111th Congress, 1st Session – – – – – – – – – – – – House Document 111–11

MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK TAMIAMI TRAIL MODIFICATIONS FINAL LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT

COMMUNICATION

FROM

THE ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS), THE DEPARTMENT OF THE ARMY

TRANSMITTING

THE DEPARTMENT'S REPORT ON A JUNE 2008 LIMITED REEVALUATION STUDY CONDUCTED TO REVIEW PREVIOUS REPORTS PREPARED FOR THE MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK (MOD WATERS) PROJECT

JANUARY 27, 2009.—Referred to the Committee on Transportation and Infrastructure and ordered to be printed

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HOUSE DOCUMENT NUMBER 111-11

NOTICE

TAMIAMI TRAIL, FL

Since Congress has authorized the project, the Army Corps of Engineers does not request that the report be printed. If there are any questions about this, please call Ms. Brown at Corps Headquarters. You can reach Ms. Brown at (202) 761-4106.

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON DC 20310-0108

JAN 15 2009

2009 JAN 29 AM 9:45
HOUSE OF REP

Honorable Nancy Pelosi
Speaker of the House
of Representatives
U.S. Capitol Building, Room H-232
Washington, D.C. 20515-0001

Dear Madam Speaker:

In response to a request contained in the Joint Explanatory Statement in the Conference Report accompanying the Water Resources Development Act (WRDA) of 2007, I am submitting my report on a June 2008 limited reevaluation study conducted by the Army Corps of Engineers (Corps) to review previous reports prepared for the Modified Water Deliveries to Everglades National Park (Mod Waters) project. The study included recommendations by the Corps for actions to enhance surface water flow through the Tamiami Trail (U.S. Highway 41). The study and its recommendations are described in the enclosed report of the Director of Civil Works, dated July 29, 2008, which I am pleased to provide to you for information. The Tamiami Trail Modifications are already authorized as part of the Mod Waters project, in the Everglades National Park Protection and Expansion Act of 1989 (Public Law 101-229, Section 104, 16 U.S.C. Part 410r-5 *et seq.*, December 1989).

The limited reevaluation study plan involves a 10.7-mile segment of the Tamiami Trail. To allow enhanced flow of surface water from north of the roadway into the Everglades National Park to the south, the Corps would construct a one-mile-long bridge in the eastern portion of the Tamiami Trail and raise the operational water level constraint from 7.5 feet to 8.5 feet in the L-29 Canal, which runs along the north edge of the roadway. To reduce damage to the road from the higher water levels, the Corps would also reinforce certain other portions of the road. Together, these measures in effect would become the central feature of the Mod Waters project. They would allow higher flows to pass through the roadway, which is expected to produce an increase in the associated Everglades ridge and slough habitat, as well as a reduction in the loss of tree islands. The project is expected to improve at least 63,000 acres of Florida Everglades habitat and provide a 93 percent increase in water delivery to Everglades National Park. There also would be an associated increase in ecological connectivity resulting from the one-mile-long bridge opening.

Based on October 2007 price levels, the Corps estimates that the fully funded cost of construction of the Tamiami Trail Modifications feature is $212,000,000, escalated to the mid-point of construction, excluding $16.7 million for planning and preconstruction engineering and design. As of the start of FY 2009, the Corps estimates that it would be able to finish the remaining preconstruction engineering and design work with $3.3 million from available carryover funds. In accordance with the authorization in section 104 of The Everglades National Park Protection and Expansion Act, all Mod waters project costs are all allocated to the environmental restoration purpose and funded 100 percent Federal. Operation, maintenance, repair, rehabilitation, and replacement (OMRR&R) associated with the water conveyance aspects of the project would be the responsibility of the non-Federal sponsor, the South Florida Water Management District, at an estimated average annual cost of $30,000, cost shared at the rate of 75 percent Federal and 25 percent non-Federal. OMRR&R for the Tamiami Trail road would continue to be the sole responsibility of and funded by the Florida Department of Transportation. The State of Florida also has offered verbally to contribute approximately $4.5 million more, as well as additional contributions of material and in-kind work.

The plan recommended in the limited revaluation study is a modification of a subset of the plan contained in the 2005 Revised General Reevaluation Report (RGRR) for Tamiami Trail Modifications, which recommended two bridges and a different operational regime for the water levels in the L-29 canal. Due to significant cost escalation associated with construction materials, labor shortages and fuel oil, the 2005 RGRR plan and other options were reevaluated in this limited reevaluation study. In accordance with the WRDA 2007 Conference Report Joint Explanatory Statement, the measures proposed in the 2005 RGRR plan may be further examined in the future under other authorizations, including the Comprehensive Everglades Restoration Plan.

Extensive coordination with stakeholders was conducted during the limited reevaluation study and public review of a draft study. As with previous plans for the Tamiami Trail Modifications, there are strong and divergent opinions about the project plan for this feature, ranging from an option with no bridges advocated by the Miccosukee Tribe of Indians of Florida to an 11-mile skyway bridge option proposed by the Sierra Club. The measures recommended in the limited reevaluation study are supported by the Department of the Army, Department of the Interior, and State of Florida. Having considered stakeholder comments and concerns, ecosystem restoration objectives, technical considerations, costs and environmental and social effects, the Administration concluded that the recommended plan is cost effective and, to complete the Mod Waters project, represents a balance between costs and environmental benefits for the Tamiami Trail Modifications feature.

The Office of Management and Budget (OMB) advises that there is no objection to the submission of this report to Congress. The OMB review concluded that the project is consistent with the policy and programs of the President. A copy of its letter is enclosed. I am providing a copy of this transmittal and the OMB letter, dated January 15, 2009, to the House Subcommittees on Energy and Water Development, and Water Resources and Environment.

Very truly yours,

John Paul Woodley, Jr.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Enclosures

5 Enclosures

1. OMB Letter, January 15, 2009
2. State of Florida Letter, May 12, 2008
3. DOI Letter, May 9, 2008
4. Report of the Director of Civil Works, July 29, 2008
5. Modified Water Deliveries to Everglades National Park, Tamiami Trail Modifications, Final Limited Reevaluation Report and Environmental Assessment, June 2008

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

January 15, 2009

The Honorable John Paul Woodley, Jr.
Assistant Secretary of the Army (Civil Works)
108 Army Pentagon
Washington, DC 20301-0108

Dear Mr. Woodley:

As required by Executive Order 12322, the Office of Management and Budget has reviewed the Army Corps of Engineers limited reevaluation report on the Tamiami Trail Modifications, which are the central feature of the Modified Water Deliveries to Everglades National Park project.

Our review concluded that the plan proposed in this limited reevaluation report is consistent with the policy and programs of the President. The Office of Management and Budget does not object to you submitting the report to the Congress.

Sincerely,

Richard A. Mertens
Deputy Associate Director
Energy, Science and Water

Florida Department of Transportation

Florida Department of Environmental Protection

South Florida Water Management District

May 12, 2008

The Honorable Bill Nelson
United States Senate
716 Hart Senate Office Building
Washington, DC 20510

Dear Senator Nelson:

As you are aware, the U.S. Army Corps of Engineers has published the Draft 2008 Modified Water Deliveries to Everglades National Park Tamiami Trail Modification Limited Re-evaluation Report and Environmental Assessment. Prior to our submittal of formal comments on the report, we wanted to inform you of our support for the Tentatively Selected Plan identified in the Report and to thank you for Congressional support and attention to this project.

Our expectation, which appears consistent with the Tentatively Selected Plan, is the construction of a one-mile bridge and the reinforcement of Tamiami Trail to sufficiently allow sustained stages in the L-29 canal to reach 8.5 feet. While the "plan" is not and cannot be perfect, the ability to almost double the annual average volume of water delivered into Everglades National Park is a significant step. We understand the fiscal concerns identified by the Appropriations Committees. We believe the tentatively selected plan is the minimal alternative for addressing Tamiami Trail and is worthy of the investment by the federal government.

In fact, while the Modified Water Deliveries Project is identified as a 100 percent federally funded project, the State, in continuing to show strong support for our restoration partnership, is willing to assist in moving the Tamiami Trail project forward by contributing approximately $10 million in funds and materials to the Army Corps of Engineers.

Florida Department of Transportation
605 Suwannee Street - Tallahassee, Florida 32399-0450
Florida Department of Environmental Protection
3900 Commonwealth Boulevard - Tallahassee, Florida 32399-3000
South Florida Water Management District
3301 Gun Club Road - West Palm Beach, Florida 33406

Exc 2

We are encouraged that staff from our agencies, staff from the federal agencies, and individuals from the environmental community all have worked collectively to develop a plan that could, after all these years, result in improved water deliveries and contribute to the restoration of the southern region of *America's River of Grass*. We hope that your continued support and leadership will result in the Congressional support vital to now bring this page of Everglades Restoration to a close.

If we can be of any assistance, please do not hesitate to ask. We look forward to joining you at the groundbreaking celebration for Tamiami Trail in the very near future.

Sincerely,

Michael W. Sole
Secretary
Florida Department of
Environmental Protection

Stephanie C. Kopelousos
Secretary
Florida Department of
Transportation

Carol Ann Wehle
Executive Director
South Florida Water
Management District

c: Eric Buermann, Chairman, Governing Board, SFWMD
Kelly Layman, Chief of Staff, DEP
Kevin Thibault, Chief of Staff, DOT
Greg Knecht, Director, Ecosystem Projects, DEP
Kerry Feehery, Florida Washington Office
Hannah Walker, Florida Washington Office

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

May 9, 2008

Colonel Paul Grosskruger
Commander
United States Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Colonel Grosskruger:

Thank you for the opportunity to review and provide comments on the April 2008 *Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification Limited Reevaluation Report and Environmental Assessment (LRR/EA), Miami-Dade County, Florida.* We appreciate the collaborative approach employed in producing the LRR/EA through the joint efforts of your staff and staff from the National Park Service and U.S. Fish and Wildlife Service.

The Department of Interior supports the Tentatively Selected Plan, Alternative 3.2.2a, which combines the installation of a 1 mile bridge in the eastern location along Tamiami Trail (U.S. 41) with raising the stage constraint at L-29 Canal by one foot, to 8.5 feet, and providing road mitigation to this level. As stated in the LRR/EA, the project provides water flow benefits consistent with the congressional direction, increases the ecosystem performance outputs, and is compatible with future Comprehensive Everglades Restoration Plan improvements.

We look forward to our continued coordination with you on the completion of this important document. We have additional clarifying comments which we will provide separately. We are committed to working towards the completion of the remaining features of the overall Modified Water Deliveries Project, especially the conveyance and seepage plans and the revised Operating Plan. In addition, we look forward to the start up and participation in the development of Phase 2 for the Tamiami Trail.

Sincerely,

Terrence C. Salt
Director of Everglades Restoration Initiatives

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

JUL 29 2008

CECW-SAD

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)
(ATTN: Mr. George Dunlop)

SUBJECT: Modified Water Deliveries, Tamiami Trail– Limited Re-evaluation Report, Director of Civil Works Endorsement Memorandum.

1. The Headquarters U.S. Army Corps of Engineers (HQUSACE) has completed its policy review of the Tamiami Trail (U.S. Highway 41) Modifications Final Integrated Limited Re-Evaluation Report (LRR) and Environmental Assessment (EA). The LRR/EA was prepared in response to the Water Resources Development Act of 2007 (Public Law 110-114) - Conference Report language which directed the Chief of Engineers to re-examine prior reports and environmental documents and implement immediate steps to increase water flow into Northeast Shark River Slough in ENP and guidance issued by HQUSACE in a memorandum dated 11 June 2007 which was coordinated with your office. An Addendum to the LRR/EA which documents resolution of policy review issues and comments identified during final policy review in the HQUSACE is hereby incorporated into the LRR. My findings and recommendations are summarized below.

2. The LRR recommends implementation of a plan of improvement along a 10.7-mile segment of the Tamiami Trail (U.S. Highway 41) between existing water control structures S-333 on the west and S-334 on the east, located in Miami-Dade County, Florida. After reviewing Congressional directives, all previous reports, and various alternatives and their benefits and costs, the U. S. Army Corps of Engineers (Corps) and the South Florida Water Management District, the non-Federal sponsor, recommend a plan consisting of two actions: 1) construction of a one-mile long bridge in the project area's eastern segment; and 2) raise the headwater stage constraint in the L-29 Borrow Canal located directly north of the Tamiami Trail roadway by one foot to eight and one half feet. Raising the canal stage would require road mitigation along parts of the 10.7-mile stretch of Tamiami Trail to reinforce the un-bridged roadway to Florida Department of Transportation (FDOT) standards compatible with the increased stage. The recommended plan helps achieve flow enhancement objectives from the Water Conservation Areas north of the Trail into Everglades National Park (ENP) and provides connectivity between the two Everglades systems. The recommended project is a smaller increment of the plan recommended in the 2005 Revised GRR and Final Supplemental (FSEIS), which included: (1) construction of a one mile bridge in the eastern portion of the Trail; (2) construction of a two mile bridge in the western portion of the trail; and (3) raising the L-29 Borrow Canal stage constraint to 9.7 ft. Implementation of the 2005 plan was abandoned due to a significant increase in costs associated with construction materials, labor shortages, and fuel oil. These remaining features recommended in the 2005 plan may be further examined under other authorizations, including the Comprehensive Everglades Restoration Plan (CERP).

Encl 4

3. The recommended plan described in the LRR has a fully funded cost estimate, which includes escalation to the mid-point of construction, totaling $212 million; the total first cost estimate (excluding escalation) is $205.3 million. Project construction costs are generally 100 percent Federally funded, except for the cost of utility relocations currently estimated at $3,000,000 which are a local sponsor responsibility. Operation, maintenance, repair, rehabilitation, and replacement are cost shared 75 percent – Federal and 25 percent – South Florida Water Management District. The State of Florida, through FDOT, has also verbally agreed to provide $4,500,000 to the project.

4. The recommended plan when implemented would improve connectivity, reduce sharp flow velocity changes, and improve rainy season depth and duration which are hydrologic conditions needed to sustain slough vegetation in ENP. It would provide nearly double the hydrological and habitat benefits as lower cost alternatives and construction could begin in late Fiscal Year (FY) 2008. The plan is compatible with the Comprehensive Everglades Restoration Plan (CERP) and is supported by the U.S. Department of the Interior (DOI), Everglades National Park and the State of Florida.

5. The Draft LRR was circulated for public review and comment in May 2008. Comments were received from the Miccosukee Tribe of Indians of Florida (Miccosukee Tribe), State and Federal agencies, as well as from non-profit groups. The DOI has indicated their strong support for the project. The U.S. Environmental Protection Agency (EPA) indicated their support for the project, while recognizing the increased benefits associated with the 2005 plan. The State of Florida has indicated its support for the recommended plan and the South Florida Water Management District will serve as the project sponsor. The FDOT made significant comments, and these comments have been incorporated into the design of the project. Comments received from the Miccosukee Tribe contend the project will not achieve the required benefits, will be too expensive to implement, improperly segments the project, and that the U.S. Army Corps of Engineers' EA and Finding of No Significant Impact are not satisfactory to comply with the National Environmental Policy Act. A coalition of environmental groups has expressed their strong support for larger projects that provide additional flow. The Sierra Club has advocated elevating the entire 11 mile stretch of roadway.

6. The HQUSACE and Office of the Assistant Secretary of the Army (Civil Works) staff have been actively involved throughout the LRR completion process. Review meetings were also held with the Council on Environmental Quality, the Office of Management and Budget, DOI, ENP, and the State of Florida to address policy and implementation issues. An independent technical review (ITR) and external peer review (EPR), which was coordinated through the Planning Center of Expertise, have also been completed. No outstanding policy review issues remain unresolved and all planning models have been certified. The project is consistent with the Environmental Operating Principals.

7. Modifications to the Tamiami Trail remain a center of controversy between stakeholders, environmental groups and other interested parties. At the center of the controversy is the preference for "smaller" plans without constructing a bridge, such as providing spreader swales on the downstream end of the existing culverts below Tamiami Trail to improve flow, as advocated by the Miccosukee Tribe. Others prefer "larger" plans such the 2005 Revised GRR plan or even the 11-mile elevated "skyway" bridge, currently estimated in excess of $1 billion. The Miccosukee Tribe recently filed two lawsuits, one against the U.S. Army Corps of Engineers, and a second against the Secretary, U.S. Department of Transportation. The DOI, State of Florida, and the Corps all agree that the recommended plan is cost effective and represents a balance between costs and environmental benefits. Additional benefits are possible through higher cost plans, and may be explored in other authorities. In addition, an operations plan for the project will need to be developed, and is expected to be controversial due to the necessary balancing of competing interests.

8. The Miccosukee Tribe has also recently requested an administrative hearing with the State of Florida – Department of Environmental Protection on the issuance of water quality certification for this project. Language has been included in Project Cooperation Agreement precludes construction prior to the issuance of a water quality certificate.

9. Washington level review indicates that the plan recommended by the reporting officers as amended by the LRR Addendum is environmentally justified, technically sound, cost effective and socially acceptable. The plan conforms to essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and other administration and legislative policies and guidelines. Also, the views of interested parties, including Federal, State and local agencies, have been considered.

10. I generally concur in the findings, conclusions, and recommendations of the reporting officers as amended by the LRR and Addendum. Accordingly, I recommend that the plan described herein for ecosystem restoration be implemented as a Federal project, with such modifications as in the direction of the Chief of Engineers may be advisable, and subject to cost-sharing, financing, and subject to cost-sharing, financing, and other applicable requirements.

a. OMRR&R of the project, or functional portion of the project, in a manner compatible with the project's authorized purposes and in accordance with applicable federal and state laws and regulations and any specific directions prescribed by the federal government in the OMRR&R manual and any subsequent amendments thereto or other applicable guidance;

b. The local sponsor shall contribute 25 percent of operation and maintenance cost as established under Article II of the 1994 Modified Water Deliveries PCA;

c. Shall not use federal funds to meet the non-federal sponsor's share of project OMRR&R costs unless the federal granting agency verifies in writing that the expenditure of such funds is expressly authorized;

d. Give the federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-federal sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, OMRR&R, or completing the project. No completion, OMRR&R by the federal government shall relieve the non-federal sponsor of the responsibility to meet the non-federal sponsor's obligations or to preclude the federal government from pursuing any other remedy at law or equity to ensure faithful performance;

e. Hold and save the United States free from all damages arising from the construction, OMRR&R of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;

f. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the CERCLA (42 USC 9601-9675 as amended) that may exist in, on, or under lands, easements, or rights-of-way that the federal government determines to be required for the initial construction, operation, and maintenance of the project that were provided by the Non-Federal Sponsor and for which the Local Sponsor has received a land compensation payment. However, for lands that the federal government determines to be subject to the navigation servitude, only the federal government shall perform such investigations unless the federal government provides the non-federal sponsor with prior specific written direction, in which case the non-federal sponsor shall perform such investigations in accordance with such written direction;

g. Assume, as between the federal government and the non-federal sponsor, complete financial responsibility for all necessary cleanup and response costs of CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the federal government determines to be necessary for the construction, operation, or maintenance of the project that were provided by the non-federal sponsor;

h. Agree that, as between the federal government and the non-federal sponsor, the non-federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that would not cause liability to arise under CERCLA;

i. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce the level of protection it affords, hinder operation and maintenance, or interfere with its proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;

j. Not less than once each year, inform affected interests of the extent of protection afforded by the project;

k. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of three years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as would properly reflect total costs of construction of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 CFR Section 33.20;

l. Comply with Section 221 of P.L. 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the WRDA 1986, P.L. 99- 662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

m. Comply with all applicable federal and state laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, P.L. 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army," and all applicable federal labor standards and requirements, including but not limited to 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act [formerly 40 U.S.C. 276a et seq.], the Contract Work Hours and Safety Standards Act[formerly 40 U.S.C. 327 et seq.] and the Copeland Anti-Kickback Act [formerly 40 U.S.C. 276c et seq.];

n. Comply with Section 402 of the WRDA 1986, as amended (33 U.S.C. 70lb-12), which requires a non-federal interest to participate in and comply with applicable federal floodplain management and flood insurance programs, prepare a flood plain management plan within one year after the date of signing a PCA Amendment, and implement the plan not later than one year after completion of construction of the project; and,

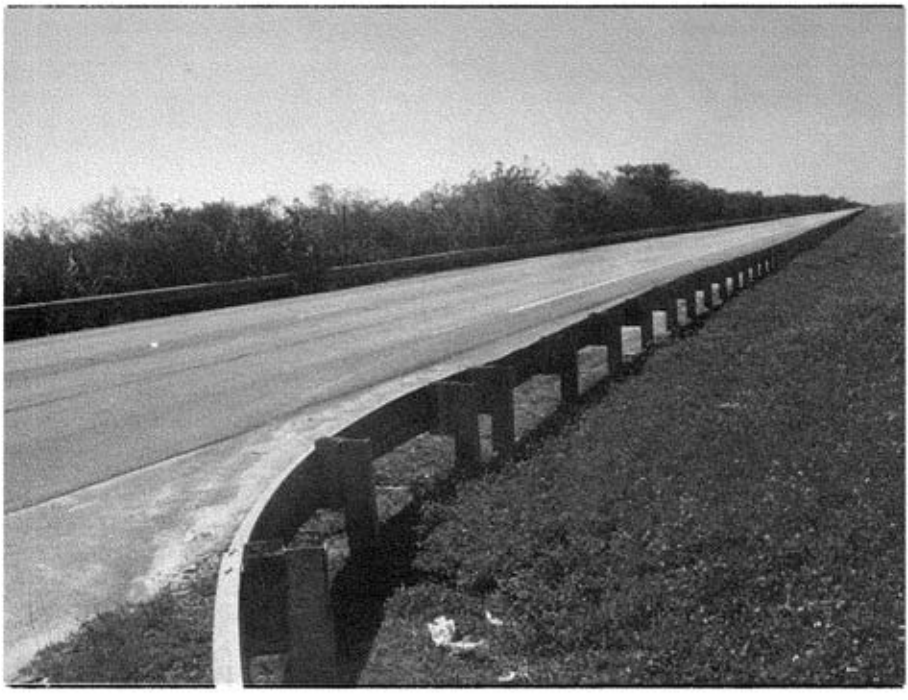
o. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, P.L. 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, necessary for the initial construction, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

11. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities in the formulation of a national civil works construction program or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding.

STEVEN L. STOCKTON, P.E.
Director of Civil Works

MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS
FINAL LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT

VOLUME 1, MAIN REPORT



U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EVERGLADES NATIONAL PARK

US Army Corps of Engineers

June 2008

This Report Contains Two Volumes

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Addendum
Tamiami Trail Modifications
Final Integrated Limited Reevaluation Report and Environmental Assessment
28 July 2008

INFORMATION FOR REVIEWERS: This addendum, which is hereby incorporated in the LRR/EA, clarifies points in the 2008 Tamiami Trail Modifications Final Integrated Limited Reevaluation Report (LRR) and Environmental Assessment (EA). The points of clarification address comments received from the Headquarters, U.S. Army Corps of Engineers (HQUSACE) and are arranged by reference to the section, paragraph, and page of the LRR. The Finding of No Significant Impact (FONSI) and recommendations in this report were signed at the District level on 20 June 2008.

Report Title: The referenced Limited Reevaluation Report and Environmental Assessment (LRR/EA) is a single integrated document. Information pertinent to NEPA, the National Environmental Policy Act, is found in the Executive Summary and Sections 1, 2, 3, 4, 5 and 6. All of these sections are marked with an asterisk. Public comments and agency coordination letters are reproduced in Appendix J.

Report: The total project cost will be reduced for previously anticipated relocations costs accordingly.

Report: The team prepared an Environmental Assessment rather than an Environmental Impact Statement (EIS) for several reasons as follows:

1. The alternatives considered in the LRR/EA were similar to the alternatives evaluated in the 2005 Revised General Reevaluation Report (RGRR) and Final Supplemental EIS (FSEIS). Alternative 3.2.2a is a similar plan, along the same exact route, including an eastern bridge in the same exact place, as analyzed and recommended in the 2005 RGRR/FSEIS and then adopted in a January 2006 Record of Decision (ROD).

2. The government team preparing the LRR determined that the probable impacts of the recommended plan (Alternative 3.2.2a) were going to be less than those already discussed in the 2005 RGRR/FSEIS under Alternative 14 (Alternative 4.2.3 of the LRR). The LRR recommended plan is very similar but smaller and cheaper than Alternative 14 from the 2005 RGRR/FSEIS. The western two miles of bridges were removed and stages in L-29 Canal were reduced and constrained to 8.5 feet National Geodetic Vertical Datum (NGVD).

3. The team referenced the 2005 RGRR/FSEIS, stating the tiered approach. Information from the 2005 RGRR/FSEIS was incorporated by reference generously in the LRR/EA text.

4. The USFWS and National Park Service (NPS) concurred with the determination that an EA was the appropriate NEPA vehicle, so long as text of the previous document was incorporated by reference. The 2005 RGRR/FSEIS was incorporated by reference. EPA did

not question our choice of an EA as a vehicle for the additional environmental information developed in the LRR/EA.

5. Most importantly, there are no impacts contemplated in the LRR/EA that were not described in the preceding RGRR/FSEIS.

6. The signed FONSI represents a decision that an EIS is not needed. It does not constitute a final agency decision to proceed with construction of the Recommended Plan.

FONSI, page ii: Table 1 in the FONSI is a summarization of the Alternative table – Table 4-2 in the main body of the LRR/EA.

FONSI, page iii: The Recommended Plan is Alternative 3.2.2a. The Recommended Plan, which is also the Preferred Alternative, is described in the second paragraph of the FONSI without its numerical label 3.2.2a.

FONSI, page iv: The excerpted conference language from the WRDA of 2007 as shown on page iv was taken from H.R. Conf. Rep. No. 280, 110TH Cong., 1ST Sess. (2007).

Executive Summary, page i: The costs presented in the main report (page i, Table 6-1, and page 7-1) and in the Cost Appendix C (Tables 5 and 7 and pages C-10 and C-11) present similar costs, but have different purposes. The costs shown in the executive summary are the fully funded cost estimate and the total first cost (excluding escalation).

LRR/EA, Section 1.1, page 1-5: The planning objectives for this LRR were set by the Water Resources Development Act (WRDA) of 2007 (Public Law 110-114) – Conference Report language (H.R. Conf. Rep. No. 280, 110TH Cong., 1ST Sess. (2007)); the cost constraint was set when the Congress rejected the cost of the previously recommended plan, Alternative 14 of the 2005 RGRR (Alternative 4.2.3 of this LRR). The immediate water flow target was 1,400 cubic feet per second (one in 10 year peak flow) as brought forward from the 1992 General Design Memorandum for Modified Water Deliveries to Everglades National Park; the ultimate target flow is 4,000 cubic feet per second. The revised cost estimate for Alternative 4.2.3 was $430 million. The Corps set $400 million dollars as the cost cap for screening purposes using cost as a constraint. Other objectives that became targets were: (a) reduction in flow velocity changes through the road; (b) increased potential connectivity; and (c) hydroperiod suitable for marsh/slough vegetation inside ENP.

LRR/EA, Section 4.4.3, page 4-28: The Plan Formulation Chapter explains how the targets were applied to all alternatives, beginning on page 4-28. Alternatives were screened in the following order: Average annual flow volumes (criterion was at least a 20% improvement over existing conditions); then velocity differences between the road and the marsh (again, a 20% improvement was the cutoff); then potential connectivity improvements (at least a 5% improvement); then marsh hydroperiod achievement (at least 20% improvement). Only after these target performance criteria were scored and alternatives that did not meet them eliminated, was the cost constraint applied.

LRR/EA, Section 4.5.2, page 4-40: Three value engineering (VE) studies were conducted on the Tamiami Trail project since 2002. A coordination review (Attachment 1) analyzed potential VE recommendations from these studies that may significantly reduce the cost to construct the project if applied. Eleven proposals from the VE studies were incorporated into the LRR/EA alternatives. Temporary construction rights-of-way, use of lime rock aggregate in place of overbuilt asphalt sections, and recycling asphalt were three proposals that provided significant cost reduction.

LRR/EA, Section 5.10, page 5-26: The Memorandum of Agreement for documentation of Tamiami Trail as an historic resource was signed on 3 July 2008. The agreement was signed by USACE, Jacksonville District; the Everglades National Park (ENP), National Park Service (NPS); and the Florida State Historic Preservation Office. Additionally the National Park Service is a cooperating agency for the Tamiami Trail Modifications project and the Integrated LRR/EA. A letter of support from the Department of the Interior (DOI) for Alternative 3.2.2a is contained within Appendix J.

LRR/EA, Section 6.3.1, Table 6-1, page 6-12: Table 6-1 shows the future funds needed to complete the project. In this table, the total construction cost is composed of the "First Cost" of $181.4M + the escalation to mid-point of construction of $6.7M for a total construction cost of $188.1M. This value is consistent with the construction costs shown in Appendix C both in the MII report (Table 5, page C-17) and in the Total Project Cost Summary (Table 7, page C-19) for the final selected alternative. The slight differences between these three numbers are due to rounding.

Since Table 6-1 is showing future funds needed the PED cost is shown as $0. Similarly, the Total Project Cost Summary shows Total Project Cost and includes the PED cost which has either been spent (sunk cost) or already obligated this FY (this obligation equals $1.4M for A-E task orders not yet expended). All other costs in the Total Project Cost Summary are future costs for which the District is seeking authority.

LRR/EA, Section 7.0, page 7-1, last paragraph: Prior to project implementation, the South Florida Water Management District, the non-federal sponsor, shall enter into a binding agreement **in the form of a PCA amendment**, between the Department of the Army and SFWMD for modification of the C&SF project, MWD to ENP project, **and the SFWMD agrees to perform the following items of local cooperation.**

LRR/EA, Section 7.0, page 7-1, paragraph a: OMRR&R of the project, or functional portion of the project, in a manner compatible with the project's authorized purposes and in accordance with applicable federal and state laws and regulations and any specific directions prescribed by the federal government **in the OMRR&R manual and any subsequent amendments thereto or other applicable guidance**.

LRR/EA, Section 7.0, page 7-1, paragraph b: Consistent with paragraph 94a of the 1992 General Design Memorandum, the local sponsor shall contribute 25 percent of operation and maintenance cost as established under Article II of the 1994 MWD PCA.

LRR/EA, Section 7.0, page 7-2, paragraph c: **Shall** not use federal funds to meet the non-federal sponsor's share of project OMRR&R costs unless the federal granting agency verifies in writing that the expenditure of such funds is **expressly** authorized.

LRR/EA, Section 7.0, page 7-2, paragraph d: The last sentence of paragraph d on page 7-2 was removed and replaced with the following: "Give the federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-federal sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, OMRR& R, or completing the project."

Annex B, USFWS Consultation: The amended Biological Opinion supporting Alternative 3.2.2a was signed by the U.S. Fish and Wildlife Service (USFWS) on 25 June 2008.

Appendix C: The alternatives' cost savings resulted from cost risk analysis. The risk analysis was fully coordinated with the District's VE officer.

Appendix C, pages C-10 and C-11: The costs shown in the appendix are based on the parametric model used in the alternative screening matrix. The Cost Engineering Appendix follows the timeline of this project starting at the current working estimate developed in the fall of 2006 that showed the significant cost increase from the RGRR. This estimate became the basis for a parametric estimating model that was used to determine costs for the alternative matrix and to select the tentatively selected plan (TSP) in the Draft LRR (which is the $226.6M cost shown on page C-11). The design and estimate for the TSP were refined between the Draft and Final LRR resulting in the final MII estimate shown on page C-17 and the final Total Project Cost Summary shown on page C-19.

Appendix C, Table 7, page C-19: The total project cost of $220,562,000 was certified during independent technical review as of 6 June 2008 by the Walla Walla District, Cost Engineering Center of Expertise. This estimate included the sunk cost estimate for planning, engineering, and design.

Appendix F, Section 4.1.a., page F-3: Add perpetual flowage easement to the requirements and the word "additional" so that the third sentence of paragraph a (continued from page F-2) reads as follows. "A perpetual road easement, perpetual flowage easement and a perpetual channel easement are required for approximately 0.44 acre and a temporary work area easement is required for an additional 0.44 acre for a period of 60 months."

Appendix F, Section 4.1.c., page F-3: Florida Department of Transportation (FDOT) will retain responsibility for all costs associated with the investigation, design, response, and remediation of any CERCLA regulated substances that may be found in association with the lands, easements relocations, and rights-of-way which it grants associated with this project. This requirement is in accordance with USACE policy and law for any landowner and will be stated in the relocation contract and all deeds.

Appendix F, Section 4.2.d., page F-5: Replace the second and third paragraphs of this section with "A determination will be made as to the required interest in land, if any, for project

operation for the Airboat Association of Florida tract. If easement estate is considered appropriate, the non-standard estate for flowage easement (permanent and occasional flooding) in paragraph 4.7.2 will be used.

Appendix F, Section 4.3.1, pages F-7 and F-8: Delete paragraphs after the first paragraph in this section.

Appendix F, Section 4.3.2, page F-8: the heading was changed to "DOI Responsibility".

Appendix F, Section 4.3.2, page F-8: Delete the first and last sentences of this section and add the following sentences at the beginning of the section. "The real estate cost estimate below is an estimate of the acquisition costs for DOI to acquire fee simple title to lands within the ENP boundary that lie south of the Tamiami Trail and which are necessary for operation of the Project. The estimate is included for informational purposes only and is not included in the total project costs for the Project as described in this report. The park is, under their General Management Plan, evaluating the future acquisition of real estate interests for the privately-owned parcels south of Tamiami Trail. At this time, it is not known what real estate interest the park will acquire; therefore, this office provided the most costly scenario of fee acquisition for the determination of costs."

Appendix F, Section 4.16.3, pages F-17 and F-18: Delete last paragraph on page F-17 and first two paragraphs of page F-18 and replace with the following text. "The AT&T and Bell South utilities located within the existing right-of-way of U.S. Highway 41 will not be relocated at Project expense since the permits allowing those utilities to utilize the road right-of-way can be revoked upon 30 days notice by the FDOT. Total project costs will be reduced accordingly."

Appendix F, Section 4.17, page F-18: Delete the last two sentences of the last paragraph of this section. Add the following sentence: "It is anticipated that the DOI will acquire the appropriate real estate interests for these sites from the private owners as these tracts are necessary for operation of the project and are situated south of the Tamiami Trail."

Appendix J: contains a tabulation of all public and agency comments and the agencies' response to each. This table is followed by scanned copies of all letters and memoranda received during the comment period including the letter of support from the DOI for Alternative 3.2.2a. Additional letters of support received are contained in Appendix K.

Tamiami Trail Modifications LRR
Value Engineering Coordination Review

Background: Three Value Engineering (VE) studies have been performed for the Tamiami Trail Modifications project with VE activities as established by ER 11-1-321. The three studies were prepared by the following parties with corresponding VE report dates, and project document (scopes of project) and date is shown below:

1. University of Florida, Civil Engineering Department, VE Report dated April 2002; GRR Final Addendum dated July 2001 (Existing Alignment and 3,000-Foot Bridge with Water Quality Treatment)
2. Jacksonville District In-house Team, VE Report dated July 2005; RGRR Pre-Final Design Level dated June 2005 (Four Mile Bridge Structure and Roadway Raise)
3. Department of Interior, National Park Service, by contract with VE Group, LLC and Leo A Daly Company, VE Report dated May 2007; 30% Design from Subsequent 2005 RGRR, March 2007 (Two Bridge structures 1-Mile and 2-Mile Hydraulic Openings with Road Raising within Project Limits).

Coordination Review: The coordination review analyzed potential VE recommendations by previous VE studies that may result in significantly reduced cost to construct the project if adapted. The analysis has been supported by project delivery team (PDT) members for scope, applicability and cost. The following activities were conducted:

1. Identified ideas with possibilities of significant savings for selected LRR alternatives. A working list of proposals was prepared and screened by PDT.

2. Selected potential VE proposals were applied to the current scope for LRR Alternatives 2.2.2a, 4.3.2 and 5.4.

3. Evaluated applicable implementation to capture savings while delivering a fully functional project and maintaining serviceability (i.e.; assuring savings will be realized and increased future cost do not offset savings through maintenance/repair/replacement and that project benefits are not reduced or lost).

4. Updated possible cost savings are presented in VE recommendations.

Summaries of VE Report Recommendations: VE proposals provided in VE reports will be prepared for evaluation:

1. The University of Florida VE report provided 3 VE recommendations with minor potential savings not found to be applicable to current alternatives. There is no possibility that savings will be realized.

2. The Jacksonville District VE report provided 6 VE recommendations with potential savings ranging to $36 million (based on 2005 design estimate base). Four of the six proposals were incorporated into the RGRR design. There is further potential application for two proposals for alternative bridge foundation system and further design optimization to project cost target.

3. The DOI/National Park Service VE report provided 14 alternatives with potential savings from selected combinations ranging to $131 million as selected recommended NPS. Seven proposals were incorporated into 22 of the 26 LRR Alternatives.

VE Recommendations: Alternatives 2.2.2a, 4.3.2 and 5.4 are identified as leading alternatives and significant cost containing VE proposals were developed for each one. Estimated savings are verified and updated to FY 2008 dollars.

Alternative 2.2.2a – Raise Road, Add 1-Mile Eastern Bridge. The current alternative estimate, scope of work and quantities of materials incorporates significant VE proposals including the southern shift in road alignment, optimization in bridge design including pollution abatement systems and reduced length of bridge to 1-mile. Proposals would also apply to Alternatives 1.4a, 3.2.2a, and 4.2.2a with reductions for item 2 as noted. Additional cost saving proposals may include the following items and associated cost savings:

1. ***Provide Temporary Construction Rights of Way (ROW) – Savings $3.7 million.*** The allowance of a 50-Foot wide temporary construction ROW would allow construction staging operations, delivery and materials storage to shorten the construction period for the bridge. It eliminates top-down construction limited to bridge sections being progressively completed to stage the construction of the next adjacent section. The 3 year construction period would be shortened. A 50-FT wide ROW would affect approximately 6 acres of adjacent land per mile of bridge. This issue becomes more acute as bridge lengths increase for other alternatives. Restoration of disturbed areas would be required for this method of construction.

2. ***Allow a Lime Rock Aggregate Fill Base and Eliminate the Overbuilt Asphalt Section – Savings $5 million.*** The issue is under coordination with the State Department of Transportation and will significant speed construction with the simpler base construction using the lower cost base material. Savings are not realized for Alternative 1.4a, and are reduced for Alternative 3.2.2a, featuring lower finished elevations for the road raise. Alternative 4.2.2a, having a higher elevation road raising, would have approximately $5.5 million in savings.

3. ***Recycle Asphalt – Savings $6.4 million.*** Incorporation of recycled asphalt in new paving projects is broadly implemented for road paving projects. Recycling milled asphalt top course and removed demolished road sections would yield savings related to new pavement quantity purchased by economizing material quantities. Early coordination has been made to identify an applied unit price break. Recycling as much as 80% of removed materials may be added with new asphalt mix – significant savings should be available. The 2-inch milled top course is in excess of 111,000 CY. As minimum cost avoidance, landfill tipping fees are eliminated with recycling. Possibly reduced handling and shorter hauling distances can also be coordinated.

Alternative 4.2.3 – Raise Road, Add 2-Mile Plus 1-Mile Bridges (RGRR). The current alternative estimate, scope of work and quantities of materials incorporates significant VE proposals including the southern shift in road alignment, optimization in bridge design including pollution abatement and reduced length of bridge to 3-miles from 4-miles. Proposals would also apply to Alternatives 1.4b, 2.2.2b, 2.2.3, 3.2.2b, 3.2.3 and 4.2.2b with reductions for items shown below. Additional cost saving proposals may include the following items and associated cost savings:

1. ***Provide Temporary Construction Rights of Way (ROW) – Savings $11.2 million.*** The allowance of a 50-Foot wide temporary construction ROW would allow construction staging operations, delivery and materials storage to shorten the construction period for the bridge. It eliminates top-down construction limited to bridge sections being progressively completed to stage the construction of the next adjacent section. The 5 year construction period would be shortened also reducing applied escalation. A 50-FT wide ROW would affect approximately 6 acres of adjacent land per mile of bridge, or 18 total acres. This issue becomes more acute as bridge lengths are increased. Restoration of disturbed areas would be required for this method of construction. The 11.2 million savings would be realized by Alternatives 2.2.3 and 3.2.3. Savings are reduced for Alternative 1.4b and 2.2.2b, 3.2.2b and 4.2.2b, featuring only one bridge ($3.7 million each).

2. ***Allow a Lime Rock Aggregate Fill Base and Eliminate the Overbuilt Asphalt Section – Savings $5 million.*** The issue is under coordination with the State Department of Transportation and will significant speed construction with the simpler base construction using the lower cost base material. Savings are not realized for Alternative 1.4b, and are reduced for Alternatives 2.2.2b, 2.2.3, 3.2.2b and 3.2.3 featuring lower finished elevations for the road raise.

3. ***Recycle Asphalt – Savings $6.4 million.*** Incorporation of recycled asphalt in new paving projects is broadly implemented for road paving projects. Recycling milled asphalt top course and removed demolished road sections would yield savings related to new pavement quantity purchased by economizing material quantities. Early coordination has been made to identify an applied unit price break. Recycling as much as 80% of removed materials may be added with new asphalt mix – significant savings should be realized. The 2-inch milled top course is in excess of 111,000 CY. As minimum cost avoidance, landfill tipping fees are

eliminated with recycling. Possible reduced handling and shorter hauling distances can also be coordinated.

4. ***Develop Drill Pier Foundation for Western 2-Mile Bridge – Savings $21.4 million.*** Existing foundation conditions have been found to be worst in the western bridges locations requiring a double battered precast concrete piles system if the current design is continued. Development of a 36-inch drilled pier foundation for the two western bridges will result in significant savings. Caution is noted for water quality permit issued and sensitivity with close proximity of the Park for the larger dimensioned drilled pier system. Proper development of the design should address these issues.

Alternative 5.4 – Current Alignment with 1-Mile Bridge and Relocation of L-67 Levee – Crown 13.00 Feet. The current alternative estimate, scope of work and quantities of materials incorporates significant VE proposals including the southern shift in road alignment, optimization in bridge design including pollution abatement systems and reduced length of bridge to 1-mile. No VE alternatives are identified for the relocation of L-67 levee. Possible savings are essentially the same as presented for Alternative 2.2.2a, also featuring a 1-mile bridge, but are modified by the bridge location to the west. Additional cost saving proposals may include the following items and associated cost savings:

1. ***Provide Temporary Construction Rights of Way (ROW) – Savings $3.7 million.*** The allowance of a 50-Foot wide temporary construction ROW would allow construction staging operations, delivery and materials storage to shorten the construction period for the bridge. It eliminates top-down construction limited to bridge sections being progressively completed to stage the construction of the next adjacent section. The 3.5 year construction period would be shortened. A 50-FT wide ROW would affect approximately 6 acres of adjacent land per mile of bridge. This issue becomes more acute as bridge lengths increase for other alternatives. Restoration of disturbed areas would be required for this method of construction.

2. ***Allow a Lime Rock Aggregate Fill Base and Eliminate the Overbuilt Asphalt Section – Savings $5 million.*** The issue is under coordination with the State Department of Transportation and will significant speed construction with the simpler base construction using the lower cost base material.

3. ***Recycle Asphalt – Savings $6.4 million.*** Incorporation of recycled asphalt in new paving projects is broadly implemented for road paving projects. Recycling milled asphalt top course and removed demolished road sections would yield savings related to new pavement quantity purchased by economizing material quantities. Early coordination has been made to identify an applied unit price break. Recycling as much as 80% of removed materials may be added with new asphalt mix – significant savings should be realized. The 2-inch milled top course is in excess of 111,000 CY. As minimum cost avoidance, landfill tipping fees are eliminated with recycling. Possibly reduced handling and shorter hauling distances can also be coordinated.

Possible total savings are identified for the presented LRR Alternatives ranging from $18 million to $44 million due to complexities and scope variations of the alternatives. These additional Value Engineering options have been identified by the PDT as being cost reduction alternatives that may be applied to the identified LRR Alternatives. The LRR Alternatives will be minimally exposed to risk or other disadvantages if the VE recommendations are accepted and implemented into the project design.

Several VE proposals were evaluated and determined not feasible for implementation. These items include the placement of pipes, culverts or precast arch structures in lieu of bridge structures. The numbers of these structures varied from 130 sets to over 1,200 sets of structures, and these supporting methods of construction posed serious problems with maintaining traffic service, and risk for roadway structural damage for placement of such large dimensioned drain systems and the large numbers of structures required. The LRR alternatives for culverts are reduced in structure dimensions and reduced in numbers to only 19 sets. While the alternatives pose the same problems – it is substantially reduced in numbers and is expected to reduce benefits too. Likewise, shifting the bridges to the roadway alignment to use the existing embankment is not presently deemed feasible without specific development. Management of traffic service, offsets from new construction features while the existing roadway is modified was not well developed or described with the VE proposal. No VE savings are identified for these items.

The PDT has also identified other cost reducing alternatives not related to the documented VE study recommendations. The coordination of both the VE savings and other cost reducing alternatives are equally developed for current LRR Alternatives; however, they can not be applied twice. These VE recommendations are presented with supporting narrative for associated Alternatives to assist in the plan alternative selection process.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

FINDING OF NO SIGNIFICANT IMPACT

Modified Water Deliveries to Everglades National Park
Limited Reevaluation Report, Tamiami Trail Modifications

The U.S. Army Corps of Engineers (Corps), Jacksonville District, has completed a Limited Reevaluation of modifications for conveyance of water through Tamiami Trail as authorized in the Everglades National Park Expansion and Protection Act of 1989, in the 1992 Modified Water Deliveries (MWD) to Everglades National Park (ENP) General Design Memorandum (GDM) and Environmental Impact Statement (EIS), in the Revised General Reevaluation Report (RGRR) and Supplemental Environmental Impact Statement (SEIS) of 2005-6, and in the 2007 Water Resources Development Act (WRDA). This Limited Reevaluation was undertaken due to unexpected and unprecedented cost increases under the previously selected plan described in the November 2005 RGRR and January 2006 Record of Decision (ROD).

The Recommended Plan, equivalent to the Preferred Alternative in National Environmental Policy Act (NEPA) language, is to raise the operational water level constraint in the L-29 Canal from 7.5 feet to 8.5 feet, build a bridge approximately one mile long in the eastern segment of the roadway, and reinforce the un-bridged roadway to Florida Department of Transportation standards compatible with the increased stage constraint. The size and location of the bridge would be as described for the eastern bridge under Alternative 14 of the 2005 RGRR/Final Supplemental Environmental Impact Statement (FSEIS) (the Selected Plan indicated in the ROD). The environmental impacts of Alternative 14 were discussed in the referenced FSEIS and ROD, and are incorporated by reference here. The project location is shown in Figures 1-1 and 1-2 of the MWD Tamiami Trail Modifications Limited Reevaluation Report.

Based on the updated cost and benefit information analyzed in this Limited Reevaluation Report (LRR) and Environmental Assessment (EA), and on previous evaluations and public comments in the SEIS of 2005 for Tamiami Trail, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not cause significant adverse effects on the quality of the human or natural environment and does not require the preparation of a new EIS. Reasons for this conclusion are, in summary:

The EA for this LRR discusses the development and evaluation of 27 alternative plans including a no action alternative. Screening of alternatives was based on hydrologic efficiency (ability to increase conveyance to ENP), potential habitat benefits, cost and ability to be implemented quickly. Some of the considered alternatives are variations on alternatives developed previously, and others are new. Alternatives include combinations of incrementally increased water level constraints in the L-29 Canal, from the current 7.5 feet to 8 feet, 8.5 feet or 9.7 feet, structural options, including installing additional culverts, various bridge combinations and locations, and other options, including relocating the roadway and/or levees. New cost estimates were developed for all alternatives. Table 1 shows the complete list of alternatives evaluated.

Table 1: TAMIAMI TRAIL PLAN FORMULATION ALTERNATIVES

Alt.		L-29 Constraint (feet)
1	No roadway reinforcement (note 2)	
1.1	No Action	7.5
1.2	Add spreader swales (30-x 1000 ft bottom width)	7.5
1.3	Add culvert sets (note 3)	7.5
1.4a	Add 1-mile eastern bridge	7.5
1.4b	Add 1-mile western bridge	7.5
1.5	Reinforce western section of road to 12.70 ft (crown) and add 1-mile western bridge	7.5
2	Roadway improvements-crown 11.05 ft (note 4)	
2.1	Reinforce road (low points only)	8.0
2.2.1	Reinforce low points, add culvert sets with swales	8.0
2.2.2a	Reinforce low points, add 1-mile eastern bridge	8.0
2.2.2b	Reinforce low points, add 1-mile western bridge	8.0
2.2.3	Reinforce low points, add 2 mile + 1 mile bridges	8.0
3	Roadway improvements-Crown 11.55 ft (note 4)	
3.1	Reinforce road	8.5
3.2.1	Reinforce road, add culvert sets with swales	8.5
3.2.2a	Reinforce road, add 1-mile eastern bridge	8.5
3.2.2b	Reinforce road, add 1-mile western bridge	8.5
3.2.3	Reinforce road, add 2 mile + 1-mile bridges	8.5
4	Roadway improvements- Crown 12.75 ft (note 4)	
4.1	Reinforce road	9.7
4.2.1	Reinforce road, add culvert sets with swales	9.7
4.2.2a	Reinforce road, add 1-mile eastern bridge (RGRR)	9.7
4.2.2b	Reinforce road, add 1-mile western bridge (RGRR)	9.7
4.2.3	Reinforce road, add 2-mile + 1-mile bridges (RGRR)	9.7
4.2.4	10.7 mile bridge (RGRR)	9.7
5	Structural alternatives and/or road re-alignment (note 4)	9.7
5.1	Northern alignment of RGRR Alt 14 (on L-29 levee)	9.7
5.2	Northern alignment with 1-mile bridge	9.7
5.3	Northern alignment with 1-mile bridge and relocation of L-67 levee-Crown 13.0 ft	9.7
5.4	Current alignment with 1-mile bridge and relocation of L-67 levee-crown 13.0 ft.	9.7
5.5	Pump stations along L-29	9.7

Notes:

2. Existing road has 19 culvert sets consisting of 3 culverts per set, resulting in an average culvert set spacing of 3,000 feet.
3. Reduces culvert spacing to approximately 1,500 feet.
4. All road improvements require 3.05 feet between the road crest and the L-29 design elevation.

Cost constraints led to elimination of all alternatives but those in Groups 2 (one half foot increase of maximum stage constraint in L-29 Canal) and 3 (one-foot increase in maximum stage constraint in the L-29 Canal). Of the alternatives carried forward for final evaluation, Alternative 3.2.2a (eastern bridge and raise water levels one foot) was most effective and efficient. Alternatives in Group 1 did not effectively increase conveyance or lead to added wetland connectivity; while those in Groups 4 and 5 appear to be too costly to meet the constraints of the Congressional direction.

The preferred alternative is an action of reduced scope compared to the previously selected plan, Alternative 14 in the 2005 RGRR/SEIS. The eastern bridge location is the same location recommended in that document; however, no western bridge segment or segments are recommended. No businesses are operating directly in the footprint of the proposed bridge or its approaches. Florida Power and Light owns lands that are currently vacant within the footprint. The Corps will seek to acquire real estate interests from them. Due to lower water level constraints (8.5 feet instead of 9.7 feet in the 2005-6 RGRR) indirect impacts are expected to be minimal. Real estate requirements for the recommended plan have been identified. Road modifications to parts of U.S. 41, Tamiami Trail, will be required and their costs are included in project cost estimates. Water levels (stages) in the L-29 Canal will be constrained to lower stages than those anticipated in the 2005 RGRR/SEIS, reducing the need for modifications to the roadbed. The recommended action is expected to be compatible with budgeted funds for the completion of the MWD to ENP project and allow for future improvements to further increase conveyance through U.S. 41.

Stakeholder and agency comments have been sought via a scoping letter, some stakeholder meetings, a state water quality pre-application meeting, and through public and agency coordination of the Draft LRR/EA during the period between April 9 and May 9, 2008. Comments received have been incorporated into the EA discussion of issues and concerns. The U.S. Environmental Protection Agency expressed support for the recommended plan, as did the Department of the Interior. Some stakeholder groups expressed preference for certain alternatives. The Miccosukee Tribe has reiterated comments on previous evaluations, stating that it does not favor a bridge or believe one is necessary urging the Corps to consider an option that increases culverts, provides getaway swales south of the road and maintains these structures open. Most state and federal agency comments have been supportive, and many expressed support for an alternative from the (3) group (raising the L-29 water level constraint one foot to force more water into the Park). Non-governmental conservation groups generally favor larger (higher water level, more bridges) alternatives, such as Alternative 4.2.4, which includes bridging the entire 10.7 mile length of Tamiami Trail in the project area.

A public workshop was held on April 22, 2008 in the Miami area to receive additional public and stakeholder comments. All comments received during this workshop or via mail or e-mail have been reproduced in the LRR/EA.

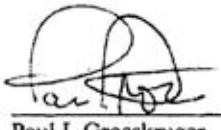
State Water Quality Certification (WQC) is being sought in an action parallel to the NEPA process. A cultural resources survey has been conducted. The Tamiami Trail and L-29 Canal are historic resources. A draft Memorandum of Agreement is in preparation among

the concerned agencies, including ENP, Florida Department of Transportation, Corps and the Miccosukee Tribe, to document the road and install a plaque explaining its historic significance. Evaluations are in compliance with the Fish and Wildlife Coordination Act (preliminary report received), Clean Air Act, Clean Water Act, Endangered Species Act and Coastal Zone Management Act at this stage of planning. Section 7 consultation has been re-initiated with the U.S. Fish and Wildlife Service (FWS) and is expected to be concluded within a few weeks. Under the Clean Water Act, a WQC will be required for construction of the preferred alternative. Pre-application meetings have been held with the Florida Department of Environmental Protection, and the certificate is expected to be issued prior to any construction work on this project. A Clean Water Act Section 404 (b)(1) Evaluation is appended to this LRR/EA, and based on the guidelines of 40 Code of Federal Regulations (CFR) Part 230, the proposed project is specified as complying with the requirements of these guidelines including appropriate and practical conditions to minimize pollution or adverse effects to the affected aquatic ecosystem.

Under the Fish and Wildlife Coordination Act, coordination with both the FWS and the Florida Fish and Wildlife Conservation Commission has begun. Both agencies have commented on this report and EA. FWS has indicated it can support the preferred alternative.

The signing of this FONSI does not constitute a final agency decision to proceed with construction of the Recommended Plan. A decision to proceed with construction of Tamiami Trail will be made following review of the LRR by the Chief of Engineers.

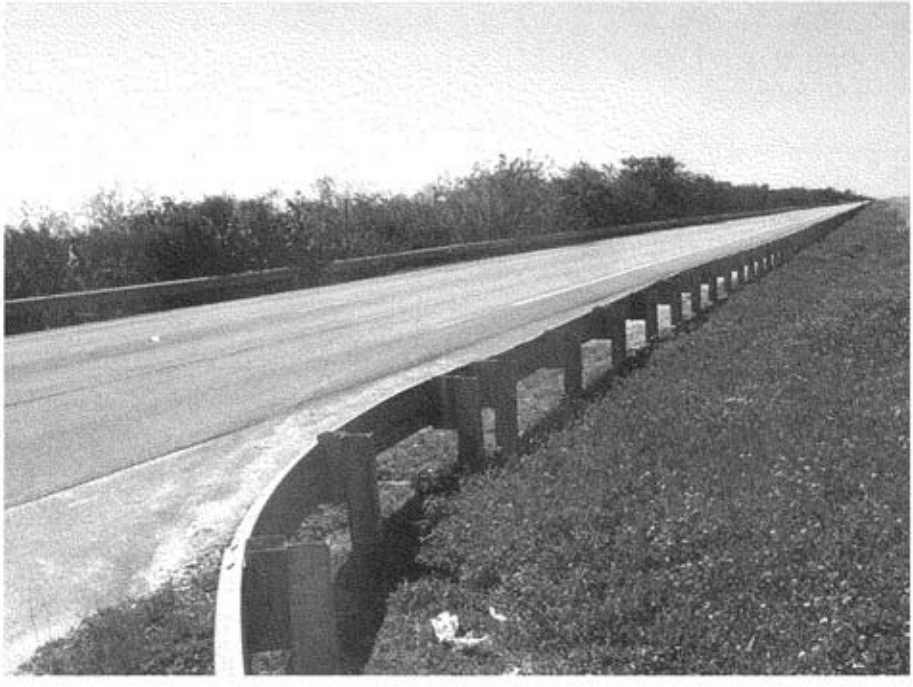
In view of the above and after consideration of public and agency comments received on the project, I have concluded that the proposed action for improving conveyance across Tamiami Trail from L-29 Canal into ENP will not result in a significant adverse effect on the human environment. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed herewith.



Paul L Grosskruger
Colonel, U.S. Army
District Engineer

20 Jun 08
Date

MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS
FINAL LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT



U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EVERGLADES NATIONAL PARK

US Army Corps of Engineers

June 2008

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MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK

TAMIAMI TRAIL MODIFICATIONS

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AND
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EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), and the Department of the Interior (DOI), represented by the National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS), have re-evaluated alternatives to restore Everglades National Park (ENP) by redistributing and providing additional flows of water into the Park through U.S. 41, Tamiami Trail.

After reviewing Congressional directives and targets, all previous reports, and previous and new alternatives and costs, the agencies recommend a plan consisting of two actions: 1) build a one-mile long bridge in the project area's eastern segment and 2) raise the headwater stage constraint in the L-29 Borrow Canal by one foot to eight and one half feet; which would require road mitigation on parts of U.S. Highway 41 in the action area, located between S-333 on the west and S-334 on the east. This Recommended Plan is called Alternative 3.2.2.a.

The Limited Reevaluation Report (LRR) Recommended Plan's total fully funded cost estimate, which includes escalation to the mid-point of construction, is **$212 million**; its total first cost estimate (excluding escalation) is **$205.3 million**. The LRR Recommended Plan would improve connectivity, reduce sharp flow velocity changes, and improve rainy season depth and duration which are hydrologic conditions needed to sustain slough vegetation in ENP. It would provide nearly double the hydrological and habitat benefits as lower cost alternatives and construction could begin in late Fiscal Year (FY) 2008. Since the bridge segment is part of the 2005 Revised General Reevaluation Report (RGRR) recommended plan, it would be compatible with anticipated Comprehensive Everglades Restoration Plan (CERP) stages of up to 9.7 feet. The LRR Recommended Plan would also be compatible with future changes anticipated under CERP, as the bridged segment would not require rebuilding. With the exception of the 10.7-mile bridge (Alternative 4.2.4) and the "Blue Shanty" (Alternatives 5.3 and 5.4), none of the other alternatives appeared capable of accommodating flows of 4,000 cubic feet per second (cfs). Although 4,000 cfs flows are only expected under infrequent, high rainfall events, flows of this magnitude are important to induce positive ecological response. These three alternatives capable of accommodating 4,000 cfs flows were eliminated from consideration due to cost.

Background. The Everglades National Park Protection and Expansion Act, December 1989, authorized the Secretary of the Army to improve water deliveries to ENP and to take steps to restore natural hydrologic conditions to the extent practicable. The General Design Memorandum (GDM) called for in the Act was completed in June 1992. The 1992 GDM and Environmental Impact Statement (EIS) recommended transfer of water into the park from Water

Conservation Area (WCA)-3B to the L-29 Canal, and assumed that the existing culverts under Tamiami Trail (U.S. Highway 41) roadway would be adequate to convey the increased flows. Subsequent hydrologic analyses revealed that the higher stage in the L-29 Canal that would be required for the culverts to convey the increased flows could adversely affect the structure of Tamiami Trail and cause progressive road failure under infrequent storm conditions.

Figure ES-1. Project and Study Area Location
The Project area includes a 10.7 mile long section of Tamiami Trail.

Alternative means for water conveyance were first evaluated in a General Reevaluation Report and Supplemental Environmental Impact Statement (GRR/SEIS), the final version of which was coordinated with the public in 2003. The 2003 Preferred Plan was a 3,000 foot bridge and a proposed agreement to

pay compensation to Florida Department of Transportation (FDOT) for a flowage easement along the unbridged portion of Tamiami Trail. State concerns regarding probable damage to Tamiami Trail were raised prior to, during and subsequent to the public and agency review of the final report, and the Final GRR/SEIS was withdrawn without a signed Record of Decision.

In 2005, a revision of the GRR examined additional alternatives. Ten alternatives, including no-action, were considered, including the previously considered 3,000 foot long bridge. All alternatives would have conveyed the increased flows associated with Modified Water Deliveries (MWD). All would have required removal of the roadway in the footprint of the bridges and the reconstruction, with an asphalt overlay, of the unbridged portion of the road.

The 2005 RGRR Alternatives were as follows:

- No-Action
- Alternative 9 — 3,000 foot long bridge
- Alternative 10 — Four Mile long bridge in the central region of the project area
- Alternative 11 — Four mile long bridge at the eastern end of the project area
- Alternative 12 — Three mile long bridge
- Alternative 13 — Two mile long bridge
- Alternative 14 — Two mile long bridge at the western region of the project area and a one-mile long bridge at the eastern end
- Alternative 15 — 1.3 mile long bridge at the western region of the project area and a 0.7 mile long bridge at the eastern end
- Alternative 16 — Three 3,000 foot long bridges
- Alternative 17 — 10.7 mile long elevated roadway within the existing right of way

All 2005 alternatives incorporated a design high water of 9.7 feet. Alternatives were evaluated by an interdisciplinary team based on their ability to meet targets for hydrologic and ecologic performance measures.

2005 RGRR Recommended Plan. The 2005 RGRR Recommended Plan was Alternative 14 (widen and raise road profile with two mile bridge west and one mile east, and reconstruct the remaining unbridged roadway). Total project cost was estimated at approximately $144 million dollars. After public coordination of a Draft and Final GRR/SEIS, and consideration of all comments from agencies, stakeholders and the public, a Record of Decision selecting Alternative

14 was signed on January 25, 2006 and the proposed project was sent to Congress for consideration in the FY 2007 budget.

Congressional Consideration of 2005 RGRR Plan; 2007 "Managers' Language". When the 2005 RGRR plan was approved in 2006 by the Assistant Secretary of the Army for Civil Works, early Pre-construction Engineering and Design work led to refinement of the total cost estimates for Alternative 14. By the time Congress considered the Tamiami Trail Modifications for inclusion into the authorizing language in the 2007 Water Resources Development Act (WRDA) in early summer of 2007, revised and more detailed cost estimates for the plan, including a newly required cost risk analysis, put the cost at **$305 million**. Congressional managers developing WRDA 2007 expressed dismay at the relatively rapid cost increase and high cost of the 2005 RGRR plan; and directed proponents in the DOI and USACE to re-evaluate the 2005 Plan and develop less costly alternatives. That direction is the basis for this LRR. The cooperating agencies were directed to:

"Re-examine options to modify the water deliveries to the Park. However, the managers also direct the Chief of Engineers to pursue immediate steps to increase flows to the Park of at least 1,400 cubic feet per second, without significantly increasing the risk of roadbed failure. Flows less than 1,400 cubic feet per second will not produce measurable benefits to the Park..."

"...The managers direct the Chief of Engineers to re-examine the prior reports and environmental documentation associated with modifying water deliveries to the Park prepared under the 1989 Act, and to evaluate the practicable alternatives for increasing the flow of water under the highway and into the Park. The recommendations...shall, to the extent practicable, take steps to restore the natural hydrological conditions within the Park. The managers direct that the flows to the Park have a minimum target of 4,000 cubic feet per second so as to address the restoration envisioned in the 1989 Act."

This LRR re-evaluated the most likely cost of Alternative 14, as directed. After applying cost-risk considerations as required by USACE planning guidance implemented beginning in September 2007, the current estimated cost of RGRR Alternative 14 (Alt 4.2.3 in the LRR) is **$430 million**.

The team also examined 27 options including no-action and the 2005 RGRR plan. The actions included reinforcing the road only (in six-inch increments up to 9.7 feet), doubling the number of culverts alone, adding a bridge only (at two different locations), and various combinations of road reinforcement and culverts or road reinforcement and bridges. Alternatives from the RGRR that were more costly than Alternative 14 from the RGRR were not re-evaluated, as the team felt that they would be even more expensive than the previously selected plan.

Each alternative was examined for hydrologic performance (flow volume and flow velocity) and ecologic performance. They were compared against the flow targets set by the Managers' language, and against cost constraints. Finally, they were evaluated in terms of how quickly construction could commence.

The team's analysis quickly eliminated alternatives focused solely on road reinforcement, as they did not provide better velocity distributions of flow than under no-action. Likewise, culvert-only alternatives were eliminated for similarly poor performance, and were less efficient than bridge alternatives (at each stage constraint) in increasing average and peak flow delivery to the Park. Four final alternatives and no-action were carried forward for evaluation according to the USACE's criteria of completeness, efficiency, effectiveness and acceptability. All alternatives retained for detailed screening provided significant improvements in terms of hydrologic and ecological performance. The best performing and most cost-effective plan is Alternative 3.2.2.a, which combines a one-mile bridge in the eastern location with raising the stage constraint at L-29 by one foot, to eight and one half feet, and providing road mitigation to this level. Alternative 3.2.2a provides flow benefits to meet the Managers' language, nearly doubles the ecosystem performance outputs compared to no action, and is forward compatible with future CERP improvements. If approved by Congress, construction could commence on Alternative 3.2.2a with a projected completion date in late 2011. The total fully funded cost estimate for Alternative 3.2.2a, the Recommended Plan, is **$212 million**. This estimate includes risk and uncertainties at the 90 percent confidence level, as well as expected cost escalation to the midpoint of construction. This confidence indicates that there is a 90 percent chance the final cost for this project (at FY-08 pricing levels) would be equal to **or less** than this estimate.

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Acronyms

8.5 SMA	8.5 square mile area
A	
AAHU	Average Annual Habitat Unit
ADT	average daily traffic
B	
BMPs	Best Management Practices
BO	Biological Opinion
BOD	Biochemical Oxygen Demand
C	
C-111	Canal 111
C&SF	Central and Southern Florida
CE/ICA	Cost Effectiveness and Incremental Cost Analyses
CERP	Comprehensive Everglades Restoration Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm	centimeter
CSOP	Combined Structural Operating Plan
CSSS	Cape Sable seaside sparrow
CWE	Current Working Estimate
CWE	Control Water Elevation (Appendix B-Engineering)
CY	cubic yard
D	
dBA	decibels
DERM	Miami-Dade County Department of Environmental Resource Management
DM	Design Manual
DO	Dissolved Oxygen
DOI	US Department of the Interior
DSL	Design Service Life
E	
EA	Environmental Assessment
ECB	Engineering Construction Bulletin

EDEN	Everglades Depth Estimation Network
EDR	Engineering Documentation Report
EIS	Environmental Impact System
ENP	Everglades National Park
EO	Executive Order
EPR	External Peer Review
ER	Engineering Regulation
ESA	Endangered Species Act
EVER	Everglades National Park

F

FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FLUCCS	Florida Land Use/ Cover and Classification System
FONSI	Finding of No Significant Impact
FP&L	Florida Power and Light
FSEIS	Final Supplemental Environmental Impact Statement
FWC	Florida Fish and Wildlife Conservation Commission
FWCAR	Fish and Wildlife Coordination Act Report
FWS	US Fish and Wildlife Service
FY	Fiscal Year

G

GDM	General Design Memorandum
GIS	Geographic Information Systems
GMP	General Management Plan
GRR	General Reevaluation Report

H

HCM	Highway Capacity Manual
HED	Highway Easement Deed
H&H	Hydrology and Hydraulics
HQ	Headquarters
HTRW	Hazardous Toxic and Radioactive Waste

I

IGE	Independent Government Estimate
IOP	Interim Operational Plan
ISOP	Interim Structural and Operational Plan
ITR	Independent Technical Review

J

K

L

LF	linear foot
LOS	Level of Service
LRR	Limited Reevaluation Review

M

MCACES	Microcomputer Aided Cost Engineering System
MOA	Memorandum of Agreement
MOT	Maintenance of Traffic
MWD or Mod Waters	Modified Water Deliveries

N

NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAGPRA	Native American Graves Protection and Repatriation Act
NED	national economic development
NEPA	National Environmental Policy Act
NER	National Ecosystem Restoration
NESRS	Northeast Shark River Slough
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NPS	U.S. National Park Service
NRHP	National Register of Historic Places
NSM	Natural Systems Model

O

OFW	Outstanding Florida Water
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation

P

PAH	polycyclic aromatic hydrocarbons
PCA	Project Cooperation Agreement
PCB	polychlorinated biphenyls
PDT	Project Delivery Team
PED	Pre-construction Engineering and Design
PL	Public Law

Q

R

Re-MAP	Regional Environmental Monitoring and Assessment Plan
RPAs	Reasonable and Prudent Alternatives
RGRR	Revised General Reevaluation Report
ROD	Record of Decision
ROW	Rights of Way

S

S&A	Supervision and Administration
SEIS	Supplemental Environmental Impact Statement
SFWMD	South Florida Water Management District
SHPO	State Historic Preservation Officer

T

TBT	tributyltin
TCC	Total Construction Cost
TSP	Tentatively Selected Plan
TTM	Tamiami Trail Modification

U

USACE	US Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	US Geological Survey

V

VE	Value Engineering
VLF	vertical linear foot
VOC	volatile organic compounds
VPD	Vehicles per Day

W

WCAs	Water Conservation Areas
WQC	Water Quality Certification
WRDA	Water Resource Development Act
WSRS	Western Shark River Slough

X

Y

Z

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SECTION 1

INTRODUCTION

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1.0 INTRODUCTION

This report is an integrated Limited Reevaluation Report (LRR) and Environmental Assessment (EA) for Tamiami Trail Modifications (TTM) for Modified Water Deliveries (Mod Waters) to Everglades National Park (ENP). The study leading to this report was conducted by an interdisciplinary team, including hydrologists, design and cost engineers, water modelers, managers, physical scientists, archeologists, planners, biologists, ecologists and National Environmental Policy Act (NEPA) specialists. Cooperating NEPA agencies with the U.S. Army Corps of Engineers (USACE) include the National Park Service (NPS) and ENP. The South Florida Water Management District (SFWMD) would be a cost-sharing partner with the USACE for Operations and Maintenance of the project. Once construction is complete, this project would become part of the Central and Southern Florida (C&SF) Project.

The purpose of this LRR is to identify a recommended plan for modifying Tamiami Trail (U.S. Highway 41) to meet the objectives of the 1992 USACE General Design Memorandum (GDM) called "Modified Water Deliveries to Everglades National Park" (often called the "Mod Waters" or "MWD" Project). Through extensive public and agency coordination, a recommended plan for this project was previously evaluated in the 2005 Revised General Re-evaluation Report (RGRR) and Environmental Impact Statement (EIS). It was approved by the USACE and forwarded to Congress in 2006. However, estimated costs of the plan grew dramatically since original authorization. Consequently, Congressional managers drafting the Water Resources Development Act (WRDA) of 2007 directed the USACE to identify a lower-cost plan still capable of meeting the Mod Waters objectives, and to submit a revised report by July 2008. The present report is intended to tier from the detailed evaluations provided in the 2005 RGRR and EIS, which is available for viewing on the USACE Jacksonville District website[1]. For the reviewer's convenience, sections of this report containing material required for NEPA evaluations are preceded by an asterisk (*) in the Table of Contents.

The project location is a 10.7-mile section of Tamiami Trail (U.S. Highway 41) from Structure 333 (S-333) on the west to Structure 334 (S-334) on the east. It is bordered to the north by Water Conservation Area (WCA)-3B and includes a discontinuous stretch of relatively deep marsh and slough called Northeast Shark River Slough (NESRS) in ENP (***Figure 1-1*** and ***Figure 1-2***).

Shark River Slough is a curving flow-way that originally stretched from the south shore of Lake Okeechobee southeastward through Palm Beach, Broward and Miami-Dade Counties in WCA-3A and 3B, where it curved south and then

[1] http://www.saj.usace.army.mil/dp/mwdenp-c111/index.htm

southwest into ENP. Historically, Shark River Slough was the central core of the Everglades flow-way.

The continuity of the slough into ENP has been blocked at the south end of WCA-3B by the L-29 Levee and adjacent L-29 Canal, both of which parallel the north side of Tamiami Trail. Currently, water flows through Tamiami Trail in a set of culverts into ENP. The goal of this integrated LRR/EA is to propose a plan to Congress that provides immediate steps to increase flows to ENP while meeting directives set by Congressional managers.

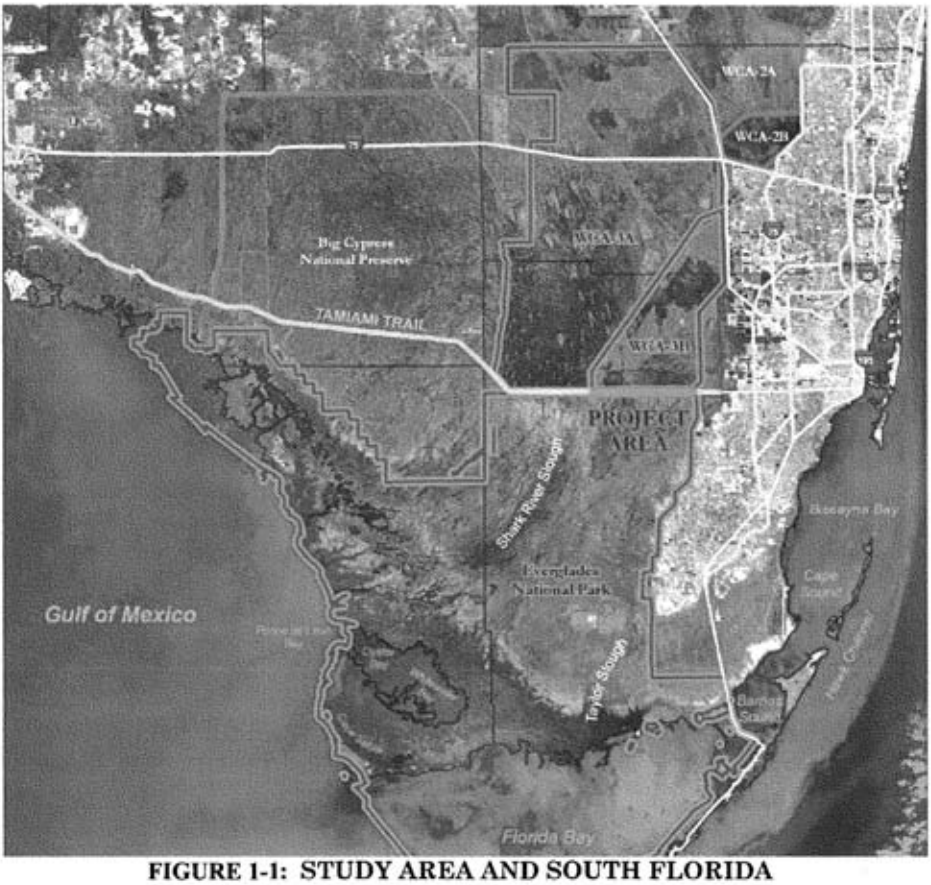

FIGURE 1-1: STUDY AREA AND SOUTH FLORIDA

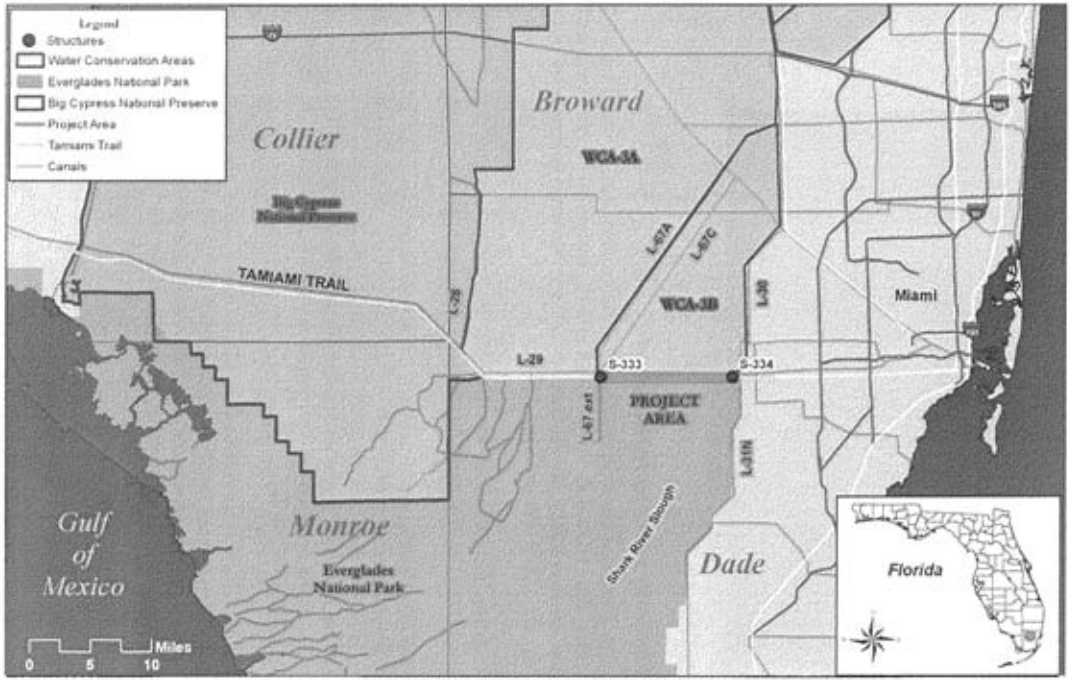

FIGURE 1-2: PROJECT LOCATION

FIGURE 1-3: SHARK RIVER SLOUGH PATH

1.1 Project Authority and Congressional Intent

The Everglades National Park Protection and Expansion Act, (Public Law [PL] 101-229, Section 104, 16 U.S.C. Part 410r-5 *et seq.*, December 1989), authorized the Secretary of the Army to undertake certain actions to improve water deliveries from the C&SF Project to the ENP.

Section 104 of the Act directed the USACE to address restoration of water deliveries and natural hydrological conditions. The Act states:

> *Sec 104 (a) (1): Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park.*
>
> *Sec 104(a) (2). Such modifications shall be based upon the findings of the Secretary's experimental program authorized in Section 1302 of the 1984 Supplemental Appropriations Act (97 Stat. 1292) and generally as set forth in a General Design Memorandum to be prepared by the Jacksonville District entitled Modified Water Deliveries to Everglades National Park. The Draft of such Memorandum and the Final Memorandum, as prepared by the Jacksonville District, shall be submitted as promptly as practicable to the Committee on Energy and Natural Resources and the Committee on Environment and Public Works of the United States Senate and the*

Committee on Interior and Insular Affairs and the Committee on Public Works and Transportation of the United States House of Representatives.

Sec 104 (a) (3): Construction of project modifications authorized in this subsection and flood protection systems authorized in subsections (c) and (d) are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the Park in particular and shall not require further economic justification.

The USACE published a GDM in 1992 called "Modified Water Deliveries to Everglades National Park." This GDM satisfied in part the direction contained in the Everglades Protection and Expansion Act by providing for flood mitigation for the Indian camps and for the 8.5 Square Mile Area (8.5 SMA) of the "east Everglades", as well as a design for seepage and conveyance control features for the WCAs, but it did not address needed modifications to provide full conveyance capacity under the Tamiami Trail for anticipated additional flow volumes of up to 4,000 cubic feet per second (cfs) during the rainy season. It was known by 2000 that additional modifications to Tamiami Trail would be required to convey improved flows to NESRS. There were widely opposing views on the magnitude of changes to Tamiami Trail that were needed to provide the conveyance, making the evaluation process lengthy and difficult. In 2005, the USACE published a RGRR and Supplemental Environmental Impact Statement (SEIS) that would have provided capacity to allow improved flow volumes across the Trail, once the conveyance and seepage control features in WCA-3A and 3B were built. The major problem with the 2005 Recommended Plan was its anticipated cost. Although a Record of Decision (ROD) selecting the 2005 Recommended Plan was signed in January 2006, and the plan was proposed to Congress, the Selected Plan was not approved.

In 2007, Congress expressed dismay at cost increases associated with Tamiami Trail modifications, as well as the 18-year delay (since passage of the Everglades Protection and Expansion Act) in full implementation of "Mod Waters." Congress directed the USACE, in the managers' language written during drafting of the WRDA 2007, to:

"...re-examine options to modify the water deliveries to the Park... However, the managers also direct the Chief of Engineers to pursue immediate steps to increase flows to the Park of at least 1,400 cubic feet per second, without significantly increasing the risk of roadbed failure. Flows less than 1,400 cubic feet per second will not produce measurable benefits to the Park.

The managers direct the Chief of Engineers to proceed with increasing flows to the Park upon the completion of the eight and one-half square mile area construction this fall. Completing that construction removes the current

constraint on water levels within the Northeast Shark River Slough area of the Park.

The managers direct the Chief of Engineers to re-examine the prior reports and environmental documentation associated with modifying water deliveries to the Park prepared under the 1989 Act, and to evaluate the practicable alternatives for increasing the flow of water under the highway and into the Park. The recommendations resulting from this re-examination are to be for improving flows in a manner that is consistent with the direction in the 1989 Act that the Secretary of the Army construct modifications "to improve water deliveries into the Park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the Park. The managers direct that the flows to the Park have a minimum target of 4,000 cubic feet per second so as to address the restoration envisioned in the 1989 Act."

1.2 History of Tamiami Trail and the Everglades "River of Grass"

The Florida Everglades is one of the largest and most complex freshwater wetland ecosystems in the world. The location, timing, duration, and depth of flooding, combined with geology and other factors, determine the distribution and composition of the plant and animal communities of the Everglades. The southernmost end and receiving waters for the 18,000 square mile south Florida everglades ecosystem is ENP. Virtually all waters delivered to the Park other than direct rainfall are provided by the C&SF Project, which was authorized by the Flood Control Act of 1948 (PL 858, 80th Congress) for flood control, water supply, prevention of salt water intrusion, preservation of fish and wildlife, recreation and navigation. The USACE began building the C&SF Project in the 1950s. Construction was largely complete by 1962, although some construction continues to this day. The C&SF Project divided the shallow and slow-flowing Everglades wetlands into compartments and installed pumps and gated structures to control flow from one segment to another.

The Tamiami Trail, which was completed in 1928 by the Florida State Road Department, is an impediment to flow, slowing and blocking water flow south into the southern Everglades and ENP. Additional blocking of direct flow occurred with the 1962 construction of the L-28 and L-29 levees enclosing WCAs-3A and 3B and enlargement of the road borrow canal (now called L-29 Canal), as part of the C&SF Project. The cumulative result of construction of Tamiami Trail and the C&SF Project was significant reduction in the volume, timing and duration of water flow to NESRS.

Until Congress enacted the 1989 Everglades Protection and Expansion Act, ENP was smaller than at present. The large S-12 gate structures on the L-29 Levee at the south end of WCA-3A could deliver high water volumes to the Park itself, but most of NESRS lay in the undeveloped lands between ENP and the

developed areas near the east coast. This area received water only from direct rainfall and through culvert sets under the road. An extension of the L-67 Levee, running along the Park's eastern boundary, restricted flow into NESRS from the west. Reduced inflows from the north and west resulting from the compartmentalization of the system led to reduction of flooding depths and durations and loss of long-hydroperiod habitats inside the Park. Slough habitat, the unique Everglades wetland complex immortalized as the "river of grass" by Marjory Stoneman Douglas, was among the most adversely impacted by flow reduction.

In response to conservationists' concerns over loss of Everglades values during the 1980s, US Congress passed PL 98-191, providing for experimental supplemental deliveries of water to the Park, in 1983. After a series of studies authorized under this Act, it became evident that it would be difficult to increase water deliveries to Park lands without adversely affecting adjacent agricultural lands. In 1989, Congress passed the Everglades National Park Protection and Expansion Act (PL 101-229). This Act authorized acquisition of 109,000 acres of privately owned and State lands located south of Tamiami Trail between the L-67 Extension and the L-31 Canal. This area was a major expansion of Park lands that would eventually allow for their re-hydration; but in 1989, there were minimal structures available to convey water into these newly acquired Park lands that had previously been kept relatively dry for agricultural and recreational use. Therefore, the Act also directed the USACE to increase flows into the Park to the extent practicable.

The USACE prepared a GDM for "Mod Waters to ENP". The GDM was completed in 1992 and included five major components:

1. Flood mitigation for the 8.5 SMA, a residential area located just west of the L-31N Levee (the new authorized eastern Park boundary) that would flood if additional water were discharged into the eastern Park extension.
2. Conveyance and seepage control features, designed to facilitate flow from WCA-3A to WCA-3B and from WCA-3B to the L-29 Canal adjacent to Tamiami Trail, and to limit seepage eastward from WCA-3B and ENP into developed areas of Miami-Dade County.
3. Modifications to Tamiami Trail to raise it in the vicinity of the S-334 structure.
4. Raising Tigertail and Osceola Indian Camps to levels above the expected flood levels.
5. A new operational plan for the water control structures was recommended that would deliver 55 percent of total water volumes east of L-67, and 45 percent to the west, to reflect historic flow paths.

The 1992 GDM noted that maximum rainy season flow volumes into the Park could reach 4,000 cfs, and recommended structures to deliver these flows into the L-29 Canal just north of Tamiami Trail. It did not anticipate that the existing culvert sets would be inadequate to deliver this volume, and recommended raising the Trail only to accommodate the S-334 and S-356 pump structures (at the far eastern end of the road segment)

Since 1992, ENP has acquired nearly all the additional authorized lands east of the old Park boundary. A flood mitigation plan for the 8.5 SMA, including relocation of the S-357 pump station, was approved in 2000 and reaffirmed in 2003, and construction is now nearing completion. Tigertail Camp has been raised. ENP is in dialog with the Osceola group in preparation for raising this camp as well. The S-356 pump station was built as a temporary pump station at the location indicated in the GDM. The S-355A and S-355B spillways, allowing water flow from the south end of WCA-3B into L-29 Canal, have been built. However, the last remaining conveyance and seepage features, the S-349 spillways and S-345 flow structures that would allow flow through the L-67 Levees between WCAs-3A and 3B, remain to be built. The final design of these structures would depend in part on the selection and approval of the preferred alternative (recommended plan) for Tamiami Trail.

The WRDA 2000 authorized the Comprehensive Everglades Restoration Plan (CERP) ***(Figure 1-4)***. The restudy of the C&SF Project that led to CERP indicated that further work on reducing barriers to flow in WCA-3 was justified. However, WRDA 2000 also required that the MWD plan be complete before "CERP" modifications could begin construction. ***(Figure 1-5)*** shows CERP WCA-3 Decompartmentalization as conceptualized in WRDA 2000.

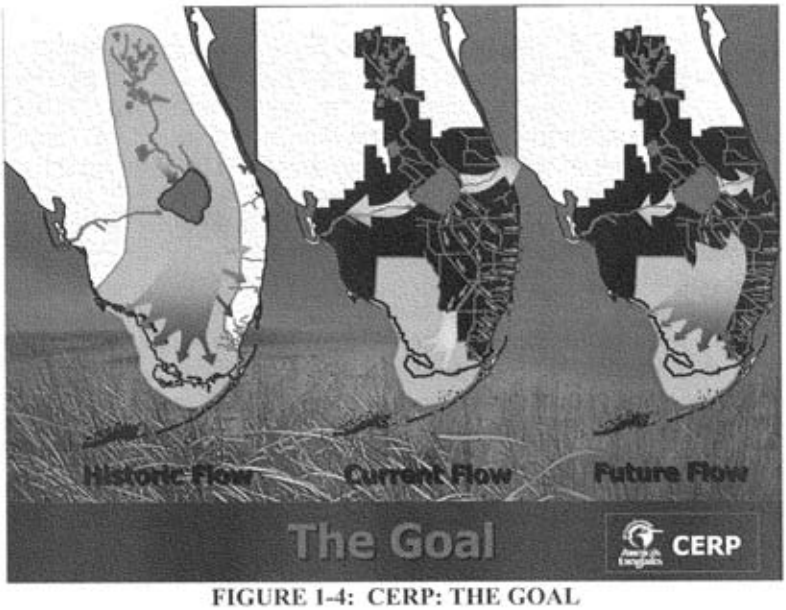

FIGURE 1-4: CERP: THE GOAL

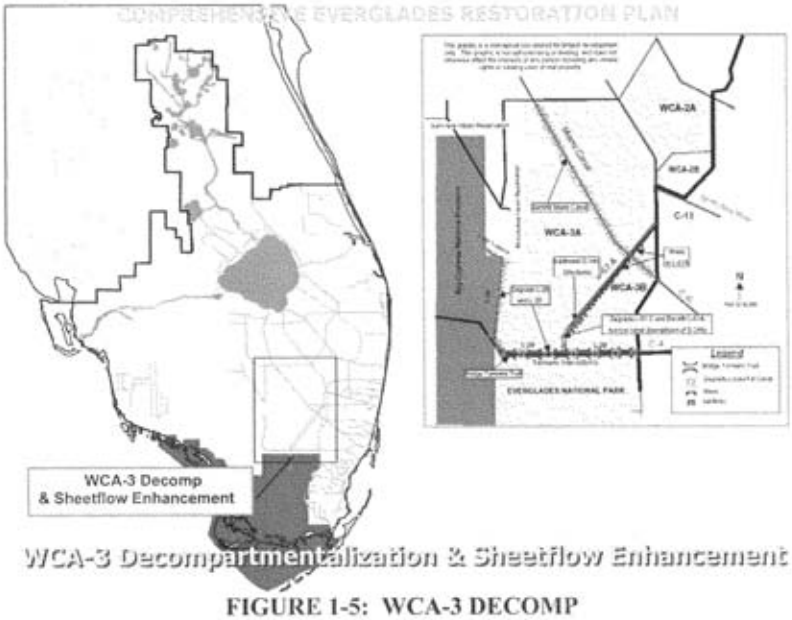

FIGURE 1-5: WCA-3 DECOMP

By the late 1990s it was known that in contrast to the 1992 GDM assumption, the existing culvert sets through Tamiami Trail were inadequate to pass Mod Waters design flows, and that operating with no additional conveyance structures would ultimately damage the road bed. The GDM merely recommended changing the flow distribution across the Trail such that 55 percent of total flows would be delivered east of the L-67 Levee and 45 percent delivered to the west. However, subsequent studies showed that, while the design volumes of water could indeed be passed through the Trail into NESRS, this flow rate through the culverts would only occur with a high "head" on the north side of the culverts; that is, after water levels on the north side of the road increased enough to force water through. Under current operating conditions, such high levels would occur in the rainy season, except that deliveries are stopped to avoid exceeding a stage of 7.5 feet in L-29 Canal, the level considered safe by Florida Department of Transportation (FDOT) standards. Operational safeguards to prevent damage include closing the S-333 Structure according to stage readings on a gauge south of the Trail to avoid high heads in L-29. If high levels were to occur regularly or persist for longer periods they would make the road vulnerable to structural damage.

In 2003, a reevaluation of features along the 10.7-mile stretch of Tamiami Trail east of the L-67 Levee recommended a 3,000-foot bridge and a proposed real estate agreement to pay compensation for a flowage easement. The USACE published a General Reevaluation Report (GRR) and EIS in 2003[2] which recommended a 3,000-foot bridge and noted that the original GDM had probably underestimated the design high water stage. The 2003 study used a design water elevation of 9.7 feet. Although this report recommended acquiring a flowage easement over the unbridged part of Tamiami Trail and compensation to FDOT for damages, no agreement could be reached with FDOT; because of lack of state agency support the report and EIS were withdrawn.

In the 2005 RGRR and SEIS, the recommended plan was Alternative 14– construction of a three-mile, two-bridge alternative and reconstruction of the entire 10.7 mile stretch of Tamiami Trail to accommodate the higher water levels (up to 9.7 foot stage) under the road. After extensive public and agency coordination a ROD identifying the Selected Plan was signed on January 25, 2006, and Alternative 14 was forwarded to Congress. Congress found the estimated cost of the 2005 plan unacceptable and the Congressional managers drafting WRDA 2007 directed the USACE to conduct this reevaluation study.

Estimated costs for the Tamiami Trail features have grown markedly since the original authorization, due to the cost of reinforcing the highway, the cost of improving conveyance and significant increases in the costs of construction materials. As costs of materials, including fuel, real estate, steel, Portland

[2] http://planning.saj.usace.army.mil/envdocs_A-D/Dade_Co/Tamiami_Trail/index.html

cement and asphalt continued to rise in world markets during the 2006-2008 period the estimated cost of the 2005 Selected RGRR Plan increased dramatically from $144 million to the approximately $430 million shown in this report.

The conference report language for WRDA 2007 directed the Chief of Engineers to conduct this reevaluation study. Implicit in the direction was a requirement that the new recommended alternative be less costly than the previous recommended plan.

1.3 Study Scope and Organization

From the conference report language the intent of Congressional managers was that the Chief of Engineers implement cost effective measures to immediately improve water deliveries and adopt an adaptive management approach toward restoring flows to ENP. The managers targeted immediate flow increases to 1,400 cfs, with a target of 4,000 cfs under the Trail to address GDM estimates of peak flows. Flows less than 1,400 cfs were perceived as not being able to produce a measurable benefit to the ENP.

This report documents previous and recent studies to modify Tamiami Trail. It provides a summary of the following information:

1. Updated cost estimates of previous plans proposed in the 2005 RGRR for an improved water delivery system for ENP, including incorporation of cost saving measures and value engineering proposals.
2. Limited reevaluation of alternatives, including cost analyses, for all proposed structural alternatives. Alternatives were arrayed and evaluated stepwise in order of increasing magnitude and potential cost.
3. Evaluation of each alternative's potential to meet flow volume, velocity and distribution targets, as well as potential ecosystem restoration benefits associated with each alternative.
4. Evaluation of forward compatibility with potential CERP actions in the CERP "WCA-3 Decompartmentalization" project element.

This report includes a general description of all viable alternatives, cost estimates, and environmental benefits analysis. Recommendations were developed considering environmental benefits produced, cost, future CERP flow needs, and other relevant factors.

1.4 Purpose of and Need for the Action

The purpose of this Limited Re-evaluation is to answer directives from the Managers' language cited in Section 1.1. The USACE and ENP must recommend a plan in a Report to Congress no later than July 1, 2008. This

report must identify a plan that is efficient, complete and acceptable in terms of cost and specified hydrologic targets that generate desired ecological responses.

The need for the action is the same as cited in the Mod Waters Tamiami Trail Modification 2003 GRR and the 2005 RGRR: In its current condition, the segment of Tamiami Trail located between S-334 on the east and S-333 on the west has inadequate capacity to deliver the volumes of water required to restore ENP and in NESRS without risking damage to the roadbed and its eventual degradation and causing a backwater impact on WCA-3B potentially drowning tree islands. The recommended plan must address: (1) measures to increase conveyance of water to NESRS, and (2) modifications to the existing roadbed, if any, required to allow this conveyance.

The flow requirement of the MWD to ENP Project has generated considerable confusion as to the intent of the Congressional Authorization. The Everglades National Park Protection and Expansion Act (PL 101-229) Sec 104(a) (1) did not authorize a specific flow rate but states, as cited in Section 1.1, to "improve water deliveries into the park" and "take steps to restore the natural hydrological conditions within the park."

The Managers' language references recommendations of the 1992 GDM relative to maximum average rainy season flows and maximum flows. The final 1992 GDM Report, Part 1 Supplement 54 General Design Memorandum and Environmental Impact Statement Modified Water Deliveries to Everglades National Park, Florida June 1992, Section H. Recommended Project (page 52) defines the measures for which restoring the natural hydrologic conditions to the extent practicable would be met:

> *"The goal of restoring natural hydrologic conditions will be met in terms of all three of its dimensions: location, timing and volume:*
>
> a. *Location–The historic path of Shark River Slough will be restored by bringing WCA-3B and NESRS back into the flow-way between WCA-3A and ENP.*
> b. *Timing–Water flows through the restored Shark River Slough will reflect natural local meteorological conditions, including the extremes of natural droughts and floods, and variations in the annual seasonal and long-term cycles.*
> c. *Volume–The volume of water delivered will reflect the naturally available supplies based on local meteorological conditions, except in cases where operations of the C&SF project for other authorized project purposes necessitate increased or decreased deliveries. Natural hydroperiods will be restored."*

In addition, the 1992 GDM Report, Part 1 Supplement 54 General Design Memorandum and Environmental Impact Statement Modified Water Deliveries to Everglades National Park, Florida June 1992, Section I. Environmental Analysis (page 58) went on to state:

> "Hydrologic restoration of WCA No. 3B is also essential to restoring natural water conditions in the Park. Diversion of flood waters from WCA No. 3A into detention in WCA No. 3B would decrease the volume of and, in some cases, the need for regulatory water releases in to the Park from WCA No. 3A. This would reduce the frequency of unnatural distributions of water across SRS, and further reduce the occurrences of alligator nest flooding south of the S-12s. The ability to discharge an additional 2,000 cfs of water in to NESRS through the new S-355 structures and 1,300 cfs through S-333, would allow full restoration of historic water depths in the center of the slough, thereby causing reflooding of the short-hydroperiod marshes on the eastern slope of the slough. This would accrue all the wildlife benefits from increased primary and secondary productivity previously discussed. In addition, aquifer recharge, reestablishment of groundwater flows, surface water reconnection between SRS and Taylor slough, and restoration of estuarine productivity would be maximized."

The specific high flow rate value of 4,000 cfs is based on the total capacity of flow for the recommended structures that would be implemented under this plan to deliver water (Volume) into the L-29 Canal between structures S-333 and S-334, inclusive of the seepage return flow from pump station S-356. These structures and their maximum discharge capacities are:

- S-333 (1,350 cfs), discharges water from WCA-3A
- S-355A (1,000 cfs), discharges water from WCA-3B
- S-355B (1,000 cfs), discharges water from WCA-3B
- S-356 (950 cfs), returns seepage water from NESRS

The 4,000 cfs peak flow volume for the MWD to ENP Project is important because it allows for a discharge sufficient to create the physical changes to the landscape (geomorphology of the system). The changes that occur during these peak discharges are important ecologically; for example, these types of volumes clean out sloughs, potentially create new sloughs, and are important for creating favorable ecological conditions in NESRS that would persist for the wet season and into the dry season. It is even desirable, but beyond the scope of MWD, to actually achieve flows greater than 4,000 cfs. The general goal of MWD to ENP was to restore, to the extent practicable, the natural hydrology of the system. It is felt that the 4,000 cfs discharge into NESRS is approximately representative of a 1 in 10 year flow event. At a minimum the system would have to experience

the variability of stages up to a 1 in 10 year event to allow positive ecological changes.

Under current conditions, the existing 19 sets of culverts under Tamiami Trail cannot meet the target discharge of 4,000 cfs into ENP unless stages on the north side of the culverts in L-29 Canal are raised very high. These higher stages result in structural damage to the Tamiami Trail roadway embankment and increase the likelihood of flooding tree islands within WCA-3B. In its current condition, Tamiami Trail does not have the structural capacity to pass a rainy season average of 1,400 cfs without violating the FDOT stage constraints of 7.5 ft, National Geodetic Vertical Datum (NGVD) for Tamiami Trail.

The 2005 RGRR selected alternative had a one-mile eastern bridge, a two-mile western bridge, and the roadway embankment design was based on elevation 9.7 feet, NGVD (referred to as the Design High Water). One intent of the 2005 RGRR selected alternative was to provide unconstrained flow into ENP. This did not mean that the 9.7 foot stage would not be exceeded, but if the stage were to be exceeded, then the system would not have to be controlled as currently required. In other words, flows and stages would be representative of the naturally available supplies based on local meteorological conditions. This alternative would allow for the 4,000 cfs flow target to be met.

The goal of MWD and therefore this LRR is to evaluate alternatives in terms of their capability to increase flow volume, timing and location to restore the natural hydrologic conditions of the Shark River Slough to the extent practicable. Future construction of the CERP and other project elements, especially storage reservoirs, seepage buffers and decompartmentalization of WCA-3, may allow for future higher volume releases to increase in frequency and duration. It is thus desirable, at a minimum, to indicate which plans could be compatible with further future modifications to increase water deliveries.

1.5 Study Sponsor

The U.S. Department of the Interior (DOI) has provided most of the federal funding to develop the MWD Project elements to date and is a cooperator under the NEPA for this Report. The SFWMD is the non-federal sponsor for operation and maintenance of the C&SF Project, as specified in the 1994 Project Cooperation Agreement (PCA). To ensure appropriate and timely coordination of federal/state activities, an interagency advisory team consisting of the DOI (US Fish and Wildlife Service [FWS] and NPS-ENP), the SFWMD, the Florida Fish and Wildlife Conservation Commission (FWC), the FDOT and the FDEP provided technical input for this report.

1.6 Project Location/Congressional District

The study area includes WCA-3A and 3B, as well as the portion of NESRS located within ENP. The project location, with structures included, is shown in ***Figure 1-2***. The proposed project is within Florida's 25th Congressional District.

The project features are located on US Highway 41, commonly referred to as the Tamiami (Tampa to Miami) Trail, which connects Miami and Tampa. The project location is a 10.7-mile stretch of the highway just west of Miami. The western end of the area is at S-333 near the L-67 Extension Levee, and the eastern end is at S-334 near the L-30 Levee and Canal and the L-31N Levee. The L-29 Canal (also known as the Tamiami Canal) runs along the north side of Tamiami Trail. The L-29 Levee runs along the north side of the L-29 Canal. The levee comprises the southern boundary of WCA-3B. ***Figure 1-6*** shows a cross section of Tamiami Trail, depicting the relationships among WCA-3B, L-29 Levee, L-29 Canal, Tamiami Trail, and ENP.

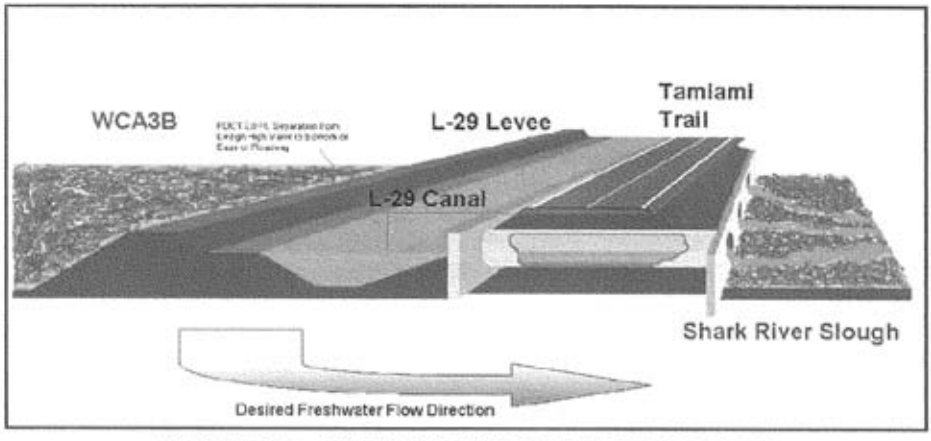

FIGURE 1-6: CROSS-SECTION OF TAMIAMI TRAIL
(current conditions)

1.7 Current Conditions

Over the last 50 years, the C&SF Project contributed to agricultural and residential development in south Florida through the conversion of nearly half of the Everglades ecosystem from wetland habitat to agricultural and urban uses. This development, which occurred along the eastern margins of the original marshlands north of Tamiami Trail, reduced the lands available for storing water and delivering it southward. Additionally, the C&SF Project has altered the hydrology of the remaining Everglades system through the operation of its

network of canals and levees. The altered timing of wet and dry cycles has resulted in water conditions that do not correspond to life cycles of native species. As a result, more water now flows through canals to the east and less flows southward through ENP to Florida Bay than occurred historically. Generally, the C&SF system makes it difficult to provide natural timing, volume and distribution. In wet periods, water is impounded in the WCAs and then discharged to Everglades or coastal canals. During dry periods, water can flow through the canals to coastal areas and bypass the ENP wetlands. Currently the system is operated under the Interim Operating Plan (IOP) for protection of the Cape Sable seaside sparrow (CSSS).

1.8 Prior Reports and Water Projects

The following prior planning efforts and reports are related to the Tamiami Trail portion of the MWD to ENP:

1. 1992 General Design Memorandum-Modified Water Deliveries to ENP Central and Southern Florida Projects
2. 2002 and 2006 Interim Operational Plan for protection of the CSSS, Final Environmental Impact Statement (EIS) and Record of Decision (July 2002), Final Supplemental Environmental Impact Statement and Record of Decision (May, 2007)
3. 8.5 Square Mile Area, General Re-evaluation Report and Final EIS, July 2000, Record of Decision Signed 6 December 2000
4. 2003 General Reevaluation Report and Supplemental Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail Modified Water Deliveries to Everglades National Park (withdrawn)
5. 2005 Revised General Reevaluation Report[3] and Final Supplemental EIS, Tamiami Trail. December 2005 (ROD signed January 25, 2006)

1.9 Current Studies

As discussed earlier, Congress provided language that the Chief of Engineers "pursue immediate steps to increase flows to the Park of at least 1,400 cfs, without significantly increasing the risk of roadbed failure." Spreader swales, east-west ditches designed to receive and help deliver water from Tamiami Trail culverts to the marshes, were considered within the suite of LRR alternatives.

Modeling and evaluation of LRR alternatives suggests that spreader swale implementation would have minor hydrologic benefits that may not be ecologically significant.

Because technical disagreements exist regarding the ability to adequately simulate spreader swale performance, the NPS is taking the lead on a separate planning and NEPA process to consider a spreader swale pilot project and

[3] http://www.saj.usace.army.mil/dp/mwdenp-e111/index.htm

further evaluate the potential benefits of spreader swales along the Tamiami Trail.

1.10 Prior Coordination and Public Scoping

Two previous planning studies have been published, recommending two different alternatives for providing conveyance across Tamiami Trail. The 2003 final GRR and SEIS recommended an alternative of a 3,000-foot long bridge along the 10.7-mile stretch of Tamiami Trail. After this document underwent public and agency coordination, many agencies and environmental groups, including ENP, recommended further studies and evaluation to determine if a greater conveyance capacity could be justified. These studies led to the 2005 RGRR and SEIS, which recommended a one-mile long east bridge and a two-mile long west bridge. Both of these studies aroused considerable public and agency interest, and some controversy. Previously identified public issues and concerns included: maximizing potential connectivity between the ecosystems and communities of the WCAs and the ENP; restoration of historic deep water areas (sloughs) and medium-hydroperiod marshes; restoration of typical ridge-and-slough ground patterns by restoring higher-velocity sheet flow; maintenance of typical ecotourism businesses to the extent feasible along the south side of Tamiami Trail; impacts on the road itself and on other business properties; potential impact on Miccosukee camps and traditional use areas; and potential impacts on endangered species and their habitats. Federal and state agencies including FDOT, FDEP, FWC, Florida State Historic Preservation Officer (SHPO) and Florida Department of State, as well as the DOI, NPS and FWS, the general public and the Miccosukee Tribe provided comments and recommendations for these previous reports.

ENP has accepted an invitation from the USACE to be a NEPA cooperating agency. Agencies that were invited to be NEPA cooperating agencies for this LRR/EA include the SFWMD, FDOT and FDEP. A general public scoping letter was mailed on January 28, 2008, and was closed on March 7, 2008 inviting all concerned agencies and citizens who provided previous comments to provide information on their ongoing issues, concerns and recommendations for this study.

Concerns that have been emphasized in recent scoping responses include the following:

- The suite of studied alternatives includes several that would have provided very substantial potential benefits but were eliminated due to extremely high cost.
- Several government and non-government agencies consider a stage increase of one foot, which would provide a stage constraint of 8.5 feet, a more environmentally favorable stage. Scoping comments from SFWMD, FWS and FWC favor raising the stage constraint to 8.5 feet.

- Additionally many commentors feel that the ability to pass 4,000 cfs is equally important as an average peak rainy season flow goal.
- Representatives of the Miccosukee Tribe, in meetings with USACE representatives, repeated previous comments that cleanout or expansion of the culverts and regular maintenance thereafter would provide sufficient benefits, citing the high cost of bridges relative to road repair as one reason for these comments.
- The FWC would like serious consideration given to improving conveyance along other portions of the Trail in addition to the bridge on the eastern portion.
- Miami Dade County expressed concern about potential seepage and flood protection level of service to the east.
- Some commentors repeated previous calls for bridging the entire road segment to maximize potential re-connection of the WCAs and Park wetlands.
- One commentor, 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.
- FDOT Representatives called for full inclusion of road repair costs in all project alternatives, and provided detailed specifications for road design along this stretch of Tamiami Trail.
- The Sierra Club stated support for the "Blue Shanty Plan" and asked the USACE to adopt all or a portion of that plan.
- Radio One is concerned with potential flooding impacts to its property.

1.11 Draft LRR Coordination

The draft LRR has been through several levels of review and coordination. Before the draft LRR was released to the public an Independent Technical Review (ITR) was performed by staff from other USACE districts.

The draft LRR was released for public and agency review on April 9, 2008 and available for public comment through May 9, 2008. The draft LRR was sent to local, state, and federal agencies, private interest groups, and interested public for review and comment. Public libraries in the project area were provided copies to maintain in the reference section of the libraries for public review. The draft LRR was also posted on www.evergladesplan.org for web viewing. Comments were submitted via an email address or by regular mail. Once the draft was released, public and stakeholder meetings were held to allow interested parties the opportunity to comment on the document.

Many comments were received in response to the draft LRR. A matrix of the comments and responses, as well as copies of the correspondence, is provided in Appendix J. Comments received during the review were considered in preparing

the final study documents and revisions were made to the report based on these comments.

In addition to the public and agency comments on the draft LRR, there was an External Peer Review (EPR) as well as a model certification review completed according to USACE regulations. The EPR was completed by a panel of independent scientists and engineers to review the technical rigor of the document and analysis. The model review was also completed by an independent review panel focused specifically on the model used in the alternative analysis. All comments submitted by the EPR team and the model review team to the study team were reviewed and answered. Both the EPR and model certification have been completed and approved by both teams.

1.12 Decisions to be Made

The adoption of a Recommended Plan, after USACE-Headquarters (HQ) approval, public and agency coordination of this LRR/EA, is the primary decision that must be made. As directed in the Conference Report for WRDA 2007, the cooperating federal agencies must recommend a plan to Congress by July 1, 2008 to provide immediate steps to increase flows to the Park.

Five agreements are needed in order to implement the Tamiami Trail Project.

1. Land Management Agreement–needed to complete the PCA (see item 3 below). This agreement is between USACE, DOI, and SFWMD on how to manage the project features where they extend into lands owned by ENP.
2. Florida Power and Light (FP&L) Perpetual and Temporary Construction Easements–agreement between USACE and FP&L that conveys rights to USACE to allow construction of the project bridge as well as a conveyance channel underneath the bridge on their land.
3. PCA Amendment–legally binding agreement between USACE and SFWMD identifying the SFWMD project duties and obligations fir the operation, maintenance, repair, replacement and rehabilitation (OMRR&R) of the project.
4. Highway Easement Deed (HED)–legal mechanism negotiated by DOI, Federal Highway Administration (FHWA), FDOT, SFWMD and USACE to convey lands necessary for the construction and operation of the one-mile bridge from ENP through FHWA to FDOT including a flowage easement and a channel easement.
5. Relocation Agreement–final agreement; agreement between USACE and FDOT to acquire the real estate rights to enter onto FDOT lands (from HED) to construct features and modify the existing roadway, a channel easement at the bridge location, and a flowage easement for the entire expanse of roadway within the project limits (i.e., 10.7 miles).

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SECTION 2

HISTORY OF 2005 RGRR

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2.0 HISTORY OF 2005 RGRR RECOMMENDED PLAN COSTS

2.1 Selected Plan from 2005 Revised General Reevaluation Report

The selected plan from the 2005 RGRR is Alternative 14, a plan with a total of three miles of openings in the Tamiami Trail to improve the quantity and distribution of flows from the WCAs to Shark River Slough and ENP. More specifically, the 2005 selected plan for Tamiami Trail consists of installing a two-mile and a one-mile bridge and reconstructing the roadway surface to avoid damage resulting from the required higher water levels (up to 9.7 feet NGVD) in the L-29 Canal. The two-mile bridge would be located near the western end of the 10.7 mile project area of Tamiami Trail, and the one-mile bridge would be located near the eastern end (***Figure 2-1***). The bridges would be located at points where the road was constructed through the historically deepest sloughs to provide the necessary conveyance of water south from WCA-3B into the NESRS section of ENP. The bridges would be constructed immediately south of the existing road (***Figure 2-2***). The existing road adjacent to the new bridges would be removed. The remaining eight miles of roadway would be widened and raised by about two feet to avoid damage to the granular base due to higher stages in the L-29 Canal (***Figure 2-3***). It would also be widened to support the increased elevation. The bridges would reduce the number of existing culverts sets from 19 (55 individual culverts) to 14 (40 individual culverts). The remaining culverts would require lengthening to extend beyond the widened roadway (***Figure 2-3***).

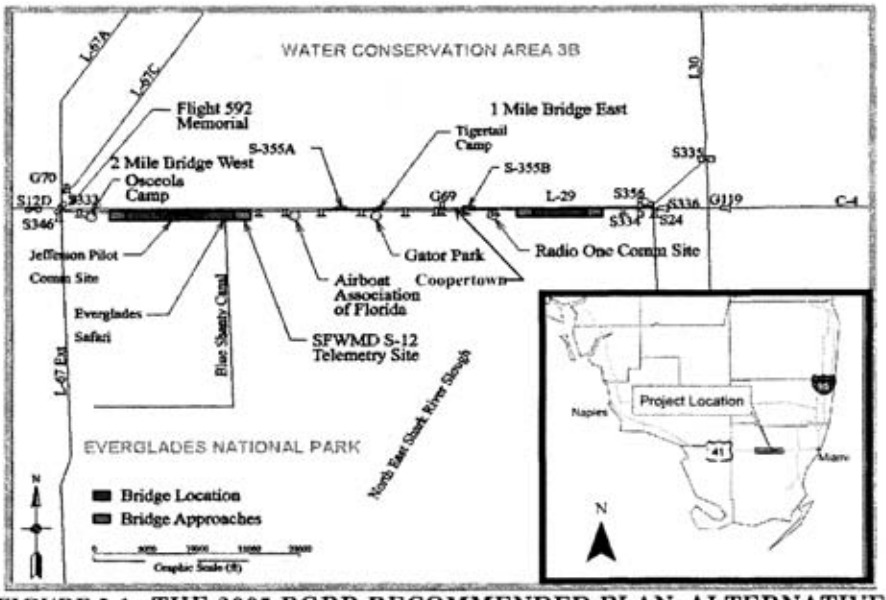

FIGURE 2-1: THE 2005 RGRR RECOMMENDED PLAN, ALTERNATIVE 14, STAGE CONSTRAINT = 9.7 FEET

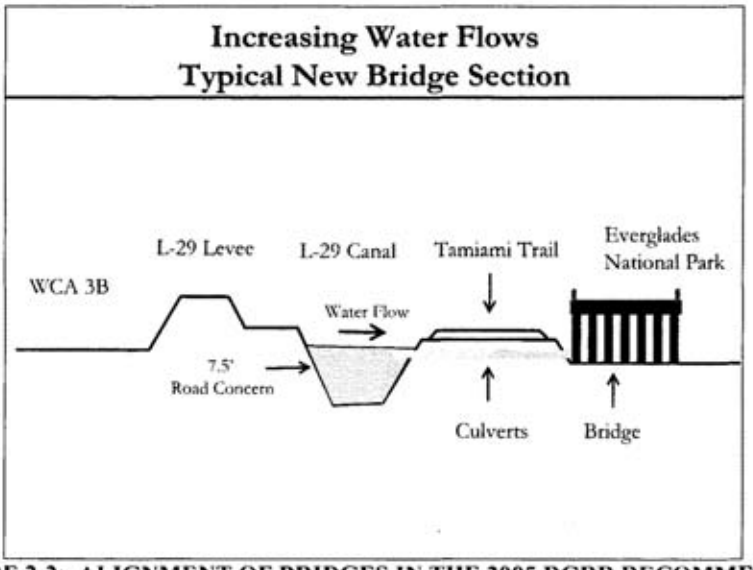

FIGURE 2-2: ALIGNMENT OF BRIDGES IN THE 2005 RGRR RECOMMENDED PLAN

(Compared to the existing Tamiami Trail and the L-29 Canal)

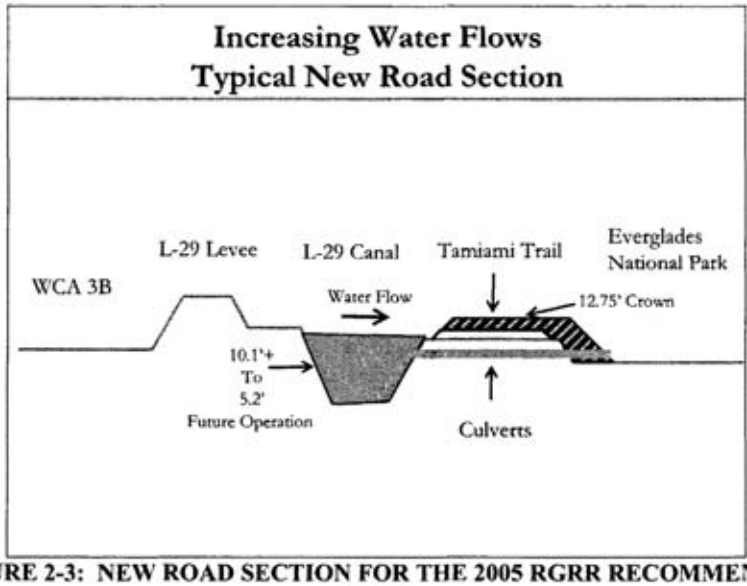

FIGURE 2-3: NEW ROAD SECTION FOR THE 2005 RGRR RECOMMENDED PLAN

(Showing the increased height above and width beyond the existing Tamiami Trail and the lengthened culverts)

2.2 Cost Update Purpose

Project cost estimates consist of several individual cost components. These components are often expressed as some percentage of the cost to construct the project. The components include:

- Construction Costs
- Non-Construction Costs including:
  - Real Estate
  - Pre-construction Engineering and Design (PED)
  - Supervision and Administration (S&A)
  - Escalation
  - Contingency

In the planning stages of a project, a variety of alternatives are developed as potential solutions to the problems and opportunities for the project. In alternative selection, the cost of an alternative is an important factor that plays a significant role in the selection of an alternative. When developing project alternatives, often only limited engineering design and details are available, resulting in preliminary project cost estimates with high uncertainty and large contingency costs. Once an alternative is selected and proceeds through engineering and design, additional data are collected (e.g., survey, geotechnical). These usually result in reduced uncertainty and reduced contingency costs.

The purpose of the cost update is to reexamine the 2005 selected plan presented in the 2005 RGRR, update the project costs to current cost levels and include new project costs associated with real estate and risk. The following sections will discuss the cost increases associated with the 2005 RGRR selected plan and provide an explanation for the discrepancy in costs between the 2005 cost estimate and the cost estimate in this report for same plan.

2.2.1 Cost Development of 2005 Revised General Reevaluation Report Recommended Alternative

During the development of the RGRR, both the design and the cost estimate were coordinated closely with FDOT. For the cost estimate in particular, price quotes and USACE developed unit prices were validated against the historic bid prices maintained by FDOT. In addition, both FDOT and FHWA reviewed the engineering design and the construction cost estimate presented in the RGRR and established that the work performed by USACE was technically adequate and in-line with FDOT and FHWA experiences.

To illustrate the parity between the USACE estimate and FDOT pricing, nine items were selected that represent 50 percent of the total RGRR estimate. As shown below, the unit prices developed during the RGRR are comparable to

FDOT unit prices from 2004 and 2005 as shown in ***Table 2-1*** (note that only partial data was available from FDOT for 2005 when the RGRR estimate was developed):

TABLE 2-1: FDOT UNIT PRICES FOR 2004 AND 2005

		GRR/SEIS Unit Price (July 2005)	2004 FDOT Unit Price	2005 FDOT Unit Price
Reinforced Concrete	CY	$984	$850	$1,085
24" Prestressed Concrete Piling	VLF	$121	$78	$62
24" Prestressed Concrete Test Piles	VLF	$456	$160	$200
Prestressed Concrete Beams-72" Florida Bulb T-Beams	LF	$258	$106	$233
Prestressed Concrete Beams-Type IV AASHTO Beams	LF	n/a	n/a	n/a
Paving-Asphaltic Concrete	TON	$104	$73	$82
Paving-Asphaltic Concrete-Friction Course	TON	$128	$83	$104
Barrier Wall	LF	$130	$115	$183
Embankment Fill	CY	$15	$15	$28
Drainage System	LF	$285	No direct comparison available	

CY-cubic yard; VLF-vertical linear foot; LF-linear foot; TON-ton

Much of the cost growth occurred in late 2005 and 2006 and has been experienced by other agencies (i.e., FDOT and SFWMD). In fact, if the cost of the 2005 RGRR recommended plan is estimated using the FDOT historic unit price data available in the summer of 2005, the estimated construction cost is approximately $110 million (compared to the USACE RGRR construction estimate of $125.1 million). One year later, the cost of the exact same RGRR plan increased by approximately 80 percent using the FDOT historic unit price data available in the summer of 2006. These numbers are intended to illustrate the magnitude of the construction cost increases that were occurring in the construction market during late 2005 and early 2006.

2.2.2 Present Day Cost for 2005 Revised General Reevaluation Report Recommended Alternative

Since the original cost estimate for the 2005 RGRR selected plan, costs of construction labor, equipment and material have significantly increased. ***Figure 2-4*** illustrates the dramatic surge in construction costs beginning in late 2003 and early 2004.

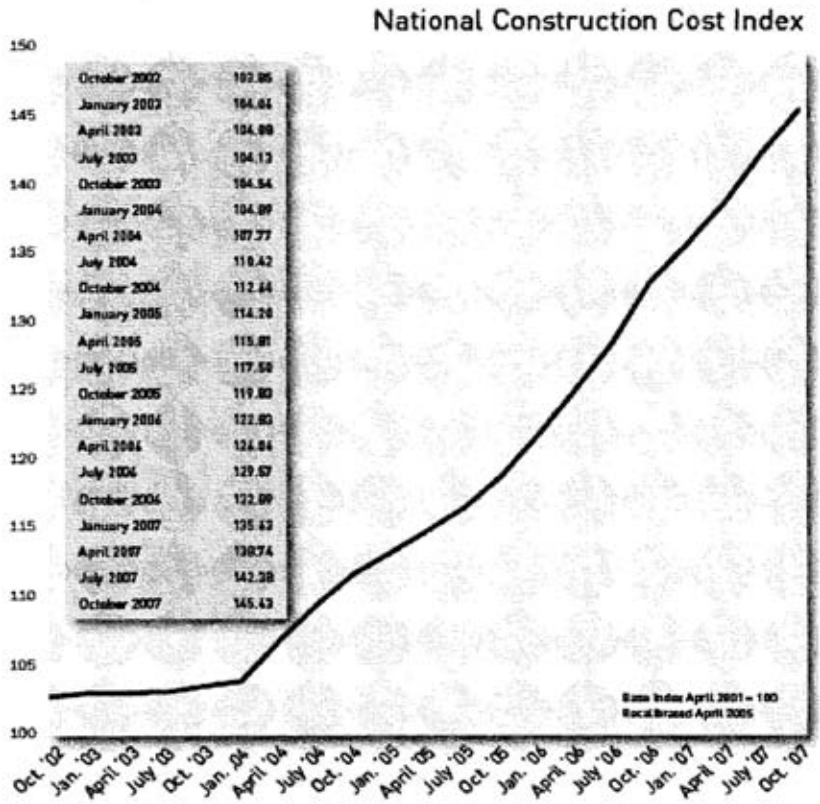

FIGURE 2-4: CHANGE IN THE NATIONAL CONSTRUCTION COST INDEX FROM 2002–2007

(Source: Quarterly Construction Cost Report, 2007 Fourth Quarter Issue -Rider Levett Bucknall)

These changes can largely be attributed to extraordinary economic developments that have occurred globally, regionally, and locally (refer to Appendix C: Cost Estimates for an in-depth analysis of these global, regional, and local economic developments and how they have played an important role in increasing the costs of labor, equipment, and materials). These developments have caused unprecedented increases in the cost of construction materials, equipment, and labor. It is critical to understand that these economic developments would affect construction costs estimates for all of the alternative plans evaluated during the RGRR study or, for that matter, on all alternative plans formulated since. ***Table 2-2*** displays the cost changes for the 2005 RGRR selected plan that have

occurred over the last two years as a result of economic developments and cost increases in labor equipment, and material.

TABLE 2-2: SIGNIFICANT CHANGES IN CONSTRUCTION COST ESTIMATE OF 2005 RGRR RECOMMENDED ALTERNATIVE
(Over a Two Year Period of Time)

Estimate	Date of Estimate	Price Level of Estimate	Construction Cost With Contingency
RGRR	August 2005	FY05	$125.1 Million
30 Percent Design	March 2007	FY07	$277.1 Million
DOI Independent Report	March 2007	FY07	$254.3 Million

The overall effect of these economic developments on cost increases to this project are much more evident than for most USACE projects since more than 65 percent of the project costs for the 2005 RGRR selected plan are for construction materials needed for the project. Construction labor, equipment and materials generally make up only one-third of the total project cost expenses for USACE Civil Works projects. Between the completion of the RGRR study and the 30 percent design for same plan, construction materials price increases have added approximately $60 million dollars to the construction cost. Except for some increases in asphalt and embankment quantities resulting from more accurate survey and geotechnical data obtained during the past two years, the design parameters of the project have not changed.

2.2.3 Cost Increases in the Current Working Estimate

As the design of the Tamiami Trail project has developed, the current working estimate (CWE) has also been updated and revised to reflect current pricing and refined design assumptions. It is important to note that there has not been any significant scope growth or quantity "busts" as the design has progressed except for the increases in asphalt and embankment quantities. For these elements, the design parameters have not changed, but much more accurate survey data has been obtained during 2007. For the RGRR, these quantities were calculated from as-built drawings and a small number of cross-sections taken over the entire 10.7-mile project area. For the current design, these quantities are based on a full survey and digital terrain model of the roadway.

One other change in quantity resulted from a Bridge Optimization Study, which is a standard FDOT cost-effectiveness analysis. As a result of this analysis, it was found that it was less expensive to use shorter Type IV AASHTO beams with more bents than the longer Florida Bulb T-Beams with fewer bents presented in the RGRR. While this design requires more bents and

subsequently, more piles, the overall cost for the bridge system (beams, bents, and piles) is less.

The CWE was developed based on material quotes received from manufacturers, conversations with FDOT and construction contractors regarding construction methods and equipment, and estimates of labor costs based on the very competitive construction environment in south Florida. As the CWE has developed, pricing data has continually been referenced to and validated against FDOT experience. According to FDOT engineers, bids for many of their projects are coming in approximately 40 percent more than their estimates which are based on their adjusted unit prices. Many of the current unit prices are in rough alignment with FDOT experience as shown in ***Table 2-3***:

TABLE 2-3: COMPARISON OF CURRENT WORKING ESTIMATE UNIT PRICES TO 2006 FDOT UNIT PRICES

		30% CWE Unit Price (Oct 2006)	2006 FDOT Unit Price
Reinforced Concrete	CY	$1,172	$1,241
24" Prestressed Concrete Piling	VLF	$220	$280
24" Prestressed Concrete Test Piles	VLF	$655	$670
Prestressed Concrete Beams-72" Florida Bulb T-Beams	LF	n/a	n/a
Prestressed Concrete Beams-Type IV AASHTO Beams	LF	$434	$283
Paving - Asphaltic Concrete	TON	$145	$96
Paving-Asphaltic Concrete-Friction Course	TON	$152	$130
Barrier Wall	LF	$340	$165
Embankment Fill	CY	$50	$17
Drainage System	LF	$753	No Direct Comparison

CY-cubic yard; LF-linear foot; VLF-vertical linear foot; TON-ton

CWE unit prices are based on estimates of the labor, equipment, and materials needed to construct the work. For example, the CWE unit price for Type IV AASHTO beams is based on actual quotes for beams and construction equipment needed to place them. The FDOT unit price is based on historic data from early 2006. When recent FDOT experience is considered, these prices are more closely aligned. Again, it is important to note that FDOT unit prices are used as a validation of the developed unit price in the CWE and not as the basis for the CWE.

The price increases and quantity changes discussed above account for over $60 million of cost growth. Other significant cost increases include:

- Maintenance of Traffic (MOT): Based on the new survey information and more detailed design information, the MOT costs have increased by approximately $6 million.
- Mobilization: Based on new survey information and the loss of a planned staging area identified in the RGRR, mobilization costs have increased by approximately $7 million.
- Escalation through Construction: The RGRR Microcomputer Aided Cost Engineering System (MCACES) construction cost estimate did not include escalation of construction costs based on the construction schedule. This is standard USACE procedure for planning reports since escalation is programmed elsewhere. However, as projects approach bid, this cost must be incorporated into the independent government estimate (IGE) since it is a legitimate cost to the contractor. The CWE contains approximately $10 million for this cost.

This summary illustrates the magnitude of and reasons for much of cost growth seen in the 30 percent CWE. However, it should not be taken as a comprehensive cost analysis for the entire project. In addition, there are several conservative assumptions included in this estimate that need to be refined as the project design progresses.

2.2.4 Cost Verification

The costs for labor, equipment and material used in estimating the 2005 RGRR selected plan cost estimate were based on FDOT unit pricing. Since the project is similar to standard FDOT work, the use of FDOT unit pricing was considered reasonable and prudent. These unit prices were independently verified by USACE to ensure accuracy and were validated against the historic bid prices maintained by FDOT. Both FDOT and FHWA reviewed the RGRR preliminary design and the construction cost estimate and found the work technically adequate and in-line with their experiences. For the 30 percent and 60 percent design estimates, costs were based on actual construction material price quotes received from manufacturers, conversations with FDOT and construction contractors regarding construction methods and equipment, and estimates of labor costs based on the very competitive construction environment in south Florida.

The USACE Cost Engineering Center of Expertise (Walla Walla District) conducted an Independent Technical Review (ITR) of the 30 percent design cost estimate in December 2006. The ITR team's overall conclusion was that the estimate accurately captured anticipated construction costs given the design and market conditions. Additionally, a DOI contractor also conducted an independent construction cost estimate based on the 30 percent design completed by the USACE. A technical analysis of the DOI cost estimate found several differences in scope and engineering assumptions.

While different design assumptions were made in developing the 2005 RGRR cost estimate and the 30 percent design cost estimate (i.e., better survey data, current pricing data, optimized bridge design), no errors or omissions have been found. The increased costs between the 2005 RGRR cost estimate and the 30 percent cost estimate can be largely attributed to the result of extraordinary unforeseen market conditions resulting in increasing labor equipment, and material costs that would affect any other construction alternative similarly.

2.3 New Costs: Real Estate and Risk and Uncertainty

2.3.1 Real Estate/Private Property

There are two separate types of private property impacts that would occur with the Tamiami Trail modifications–construction and operations (additional flows). Under the RGRR selected plan, both of these impacts occur to seven separate private properties adjacent to Tamiami Trail, six within the Everglades expansion area and one located outside of the Everglades boundary line. Current owners of these parcels are identified below:

Within ENP Expansion Area:

- Florida Power and Light
- Radio One
- Coopertown
- Gator Park
- Everglades Safari
- Lincoln Financial Media (formerly Jefferson Pilot Communication Site)

Outside ENP Expansion Area

- Airboat Association of Florida

Funding and responsibility for the six properties within the ENP expansion area acquisitions are strictly borne by the ENP, hence the costs for those acquisitions are not included in this report. Under the ENP Protection and Expansion Act, these properties were included within the ENP boundary map that was established by Congress; therefore, DOI is clearly responsible for acquisition of those properties. The Real Estate Appendix describes the estates needed on these properties as a result of increased water elevations. The Airboat Association of Florida property was explicitly excluded from acquisition under the ENP Protection and Expansion Act. The new real estate costs represent the estimated cost of a flowage easement for the Airboat Association of Florida property for all alternatives that increase the stage constraint in the L-29 Canal. Alternatives which maintain the existing stage constraint of 7.5 feet NGVD do not require this easement.

The RGRR addressed USACE's need to acquire a real estate interest in portions of the private properties that would lie within the construction footprint of the reconstructed road and bridges and the disposition of the utilities within the road right-of-way. However, it did not address induced flooding impacts that would result from the operations of the MWD project. The RGRR assumed that the NPS would acquire the necessary real estate interests in these private parcels of land adjacent to the south side of Tamiami Trail before the completion of construction of the Tamiami Trail project and before initiation of ecosystem restoration water flows directed south into ENP under the combined structural and operational plan (CSOP). However, because the NPS must complete its General Management Plan (GMP) before is can proceed with real estate acquisitions, it is unable to meet the schedule for Tamiami Trail construction. At the request of NPS, USACE proceeded with the work needed to complete the necessary acquisition for Tamiami Trail modifications. This real estate cost was not previously part of the MWD budget and added over $44 million to the project budget.

Through the GMP, the DOI-NPS is evaluating, the appropriate use and disposition of parcels within the project area. The Airboat Association's ten-acre parcel located off of Tamiami Trail was exempt from the ENP boundary.

Since this particular parcel of land was exempt from full acquisition by DOI-NPS in the PL and it has been determined that a minimum of perpetual flowage and perpetual road easements are required over portions of this property for construction, operation and maintenance of this project, USACE would acquire the needed real estate interests. As stated in the previous section on the cost of the RGRR selected plan, a real estate cost of $1,511,000 was the estimate in 2005 for the Airboat Association of Florida parcel. This cost estimate includes the acquisition costs and associated administrative costs on obtaining a fee value of the land.

2.3.2 Risk and Uncertainty

The cost estimates for the RGRR and the 30 percent design did not include risk and uncertainty analyses. USACE, Jacksonville District recognized the need to perform a risk based analysis on the 30 percent CWE; however at the time it was decided that it was more important to begin resolving the problem of significant cost growth revealed by the 30 percent CWE. The ITR team also identified several areas of risk and uncertainty that needed to be included in the risk analysis. Combined, these risk elements had the potential to drive the actual construction costs significantly higher.

2.4 Updated Cost of 2005 Plan

Therefore, based on the results of the 30 percent CWE, the ITR by the USACE Cost Engineering Center of Expertise, and the independent estimate prepared

by DOI, the total project cost for the 2005 RGRR recommended plan in Spring 2007 was approximately $429.7 million based on the following breakdown:

Estimated Construction Cost	$ 277.1 million
Additional Risk & Uncertainty	$ 100.0 million
Future PED	$ 1.5 million
Engineering During Construction (2%)	$ 7.5 million
S&A (10%)	$ 37.7 million
Real Estate	$ 5.9 million
Total Project Cost	$ 429.7 million

The cost of the 2005 RGRR recommended plan, when escalated to the mid-point of construction, is roughly comparable to Alternative 4.2.3 of the LRR alternative array discussed in Section 4 of this report.

SECTION 3

EXISTING AND FUTURE CONDITION

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3.0 EXISTING AND FUTURE CONDITIONS

3.1 Introduction

This section of the report describes the conditions as they currently exist (refer to ***Figure 3-1*** project area map); it provides a summary of the 2005 RGRR/SEIS discussion of the affected environment, which is unchanged. It is to these baseline conditions that the alternative actions are compared and evaluated.

The study team assumed that future without project conditions would be similar to existing conditions; therefore, the sections of this report describing existing conditions also represent the future without project conditions. The future without project conditions are the conditions expected in the project area if no project is implemented.

The team does not expect significant ecosystem improvements without construction of a MWD Tamiami Trail project. Language within WRDA 2000 prohibits construction of several significant CERP components, including WCA-3 Decompartmentalization, until MWD construction is complete.

However, formulation of the WCA-3 Decompartmentalization Project will be based on what this Tamiami Trail Modification Project is authorized to build. The two projects have different authorizing laws and different sources of funding, and will not be combined for analysis.

Other CERP components and other non-CERP restoration projects would be allowed to proceed. The authorization, construction, and initial operation of these allowable potential CERP or non-CERP restoration projects are uncertain. Some of those projects would provide additional water for the natural system, but the amount of water they could deliver to ENP would be limited by Tamiami Trail and the 7.5-foot stage constraint in the L-29 Canal.

The future without project conditions for this planning study is synonymous with the No Action alternative under NEPA.

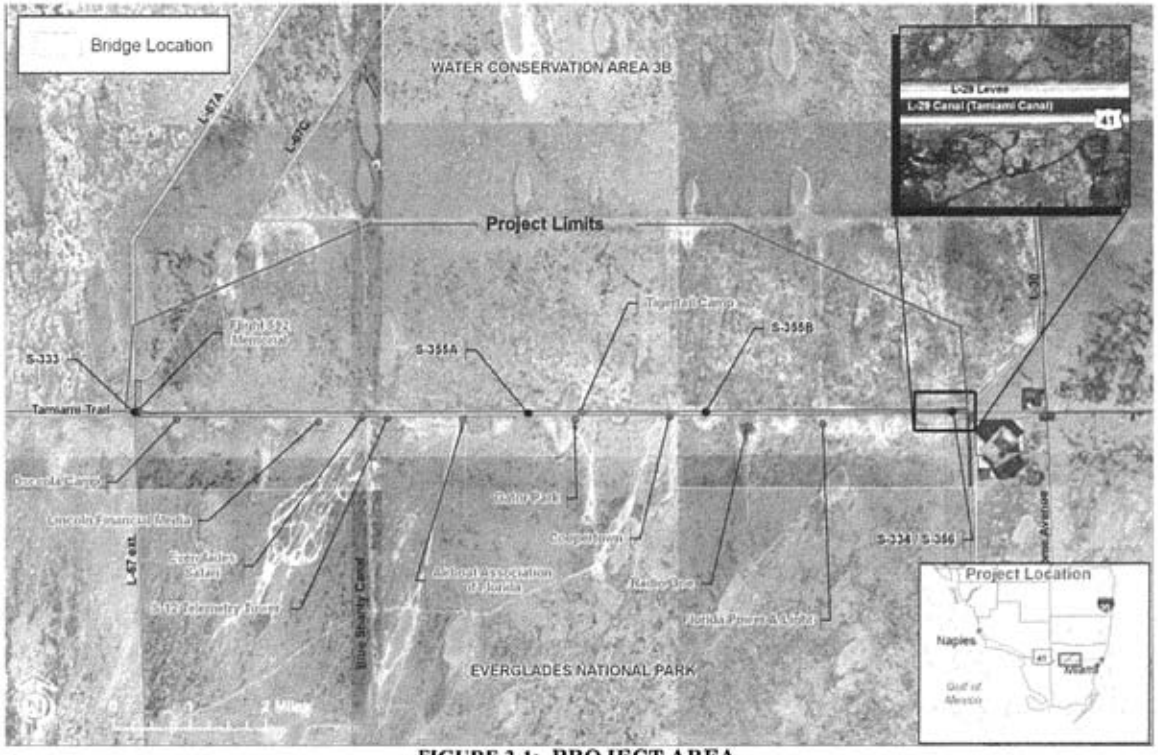


FIGURE 3-1: PROJECT AREA

3.2 Geology and Soils

Florida bedrock is primarily limestone with stratigraphic thicknesses of more than 5,000 feet in the south. The Lower East Coast, which is located on the Atlantic Coastal Ridge, is underlain primarily by thin sand and limestone that are highly permeable and moderately well drained. The soil of the Tamiami Trail project area is mainly of the Lauderhill-Dania-Pahokee Association, which consists of nearly level, poorly drained soils containing organic material eight to more than 51 inches deep over limestone bedrock. These soils extend west from the Atlantic Coastal Ridge into the Everglades. Typically, the soils are black to dark brown muck underlain by soft porous limestone. These soils are characterized by high subsidence, ponding, excess humus, and low strength.

3.3 Surface Waters

Major characteristics of south Florida hydrology are local rainfall, evapotranspiration, canals, and water control structures, flat topography, and the highly permeable Biscayne Aquifer. Water introduced from either direct rainfall or canals is rapidly removed by evapotranspiration, seepage into the aquifer, or canal and overland surface drainage to the Atlantic Ocean, Florida Bay, or the Gulf of Mexico.

Levees and canals constructed during the last 50 years under the C&SF project have divided the former Everglades into areas designated for development and areas for fish and wildlife benefits, natural system preservation, and water storage. The natural areas consist of the three WCAs located north of Tamiami Trail and ENP to the south. Water flow in the vicinity of the project is primarily from WCA-3A through control structures to the L-29 Canal, and from the canal through culverts into ENP.

The WCAs provide detention for water from the agricultural area and parts of the east coast region and for flood discharge from Lake Okeechobee to the sea. Detention of water helps prevent floodwaters from inundating the east coast urban areas; provides a water supply and detention for east coast urban and agricultural areas and ENP; improves the water supply for east coast communities by recharging underground freshwater reservoirs; reduces seepage; and may ameliorate saltwater intrusion in coastal aquifers. While the WCAs may reduce the severity of the drainage of the Everglades caused by the major canal systems, thus reducing impacts to fish and wildlife caused by the major drainage systems, the levees surrounding the WCAs still function to impound the Everglades, precluding the historic flow patterns. The C&SF system makes it difficult to provide natural timing, volume and distribution. In wet periods, water is impounded in the WCAs and then discharged to Everglades or coastal canals. During dry periods, water can flow through the canals to coastal areas and bypass the ENP wetlands.

The maintenance of water levels in the WCAs essentially represents the seasonal and monthly limits of storage. The levels vary from high stages in the late fall and winter to low stages at the beginning of the wet season. This permits the storage of runoff during the wet season and the release of stored water to ENP during the dry season and maintains elements of the habitat essential to fish and wildlife. The distribution of water for flood control and water supply varies seasonally. The schedules for the WCAs include a minimum water level below which water releases are not permitted unless water is supplied from another source. When water levels fall below the minimum levels, transfers of water from Lake Okeechobee or the WCAs are made to meet water supply demands.

FIGURE 3-2: SHARK RIVER SLOUGH PATH

Shark River Slough, a wide, curving flow-way, began south of Lake Okeechobee. Its original course was southeast from the Lake, gradually curving south and then southwest (through what are now WCAs-2 and 3, *Figure 3-2*). It trends southwest inside ENP and its center of drainage is within the 10.7-mile stretch of Tamiami Trail. It is one of the principal pathways for water to slowly drain from the area south of Lake Okeechobee southward to the tidewaters of the

Everglades. Shark River Slough is a broad, shallow, natural drainage way at a slightly lower elevation than the surrounding Everglades. The width varies based on season, but can range from a several thousand feet to over 40 miles, depending on rainfall and hydrologic conditions. The construction of Tamiami Trail and WCA-3 impounded and altered the slough, effectively creating a barrier through the everglades, between the northern everglades and ENP. ***Figure 1-6*** shows the current configuration of the L-29 Levee and Canal.

The primary source of water from the northern part of the C&SF system to NESRS is WCA-3A. WCA-3A is very large and thus primarily rain fed, though it also receives water deliveries from the north, as well as storm runoff from western Broward County. WCA-3A discharges into the L-29 Canal through Structure S-333, which is located at the extreme southeast corner of the WCA. Water in the L-29 Canal then passes under the Tamiami Trail into ENP through 19 sets of culverts (55 total culverts, three culverts per set in most locations), as shown in ***Figure 3-3***.

Under existing conditions water does not flow directly from WCA-3B into the L-29 Canal. Although there are two discharge structures (S-355A and S-355B) along the L-29 Levee south of WCA-3B that could move water from WCA-3B into the canal, they are not operating at present because of low water stages in WCA-3B. Water stages in WCA-3B are much lower than stages in WCA-3A, due to a lack of inflows into WCA-3B and the reduction of seepage from 3A to 3B due to the design of L67A and C levees. WCA-3B loses seepage to the east by the L-30 borrow canal and to the south by the L-29 borrow canal.

Water deliveries to eastern ENP are controlled by the stage in L-29 Canal, as pressure from the water within the canal (hydraulic head), is required to force water through the culverts and into the Park. As canal stage increases, more water is forced beneath the road. However, canal stage is strictly controlled due to potential flooding within residential or agricultural areas of Miami-Dade County or potential damage to Tamiami Trail. The canal stage constraint is 7.5 feet NGVD. Higher water levels within the canal may erode the sub-base of the road and create a potential safety hazard. In most cases, flows that would cause the canal water level to rise above 7.5 feet NGVD are diverted or held for release at a different time. ***Figure 3-3*** illustrates the small difference in elevation between the water level in the canal and the base and crown of the road. The completion of flood mitigation features at the 8.5 SMA has removed some of the constraints for maintaining water levels in the L-29 Canal at or below 7.5 feet. The management of stage levels is among the most important factors in determining the amount of water entering the ENP.

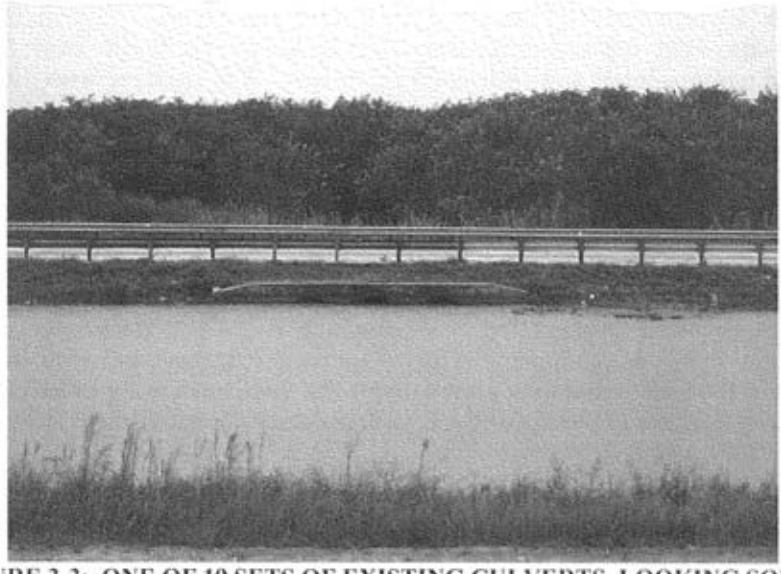


FIGURE 3-3: ONE OF 19 SETS OF EXISTING CULVERTS, LOOKING SOUTH FROM L-29 LEVEE

3.4 Water Quality

General. The water quality in the Everglades has been greatly influenced by development-related activities. Extensive drainage networks allowed the development of large land tracts for urban and agricultural development. Nonpoint (e.g., agricultural runoff) and point (e.g., wastewater discharges) sources of contamination now influence surface waters in many areas. Parameters of concern include:

- Metals–mercury, copper, cadmium, lead, zinc, arsenic.
- Pesticides–DDT and derivatives, atrazine, simazine, ametryn, endosulfan compounds, ethion, bromacil, 2,4-D, aldecarb, and fenamiphos.
- Nutrients–phosphorus, nitrite/nitrate, and ammonia/un-ionized ammonia.
- Biological–fecal coliforms and pathogens, and chlorophyll-a.
- Physical parameters–pH, dissolved oxygen, conductivity, turbidity, oil and grease, temperature, and salinity.
- Other constituents–polycyclic aromatic hydrocarbons (PAHs), dioxins and furans, sulfate, chloride, tributyltin (TBT), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs).

The primary concerns in the Everglades are nutrients, dissolved oxygen (DO), mercury, biochemical oxygen demand (BOD), and coliforms. Marsh and canal

waters typically have low DO levels relative to the standards in Class I and III Florida State Administrative Code. A site specific alternative criterion for DO in the Everglades protection area was adopted by FDEP and subsequently approved by the U.S. Environmental Protection Agency in 2005. Nutrient levels at the marsh perimeter are elevated, probably from the breakdown of organic debris as well as agricultural drainage. Key water quality parameters monitored include DO, conductivity, and nutrients.

Presented below are the of results of SFWMD water sampling in 2004 and 2005 in association with the SFWMD Tamiami Bridge Culverts Project, which monitors water passing under the Tamiami Trail into ENP at 11 sites. The FDOT culvert locations can be found in the 2005 TTM RGRR.

TABLE 3-1: WATER QUALITY RESULTS FOR CULVERT STATIONS

Approximate Location	Years	DO (mg/l)	Sp Cond (µS/cm)	pH	Tot PO_4 (mg/l)	K (mg/l)	Mg (mg/l)	SO_4 (mg/l)
S-333	2004	3.48	581.22	7.24	0.011	5.30	16.20	30.50
	2005	4.72	661.46	7.48	0.014	--	--	--
FDOT 30[1]	2004	3.46	480.12	7.15	0.015	1.10	5.10	1.70
	2005	5.02	667.04	7.43	0.016	--	--	--
FDOT 36[1]	2004	3.69	430.50	7.20	0.011	2.10	7.60	5.40
	2005	4.93	580.00	7.34	0.016	--	--	--
FDOT 40[1]	2004	4.53	583.25	7.36	0.013	3.00	9.00	9.20
	2005	4.84	663.40	7.47	0.014	--	--	--
FDOT 50[1]	2004	4.54	552.01	7.36	0.012	2.90	9.50	12.00
	2005	4.85	677.83	7.49	0.014	--	--	--
FDOT 52[1]	2004	4.85	532.83	7.34	0.011	2.90	9.60	12.30
	2005	5.16	645.44	7.52	0.013	--	--	--
FDOT 54[1]	2004	3.99	561.68	7.30	0.011	3.00	9.70	12.50
	2005	5.47	644.20	7.54	0.012	--	--	--
FDOT 56[1]	2004	4.64	574.85	7.34	0.010	3.00	9.80	12.40
	2005	5.02	689.00	7.60	0.014	--	--	--
FDOT 58[1]	2004	4.76	566.07	7.39	0.011	3.10	10.10	13.30
	2005	5.27	572.34	7.57	0.014	--	--	--
FDOT 60[1]	2004	4.81	567.29	7.44	0.012	3.30	10.60	14.60
	2005	5.35	557.54	7.56	0.013	--	--	--
FDOT 62[1]	2004	4.96	598.90	7.55	0.013	3.50	11.10	15.80
	2005	5.41	555.50	7.52	0.014	--	--	--
Criteria for Surface Water Quality[2]	--	Not less than 5	Not greater than 50% above background or 1275, whichever is greater	6-8.5	N/A	N/A	N/A	N/A

Notes: [1] Locations correspond to FDOT Culvert Stations in Figure 3.
Values represent averages collected throughout 2004 and through July 2005.
[2] F.A.C. 62-302.530 Criteria for Class III, Predominantly Fresh Waters in Florida

Source: SFWMD.

A water quality study along Tamiami Trail was conducted by the U.S. Geological Survey (USGS) National Water-Quality Assessment Program in 1996-1997 and reported in 1999. The report concluded that the quality of water along the Trail is variable due to natural and human influences. Specific conductance and concentrations of chloride, sulfate, and dissolved organic carbon tended to be relatively low in the undeveloped part of Tamiami Trail from the Turner River (mile 30.4) to about S-12-C (mile 66.6) and relatively high at the more developed west and east ends. Relatively high concentrations occurred to the east of S-12-C due to the inflow of mineralized water from the northern Everglades

through a network of canals. Twelve pesticides or pesticide degradation products were detected along the Tamiami Trail, with highest concentrations at Tomato Road in the west and S-12-D in the east where agricultural influences were greatest. Total phosphorus tended to decrease from west to east.

ENP has been designated as an Outstanding Florida Water (OFW) requiring special consideration. In general, an OFW has narrative criteria for not allowing degradation/worsening of water quality conditions relative to the better of (1) a fixed point in time, which for ENP is 1978-79, or (2) the conditions that existed in the year prior to application to FDEP for a Water Quality Certification (WQC). To reduce any potential for degradation of water quality in ENP, the State of Florida requires that the treatment of storm runoff be included as a component of the highway and bridge construction projects.

Highway Runoff. Highway use results in the introduction of metals, fuels, lubricants, combustion products, and toxic chemicals as potential environmental contaminants. ***Table 3-2*** summarizes several of the major constituents in runoff from highway use and their primary sources.

TABLE 3-2: HIGHWAY RUNOFF CONSTITUENTS AND THEIR PRIMARY SOURCES

Constituents	Primary Sources
Lead	Leaded gasoline (exhaust), tire wear, lubrication, bearing wear
Zinc	Tire wear, motor oil
Iron	Rust, vehicle/engine wear
Copper	Metal plating, bearing/bushing wear, engine wear, brake wear
Cadmium	Tire wear, metal plating
Chromium	Metal plating, engine wear, brake wear
Nickel	Exhaust, lubricants, plating, brake wear
Organic compounds	Vehicle exhaust, fuel leaks, lubricants

Source: EPA (1993).

The concentration of pollutants in runoff is dependent on a number of factors, including the amount of traffic to which the road is subjected. ***Table 3-3*** illustrates the differences in concentration of pollutants in highway runoff relative to vehicle usage.

Because there are no known studies of the quality or quantity of runoff from the Tamiami Trail in the project area, the quality of the runoff and the effects to the

Everglades ecosystem must be inferred. The average daily traffic (ADT) volume along the Tamiami Trail, approximately 5,200 vehicles per day (vpd), is quite low. Applying the findings of Driscoll *et al.* (1990), runoff from the Tamiami Trail would have relatively low concentrations of contaminants. Bingham *et al.* (2002) suggested that runoff from the Tamiami Trail would have "little effect on the quality of the water and the surrounding aquatic habitat in the Tamiami Canal."

TABLE 3-3: POLLUTANT CONCENTRATIONS IN HIGHWAY RUNOFF

Pollutant	Event Mean Concentration for Highways with Fewer than 30,000 Vehicles/Day* (mg/L)	Event Mean Concentration for Highways with More than 30,000 Vehicles/Day* (mg/L)
Total Suspended Solids	41	142
Volatile Suspended Solids	12	39
Total Organic Carbon	8	25
Chemical Oxygen Demand	49	114
Nitrite and Nitrate	0.46	0.76
Total Kjeldahl Nitrogen	0.87	1.83
Phosphate Phosphorus	0.16	0.40
Copper	0.022	0.054
Lead	0.080	0.400
Zinc	0.080	0.329

* Event mean concentrations are for the 50 percent median site.
Source: Driscoll *et al.* (1990).

There are local sources of metals in addition to highway runoff, such as airboat franchises and residential areas along the Tamiami Trail, and the potential exists for transport of metals from other locations by the network of canals.

Therefore, it appears that based on existing data and projections, runoff from the Tamiami Trail may have little measurable adverse effect on water quality and biological communities in the L-29 Canal. However, to reduce any potential for degradation in ENP, which is an OFW requiring special consideration, the State of Florida requires that treatment of bridge storm runoff must be included as a component of the proposed project.

3.5 Hazardous, Toxic and Radioactive Waste

A Phase I Hazardous Toxic and Radioactive Waste (HTRW) site assessment of the project area was conducted in late 2006. The assessment area extended the length of the project (between S-333 and S-334/S-356) from the L-29 Canal to 200 feet south of the centerline of the Tamiami Trail (***Figure 3-1***). The area assessed included properties owned by Lincoln Financial Media, Everglades Safari Park, the Airboat Association of Florida, Gator Park, Coopertown Airboat Rides and Restaurant (two adjacent tracts), Radio One Communications, and FP&L.

The site assessments identified four potential contamination sites, all of which are located on private property outside of the construction footprint required for the proposed project. It is anticipated that the federal government would acquire an interest in real estate from the subject private owners since these lands would be impacted not from the project's construction but rather the operation of the project. In a federal acquisition, the cost of remediation of the subject properties would be assessed against the property owner. Prior to a real estate closing, the landowner would be given a choice of conducting the remedial work at his own cost, or the federal government could withhold a sufficient amount of funds necessary for the remediation from the acquisition funds to ensure compliance.

3.6 Special Environmental Resources

The historic Everglades was a broad, shallow wetland with water flowing very slowly over 3,900 square miles from Lake Okeechobee to the mangrove zone at the southern tip of Florida. The flow that naturally occurred over this region was influenced by rainfall and a relatively low surface relief and provided the necessary conditions for the development of the Everglades ecosystem.

3.6.1 Everglades National Park

ENP was authorized by Congress on May 10, 1934 and dedicated by Harry S. Truman on December 6, 1947. The enabling legislation provided the fundamental purpose of the Park as being:

> *. . . permanently reserved as a wilderness, and no development of the project or plan for the entertainment of visitors shall be undertaken that will interfere with the preservation intact of the unique flora and fauna and the essential primitive natural conditions now prevailing in this area.*

The original 460,000 acres in 1947 was expanded to 1.3 million acres by 1958.

Recognizing ENP as a nationally and internationally significant resource, Congress passed the "Everglades National Park Protection and Expansion Act" (PL 101-229) in 1989. This law authorized the acquisition of additional land,

including the portion of the project area just south of Tamiami Trail, to benefit the natural resources of ENP.

With this addition, ENP is now approximately 1.5 million acres in size, making it the third largest unit of the NPS in the lower 48 states.

By NPS policy, lands included in the East Everglades Expansion are being assessed in the East Everglades Wilderness Study to determine whether they are suitable for possible wilderness designation. The East Everglades Wilderness Study was added to the scope of the ENP's GMP/EIS in 2006.

Because the ENP possesses "outstanding natural values," it was designated by the United Nations Educational, Scientific, and Cultural Organization as an International Biosphere Reserve in 1976 and subsequently as a World Heritage Site in 1979. The site includes historic Everglades that have been limited in manmade influences and, for the most part, avoids agricultural land. In 1987, the Ramsar Convention designated ENP as a Wetland of International Importance. ***Figure 3-1*** shows the location of ENP in southern Florida.

3.6.2 Shark River Slough

Historically, Shark River Slough was a 30-mile-wide expanse of relatively shallow water moving downstream through the low-gradient Everglades landscape. The pattern of water flow was regionally uniform across a broad expanse and lacked any central drainage channel or dendritic drainage pattern. The slough collected flows from the eastern portion of the Everglades, including the western side of the Atlantic coastal ridge, and moved that water to the southwest through the mangrove estuaries of the southwestern coast into the Gulf of Mexico.

An extensive ridge and slough landscape was characteristic of Shark River Slough. Within the ridge and slough landscape was a complex mosaic of marsh assemblages with distinct tree islands. The marsh contained large stands of sawgrass interrupted by more open communities with a mixture of smaller aquatic plants and periphyton. These types of habitats are frequently elongated and oriented parallel to the direction of water flow. Tropical hammock and pine forests occur as islands within the prairie landscape and form a third element of the ridge and slough landscape, rising slightly above the elevation of the sawgrass ridges. These tree islands support plants of West Indian origin that are unique to south Florida and contain the highest number of rare plant species in south Florida. The orientation of the larger tree islands has the same parallel alignment to the direction of flow.

Marl prairies, fire-maintained marshes that are intermittently flooded, flank both sides of Shark River Slough. A unique feature of the marl prairies is the

high species richness of the plant communities. Sawgrass (*Cladium jamaicense*) and muhly grass (*Muhlenbergia capillaris* var. *filipes*) dominate, although more than 100 species of mostly herbaceous plants have been reported.

Although seemingly small, the two-to-three-foot difference in elevation between ridge surface and slough bottom was highly significant in the pre-drainage Everglades. During the typical annual rise and fall of wet- and dry-season water levels, this elevation difference allowed sloughs to remain water-filled throughout the year, while adjacent ridges would be exposed only a few months of the year. In the pre-drainage system, native species were adapted to the multiple habitats provided by the tree islands, ridges, and sloughs. Aquatic organisms depended on the sloughs as extensive areas that would remain inundated throughout all but exceptionally dry years.

3.6.3 Biological Habitats

The habitats along the Tamiami Trail are mostly natural with long and short hydroperiod wetlands with an abundance of interspersed willowheads, bayheads, and hardwood hammocks. Sawgrass (*Cladium jamaicense*) communities dominate the long hydroperiod wetlands, whereas muhly grass (*Muhlenbergia capillaris*) and black sedge (*Schoenus nigricans*) dominate the short hydroperiod wetlands mostly influenced by NESRS and local rainfall. Four herbaceous wetland cover types are found in the Everglades: (1) sloughs with persistently deep water levels; (2) sawgrass marshes with moderate water levels and long hydroperiods; (3) wet peat prairies; and (4) wet marl prairies with shorter hydroperiods.

Plant communities present along the Tamiami Trail in the project area include:

- Swamp forest bayheads (*Magnolia virginiana, Annona glabra, Chrysobalanus icaco, Persea borbonia, Ilex cassine, Metopium toxiferum,* among others);
- Maidencane/spike-rush, a mix of shallow open water, *Eleocharis* spp. and *Panicum hemitomon*, which can include sparse association of low-stature *Cladium jamaicense, Typha* spp., *Sagittaria lancifolia, Pontederia lanceolata, Nymphaea* spp., etc., typical of SFWMD impounded conservation areas;
- Graminoid (grasses, sedges, and rushes);
- Non-graminoid emergent marsh (*Pontederia lanceolata, Sagittaria* spp., *Nymphaea odorata, Typha* spp., with *Ludwigia repens* and *Utricularia* spp. as possible submergents);
- Sawgrass (*Cladium jamaicense*);
- Cattail (*Typha* spp.);
- Scrub hardwood, which includes species such as *M. toxiferum, P. borbonia, Myrica cerifera, I. cassine, M. virginiana, Myrsine floridana, Conocarpus*

erectus, Chrysobalanus icaco, often with a moderate-to-heavy component of mixed grasses; and
- Willow shrublands *(Salix carolinjana).*

Sloughs provide critical habitat for submerged and floating vegetation in the Everglades ecosystem as they are the deepest marsh communities that provide the main pathway of water flow through the Everglades (Lodge, 2005). Slough vegetation communities are often associated with tree islands and long patches of sawgrass stands. This vegetation landscape is termed "ridge and slough", since the sawgrass is elevated above the adjacent slough.

The deep water slough vegetation community is typically dominated by submerged and floating aquatic plants such as bladderworts, white waterlily, floating heart, and spatterdock (Lodge, 2005). In the EPA's ecosystem assessment of the Everglades (R-EMAP), Stober *et al.* (2001) noted plant associations across the deep water slough Everglades dominated by white waterlily. However, Stober *et al.* (2001) only noted one sampling location in ENP sloughs containing white waterlily; the lack of white waterlily is thought to result from inadequate water depths and hydroperiods caused by artificial draining of the marsh community. This is consistent with vegetation surveys conducted by Davis (1943), Gunderson (1994), and Olmstead and Armentano (1997). White waterlily is more abundant in deeper slough habitats of the Loxahatchee National Wildlife Refuge and the WCA-2 and WCA-3 of the greater Everglades less subject to drydown events (Stober *et al.*, 2001). Paleoecological seed data indicates that native ENP slough communities were once dominated by white waterlily and banana lily prior to the widespread artificial draining of slough communities (Saunders *et al.*, 2007).

White waterlily has adaptations including an extensive root system and floating leaves that allow it to out-compete other species of emergent and submerged vegetation during optimum hydrologic conditions. Richards' (2007) mesocosm studies illustrated that white waterlily exhibits significantly more root biomass at depths of 60 centimeters (cm) (two-feet) and 90 cm (three-feet) as compared to a depth of 30 cm (one-foot). Field studies also verify that deep water slough vegetation is dominated by white waterlily in wet season water depths exceeding 90 cm (Powers, 2005; and Givnish *et al.*, 2008). McVoy *et al.*'s (in review) historical ecological study of the Everglades estimated that pre-drainage water depths in sloughs had a long term average depth of 60 cm (two-feet). Based on the scientific literature review, the optimal hydrological conditions for white waterlily-dominated deep water sloughs are wet season depths exceeding two to three feet and a maximized average wet season depth.

Other classifications along the Tamiami Trail include Brazilian pepper/shrubland mix, open water, spoil areas, areas influenced by human activities, major roads, and canals.

Partitioning of the Everglades by levees, canals, and roads, including the Tamiami Trail and the L-29 Canal, has created barriers to the free movement of organisms, particularly aquatic species and those with limited mobility. Aquatic connectivity between the WCAs and ENP is currently limited to the series of small culverts under the Tamiami Trail. The L-29 Canal and Levee are obstructions to fish and wildlife movement and migration from WCA-3A to ENP. Traffic mortality on the Tamiami Trail reduces the free movement of terrestrial and semiaquatic animals.

3.6.4 Protected Species

Federally listed species known or potentially encountered in the project area, and which were given consideration by FWS coordination in accordance with Section 7 of the Endangered Species Act (ESA), include the CSSS, eastern indigo snake, Florida panther, snail kite, West Indian manatee and wood stork.

Cape Sable Seaside Sparrow (*Ammodramus maritimus mirabilis*). The CSSS is one of eight extant subspecies of seaside sparrow in North America. Its distribution is limited to the short-hydroperiod wetlands at the bottom of the greater Everglades system, on the southern tip of mainland Florida. The CSSS was first provided protection when it was listed on March 11, 1967, under the Endangered Species Preservation Act of 1967 (32 Federal Register 4001). That protection was continued under the Endangered Species Conservation Act of 1969. The sparrow and all other species listed under the Endangered Species Conservation Act were the first species protected under the Act of 1973, as amended.

The CSSS inhabits six distinct subpopulations called A, B, C, D, E and F. Critical habitat for this species was designated on August 11, 1977 (42 FR 42840). Currently, the critical habitat includes areas of land, water, and airspace in the Taylor Slough vicinity of Collier, Miami-Dade, and Monroe Counties. Much of this area is within the boundaries of ENP. Because this was one of the first critical habitat designations under the Act, there were no primary constituent elements defined. The designated area encompasses about 197,260 acres (79,828 hectares), and includes portions of subpopulations B through F. Subpopulation A is the only area occupied by sparrows that does not have associated designated critical habitat.

Subpopulation A is one of the large subpopulations and thought to be critical to the existence of the CSSS. It is located in western Shark River Slough immediately in the path of water discharges from WCA-3A through the S-12

structures. Unusually intense and unseasonable rainy periods coupled with C&SF operations during the winters of 1992/93 and 1993/94 caused prolonged flooding in subpopulation A, with the result that little or no breeding there was possible during the 1993 and 1994 sparrow breeding seasons. The flooding of the habitat by direct rainfall was exacerbated by discharges of water through the S-12s needed to meet the water regulation schedule for WCA-3A. This is reflected in the dramatic reduction of CSSS detected in subsequent surveys in subpopulation A. As a consequence, FWS issued a biological opinion (BO) in 1999 providing recommendations to the USACE on how water levels must be controlled in nesting habitat so that the existence of CSSS would not be jeopardized. The USACE responded by developing changes in water management operations that are still currently in effect. The goals are to keep subpopulations (particularly subpopulation A) dry during the breeding season and to keep the habitat for the subpopulations B, C, D, E, and F from excessive drying to prevent un-natural fire frequencies.

Eastern Indigo Snake (*Drymarchon corais couperi*). 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.

Florida Panther (*Puma* [*Felis*] *concolor coryi*). The Florida panther was listed as endangered in 1967. Activities beginning as early as the 1800s influenced the status of the panther, with the first bounty passed in Florida in 1832. Following bounty hunting, agricultural land clearing and lumbering reduced its habitat drastically into the 1950s. Significant habitat reduction continues today. Other factors affecting the population's decline include contaminants, prey availability, human-related disturbance and mortality, disease, and genetic erosion.

The current occupied range of the panther is estimated to be 2.2 million acres (890,000 hectares) in south Florida. Panthers prefer native, upland forests, especially hardwood hammocks and pine flatwoods, to wetlands and disturbed habitats. Native landscapes within the Big Cypress Swamp region of south Florida, within occupied panther range, are dominated by slash pine (*Pinus elliottii*), cypress, and freshwater marshes, interspersed with mixed-swamp forests, hammock forests, and prairies. Private lands represent about 50 percent of occupied panther range in south Florida. The largest contiguous tract of panther habitat is the Big Cypress National Preserve/Everglades ecosystem in Collier, Monroe, and Miami-Dade counties.

Suitable habitat extends into Lee, Hendry, Charlotte, Glades, Broward, Palm Beach, and southern Highlands counties.

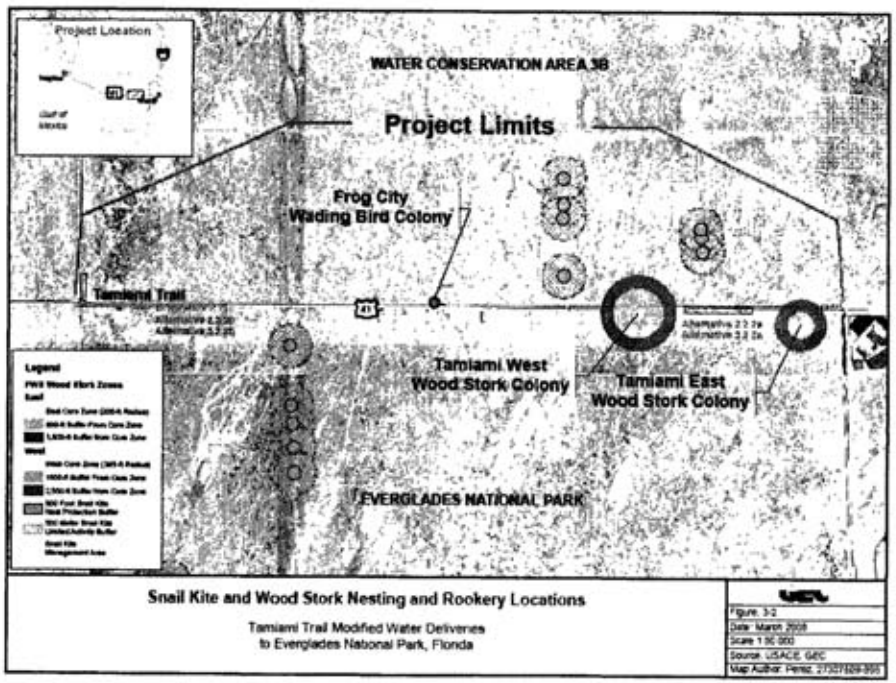
Breeding activity peaks in fall and winter. Parturition is distributed throughout the year with 81 percent of births occurring between March and July. Litter sizes range from one to four kittens, with a mean of 2.2 kittens per successful litter. Intervals between litters range from 16 to 37 months.

The number of radio-collared panthers being monitored has increased from eight in 1984 to 46 in 2001. Throughout the occupied range of the panther, the ENP population represents at least 11 percent of the panther population known to the FWS. Two panthers in ENP have been documented crossing the Shark River Slough into Big Cypress National Preserve. The only known reproducing panther population is located in the Big Cypress Swamp/Everglades physiographic region.

Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*). Snail kites, listed as endangered in 1967, require long hydroperiod wetlands that remain inundated throughout the year. This preference is associated with the apple snail (*Pomacea paludosa*), its primary food source, which requires nearly continuous flooding of wetlands for greater than one year. Suitable habitats for the kite include freshwater marsh and shallow vegetated lake margins where apple snails can be found. Critical habitat for the snail kite was designated in 1977 and includes WCA-1, 2, and 3A, and portions of ENP, as well as Lake Okeechobee shorelines and portions of the St. Johns marsh. Preferred nesting habitat includes small trees and shrubs such as willow, bald cypress, pond cypress, sweet bay, dahoon holly, southern bayberry, and elderberry. During dry periods when suitable shrubs and trees experience dry conditions, herbaceous species such as sawgrass, cattail, bulrush, and common reed are used for nest sites. The breeding season can vary from year to year depending on rainfall and water levels. Ninety-eight percent of nesting attempts occur from December through July, with 89 percent initiated between January and June. ***Figure 3-4*** depicts recent snail kite nesting locations and protection zones.

WCA-3A is the largest and most consistently utilized (as measured by numbers of birds observed during annual surveys from 1970 to 1994) of the designated critical habitat for the kites. Snail kites have increasingly moved their nesting activity to areas of higher elevations in WCA-3A over the past two decades, presumably as the traditional nesting vegetation has been degraded by sustained high water levels due to water management practices. Higher water levels have resulted in the conversion of wet prairies (preferred foraging habitat for kites) to aquatic sloughs in selected sites in that area,

FIGURE 3-4: SNAIL KITE AND WOOD STORK NESTING AND ROOKERY LOCATIONS



along with losses of interspersed herbaceous and woody species essential for nesting habitat.

West Indian Manatee (*Trichechus manatus*). The West Indian manatee was first listed as endangered in 1967. This species lives in freshwater, brackish, and marine habitats and eats submerged, emergent, and floating vegetation. During the hot summer months, the mammal's habitat can range as far north as Rhode Island and as far west as Texas. During winter months, the population concentrates in peninsular Florida, depending on warm water flows from natural springs and power plant outfalls. The most significant threat facing manatees in Florida is death or injury from boat strikes. It is highly unlikely that the West Indian manatee occurs in the project area.

Wood Stork (*Mycteria americana*). The wood stork was listed as endangered in 1984 due to loss of foraging habitat and colony nesting failures. No critical habitat has been designated for the wood stork.

Preferring freshwater wetlands for nesting, roosting, and foraging, wood storks can be found throughout central and southern Florida. Nests are typically constructed in tree stands within swamps or stands surrounded by large areas of open water. Because of their tactile feeding methods, storks feed most effectively in shallow water settings where prey items are concentrated. During winter and spring dry seasons when water levels recede, prey items are often further concentrated, providing foraging areas with abundant food supplies. Drainage in south Florida may be responsible for delaying stork nesting from November to as late as February or March. Nesting delays are believed to contribute to nest failures and colony abandonment because of the dispersal of prey items associated with the onset of the wet season (May-June). Wood stork rookeries occur at two pond apple stands along the south side of the highway: the Tamiami Trail West Rookery and the Tamiami Trail East Rookery (***Figure 3-4***).

In 2001, overall wood stork nesting effort in the WCAs was greater than had previously been seen since the mid-1970s and ten percent greater than 2000, another banner year. As in 2000, the storks nested in February and were able to fledge large numbers of young prior to the onset of rains. In 2005, nests were largely unsuccessful as a result of stable or rising water levels during March due to unseasonable rainfall. Tamiami West had a maximum of 25-35 successful nests.

The FWS, using the Habitat Management Guidelines for the Wood Stork in the Southeast Region (Guidelines) (Ogden 1990) based on recent photography during nesting season, identified primary and secondary restriction zones.

The primary zone is the most critical area and must be managed according to the guidelines to insure the colony survives. For the West Colony, a core area that contains nesting habitat has been designated by FWS to have a radius of 385 feet from the center of the colony. The primary zone for the West Colony extends an additional 1,300 feet in all directions from the core area for a radius of 1,585 feet. The FWS has designated the primary zone for the East Colony as a 1,300-foot radius from the colony center. The pond apple forest creates a visual barrier between the rookery and Tamiami Trail. The storks appear to have become somewhat acclimated to highway traffic noise.

The secondary zone may be used by wood storks for collecting nesting material and for roosting, loafing, and feeding (especially important for newly fledged young). The secondary zone of the West Colony extends an additional 1,000 feet beyond the primary zone for a total radius of 2,885 feet from the center of the colony. For the Tamiami East Colony, the secondary zone extends 1,200 feet beyond the primary zone for a total radius of 2,500 feet.

Approximately 3,700 linear feet of the Tamiami Trail are located within the primary zone of the Tamiami West Colony; none lies within the primary zone of the East Colony. In addition, approximately 5,000 linear feet of the highway lies within the secondary zones of the colonies.

In addition to the wood stork, FWC has identified six birds as species of special concern that may nest or otherwise be found in the vicinity of Tamiami Trail between S-334 and the L-67 Canal: tricolored heron, snowy egret, little blue heron, limpkin, roseate spoonbill, and white ibis. These migratory birds are protected under the provisions of the Migratory Bird Treaty Act. They are protected species under the jurisdiction of FWS. Nesting activities in these rookeries usually last until the rains have dispersed prey, leading to the cessation of nesting. FWS and FWC identified the Frog City wading bird colony, which hosts tricolored herons and great egrets, as potentially requiring protective measures during construction. The Frog City rookery is located in WCA-3B close to the L-29 Levee approximately one-quarter mile west of the Tigertail Camp.

The American alligator (*Alligator mississippiensis*), a species of special concern, and the Everglades mink (*Mustela vison evergladensis*), listed as threatened by the State of Florida, are also found along the Tamiami Trail corridor.

3.7 Air Quality

In accordance with the 1990 Clean Air Act (CAA) Amendments, the EPA designated the Southeast Florida Airshed, consisting of Miami-Dade, Broward, and Palm Beach counties, as a nonattainment area for ozone and its precursors. On April 27, 1995, the airshed was redesignated as an ozone

attainment/maintenance area. Miami-Dade County is an attainment area for carbon monoxide. Nitrogen dioxide, sulfur dioxide, and total suspended particulates are present in concentrations that are better than national standards. EPA has not determined a designation for airborne lead in southeastern Florida. ENP is a Class I Airshed.

3.8 Transportation

The original Tamiami Trail was most likely constructed in the late 1920s and early 1930s primarily by digging the canal by steam shovel and placing the spoil ahead to create the roadbed. In the mid-1940s, about 38 bridges were added at various locations on the Tamiami Trail, 19 of which were within the project area. In the early 1950s, the bridges were removed and replaced with the culverts that are currently in place. In 1968, the shoulders were widened and the pavement was overlaid. In 1970, a guardrail was added on the north side. At some time in the 1980s or 1990s, another guardrail was added on the south side of the road. Finally, in 1993, the shoulders were widened, and the mainline pavement was resurfaced.

FDOT requires that culverts be designed for a projected maintenance-free time or a design service life (DSL) appropriate for the culvert function and highway type. Recently, the FDOT Culvert Service Life Estimator Program was used with soil parameters to determine DSLs for four locations. The results indicated that the existing reinforced concrete pipe culverts under US Highway 41, which have been in operation for approximately 50 years, should continue to provide service for an additional 50 years.

The road is currently in need of maintenance. The asphalt surface of the road has surface environmental stress cracks and subsurface fatigue cracks. Based on FDOT's Flexible Pavement Survey Handbook in 2000 the Pavement Condition Rating, by which road surfaces are rated on a scale of 1 to 10, the Tamiami Trail would receive an FDOT rating of 6. Whenever a road is rated at 6 or below, repair actions are typically required. Because of pavement deterioration in terms of cracking, rutting, and ride, FDOT determined that the portion of the Tamiami Trail within the project area is in need of rehabilitation. The ADT volume from the 2003 GRR based on 1999 Existing Average Daily Traffic along the Tamiami Trail, approximately 5,200 vpd, is quite low.

3.9 Recreation

ENP receives in excess of a million visitors each year. Recreational opportunities include biking, boating, fishing, hiking, camping, and wildlife viewing. Approximately six miles west of the project area, the Shark Valley Information Center offers a 15-mile round-trip tram road (not open to private motorized vehicles) that extends into the marsh, offering one of the best opportunities for viewing wildlife. A two-hour narrated tram ride provides an

overview of the freshwater Everglades, and bicycles are available to rent. An observation tower is located at the half-way point.

The Airboat Association of Florida is a recreational association with facilities on the south side of the Tamiami Trail about three miles east of the western end of the project area.

Four commercial airboat operators are currently operating south of the Tamiami Trail. Three operators, Coopertown Airboat Rides and Restaurant, Everglades Safari Park and Gator Park operate from facilities located on the south side of Tamiami Trail and receive between two and three hundred thousand visitors each year. The other operator, Airboat USA launches from a public airboat ramp immediately east of Coopertown Airboat Rides. These ecotourism businesses offer guided tours into ENP.

The verge between the L-29 Canal and the L-29 Levee is used for passage along the canal, picnicking, or launching boats into the L-29 Canal. A road atop the L-29 Levee allows panoramic views to the north into WCA-3B.

Primary access to boat ramps on the north side of the L-29 Canal is at S-333 and S-334. Roads across these structures lead to several boat ramps and to bank fishing on the north bank of the L-29 Canal. S-334 provides access to a boat ramp (Boat Ramp 153) three miles to the east that allows boat launching into the L-29 Canal. A picnic area is associated with the boat ramp. Control structure S-333 provides access across the L-29 Canal to one airboat ramp and two boat ramps. There is a boat ramp on Canal 67-A and another on Canal 67-C. Both ramps are heavily used by boat fishermen. The airboat ramps provide access for deer and waterfowl hunters, as well as for recreational airboaters. Approximately 10.5 miles of the north bank of the L-29 Canal are available for bank fishing. Noncommercial airboats also launch south of the Tamiami Trail at two locations for sightseeing. The two locations are the ramp immediately east of Coopertown Airboat Rides and an undeveloped area at the L-67 Extension. The "Everglades National Park Protection and Expansion Act" allows those noncommercial airboat operators using the expansion area on January 1, 1989 to continue to operate airboats inside the expansion area.

Bank fishing is also popular from the shoulders of the Tamiami Trail and L-67 Extension Levee. Fishermen frequent the 10.7 miles of the south bank of the L-29 Canal (north shoulder of the highway). The only places for bank fishing on the south side of the highway are where the culverts discharge water to the south. FWC personnel conducted angler counts along the Tamiami Trail from December 1998 to May 1999. The mean number of anglers per mile for weekdays and weekend days, respectively, was 0.95 and 2.28. Ninety-four percent were bank anglers (personal communication, FWC, September 28, 2000).

These numbers translate into an estimated ten fishermen per weekday and 23 per weekend day, totaling approximately 5,000 man-days of fishing per year within the 10.7-mile study area. Personal observation revealed 25 bank fishermen and two boats with two fishermen in the project study segment at approximately 10:00 A.M. on a Saturday in September 2000. Almost all the bank fishermen were fishing on either side of the highway right-of-way, with only a few on the north bank of the L-29 Canal.

It should be noted that at least some of the fishing is subsistence, not recreational. There is reportedly recreational fishing for oscars (*Astronotus ocellatus*), an aquarium fish native to South America that has become established in south Florida and which reportedly "puts up a good fight." Recreational anglers have been observed fishing for bass by boat in the canal during the short period of time when dry conditions drive the bass out of the marshes.

3.10 Cultural Resources

Studies for historic and archaeological resources were conducted to identify and assess National Register of Historic Places (NRHP) eligibility of historic properties within the project area, to survey potential archaeological sites, to conduct archival research, and to assess the potential of each historic resource as a Traditional Cultural Property as defined by National Register Bulletin No. 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties. This work was conducted to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Archaeological and Historic Preservation Act of 1974.

Cultural resource surveys have been performed by Janus Research (2001) and New South Associates (2006). Background research was conducted at the Florida Master Site File in the Florida Collection of the Florida State Library. Additional literature was examined at the University of Florida libraries, the Miami-Dade Public Library, and the Historical Museum of Southern Florida.

Ethnographic interviews determined that several cultural groups use the L-29 Canal for recreation and food. Formal and informal interviews were conducted with anglers, business owners, and members of the Airboat Association of Florida. Because these activities are not limited to the canal or form the basis for identity of any group, the L-29 Canal was not recommended as a Traditional Cultural Property (New South Associates, 2006).

Archaeological surveys consisted of visual examinations, limited shovel testing along the right-of-way of the Tamiami Trail, and six areas having the greatest potential for containing archaeological deposit: the Osceola Camp, Everglades Safari Park, the Airboat Association of Florida, Gator Park, and Coopertown

Restaurant and Airboat Rides. None of the locations contained cultural material (New South Associates, 2006).

Architectural historians assessed properties within the project area for NRHP eligibility. Five historic properties within the project corridor were recommended and evaluated for potential eligibility for the NRHP. Private properties include: Coopertown Airboat Rides and Restaurant, Gator Park and the Airboat Association of Florida. However, the Tamiami Trail and the Tamiami Canal were also recommended for NRHP listing. The SHPO has concurred with these recommendations for listing.

The Tamiami (Tampa to Miami) Trail is important as one of the state's major engineering projects during the early 20th century. It has an overall length of 245 miles with approximately 24 miles within Miami-Dade County. Although the roadway has experienced changes over the years, such as the paving of the original limerock road with asphalt, slight widening of the road and the addition of low metal marries on both sides of the road, the Tamiami Trail continues to retain its historic character. Additionally, the road's historic feeling, association, design, and setting are still evident. The Trail's engineering and construction were performed under conditions that at the time were unprecedented in highway construction. It provided the first route across the southern peninsula and offered an opportunity for the general public to observe the Everglades from automobiles. Based on its associations with the developmental, commercial, and transportation history of Florida and the Miami-Dade County, the Miami-Dade County segment, including the portion adjacent to ENP, is considered to be a significant historic resource.

Two additional investigations of cultural resources commissioned by ENP revealed no additional resources within the footprint of the project (Schwadron, 2006a,b).

3.11 Aesthetics

The views along the project segment of the Tamiami Trail are interesting, but somewhat limited and constrained. On the north side of the highway are the L-29 Canal and the L-29 Levee, which extend along the entire 10.7 miles of the project segment. The view of the north side of the canal and levee is broken up by several water control structures and the Tigertail Camp. A panoramic view of the sawgrass and occasional hammocks or tree islands is largely blocked by the height of the levee. On the south side, the view is often blocked by tall vegetation along the roadside. Occasional breaks allow some distance views. The Osceola Camp and the grove of trees at the Airboat Association site provide some points of interest.

3.12 Noise Environment

The 2003 GRR/SEIS evaluated existing conditions, future without project conditions, and the alternatives under consideration at that time. ***Table 3-4*** presents project area traffic data from the report.

Traffic noise impacts were evaluated using maximum peak hour traffic at level of service (LOS) "D" because they provide higher noise levels than maximum peak hour traffic at LOS "C." Because the geometry of all current alternatives is identical with respect to Highway Capacity Manual (HCM) operational analysis, projected flow, LOS, and average speeds are identical for a given year and month for all alternatives.

TABLE 3-4 PROJECT AREA TRAFFIC DATA

Year	ADT (vpd)	Design Hour (vph)	Flow (vph)	Level of Service (LOS)	Average Speed (mph)
2000	5,375	800	860	D	50
2020	8,852	1,316	1,400	D	50

Source: USACE (2003)

Sensitive receivers selected and evaluated for the 2003 report included the Flight 592 Memorial, Osceola Camp, Safari Park, Gator Park, Tigertail Camp, Coopertown Airboats and the Airboat Association of Florida. Three sound levels were determined for each activity: (1) noise abatement criteria (NAC); (2) existing noise levels; and (3) predicted noise levels.

Ambient noise levels were recorded for 16.5 hours at the Osceola Camp and at the Tigertail Camp to determine background and peak hour noise levels. Measurements indicated average background A-weighted hourly equivalents (LAeq1h) of 65.8 decibels (dBA) at the Osceola Camp and 58.4 dBA at the Tigertail Camp. Peak hour levels were 68.0 dBA at the Osceola Camp and 61.0 dBA at the Tigertail Camp.

Peak hour existing conditions from the 2003 report are presented in ***Table 3-5***. Significantly, the evaluation indicated that the northwest portion of the Osceola Camp exceeded FDOT approach criterion of 66 dBA at peak hour existing conditions. All sites were found to be at or near the FDOT approach criterion of 66 dBA for the existing peak hour noise levels.

TABLE 3-5 EXISTING PEAK HOUR NOISE LEVELS

Site	Receiver[1]				
	1	2	3	4	5
Flight 592 Memorial	59.9	--	--	--	--
Osceola Camp	68.3	62.0	57.5	62.2	62.6
Safari Park	69.6	69.9	--	--	--
Gator Park	69.6	62.7	--	--	--
Tigertail Camp	60.5	60.8	--	--	--
Coopertown Airboats	69.6	69.9	62.7	--	--

Note: [1]Receivers are hypothetical points for sites for existing peak-hour modeling.

Source: USACE (2003).

3.13 Economics/Socioeconomics

The project study area is west of the "limits to urbanization" boundary established by the Miami-Dade Planning Department. Coupled with the protected natural areas north and south of the corridor, this effectively means that no additional development would be allowed along the corridor within the project limits. However, new ENP operations/visitor areas are possible in light of the ongoing ENP GMP process consistent with the Everglades National Park Protection and Expansion Act of 1989.

The Miami-Dade County region is a major metropolitan area with a population in excess of two million. The region supports a diverse economy with an emphasis on tourism, wholesale and retail trade, manufacturing, and shipping/transport. One-third of the Miami-Dade County area is within the boundary of ENP.

According to the 2000 census, the population of the county is approximately 70 percent white and slightly more than 20 percent black. Approximately 57 percent of Miami-Dade residents identify themselves as Hispanic. In 2000 it was estimated that 18 percent of the county's residents were in poverty, with almost 25 percent of that number being children under the age of 18. Over one million people were employed.

Three tourist-oriented businesses located on the south side of Tamiami Trail in the study area offer airboat trips, souvenirs and restaurant facilities: Coopertown Airboat Rides and Restaurant, Everglades Safari Park and Gator Park, Inc. The particular attraction of the businesses is ecotourism.

3.14 Tribal Lands

The Miccosukee Tribe of Indians has lived in what is now ENP for generations and has traditional, aboriginal, and statutory rights to live in the Everglades.

Two Miccosukee Tribe family group settlements are located within the project area: the Tigertail Camp and the Osceola Camp. The Tigertail Camp, located north of Tamiami Trail between the L-29 Canal and the L-29 Levee, is home to approximately 15-20 people, as indicated by the 2003 report. Vehicle access is by means of unimproved roads adjacent to and on top of the L-29 Levee that intersect the Tamiami Trail at canal crossings at each end of the project area. A pedestrian bridge crossing the canal connects a small parking area along the northern side of the highway to the Tigertail Camp. The living facilities of the Tigertail Camp were recently elevated above the flow levels anticipated for MWD.

According to the RGRR/SEIS, the Osceola Camp is home to ten to 15 people. It is located on the south side of the Tamiami Trail approximately one-half mile east of the western end of the project area. Access is by vehicle directly from the highway.

3.15 Flight 592 Memorial

The Valu Jet Flight 592 Memorial is located at the western end of the project area on the northern side of the L-29 Levee, about 250 feet from Tamiami Trail. Access to the memorial is via the S-333 canal crossing. The site consists of a parking area and a sculpture/memorial consisting of 110 concrete pillars that symbolize each of the lives lost in the DC-9 crash on May 11, 1996. The pillars are arranged in a triangular pattern that points to the actual crash site eight miles away in the Everglades.

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SECTION 4

FORMULATION AND EVALUATION OF ALTERNATIVES

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4.0 FORMULATION AND EVALUATION OF ALTERNATIVES

4.1 Purpose of the Limited Reevaluation

The purpose of the MWD Project is to restore to the extent practicable the natural hydrologic conditions within ENP. The ENP segment of Shark River Slough, the deepest flow way inside ENP, requires higher average water stages and longer flooding durations (compared to current conditions) during the wet and dry season to restore and maintain slough habitat. Historic hydrologic conditions have been altered by the Tamiami Trail, the levees that enclose the southern side of WCA-3A and 3B, and L-29 Canal.

The Tamiami Trail feature of the MWD Project is needed primarily to:

1. create hydraulic conveyance capacity through the Tamiami Trail to allow a return to a more natural flow of water to ENP in timing, location and volume of delivery, as directed in the ENP Protection and Expansion Act 1989 and the 1992 GDM;
2. prevent loss of and restore ridge and slough vegetation through an increase in the volume of water delivered to NESRS.

The purposes of this LRR are:

1. to review previously proposed and new alternatives to identify a cost-effective plan that maximizes benefits in terms of hydrology (flow volume, timing and stages inside ENP), suitability for vegetation and potential ecological connectivity
2. to develop a recommended plan that can be implemented under the MWD authority and funding, and that provides a way forward and source of scientific data to guide the eventual provision of the greater flows and additional restoration anticipated in the future under the CERP or other authority.
3. to recommend a plan consistent with the policy constraints and guidance.

4.2 Problems, Opportunities, Objectives and Constraints

4.2.1 Problems

The fundamental problem identified in previous Tamiami Trail reports remains the same. The problem is a loss of much of the deepest, longest hydroperiod habitat inside ENP as a result of changes to the hydrology of the system. The Tamiami Trail roadway acts as a barrier to flow, reducing flows to the south, shortening the period of inundation (the hydroperiod), and substantially lowering the natural variability in the hydroperiod. Hydrologic changes began when the Tamiami Trail was built in 1929, but became worse after the WCAs were enclosed (circa 1962), further cutting off natural flow paths from WCA-3A to WCA-3B, concentrating southward flows west of NESRS, south of WCA-3A,

and cutting off flows from WCA-3B to the L-29 borrow canal and into the eastern Everglades area (refer to ***Figure 1-1*** and ***Figure 1-2***).

At the time that the WCAs were enclosed, the area east of S-333 was not part of ENP and was destined for agriculture. Therefore it was desired to route water away from this area. The 1989 Everglades Protection and Expansion Act changed the purpose of lands east of the S-333 and the L-67 Extension Levee from agriculture and private ownership to the NPS, and further directed the USACE to restore the eastern Everglades' hydrology to the extent practicable. The L-29 Levee, L-29 Canal and Tamiami Trail together create barriers that obstruct the free movement of water, aquatic organisms and wildlife between ENP and WCA-3B. ***Figure 4-1*** is an isometric figure showing that the L-29 Levee, L-29 Canal and Tamiami Trail act as a barrier to water flow to ENP south of the road. The vegetation depicted in ENP is ridge and slough landscape.

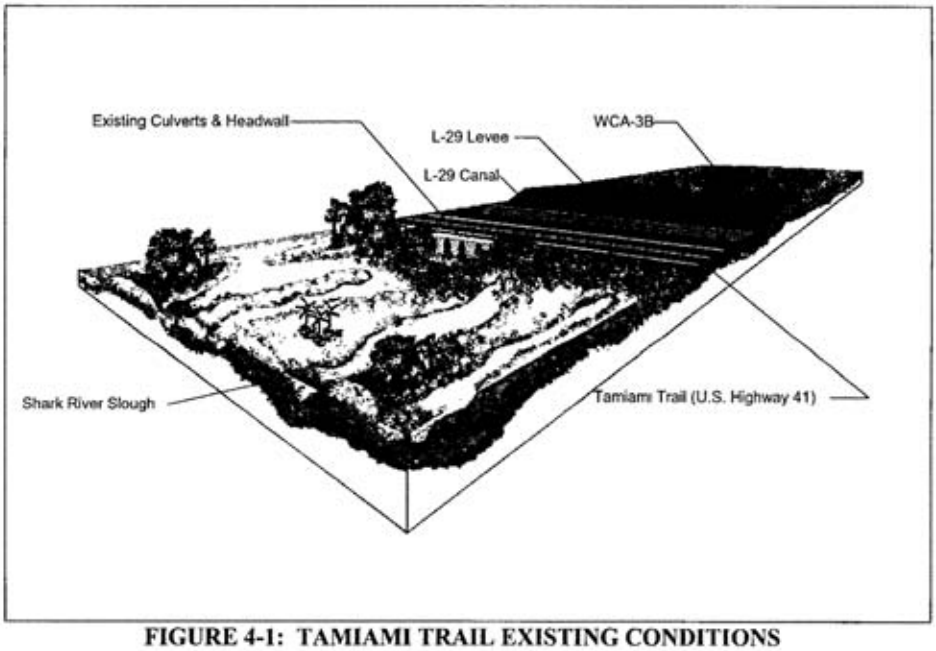

FIGURE 4-1: TAMIAMI TRAIL EXISTING CONDITIONS

Figure 4-2 and ***Figure 4-3*** allow a comparison of pre-drainage vegetation and recent, post-drainage vegetation in the area south of Tamiami Trail. These figures show the same red-outlined area where benefits and impacts were quantified. The J.H. Davis map of original, pre-drainage vegetation of the study area ***(Figure 4-2)*** shows the extent of the ridge and slough landscape. Davis recognized four dominant vegetation types in the potential impact area evaluated for improvements south of the Trail. They were, from approximately northwest to southeast: Deep sawgrass marsh (with tree islands shown as darker ovals and sloughs as lighter color), sparse sawgrass marsh, also with tree islands; medium to sparse sawgrass marsh (representing somewhat higher elevation, shorter hydroperiod and "marsh prairie", the shorter hydroperiod, shallower wetlands on the eastern slope up to more elevated lands to the east

Adverse impacts at the landscape level were caused by drainage and obstruction of natural flow pathways. A gradual loss of elevation difference between the tops of the ridges and slough bottoms created a flatter, more uniform topography, which led to conversion of plant cover to a more uniform sawgrass dominated community with fewer tree islands (***Figure 4-3***). In addition, major interruptions to ecological connectivity between the WCAs and the ENP, as well as animal mortality along the Tamiami Trail were results of the obstruction. It is certain that natural ENP systems would not recover their defining attributes under current conditions.

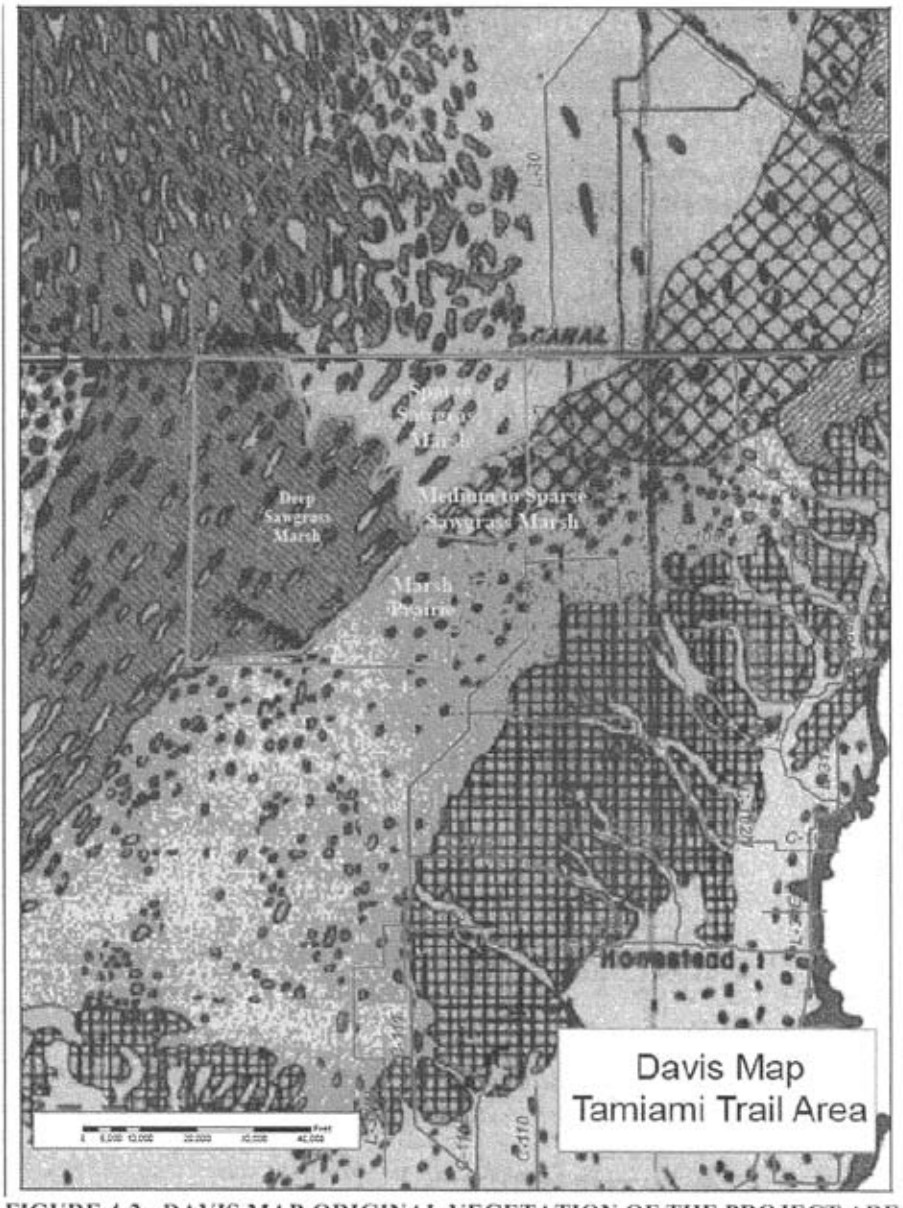

FIGURE 4-2: DAVIS MAP-ORIGINAL VEGETATION OF THE PROJECT AREA
(THE RED-OUTLINED AREA MATCHES THE RED OUTLINED AREA OF FIGURE 4-3)
(FOUR VEGETATION TYPES ARE LABELED WITHIN THE MAP)

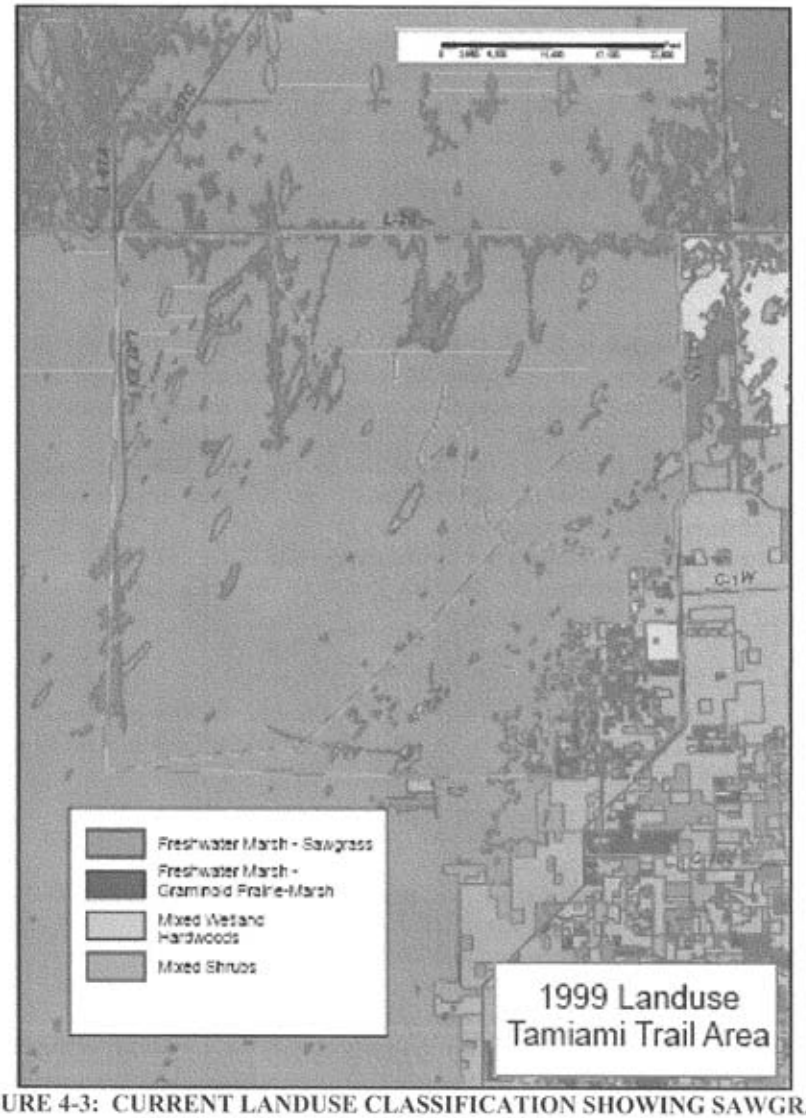

FIGURE 4-3: CURRENT LANDUSE CLASSIFICATION SHOWING SAWGRASS DOMINATION AND LIMITED TREE ISLANDS
(THE RED-OUTLINED AREA MATCHES THE RED OUTLINED AREA OF FIGURE 4-2).

4.2.2 Opportunities

The Tamiami Trail component of the MWD Project is part of an effort to restore the natural flows of water to ENP to the extent practicable. The Tamiami Trail project offers the opportunity for water conveyance to ENP with fewer obstructions to flows. This project includes opportunities to:

1. Allow delivery of more water into the eastern ENP and NESRS, restoring the balance of distribution between eastern and western deliveries, as proposed in the Mod Waters GDM, after the completion of the 8.5 SMA Project. The 8.5 SMA Project would remove a downstream flooding constraint.
2. Restore seasonal flooding and timing of deliveries that would enhance suitability for native vegetation and decrease the potential for invasive species colonization. At present most rainy season deliveries into the ENP are through the S-12 structures, located west of the L-67 Levee. Transfer of water delivery location to the east would benefit western sparrow populations while allowing late rainy season deliveries to continue for a longer season.
3. Increase the quantity of freshwater flows to NESRS. The added additional flows into the NESRS would increase the quality and quantity of ridge and slough habitat.

4.2.3 Planning Objectives

Based on a consideration of the purpose for the project, the problems occurring and the opportunities available to accomplish restoration goals, specific planning objectives for the LRR include the following:

1. Provide additional freshwater flows into NESRS, with more natural timing and distribution.
2. Restore processes that produce and maintain ridge and slough communities in ENP east of the L-67 Extension.
3. Restore slough vegetation and the deep water sloughs.
4. Reduce highway-caused mortality of animals moving across the Tamiami Trail.
5. Provide immediate peak flow capacity of 1,400 cfs with an ultimate target of 4,000 cfs.

4.2.4 Planning Constraints

The C&SF project and the construction of the Tamiami Trail have helped support the agricultural and urban development in and around the Everglades. This economic development has, however, adversely affected the ecosystem functions and values in the Everglades, including reductions in the spatial extent and functional quality of wetland habitat and decreases in native animal, fish and plant populations. While alternative plans are formulated to achieve

restoration of theses functions and values, to be considered for implementation, plans must also avoid violating planning constraints. The following constraints specifically affecting the project include:

1. Maintain at least one lane of traffic along the Tamiami Trail and avoid disruptions to traffic flows (e.g. residential and business access, hurricane evacuation).
2. Do not cause additional damages to the U.S. Highway 41 (Tamiami Trail) roadway.
3. Minimize adverse socioeconomic impacts on local businesses, residents and regional economies.
4. Avoid degradation of water quality in the ENP or any of the contributing water bodies within the basin.
5. Do not adversely affect listed threatened or endangered species.
6. Must start construction before 2010–later start would greatly delay implementation of major CERP components.

4.2.5 Future Without Project Conditions

The future without project conditions are the conditions expected in the project area if no project is implemented. It is a baseline for evaluation and comparison of alternatives. The study team assumed that future without project conditions would be similar to existing conditions. Section 3 of this report describes both the existing conditions and the future without project conditions. Please refer to Section 3 for further discussion. The future without project conditions for this planning study is synonymous with the No Action alternative under NEPA.

4.3 Alternatives

4.3.1 Plan Formulation Rationale and Overview

The plan formulation effort implemented within the LRR is designed to be a limited reformulation of alternatives identified during the 2005 RGRR and other viable alternatives that have been developed during the study process.

In order for additional water to cross Tamiami Trail, water elevation (stage) in the L-29 Canal must be raised and/or the openings in Tamiami Trail must be expanded. Alternative plans were developed as combinations of incrementally increasing stages and openings. The initial array of 26 action alternatives plus the No Action Alternative were tabulated beginning with the lowest stage increment, least action, in a progression to the highest stage increment plans, which were also those that produced the greatest benefits and most extensive structural changes.

After developing performance measure outputs and cost estimates for all 27 alternatives, the team screened alternatives based on whether the alternatives

met minimum performance levels for average annual flow volume, velocity differences, potential ecological connectivity, slough vegetation suitability, and by total project cost.

The screening resulted in a final array of four action alternatives plus the No Action Alternative. These plans were then reassessed and compared for ecological benefits, cost, cost-effectiveness, compatibility with CERP, and ability to implement. This second phase of evaluation identified the recommended plan.

4.3.2 Management Measures and Development of Alternative Plans

Management measures and subsequent alternative plans developed for this project were consistent with those that were produced during prior planning efforts. Management measures for this project focused on increasing conveyance of freshwater flows to ENP. In order to deliver additional flows, two major items need to be evaluated:

1. L-29 Canal Stage Increase: Increasing the stage in the L-29 Canal provides hydraulic head to push water from the L-29 Canal into Shark River Slough and to allow water to flow through the existing 55 culverts. Without a stage increase, there would not be the hydraulic pressure needed to push the water beneath the road. The greater the stage increase, the greater the water availability to ENP and the deeper the potential inundation and corresponding benefit to the ridge and slough community, depending upon operations and seasonal rainfall. The current stage constraint is 7.5 feet, which was introduced in part to prevent damage to the sub-base of the road. Therefore, it is a fundamental assumption that in order to raise the stage in the canal, the road would have to be mitigated to incorporate the change in water level (***Figure 4-4***). The stage in the L-29 Canal can be increased by increasing the amount of water allowed to flow through S-333 from WCA-3A into the L-29 Canal. S-333 is an existing structure that has operated for many years.

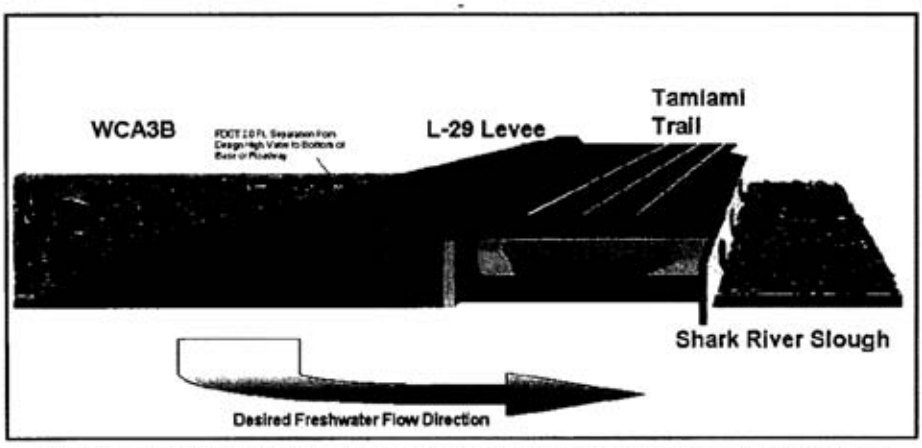

FIGURE 4-4: CROSS-SECTION OF TAMIAMI TRAIL WITH REINFORCED ROADWAY

2. Opening Size and Location: Increasing the width of the opening(s) beneath the Tamiami Trail would increase flow compared to the existing culverts. The major freshwater flow benefits of an increased opening span are derived from the reduction in head loss between the canal and marsh surfaces. By creating a larger space for water to flow between canal and slough, it creates a more equal distribution of water surfaces and functions to enhance the effectiveness of freshwater flows under any set of stage conditions. However, without a stage increase in the canal, there would not be the hydraulic pressure to push the water beneath the road; therefore, the stage must be modified to realize the benefit of the opening size. In addition to this hydrologic connectivity, larger openings provide for potential wildlife connectivity across the trail. The current long, rather narrow and dark culverts are somewhat like dark cave environments that may repel and inhibit passage of certain aquatic species, including fish, reptiles and amphibians adapted to bright surroundings. Even with the open deep water of the L-29 Canal located directly to the north of the northern culvert ends, it is expected that a more open passage illuminated indirectly, such as a bridge span, would enhance aquatic species migration. Wildlife passage is greatly limited under the current culvert openings, as the culverts are frequently wet and not suitable for migrating terrestrial species. Increasing the opening under Tamiami Trail would involve construction activity.

The team considered 0.5 foot increments of increasing stage constraints, starting from existing conditions (no increase) of 7.5 feet NGVD, then 8.0 feet, 8.5 feet, and finally 9.7 feet, which represents a return frequency of 20 years as predicted

by the Natural System Model (NSM). From a roadway design and frequency analysis using other future conditions (including CERP) a 9.7 foot stage was determined to provide reasonable protection to Tamiami Trail which allowed for unconstrained flow into ENP.

The team did not evaluate a 9.5 foot constraint as costs and benefits would be essentially the same as 9.7 feet. The team also did not evaluate a 9.0 foot constraint because at this stage the entire length of Tamiami Trail would have to be reconstructed, and the costs would approach those of a 9.7 foot stage while the benefits would be intermediate between an 8.5 foot constraint and an unconstrained stage of 9.7 foot.

Each incremental stage increase in the L-29 Canal required a consideration of impacts of the raised stage to Tamiami Trail. Increased water levels have the potential to damage the foundation of the road. The 8.0 foot stage constraint (0.5 foot stage increase) required reinforcing Tamiami Trail. The 8.5 foot stage constraint (1.0 foot stage increase) required more reinforcement of Tamiami Trail. At the 9.7 stage constraint, the road had to be reinforced sufficiently that the base of the road also had to be widened to support the increased height. ***Figure 4-5*** shows sample cross sections of the road changes that correspond to the increase in stage in the L-29 Canal.

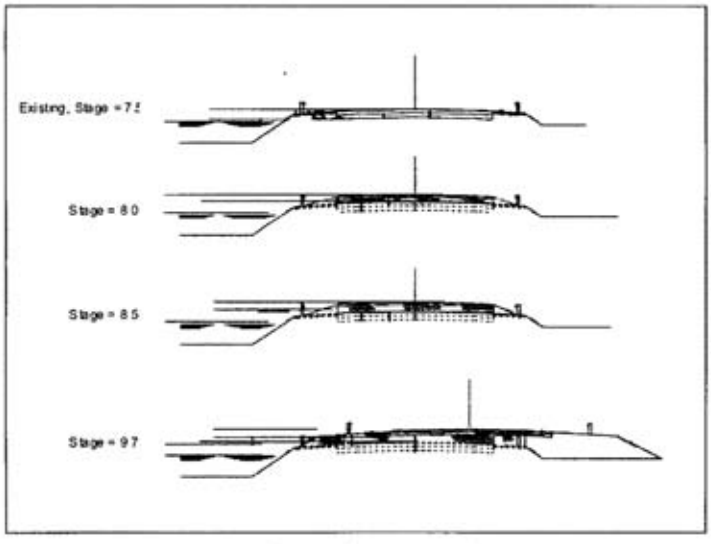

FIGURE 4-5: CANAL STAGE INCREMENTS AND ASSOCIATED MODIFICATION TO THE ROAD CROSS SECTIONS

When the team considered length of opening, many lengths between zero and 10.7 miles were initially considered. ***Figure 4-6*** shows the lengths and locations of the different openings in Tamiami Trail that were assessed in this LRR. Doubling the number of culverts and the 10.7-mile bridge were considered the minimum and maximum amounts of increase of opening size. It might have been possible to triple culvert density, but the estimated cost of doing so would have approached the cost of a one-mile bridge, while the total opening provided would have been only about 820 linear feet, while a one-mile bridge would provide 5,280 linear feet of conveyance.

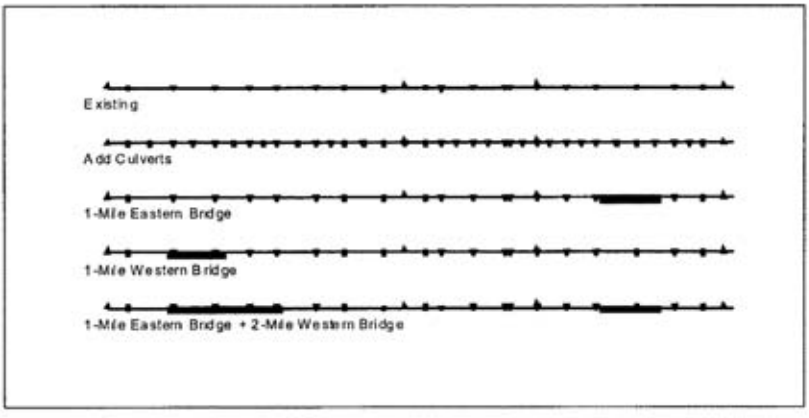

FIGURE 4-6: LOCATIONS OF THE OPENINGS ANALYZED IN THE TAMIAMI TRAIL ALTERNATIVES

(Existing, New Culverts, 1-Mile Eastern, 1-Mile Western, and 2-Mile Western Plus 1-Mile Eastern)
Note: The 10.7 mile-opening was also analyzed, but is not shown.

The two-mile west bridge plus one-mile east bridge opening (two bridges, three miles total) was selected for analysis because that alignment was part of the plan recommended in the 2005 RGRR. The 2005 RGRR Plan also included a stage of 9.7 feet. As this plan was subsequently determined to be too costly, thus initiating this reevaluation study, the LRR did not conduct detailed analysis of other plans with larger openings than the two-mile plus one-mile plan.

The team considered openings that were subsets of the plan selected in 2005. The eastern one-mile bridge would be the same location as the eastern one-mile bridge of the 2005 plan. The team considered a one-mile bridge that would be within the footprint of the two-mile bridge of the 2005 plan. The team did not pursue the two-mile western bridge from the 2005 plan because the cost

estimate developed during its design phase suggested that just this bridge was too expensive.

The team considered but did not pursue openings of less than one mile but larger than culverts. Analysis performed during the 2005 study demonstrated that there is significant head loss or difference of stage when the opening size is less than 5,000 feet (~one mile) (***Figure 4-7*** and ***Appendix D***). This differential is due to the interaction of the bridge opening size and the resistance of the downstream marsh to flow. This differential represents the additional height of water necessary to move water from the L-29 Canal into ENP. With openings smaller than one mile, much of the increase in stage of the various alternatives would be consumed by the head loss and little would be left to increase flows. Furthermore, a culverts-only alternative would not be compatible with future work under CERP. Any additional road reinforcement or bridging would require removal of most if not all of the work done under a culverts-only option.

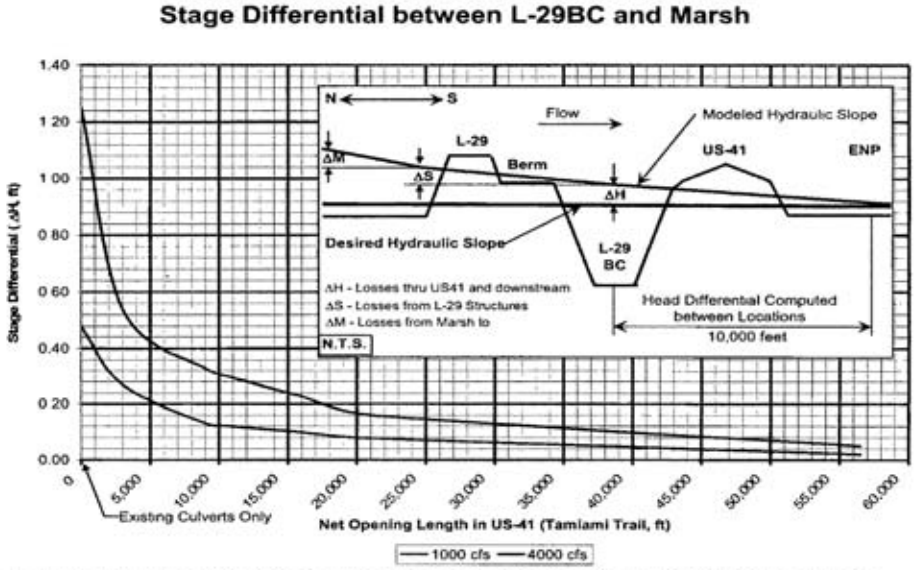

FIGURE 4-7: COMPUTED RMA-2 STAGE DIFFERENTIAL BETWEEN MARSH AND L-29 BORROW CANAL

These two variables, stage and opening, were used in various combinations to develop the incremental array of initial alternatives (***Table 4-1***) for the project. Operational changes to existing structures would be deferred to later studies and therefore were not considered in the formulation of alternative plans.

TABLE 4-1: TAMIAMI TRAIL INCREMENTAL VARIABLES AND MANAGEMENT MEASURES

CANAL STAGE (feet) and ROADWAY CROWN ELEVATION	OPENING SIZE/LOCATION
Canal Stage: 7.5 ft (Existing). Roadway Center Line El.: varies	19 culvert sets (existing), 38 culvert sets (19 existing, 19 new same location), 1 mile bridge (east), 1mile bridge (west)
Canal Stage: 8.0 ft Roadway Center Line Crown El.: 11.05 ft	19 culvert sets (existing), 38 culvert sets (19 existing, 19 new at same location), 1 mile bridge (east), 1mile bridge (west), 2 mile bridge (west) & 1 mile bridge (east)
Canal Stage: 8.5 ft Roadway Center Line Crown El.: 11.55 ft	19 culvert sets (existing), 38 culvert sets (19 existing, 19 new at same location), 1 mile bridge (east), 1mile bridge (west), 2 mile bridge (west) & 1 mile bridge (east)
Canal Stage: 9.7 ft (unconstrained flow) Roadway Center Line Crown El.: 12.75 ft	19 culvert sets (existing), 38 culvert sets (19 existing, 19 new at same location), 1 mile bridge (east), 1mile bridge (west), 2 mile bridge (west) & 1 mile bridge (east) 10.7 mile bridge (entire length of roadway)

Note: Existing roadway centerline varies from 10.1 to 12 feet.

Because of the cost to mitigate or compensate for impacts to the existing road, particularly for the higher canal stages that require that the road base be wider than the existing road, additional alternatives were evaluated that could be used to increase stage without the cost of road reinforcement. Structural alternatives include the use of levees to protect low portions. These alternatives include: (1) relocation of the road to another location, (2) construction of temporary levees to prevent road damage or (3) installation of pump stations. As previously stated, the initial array of alternatives focused on conveyance improvements based upon canal stages and opening sizes. A detailed description of each of the alternatives grouped by roadway center line crown elevations and canal stages is provided in the Engineering Appendix and ***Table 4-2*** below.

Some alternatives are identical to alternatives analyzed in previous reports. Alternative 4.2.3 of this LRR is the same as Alternative 14 of the 2005 RGRR Recommended Plan. Alternative 4.2.4, a 10.7-mile opening and bridge, is the same as Alternative 17 of the 2005 RGRR.

Alternatives do not all have the same number of conveyance openings. Three alternatives include two large openings with bridges. Thirteen alternatives include only one large opening with bridge. Four alternatives only add additional culverts. Seven alternatives do not include additional conveyance openings in Tamiami Trail.

4.3.3 Project Purpose

Recall throughout this report that the project purpose is to flow water from north to south. This project is not a transportation project. The management measures that are the components of almost all of these alternatives are: 1) increase stage in the L-29 Canal and 2) increase size of conveyance openings in Tamiami Trail, not building bridges and roads. The transportation features for the project are part of the compensation, known as the substitute facility, to FDOT for the acquisition of the needed real estate interests from FDOT. The descriptions and titles of the alternatives often refer to "bridge" and "road" because these would be the highly visible changes and these would be the high cost actions.

TABLE 4-2: REEVALUATION ALTERNATIVES

Alt	ALTERNATIVES	L-29 DESIGN STAGE (FEET)	DESCRIPTION
1	**No roadway reinforcement**		**There would be no increase in the elevation of the road except for Alternatives 1.4a and 1.4b, but this would be limited to minimal road reinforcement and only at the locations of bridges on roadway for pavement transitions. The L-29 Canal stage would remain at elevation 7.5 ft. NGVD.**
1.1	no action (19 culvert sets)	7.5	Requires no improvements to Tamiami Trail or its infrastructure.
1.2	spreader swales (30ft x 10000)	7.5	This alternative provides for spreader swales at each location of the 19 sets existing culverts. The swales have a bottom width of 30 feet wide and 1000 feet long.
1.3	add culvert sets (19 - 3x5ft dia) with swales	7.5	Add 19 sets of three 5 foot diameter culverts to the road. The new culvert sets would be installed adjacent to the location of the existing culverts. Spreader swales would be added at each location. This alternative would provide for a total opening size of 535 feet or 0.1 miles.
1.4a	add 1-mile eastern bridge	7.5	The 1 mile eastern bridge would be located between the Radio One communications tower and structure S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
1.4b	add 1-mile western bridge	7.5	The bridge would be located near the western end of the approximately 2 mile distance between Osceola Camp and Everglades Safari. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
1.5	reinforce western section of road to 13.0 feet (crown) and add 1-mile western bridge	7.5	This is a subset of Alternative 5.4. It includes a bridge located near the western end of the approximately 2 mile distance between Osceola Camp and Everglades Safari. The remaining road between Osceola Camp and Everglades Safari would be elevated to minimum 13.0 NGVD at the crown. The remainder of Tamiami Trail would not be modified.
2	**Roadway improvements - Crown 11.05ft**		**These alternatives involve reinforcing the low areas of the road to a minimal roadway crown elevation of 11.05 ft. NGVD to allow stage increase in L-29 Canal stage to reach elevation 8.0 ft. NGVD. Road reinforcing would be allowed at bridge location for pavement transitions. Note: This would meet the current FDOT criteria established that the cross section crown elevation of the road be at least 3.05 feet above the average water elevation.**
2.1	reinforce low points along road	8.0	This alternative does not include any additional openings in the road.
2.2.1	reinforce low points, add culverts with swales	8.0	Add 19 sets of three 5 foot diameter culverts to the road. The new culvert sets would be installed adjacent to the location of the existing culverts. Spreader swales would be added at each location. This alternative would provide for a total opening size of 535 feet or 0.1 miles.
2.2.2a	reinforce road, add 1-mile eastern bridge	8.0	The 1 mile eastern bridge would be located between the Radio One communications tower and structure S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.5 ft. NGVD.
2.2.2b	reinforce road, add 1-mile western bridge	8.0	The bridge would be located near the western end of the approximately 2 mile distance between Osceola Camp and Everglades Safari. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
2.2.3	reinforce low points, add 2-mile + 1-mile bridges	8.0	The 2 mile western bridge would start approximately 0.5 miles east of the Osceola Camp and end near Everglades Safari. The 1 mile eastern bridge would be located between the Radio One communications tower and S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. NGVD. The bridge low cord would have to be 6 feet above this elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
3	**Roadway improvements - Crown 11.55ft**		**These alternatives involve reinforcing the low areas of the road to a minimal roadway crown elevation of 11.55 ft. NGVD to allow stage increase in L-29 Canal stage to reach elevation 8.5 ft. NGVD. Road reinforcement would be allowed at bridge location for pavement transitions. Note: This would meet the current FDOT criteria established that the cross section crown elevation of the road be at least 3.05 feet above the average water elevation.**
3.1	reinforce road	8.5	This alternative does not include any additional openings in the road.
3.2.1	reinforce road, add culverts with swales	8.5	Add 19 sets of three 5 foot diameter culverts to the road. The new culvert sets would be installed adjacent to the location of the existing culverts. Spreader swales would be added at each location. This alternative would provide for a total opening size of 535 feet or 0.1 miles.
3.2.2a	reinforce road, add 1-mile eastern bridge	8.5	The 1 mile eastern bridge would be located between the Radio One communications tower and structure S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
3.2.2b	reinforce road, add 1-mile western bridge	8.5	The bridge would be located near the western end of the approximately 2 mile distance between Osceola Camp and Everglades Safari. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
3.2.3	reinforce road, add 2-mile + 1-mile bridges	8.5	The 2 mile western bridge would start approximately 0.5 miles east of the Osceola Camp and end near Everglades Safari. The 1 mile eastern bridge would be located between the Radio One communications tower and S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. NGVD. The bridge low cord would have to be 6 feet above this elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.

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4	**Roadway improvements - Crown 12.75ft**		**These alternatives involve reinforcing the low areas of the road to a minimal roadway crown elevation of 12.75 ft, NGVD to allow stage increase in L-29 Canal stage to reach elevation 9.7 ft. NGVD. Road reinforcing would be allowed at bridge location for pavement transitions. Note: This would meet the current FDOT criteria established that the cross section crown elevation of the road be at least 3.05 feet above the average water elevation. Raising the L-29 elevation to 9.7 feet would meet the required elevation variations of the Natural System Model (NSM) as proposed in the CSOP or CERP.**
4.1	reinforce road	9.70	This alternative does not include any additional openings in the road.
4.2.1	reinforce road, add culverts with swales	9.70	Add 19 sets of three 5 foot diameter culverts to the road. The new culvert sets would be installed adjacent to the location of the existing culverts. Spreader swales would be added at each location. This alternative would provide for a total opening size of 535 feet or 0.1 miles.
4.2.2a	reinforce road, add 1-mile eastern bridge (RGRR)	9.70	The 1 mile eastern bridge would be located between the Radio One communications tower and structure S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
4.2.2b	reinforce road, add 1-mile western bridge (RGRR)	9.70	The bridge would be located near the western end of the approximately 2 mile distance between Osceola Camp and Everglades Safari. The bridge control water elevation (CWE) for this alternative is 8.75 ft. The bridge low cord would have to be 6 feet above the CWE elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
4.2.3	reinforce road, add 2-mile + 1-mile bridges (RGRR)	9.70	The 2 mile western bridge would start approximately 0.5 miles east of the Osceola Camp and end near Everglades Safari. The 1 mile eastern bridge would be located between the Radio One communications tower and S-334. The bridge control water elevation (CWE) for this alternative is 8.75 ft. NGVD. The bridge low cord would have to be 6 feet above this elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD
4.2.4	10.7-mile bridge (RGRR)	9.70	The bridge would extend the entire length of the project area, between S-333 at the western end to S-334 at the eastern end. The bridge control water elevation (CWE) for this alternative is 8.75 ft. NGVD. The bridge low cord would have to be 6 feet above this elevation for inspection purposes. The low cord elevation would be 14.75 ft. NGVD.
5	**Structural alternatives and/or road realignment**		**Many of the components of the alternatives of Category 5 have not been recently evaluated, such as placing bridge(s) on the L-29 levee rather than along the existing roadway and constructing new levees. These alternatives have received limited evaluation of alternative alignments and Rough Order of Magnitude estimates.**
5.1	northern alignenent of Alt 14	9.70	This alternative locates the 2 mile/ 1mile bridge alternative to the north of the current location of the existing Tamiami Trail placing the roadway and bridges entirely onto the L-29 levee. The L-29 levee would be removed and three bridges would be constructed as part of the access curves to transition too and from the levee back onto Tamiami Trail. The top elevation of the road would be 12.75. The bottom cord elevation of the bridges would be 14.75. Water quality treatment of stormwater runoff is required
5.2	northern alignenent with 1-mile bridge	9.70	This alternative is similar to alternative 5.1 except there is less bridging. A one mile bridge would be constructed on the west side of Tamiami Trail to the north of the current location of the existing Tamiami Trail, placing the roadway and bridges entirely onto the L-29 levee. The top elevation of the road would be 12.75. The bottom cord elevation of the bridges would be 14.75. Water quality treatment of stormwater runoff is required
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	This alternative would concentrate all increased water stages and all road work between S-334 and the Blue Shanty Canal / Everglades Safari. A 1 mile bridge would be constructed between Osceola Camp and Everglades Safari, aligned along the existing L-29 levee. There would need to be additional bridging to connect the new bridge to the existing road alignment. The L-29 levee would have to be degraded and compacted to make it a suitable sub-grade for the roadway. The road elevation itself would have to be a minimum of 13 feet NGVD at the crown. This alternative includes modifications to L-67A, L-67C, and L-29 levees and L-67A canal to promote water flow from WCA 3A into a small portion of WCA 3B and then under the reinforced portion of Tamiami Trail and into NESS. The proposed structural changes would include water conveyance features added in the L-67A levee, degrading a portion of the L-67C and L-29 levees, and plugging portions of the L-67A canal to promote sheetflow from WCA 3A, through WCA 3B and into NESS. The proposed modifications also include plugs in the L67A canal, with different degrees of backfilling, to investigate the changes in canal flow patterns, as well as, any adverse impacts to recreational boating/fishing. In addition, the plan includes the construction of a new boat ramp to maximize recreational access while the canal plug studies are being completed. Construction of temporary levees along the current north-south alignment of the Blue Shanty Canal in southwestern WCA 3B and northern NESS in Everglades National Park, and a new gated water control structure in the L-29 canal at the temporary levee alignment The Levee to the South and the Levee to the North would be constructed to elevation 13 NGVD. The levee would have 4 to 1 side slopes for maintenance until it is removed at a later date. The road would have to be reinforced to cross the levee which would put the crown at 15 NGVD over the levee.
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	This alternative would concentrate all increased water stages and all road work between S-334 and the Blue Shanty Canal / Everglades Safari. A 1 mile bridge would be constructed between Osceola Camp and Everglades Safari, aligned along the existing road. The remainder of the road within this section would be reinforced to a minimum elevation of 13 feet NGVD at the crown. The road cross section would be similar to Alternative 4.2.3. The section of the L-29 levee opposite this new bridge would be removed. This alternative would include moving the L-67 extension eastward to the Blue Shanty canal edge. The Levee to the South and the Levee to the North would be constructed to elevation 13 NGVD. The road would have to be reinforced to cross the new levee which would put the crown at 15 NGVD over the levee.
5.5	pump stations along L-29	-	This alternative would use a pump to move water from the L-29 Canal into Northeast Shark Slough (NESRS) utilizing existing openings under Tamiami Trail.

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4.4 Initial Evaluation and Screening

All 27 alternatives were evaluated for hydrologic and ecosystem restoration benefits, project cost, real estate impacts, implementation schedule, and compatibility with the CERP. Based on this analysis, all action alternatives show an improvement in hydrologic performance compared to the No Action Alternative. As the stage and opening size increases, the performance also increases. A subset of the results of these evaluations is displayed summarized in an evaluation matrix (***Table 4-3***) to identify the top performing plans.

The next subsections of this report provide a summary of how the evaluation parameters were applied to the 27 alternatives and discuss constraints and minimum performance relative to the parameters that were considered. A more in-depth explanation of all of the evaluations can be found in the Hydrology and Hydraulics (D) and Benefits (E) Appendices. The comparison analysis and screening produced a final array of four alternatives, which were then further evaluated.

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TABLE 4-3: TAMIAMI TRAIL PLAN FORMULATION MATRIX

	ALTERNATIVE		BENEFIT SUMMARY								COST INFORMATION				
Alt.	ALTERNATIVES (note 1)	L-29 DESIGN STAGE (FEET)	BENEFIT AREA (ACRES)	1 in 10 YEAR PEAK FLOW (cfs)	AVERAGE ANNUAL VOLUME (acre-ft/year)	% VOLUME INCREASE	% CONNECTIVITY	VELOCITY DIFFERENCES, MARSH AND OPENING	NUMBER OF DAYS W/ DEPTHS > 2 FEET	AVG ANNUAL LIFT (HU)	AVG ANNUAL COST PER HU ($/HU)	TOTAL TTM COST ($M)			
1	No roadway raising (note 2)														
1.1	no action (19 culvert sets)	7.5	0	1250	177	0.0%	0.0%	1.6%	2.8%	0	N/A	0	N/A	-	-
1.2	spreader swales (30ft x 1000ft - bottom dimensions)	7.5	63195	1371	185	4.6%	0.0%	2.5%	2.4%	187	5155	17	EA	Feb-10	Nov-10
1.3	add culvert sets (19 - 3x6ft dia) with swales (note 3)	7.5	63195	1371	188	6.4%	0.0%	3.3%	2.6%	238	14332	73	EA	Feb-10	Aug-11
1.4a	add 1-mile eastern bridge	7.5	63195	1410	203	15.2%	9.0%	26.0%	3.3%	3616	2779	219	EA	Aug-09	Aug-11
1.4b	add 1-mile western bridge	7.5	63195	1410	203	15.2%	9.0%	26.0%	3.3%	4209	2587	266	EA	Jun-10	Nov-12
1.5	reinforce western section of road to 12.75ft (crown) and add 1-mile western bridge	7.5	63195	1410	203	15.2%	9.0%	26.0%	3.3%	4209	>2587<	>266<	EA	Aug-10	Feb-13
2	Roadway improvements - Crown 11.05ft (4)														
2.1	reinforce road (low points only)	8.0	63195	1434	239	35.8%	0.0%	1.8%	11.0%	2594		144	EA	Feb-10	Feb-12
2.2.1	reinforce low points, add culvert sets with swales	8.0	63195	1508	251	42.2%	0.0%	1.8%	23.3%	3715	1978	181	EA	Feb-10	Feb-13
2.2.2a	reinforce road, add 1-mile eastern bridge	8.0	63195	1577	274	54.9%	9.0%	26.0%	46.7%	6559	1409	295	EA	Dec-09	Dec-12
2.2.2b	reinforce road, add 1-mile western bridge	8.0	63195	1577	274	54.9%	9.0%	26.0%	46.7%	6134	1398	304	EA	Aug-10	Dec-13
2.2.3	reinforce low points, add 2-mile + 1-mile bridges	8.0	63195	1577	283	65.7%	28.0%	65.0%	63.1%	10661	1111	539	EA	Dec-09	Jun-14
3	Roadway improvements - Crown 11.55ft (note 4)														
3.1	reinforce road	8.5	63195	1577	303	71.7%	0.0%	1.8%	76.6%	8621		169	EA	Feb-10	Feb-12
3.2.1	reinforce road, add culvert sets with swales	8.5	63195	1577	316	79.1%	0.0%	1.8%	82.6%	9412	9330	239	EA	Feb-10	Feb-13
3.2.2a	reinforce road, add 1-mile eastern bridge	8.5	63195	1648	340	92.4%	9.0%	26.0%	84.3%	10109	985	319	EA	Dec-09	Dec-12
3.2.2b	reinforce road, add 1-mile western bridge	8.5	63195	1648	340	92.4%	9.0%	26.0%	84.3%	13705	1007	381	EA	Aug-10	Dec-13
3.2.3	reinforce road, add 2-mile + 1-mile bridges	8.5	63195	1669	355	101.1%	28.0%	65.0%	84.3%	15972	955	561	EA	Dec-09	Jun-14
4	Roadway improvements - Crown 12.75ft (note 4)														
4.1	reinforce road	9.70	63195	2024	409	121.7%	0.0%	1.8%	84.4%	17543		260	EA	Apr-10	Oct-12
4.2.1	reinforce road, add culvert sets with swales	9.70	63195	2104	417	136.1%	0.0%	1.8%	84.4%	18874	684	346	EA	Apr-10	Oct-13
4.2.2a	reinforce road, add 1-mile eastern bridge (NB/SBR)	9.70	63195	2181	430	143.8%	9.0%	26.0%	84.4%	22580	685	429	EA	Apr-10	Oct-13
4.2.2b	reinforce road, add 1-mile western bridge (NB/SBR)	9.70	63195	2181	430	143.8%	9.0%	26.0%	84.4%	23184	709	455	EA	Aug-10	May-14
4.2.3	reinforce road, add 2-mile + 1-mile bridges (NB/SBR)	9.70	63195	2331	436	146.8%	28.0%	65.0%	84.4%	28361	708	557	Complete	Jun-09	Jun-14
4.2.4	10.7-mile bridge (RDR/R)	9.70	63195	4036	472	167.1%	100.0%	100.0%	100.0%	53010		1648	EA	Feb-12	Feb-20
5	Structural alternatives and/or road realignment (note 4)														
5.1	northern alignment of Alt 14	9.70	63195	2331	436	146.8%	28.0%	65.0%	84.4%	28361	969	1328	EIS/GRR	Apr-12	Apr-20
5.2	northern alignment with 1-mile bridge	9.70	63195	2181	430	143.8%	9.0%	26.0%	84.4%	23228	1163	1187	EIS/GRR	Apr-12	Apr-19
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	17379	4036 (west) 956 (east)	472	167.1%	9.0%	13.0%	37.1%	4871	4463	751	EIS/GRR	Apr-12	Oct-18
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	17379	4037 (west) 806 (east)	472	167.1%	9.0%	13.0%	37.1%	4871	4157	626	EIS/GRR	Aug-12	Feb-16
5.5	pump stations along L-29												EIS/GRR	Aug-13	Aug-21

Notes

2 Existing road has 19 culvert sets resulting in an average culvert set spacing of ~3000 feet

3 Reduces the average culvert set spacing to approximately 1500 feet

4 All road improvements require 3.05 feet between road crest and L-29 design elevation.

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4.4.1 Benefits

The goal of the benefits analysis was to identify the hydrologic and ecological conditions that would occur given the alternatives outlined in this LRR document. These conditions were evaluated and compared to identify potential quantitative benefits for each alternative. The hydrologic analysis is presented first, followed by the ecological performance measures.

4.4.1.1 H&H Spreadsheet Analysis

The spreadsheet model was developed in order to analyze the ecological effects of NESRS that different stage constraints and bridge sizes on Tamiami Trail would produce. This spreadsheet analysis/model looked at the area within NESRS in a simplified manner and the following general assumptions were made for all alternatives (details of the model can be found in Appendix D):

a) The area between Tamiami Trail (north side), the NESRS2 monitoring gage (south side), L-67Ext (west side), and L-31N (east side) could be defined as a simple storage area. As water was added/subtracted to the area the stage would increase/decrease based on a mass balance approach.

b) To compute the inflow volumes historical deliveries were used to prevent having to develop an operational model. This general assumption looked at the total deliveries into ENP (S-12A + S-12B + S-12C + S-12D + S-333) and provided 55 percent of this volume into NESRS as long as the L-29BC was at a lower stage than the constraint for Tamiami Trail. If the L-29 stage was above the constraint flows were assumed to be zero. To smooth out the results for comparison purposes a seven-day rolling average was used to compute the discharges into NESRS. For example, Alternative 1.2, during the period of April 1-14, 1995 computed flows (cfs) based on 55 percent of the volume were: 0, 1356, 0, 0, 1253, 0, 1435, 0, 0, 0, 1252, 0, 1172, and 0. In operations of the real system however a weekly flow volume is targeted to prevent the open/closing of the structure and to maintain a more steady flow. The computed seven-day running average produced results of: 420, 614, 398, 398, 577, 373, 578, 578, 384, 384, 563, 384, 551, and 346.

c) If the flow volume was not delivered to NESRS then it was assumed it was discharged via the S-12s to NWSRS. This assumption produced no net change to the WCA-3A stage compared to historical conditions.

d) Bridge locations did not influence the ability of the spreadsheet model to deliver water. The spreadsheet model only considered topography in a very simplistic manner in regards of allowing flow out of the model and in terms of computing volumetric change. In reality the location of the bridge in conjunction

with major sloughs would increase the volume of water delivered into NESRS. However this determination was beyond the scope of the spreadsheet model. It should be noted a separate analysis was used for Performance Measure 2.C (Flows into NESRS provided via Bridge), refer to Appendix E for a description of the analysis.

e) A linear equation based on flow versus stage difference between L-29BC and NESRS2 was used to compute the stage in L-29BC. The basis for this linear equation was results from the RMA-2 modeling from the 2005 RGRR for Tamiami Trail modifications.

The spreadsheet model does a very good job of interpreting the general trends that increased inflows would produce within NESRS as measured at the NESRS2 monitoring gage. However, stage predictions should not be considered absolutes from this analysis. This analysis is a simplification of a very complicated system developed for a comparison purposes between all of the different alternatives. The spreadsheet analysis was not developed to be a predictive model but rather a comparative analysis. It was developed to be an analysis that incrementally looked at stage increases in the L-29BC and the ability to deliver additional flow volume into NESRS due to that stage increase. The model did predict stage increases in relation to increased flows but should not be considered a predictive model.

4.4.1.2 Performance Measures

Ten performance measures were developed and placed into four groups for convenience of evaluation. Each performance measure had a specific target. The ten performance measures were developed to address the important characteristics of hydrology, ridge and slough processes, vegetation, wildlife and connectivity within ENP. Each of the ten performance measures was assessed for all 27 alternatives. The ten performance measures are as follows:

1A. Average annual flow volumes
1B. One-in-ten year maximum discharge

2A. Number of sloughs crossed by bridges
2B. Difference between average velocity in marsh and average velocity at road
2C. Flows into NESRS provided via bridge

3A. Number of days water depth greater than two feet during wet season peak (indicator of deep marsh habitat conditions)
3B. Number of days water depth greater than three feet during wet season peak (indicator of deep marsh habitat conditions)
3C. Average water depth during wet season peak

4A. Reduction in wildlife mortality
4B. Potential connectivity of WCA-3-B Marsh with NESRS as percent of total project length

Appendix E, Environmental Benefits Analysis, provides an explanation of the rationale for each performance measure, its specific target, and a brief explanation of its meaning.

Most alternatives were expected to provide measurable impacts primarily over a rectangular area of 63,195 acres, located south of Tamiami Trail, bounded on the west side by the L-67 Extension (near S-333) and the east side by the L-31N Levee and the 8.5 SMA. The southern limit was defined as an east-west line connecting the southern end of L-67 Extension to 8.5 SMA. The area is depicted with the red outline in ***Figure 4-2*** and ***Figure 4-3***.

The benefits area for the "Blue Shanty" alternatives, 5.3 and 5.4, were smaller, because all flow would have been contained in the section of NESRS between the L-67 Extension and a levee that would be constructed along the Blue Shanty Canal. The benefits area for these two alternatives was 17,379 acres. This benefit area for the two alternatives may actually extend further south. In theory the area south would experience similar benefits from the south point of the L-67 Extension Levee across the ENP to the 8.5 SMA. The benefited acreage for each alternative is shown in ***Table 4-3***.

4.4.1.3 Links between Hydrology and Ecological Performance

As cited earlier in the report, this study team was tasked with immediately improving water deliveries and adopting an adaptive management approach toward restoring flows to ENP. The ultimate purpose of the water deliveries is to result in a positive ecological response. Science cannot accurately predict how a dynamic ecosystem will react to a change in hydrology. Therefore, the best method available involves "proxies" and "indicators" which the team believes will produce positive results for the ecosystem. The performance measures used in this LRR, characterized in Appendix E as "hydro-ecological performance measures," use past studies as well as the best professional judgment of a multi-agency team to predict when positive changes will occur. It is because of this uncertainty that an adaptive management approach is crucial to restoring the Everglades.

Some of the performance measures used in this analysis do not imply a direct relationship between hydrology and ecology. For example, the PMs "average annual flow volumes" and "difference between average velocity in marsh and average velocity at road" are hydrologic measures which the biologists and ecologists on the team felt would represent positive outcomes for the total ecosystem. The team chose hydrologic targets as surrogates for marsh and

slough habitats, as this is widely accepted and there are numerous published reports relating the two.

The mechanisms that control the formation and maintenance of ridges and sloughs are still poorly understood (Science Coordination Team 2003, McVoy and Tarboton 2004). Nevertheless, several models of ridge and slough topography have been proposed (McVoy and Tarboton 2004, Ross et al. 2006, Givnish et al. 2007). McVoy and Tarboton (2004) stress that ridge and slough topography is a function of water depth, water depth variation (seasonal fluctuation), flow velocity, and flow direction. Consequently, the team felt that these factors are reasonable proxies for alternative analysis.

There are, however, three performance measures that are directly linked to a species. The subset of performance measures entitled "Restore Vegetative Communities" includes measures of number of days at certain water depths during the rainy season, as well as average water depths. These measures are based on optimum conditions for the white water lily (Nymphaea odorata), a species characteristic of open sloughs in the Park. These conditions are based on research from Dr. Jenny Richards' mesocosm studies at Florida International University (Bi-annual Report for CA H5297-05-0013 Hydrologic Requirements of Aquatic Slough Vegetation, January 22, 2008).

NESRS historically was part of the ridge and slough ("corrugated") Everglades landscape. Sloughs are conspicuous and major landscape features in the southern Everglades and are the main pathway of water flow through the natural Everglades. The slough community is present in areas with the longest hydroperiods and the deepest water that rarely dries out. It also has a distinct plant community which is a mixture of floating, submerged species and sometimes emergent species.

A dominant and characteristic species of pre-drainage native sloughs is the white water lily. Over the past 40 years of hydrologic isolation from the ecosystem to the north, NESRS has largely converted to a drier community of mixed sawgrass with very little white water lily. White water lily is more abundant in deeper slough habitats and areas less subject to drydown events. Paleoecological studies indicate that pre-drainage ENP slough communities were once dominated by white water lily and banana lily prior to the widespread artificial drainage of slough communities. Many scientific studies and field observations indicate areas with conditions with deep water and few drydown events are where white water lily does better than other plants and is more abundant than other species. The vegetation suitability performance measures measure the hydrologic conditions that favor slough vegetation, particularly the white water lily, and rank favorably those alternatives that are best able to

mimic those conditions. The other performance measures represent hydrologic targets used as surrogates for marsh and slough habitat improvement.

4.4.2 Cost Analysis

Data for the initial design, construction/implementation and land acquisition costs for all 27 alternatives have been developed through engineering design, cost estimation and real estate appraisal efforts. Total construction cost used in the cost analysis of each alternative includes labor and materials costs for completing the structure(s). Total project cost is the sum of total construction cost (TCC), PED cost, S&A cost, real estate cost and escalation.

The 30 percent design cost estimates for the selected plan from the 2005 RGRR served as the starting point for the LRR cost estimates. From this, a parametric cost model was constructed to allow comparable estimates to be developed for all the alternatives.

Cost Risk Analysis. In September 2007, the USACE mandated the use of risk and uncertainty analysis for major projects. Cost risk analysis is the process of identifying and measuring the cost and schedule impact of project uncertainties on the estimated total project cost. When considerable uncertainties are identified, cost risk analysis can establish the areas of high cost uncertainty and the probability that the estimated project cost would or would not be exceeded. The 90 percent confidence level was selected as the appropriate level for the TCC. This means that there is a 90 percent chance that the final cost for this project (at fiscal year-08 pricing levels) would be equal to **or less** than this cost. This is an extremely important point and is different than how USACE project costs have traditionally reported.

Escalation. Generally, civil works projects are escalated using annual indices in accordance with the Civil Works Construction Cost Index System. The indices are indicators of inflation. The indices are used only for near-term escalation for two years or less. Beyond that timeframe it is necessary to evaluate market conditions. The 90 percent TCC estimates were escalated to the mid-point of construction, and then adjusted based on recent inflation trends in the construction industry and the anticipated construction schedule for each alternative. Since 2003, there has been unprecedented inflation in the construction industry due to rising oil prices, huge demand from overseas economies, natural disasters, and the continuing globalization of the construction industry.

Costs of alternatives are estimated at October 2007 price levels (refer to ***Table*** 4-3 for a summary of costs and Appendix C for in-depth discussion of costs). The costs in ***Table 4-3*** include market conditions escalation to the midpoint of construction.

From the cost analysis of the alternatives, the following points are emphasized:

- Costs increase at two points, at every stage increase and as opening size increases.
- Cost is associated with time of construction, both in terms of planning/design and actual construction timelines. Escalation rates observed in Florida are higher than in many other sections of the country. Plans that have shorter implementation timelines have less escalation—they are relatively less expensive.
- Costs are highly dependent on construction materials, especially asphalt and concrete. In general, road work is less expensive than bridge construction; therefore plans that limit bridge lengths tend to be less expensive.
- First costs include the risks and construction techniques necessary for constructing a project within ENP, which is a sensitive environment.
- Risk and uncertainty have been integrated into the cost analysis.

4.4.3 Screening

The screening of the LRR alternatives was based on both performance and cost criteria. These factors were used to remain in compliance with the language of the 2007 WRDA Managers' Report (Section 1) as well as the broad guidance provided by senior policy personnel within the USACE and the DOI. Initially, the guidance provided to the team was based on complying with two over-arching principles, one from the USACE and the other from DOI. USACE guidance was to identify an alternative at a cost less than the 2005 RGRR Selected Plan and not exceeding an initial upper limit cost of $300 million. DOI guidance was less specific and included the need to identify an alternative having an appropriate level of project performance while being cost effective. No upper cost threshold was provided to DOI members of the LRR team. As will be seen later in this section, this general guidance was sufficient to screen the alternatives with minor modifications in response to the expressed desires of the cooperating agencies and/or the local sponsor participating in the development of this report.

Using the broad guidance described above, the LRR team screened the LRR alternatives using a subset of the performance measures described in the Benefits Analysis Section (Section 4.4.1) as well as the estimates of the total project costs provided in ***Table 4-3***. The performance measures selected for use in the screening were those measures which provided the greatest ability to segregate the alternatives based on relative ecological and hydrological performance as well as being representative of measures requiring some minimum level of performance for an alternative to be considered acceptable. The screening strategy employed was to apply the selected ecological and hydrological performance measures sequentially and then subject the remaining

alternatives to a final screening based on the project costs. The ecological and hydrological performance measures used for this process are found in ***Table 4-4*** and are listed in their order of application in the screening process, including the threshold level of performance used for the acceptance/rejection of a given alternative:

TABLE 4-4: ECOLOGICAL AND HYDROLOGICAL PERFORMANCE MEASURES USED FOR SCREENING

Screening Priority	Measure	Hydrological/Ecological Measure Description	Screening Threshold (% above No Action)
1	1A	Average annual flow volumes	<= 20%
2	2B	Difference between average velocity in the marsh and average velocity at road	<= 20%
3	4B[1]	Potential connectivity of WCA-3B marsh with NESRS as percent of total project length	<=5%
4	3A	Hydrologic Suitability for Slough Vegetation	<=20%

[1]Note: this performance measure was originally PM 1B

These performance measures, used in the order stated in ***Table 4-4***, provide a needed combination of hydrologic performance: (1 and 2), marsh connectivity (3), and downstream ecological response (4) for the team to be confident that the screening process would provide an acceptable suite of alternatives following their sequential application.

Results of the iterative screening are described in detail below:

Screening of Alternatives Based on Average Annual Flow Volume Performance (Screening Priority 1). The initial screening of the LRR alternatives was conducted using the average annual flow volume performance measure. The relative performance of each of the alternatives is provided in ***Figure 4-8,*** and includes the threshold of a minimum level of performance of a 20 percent increase in discharge above the No Action Alternative. Alternatives which met this minimum level of performance were all alternatives in Categories 2, 3, 4, and 5. All alternatives in Category 1, which maintained the L-29 canal stage at 7.5 feet, were eliminated from further consideration. This includes alternatives with additional culverts and bridging; therefore, the ability to improve flows into NESRS appears less dependant on openings through the roadway and more dependant on the ability to increase the stage in the L-29 Canal. All alternatives having an L-29 stage greater than or equal to 8.0 feet were retained for subsequent screening.

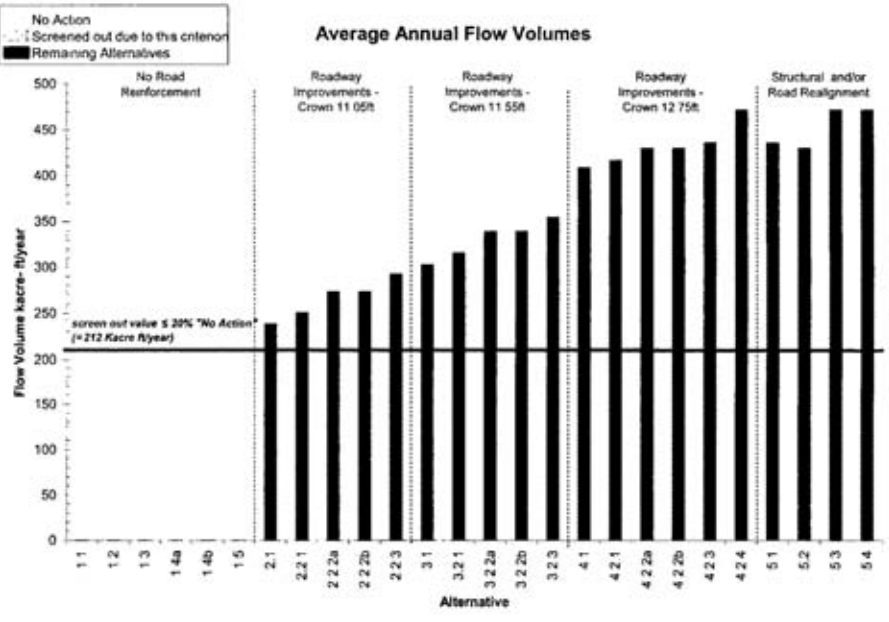

FIGURE 4-8: SCREENING RESULTS FOR AVERAGE VOLUME PERFORMANCE

Screening of Alternatives Based on Difference between Average Velocity in the Downstream Marsh and Average Velocity at Road (Screening Priority 2). Flow velocities different from the natural marsh conditions can result in modifications to the landscape, including unnatural nutrient loading, vegetation cover and soil characteristics. Alternatives were next assessed for their ability to provide slower velocities near the road (approaching marsh water velocities). Current average marsh water velocities are ~0.024 ft/sec compared to current average velocities at the road of ~1.33 ft/sec. To prevent potential erosion immediately downstream of road openings and decrease the deposition of sediment fans inside the Park, velocities of ~1.0 ft/sec or less are desired. The desired velocity approximates 20 percent increase or level of performance compared to the No Action Alternative. Application of this screening measure resulted in the relative performances depicted in ***Figure 4-9*** and resulted in the elimination of an additional six alternatives (2.1, 2.2.1, 3.1, 3.2.1, 4.1, and 4.2.1). Essentially, this screening measure eliminated all alternatives that did not have at least one bridge span within the road alignment. All remaining alternatives that had bridge spans were retained (Alternatives 2.2.2a, 2.2.2b, 2.2.3, 3.2.2a, 3.2.2b, 3.2.3, 4.2.2a, 4.2.2b, 4.2.3, 5.1, 5.2, 5.3, and 5.4) for subsequent screening. It should also be noted that alternatives with multiple bridge spans and larger span lengths performed better than alternatives with single bridges of relatively shorter bridge span length.

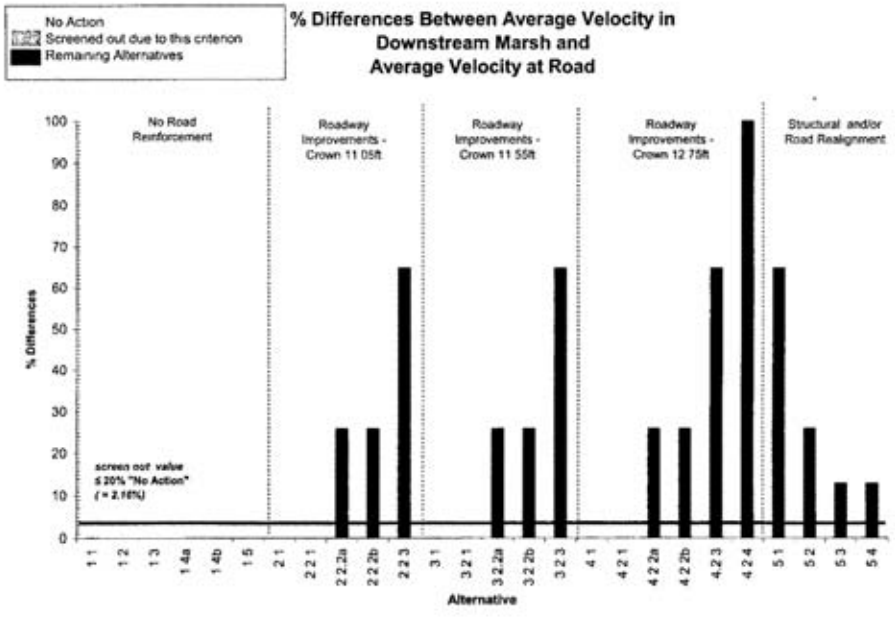

FIGURE 4-9: SCREENING FOR AVERAGE VELOCITY PERFORMANCE

Screening of Alternatives Based on Connectivity of WCA-3B Marsh and NESRS (Screening Priority 3). Connectivity performance is a measure of the degree of unimpeded natural overland flow through the marsh. The remaining alternatives were next screened for connectivity based on a minimum performance of five percent more than the No Action Alternative for marsh connectivity. As stated in earlier sections of this report, connectivity is considered as one of the primary objectives of marsh ecosystem restoration. Application of this screening measure ***(Figure 4-10)*** did not result in the elimination of any additional alternatives that remained after step 2 but did affirm the need to eliminate the alternatives that failed to meet the minimum level of performance of the previous screening criteria. For example, Alternatives 1.2, 1.3, 2.1, 2.2.1, 3.1, 3.2.1, 4.1, and 4.2.1 exhibited a level of connectivity performance below the five percent threshold for this screening criterion. Therefore, Alternatives 2.2.2a, 2.2.2b, 2.2.3, 3.2.2a, 3.2.2b, 3.2.3, 4.2.2a, 4.2.2b, 4.2.3, 5.1, 5.2, 5.3, and 5.4 were retained for further screening.

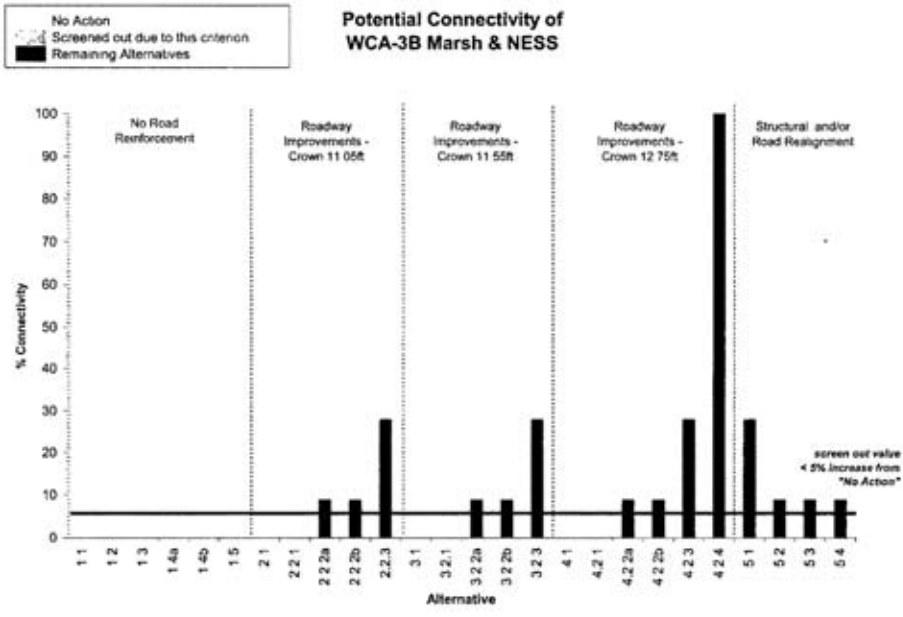

FIGURE 4-10: SCREENING FOR MARSH CONNECTIVITY PERFORMANCE

Screening of Alternatives Based on Hydrologic Suitability for Slough Vegetation (Screening Priority 4). This screening criterion is based on the need to attain water depths within the slough landscape of sufficient depth and duration to promote and sustain vegetation communities that covered the slough landscape in ENP historically. The screening measure produced similar results as the criterion for marsh connectivity. All alternatives that were retained following screening by screening priorities 1, 2, and 3 were again retained following the application of this screening priority using a minimum threshold of performance of 20 percent greater than the No Action Alternative (***Figure 4-11***). Alternatives 2.2.2a, 2.2.2b, 2.2.3, 3.2.2a, 3.2.2b, 3.2.3, 4.2.2a, 4.2.2b, 4.2.3, 5.1, 5.2, 5.3, and 5.4 were retained but also affirmed the results of the application of the earlier screening criteria when Alternatives 1.2, 1.3, 2.1, 2.2.1, 3.1, 3.2.1, 4.1, and 4.2.1 exhibited a low level of performance for marsh connectivity.

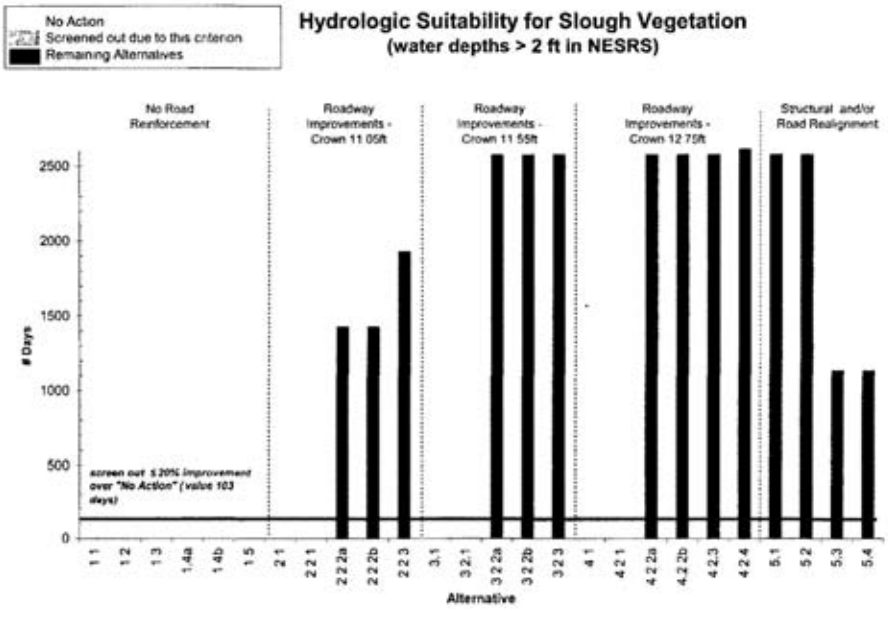

FIGURE 4-11: SCREENING FOR HYDROLOGIC SUITABILITY FOR SLOUGH VEGETATION PERFORMANCE

The results of the screening of the LRR alternatives using the hydrological and ecological performance measures indicated several important findings. First, those alternatives with lower canal stage in L-29 would likely not produce the flows or the water levels necessary for a satisfactory level of restoration

consistent with the objectives of the MWD Project. Second, only the alternatives that contained bridge spans provide potential ecological connectivity and flows that are likely to approximate natural marsh conditions.

Screening of Alternatives Based on Cost. Based on these results, the remaining alternatives (2.2.2a, 2.2.2b, 2.2.3, 3.2.2a, 3.2.2b, 3.2.3, 4.2.2a, 4.2.2b, 4.2.3, 5.1, 5.2, 5.3, and 5.4) were then subjected to the final screening priority-cost. Identification of the appropriate threshold for cost screening was difficult due to the lack of a unified and specific view from policy personnel in the USACE and DOI. Initially, the guidance from the USACE to the LRR team was to use a $300 million threshold as this was interpreted to be the upper limit of support from Congress for the Tamiami Trail component of the MWD Project. This limit was based on the assumptions that the authority of the MWD Project was limited and that additional modifications were also authorized for implementation under the CERP authority. Following public scoping of the LRR alternatives and the subsequent sharing of the preliminary results of the hydrologic and ecologic performance of the LRR alternatives, it became evident that many of the alternatives exhibiting a significantly higher level of performance were alternatives with project costs slightly higher than the initial $300 million threshold. Many of these alternatives were also identified by stakeholders as their preference for implementation. Therefore, based on input from the cooperating agencies and the local sponsor for the project, the technical LRR team elected to raise the cost threshold to $400 million to allow for the review of alternatives exhibiting significantly higher levels of performance than the pervious $300 million threshold. Additional considerations were included in the selection of this threshold cost. The team did not anticipate that $400 million or even $300 million would be approved. The team knew that the screening cost estimates (Table 4-3) were conservatively high and expected that additional design would reduce the costs anywhere from $20 million to $100 million. The threshold took into account this potential cost reduction. $400 million was considered high enough to retain alternatives with a reasonable potential to be funded after the savings and low enough to screen most alternatives that were so costly that they would not be fundable.

The results of the screening of the remaining alternatives with respect to a $400 million cost threshold are depicted in ***Figure 4-12***.

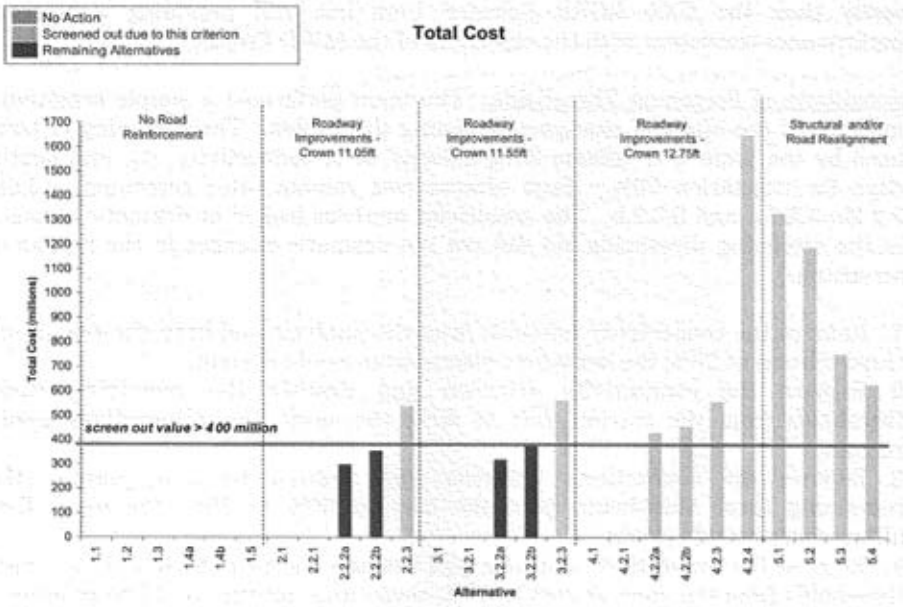

FIGURE 4-12: SCREENING FOR COST PERFORMANCE

Clearly, cost is the most important screening criterion in determining the final suite of LRR alternatives. Ten of the remaining fourteen alternatives were eliminated from further analytical considerations due to the application of the $400 million cost threshold; this includes the 2005 RGRR Environmentally Preferred Alternative - the 10.7-mile bridge plan (Alternative 17 of the RGRR and Alternative 4.2.4 of this LRR). The most important result of using this screening measure is that all of the highest performing alternatives were eliminated. Alternatives 2.2.3, 3.2.3, 4.2.2a, 4.2.2b, 4.2.3, 5.1, and 5.2 consistently exhibited higher level of performance for volume, marsh velocity, connectivity, and slough vegetation suitability than the alternatives which remain following the screening using the $400 million cost threshold. Many of the alternatives eliminated due to cost have features that include more bridging, longer spans for the bridges, and roadway modifications which allow for higher water levels in the L-29 Canal and allow for full restoration of NESRS. The alternatives remaining following the application of all of the screening measures, including cost, are Alternatives 2.2.2a, 2.2.2b, 3.2.2a, and 3.2.2b. This final suite of alternatives would be evaluated more fully in subsequent sections using the remaining performance measures found in Section 4.4.1. It is the opinion of the LRR team that the resulting alternatives meet the general guidance provided by the USACE and DOI for the identification of a cost effective alternative less

costly than the 2005 RGRR Selected Plan but still providing a level of performance consistent with the objectives of the MWD Project.

Sensitivity of Screening Thresholds. The team performed a simple sensitivity analysis of the effect of changing screening thresholds. The screening criteria used by the team are: volume 20%, velocity 20%, connectivity 5%, and depth-days for vegetation 20%. Four alternatives remain after screening: 2.2.2a, 2.2.2b, 3.2.2a, and 3.2.2.b. The sensitivity analysis looked at dramatic changes in the screening thresholds but did not see dramatic changes in the results of screening.

1. Remove the connectivity criterion from the analysis and keep the remaining three criteria at 20%; the same four alternatives would remain.
2. Remove the connectivity criterion and **double** the remaining three thresholds from the current 20% to 40%; the same four alternatives would remain.
3. Remove the connectivity criterion and **reduce by one-quarter** the remaining three thresholds from the current 20% to 15%; the same four alternatives would remain.
4. Remove the connectivity criterion and **reduce by half** the remaining three thresholds from the current 20% to 10%; seven alternatives would be retained - the same four alternatives as the original scenario plus three additional alternatives. The new alternatives would be 1.4a (1-mile eastern bridge, 7.5 stage), 1.4b (1-mile western bridge, 7.5 stage), and 1.5 (1-mile western bridge and raise part of road, 7.5 stage). These new alternatives would have been added due to the relaxation of average annual volume thresholds.

4.5 Evaluation and Comparison of Final Alternatives

After further evaluation to determine the extent to which the alternative plans would meet project objectives and taking into consideration opening size, stage increases and acceptable project costs, four action alternatives were identified in addition to the No-Action Alternative. The final array of alternatives is:

- 1.1 No-Action
- 2.2.2a Raise canal stage to 8.0 feet, reinforce road, one-mile eastern bridge
- 2.2.2b Raise canal stage to 8.0 feet, reinforce road, one-mile western bridge
- 3.2.2a Raise canal stage to 8.5 feet, reinforce road, one-mile eastern bridge
- 3.2.2b Raise canal stage to 8.5 feet, reinforce road, one-mile western bridge

Versions of these four action alternatives were also previously considered in the 2005 Report. It is expected that the four action alternatives listed above can provide a 55-92 percent increase in average annual water flows to NESRS. Since the one-mile eastern bridge is a portion of the previously selected plan, the geotechnical survey data and the intermediate plans and specifications can be used without any loss of time having to redo them.

4.5.1 Ecological Performance

Table 4-5 displays the performance measures and habitat units (HUs) for the four final alternatives. These values are the same as in Table E-3 of Appendix E, but are reproduced here for convenience.

TABLE 4-5: PERFORMANCE MEASURES FOR FINAL ALTERNATIVES

Performance Measure	1.1 No Action	2.2.2a Stage to 8.0, 1-mile Bridge East, Reinforce Road	2.2.2b Stage to 8.0, 1-mile Bridge West, Reinforce Road	3.2.2a Stage to 8.5, 1-mile Bridge East Reinforce Road	3.2.2.b Stage to 8.5, 1-mile Bridge West, Reinforce Road,
1A. Average Annual Flow Volume (acre-feet)	176,559	273,565	273,565	339,703	339,703
1B (re-labeled as 4B)					
1C. One in ten year maximum discharge (cfs)	1146	1416	1416	1642	1642
2A. Number of sloughs crossed by opening	0	2	2	2	2
2B. Ratio between average velocity in marsh and average velocity at road (%)	1.8	26	26	26	26
2C. Flows into NESRS provided via bridge (%)	0	11	20	11	20
3A. Total number of days at NESRS-1 and NESRS-2 with water depth >2 ft during growing season peak	86	1428	1428	2578	2578
3B. Total number of days at NESRS-1 and NESRS-2 with water depth >3 ft during growing season peak	0	3	3	7	7
3C. Average water depth at NESRS-1 and NESRS-2 during growing season peak (ft)	1.3	1.66	1.66	1.88	1.88
4A. Reduction in wildlife mortality (number deaths avoided per year)	0	261	261	261	261
4B. Potential connectivity of WCA-3B and NESRS (% of total length)	0	9	9	9	9
Average Annual Habitat Units (HU)	9,103	17,662	18,257	22,212	22,808
Average Annual HU lift (50 year analysis)	0	8,559	9,154	13,109	13,705

Table 4-6 summarizes the performance, compared to no-action, of the final four alternatives.

Ecological performance indices were calculated as explained in detail in Appendix E by setting the maximum of each performance measure to 100 percent and expressing "lift" of each alternative in terms of percent achievement of that maximum (***Table E-4***). Normalization of all outputs allowed the team to average outputs and multiply the index by affected acres, providing benefits expressed in (HUs). HU output was further adjusted to account for the time required for vegetation to change, and calculated for a 50 year period of analysis.

TABLE 4-6: SUMMARY PMS AND HU LIFT

OUTPUT OF ALTERNATIVES IN AVERAGE ANNUAL HABITAT UNITS LIFT ABOVE THE NO-ACTION ALTERNATIVE

ALTERNATIVE	Area of Benefits (Acres)	Volume increase %	Velocity Differences, Marsh and Opening	Time with Depths > 2 feet	Avg. Annual Lift (HU)
1. (No Action)	63195[1]	0	0	0	0
2.2.2.a Reinforce road 1/2 foot, eastern bridge	63195	54.9	26	46.7	8559
2.2.2.b Reinforce road 1/2 foot, western bridge	63195	54.9	26	46.7	9154
3.2.2.a. Reinforce road 1 foot, eastern bridge	63195	92.4	26	84.3	13109
3.2.2.b. Reinforce road 1 foot, western bridge	63195	92.4	26	84.3	13705

1. A few performance measures were applied over a smaller area. Reference Appendix E for details.

The performance measures that appear most indicative of potential ecosystem restoration are those for slough vegetation suitability and wet season average water levels (PMs 3A, 3B and 3C). Alternatives in the "2" group that would raise stage constraints by only one-half foot increased the frequency of occurrence of deep water stages more than two feet in the marsh dramatically, by 47 percent. Even greater benefits, providing 84 percent stage improvements over no-action, were predicted for the bridge alternatives that would raise the stage constraint by one foot (the "3" group). This appears to indicate that conditions favorable for maintenance of deep slough vegetation would be much more frequent under the one-foot rise alternatives than under the one-half foot

rise alternatives (the "threes" rather than the "twos"). Further, the 84 percent improvement at the "3" level means that these two alternatives are already capable of providing 84 percent of the re-hydration potential of the vegetation suitability two-foot stage target. (100 percent was provided only by the 10.7 mile reinforced road). The second flooding performance measure, number of times the marshes were flooded at three-feet or greater over the period of record, did not show dramatic changes. Apparently achieving these favorable slough-like flooding levels, which might facilitate re-conversion of deep marsh to open water sloughs, required more extreme stage increases at the road than would be provided by the final alternatives. Such high stages (greater than 8.5 feet at Tamiami Trail) occur infrequently at present, but are expected to become more frequent in CERP implementation. As stated elsewhere, the bridge design under all alternatives would allow peak stages of up to 9.7 feet, and only the road would require additional mitigation as stages increase to 9.7 feet under CERP flow conditions.

Stages in the marshes during the average wet season peak are indicated by PM 3C. Wet season peak depth is now approximately 1.3 feet on average. The alternatives with a one-half foot stage increase and a one-mile bridge increased wet season peak depth, on average, to 1.66 feet; the two alternatives with a one-foot stage increase and bridges showed a further increase to an average marsh depth of 1.88 feet. These values complement the performance measures for the frequency of very high stages, showing more average year-on-year performance. What this output may mean is that all of the four final alternatives can increase average depths in Everglades marshes, and the Alternatives 3.2.2.a and 3.2.2.b can do so rather dramatically.

All four final alternatives provided similar water velocity changes in the marsh south of the road, indicating better maintenance of ridge-and slough profiles. To further reduce damaging velocity changes causing scour and deposition it would be necessary to gap the road in additional places.

4.5.2 Cost

Once the final alternatives were identified, their cost estimates were revisited. This additional effort and analysis was reasonable to perform for the final array of alternatives, but it was not feasible to perform this high level of effort for all 26 action alternatives of the initial array. A major goal of the re-look was to reduce construction costs and mitigate risk. The following cost saving options were evaluated for the final suite of alternatives. Not all of these options are applicable to all alternatives.

- Reduce asphalt placement based on revised criteria received January 2008 from FDOT
- Additional Temporary Right of Way for Construction from ENP

- Reduction in Low Chord Height for Bridge Inspection per FDOT
- Obtain Fill Material from L-31(N) Spoil Mounds from SFWMD
- There is the possibility that the scheduled contract award date can be moved to October 2008. This option can be applied to the eastern one-mile bridge but not to the western one-mile bridge. This would substantially reduce future escalation.

The revised total project cost estimates in ***Table 4-7*** include all applicable cost savings options for each alternative. Construction costs incorporate risk analysis procedures and represent the 90 percent confidence not likely to exceed level. The estimates are based on October 2007 price levels. The costs in this table do not include PED costs that accrued during previous Tamiami Trail study efforts as these are considered sunk costs for evaluation purposes. The costs also do not include escalation. Plan formulation costs, as a matter of policy, do not include escalation. By applying the cost saving options and removing PED and escalation, the revised total cost estimates for the final four alternatives do not match, and are lower than the cost estimates presented in ***Table 4-3*** for these alternatives.

TABLE 4-7: TOTAL COST ESTIMATES OF THE FINAL ALTERNATIVES

	2.2.2a	2.2.2b	3.2.2a	3.2.2b
Construction				
Construction Subtotal (includes bridge, road removal, transitions, road, maintenance of traffic, and mobilization)	$126,000,000	$145,100,000	$154,800,000	$188,200,000
PED	$0	$0	$0	$0
EDC (2%)	$2,500,000	$2,900,000	$3,100,000	$3,800,000
S/A (8.5%)	$10,700,000	$12,300,000	$13,200,000	$16,000,000
Real Estate	$5,900,000	$5,900,000	$5,900,000	$5,900,000
Total Cost	**$145,100,000**	**$166,200,000**	**$177,000,000**	**$213,900,000**

150

4.5.3 Cost-Effectiveness/Incremental Cost Analysis for the Final Array of Alternatives

The purpose of a cost effective/incremental cost analysis (CE/ICA) is to determine the most economically efficient alternatives for producing a given output, which in the case of Tamiami Trail is measured in habitat functionality. Cost effectiveness analysis begins with a comparison of the costs and outputs of alternative plans to identify the least cost plan for every level of output considered. Alternative plans are compared to identify those that would produce greater levels of output at the same cost, or at a lesser cost, as other alternative plans. Alternative plans identified through this comparison are the cost effective alternative plans. Through the incremental analysis, cost effective plans are compared by examining the additional (incremental) costs for the additional (incremental) amounts of output produced by successively larger cost effective plans. The plans with the lowest incremental costs per unit of output for successively larger levels of output are the "Best Buy" plans. The results of these calculations and comparisons of costs and outputs between alternative plans provide a basis for addressing whether the additional outputs are worth the costs incurred to achieve them.

The final array of alternative plans for this project consisted of two alternatives that would increase the stage in the L-29 Canal to 8.0 feet and two alternatives that would increase the stage to 8.5 feet. All other management measures and alternatives were screened from further consideration as a result of previously described evaluation. ICA of the system-wide effects of the final array of plans was performed using IWR Plan software. This analysis is based on and follows guidance from the USACE Institute for Water Resources' publication, Evaluation of Environmental Investment Procedures Manual, Interim: Cost Effectiveness and Incremental Analyses, May 1995, IWR Report #95-R-1. Costs for the final array of alternatives are based upon construction costs with 90 percent confidence and also incorporated expected cost savings measures and include post-authorization PED and construction costs, interest during construction, as well as operation and maintenance costs after construction.

4.5.3.1 Average Annual Habitat Units

In ecosystem restoration projects, CE/ICA requires a comparison of average annual costs and average annual outputs (benefits). Average Annual Habitat Units (AAHU) is a measure of benefits that integrates many characteristics of the ecosystem into a single value. The average annual outputs were calculated as the difference between AAHU with-plan and AAHU without-plan (No Action) over the period of analysis (through year 2060). This difference is the lift, gain, or benefit associated with implementing the alternative. All of the outputs were calculated on an average annual basis to account for the fact that several years may be required for full attainment of the functional capacities to be realized. The calculations are further described in Appendix E. The AAHU lifts for the final alternatives are shown in ***Table 4-8***.

TABLE 4-8: AVERAGE ANNUAL HABITAT UNIT LIFT

Alternative	Average Annual Project Habitat Units
Alternative 2.2.2a	8,559
Alternative 2.2.2b	9,154
Alternative 3.2.2a	13,109
Alternative 3.2.2b	13,705

4.5.3.2 Average Annual Cost

The planning level cost estimate for the alternatives include; construction, lands, and construction management and were conducted utilizing a 90 percent confidence level, to minimize the potential for underestimating costs. Plan evaluation was analyzed using the 90 percent confidence level, but a separate analysis was conducted utilizing lower confidence levels (50 and 80 percent) to determine the sensitivity of the evaluation to the varying cost estimates. Data for initial construction/implementation, land acquisition, and periodically recurring costs for OMRR&R, have been developed through engineering design and cost estimation, and real estate appraisal efforts.

For purposes of this report and analysis, national economic development (NED) costs, as defined by USACE, are expressed in October 2007 (FY 08) price levels, and are based on costs estimated to be incurred over a 50 year period of analysis, annualized utilizing the current federal discount rate of 4 7/8 percent. Costs of a plan represent the value of goods and services required to implement and operate and maintain the selected plan. These costs are included in ***Table 4-9*** and were used in the CE analysis of the alternatives.

The costs in this section of the main report include potential cost savings measures, but do not represent the total cost of the project with escalation. Plan formulation costs, as a matter of policy, do not include escalation. These costs do not include PED costs that accrued during previous Tamiami Trail study efforts as these are considered sunk costs for evaluation purposes.

TABLE 4-9: NATIONAL ECONOMIC DEVELOPMENT COSTS OF FINAL ARRAY OF ALTERNATIVES*

Cost Component	2.2.2a	2.2.2b	3.2.2a	3.2.2b
Construction	$126,000,000	$145,100,000	$154,800,000	$188,200,000
EDC (2%)	$2,500,000	$2,900,000	$3,100,000	$3,800,000
S/A (8.5%)	$10,700,000	$12,300,000	$13,200,000	$16,000,000
Total Construction Cost	**$139,200,000**	**$160,300,000**	**$171,100,000**	**$208,000,000**
Lands	$5,900,000	$5,900,000	$5,900,000	$5,900,000
Total Implementation Cost	**$145,100,000**	**$166,200,000**	**$177,000,000**	**$213,900,000**
Interest During Construction				
Construction	**$6,840,000**	**$7,880,000**	**$10,600,000**	**$12,880,000**
Lands	**$670,000**	**$670,000**	**$670,000**	**$670,000**
Total Economic Investment	**$152,610,000**	**$174,750,000**	**$188,270,000**	**$227,450,000**
Amortized Investment Cost	**$8,199,000**	**$9,388,000**	**$10,120,000**	**$12,219,000**
OMRR&R	$30,000	$30,000	$30,000	$30,000
Average Annual Cost	**$8,229,000**	**$9,418,000**	**$10,150,000**	**$12,249,000**

- Construction and land costs are rounded to the nearest $100,000. Annualized costs are rounded to the nearest $1,000.

4.5.3.3 Cost Effectiveness Analysis

A CE analysis was conducted for the Tamiami Trail final array of alternative plans. The analyses compared the alternative plans' average annual costs against the appropriate AAHU estimates.

A summary of the average annual lift calculations and average annual costs results from the CE/ICA analysis is provided in ***Table 4-10***. The following figure and table show that Alternatives 2.2.2a, 2.2.2b, 3.2.2a and 3.2.2b are all cost effective alternatives. Alternative 3.2.2b provides the greatest habitat lift of all the alternatives, but Alternative 3.2.2a has the lowest average cost per unit of output.

TABLE 4-10: RESULTS OF COST EFFECTIVENESS ANALYSIS

Alternatives	Average Annual Cost	Output	Average Cost Per Output	Cost Effective?
Without Plan	$0	0	N/A	
2.2.2a	$8,229,000	8,559	$961	YES
2.2..2b	$9,418,000	9,154	$1,029	YES
3.2.2a	$10,150,000	13,109	$774	YES
3.2.2b	$12,249,000	13,705	$894	YES

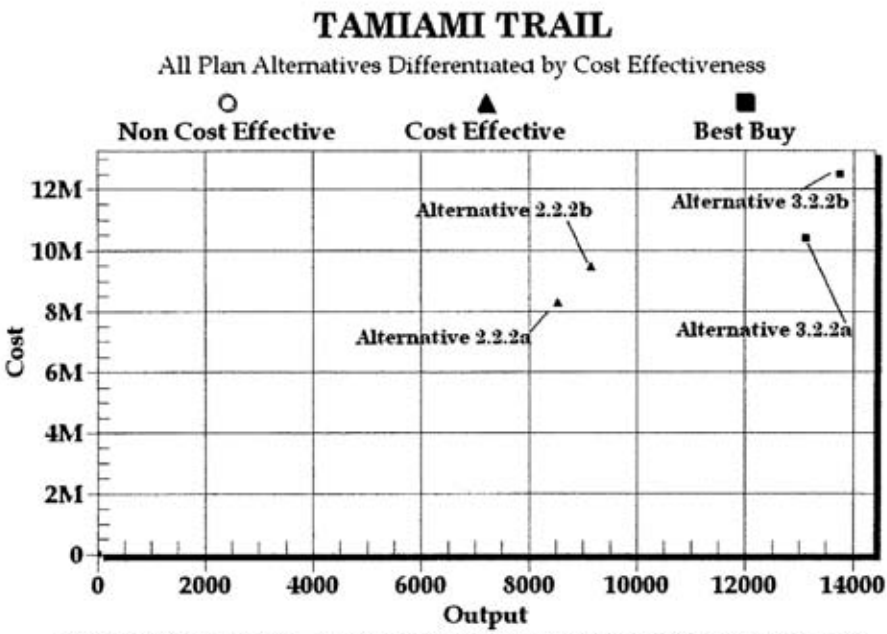

FIGURE 4-13: FINAL ARRAY OF ALTERNATIVES COST EFFECTIVE ANALYSIS RESULTS

4.5.3.4 Incremental Cost Analysis

After the cost effective plans are identified, the plans are arrayed by increasing outputs to clearly demonstrate changes in costs (i.e., increments of cost) and in outputs (i.e., increments of output). For comparison purposes, the average annual cost (AAC) per average annual habitat unit (AAHU) are then examined to determine the plan with the lowest AAC/AAHU. This plan is then considered the first "best buy" plan, or the plan that is the most efficient at producing a given level of output. After this first plan is identified, all larger cost effective plans are compared to this plan in terms of increases in (increments of) cost and increases in (increments of) output. The alternative plan with the next lowest incremental cost per unit of output (for all cost effective plans larger than the first "best buy" plan) is then considered the second best buy plan. ***Table 4-11*** presents the results of the ICA of the different alternative plans for the Tamiami Trail project. The results of the analysis show that there are two best buy plans (Alternatives 3.2.2a and 3.2.2b).

TABLE 4-11: RESULTS OF INCREMENTAL COST ANALYSIS–COST EFFECTIVE AND BEST BUY PLANS ARRAYED BY INCREASING OUTPUT

	Average Annual Cost	Output (Habitat Units)	Average Cost Per Output	Incremental Average Annual Cost	Incremental Output	Incremental Cost Per Output	Best Buy?
Without Plan	$0	0	N/A	N/A	N/A	N/A	
3.2.2a	$10,150,000	13,109	$774	$10,506,000	13,109	$774	Best Buy
3.2.2b	$12,249,000	13,705	$894	$2,099,000	596	$3,522	Best Buy

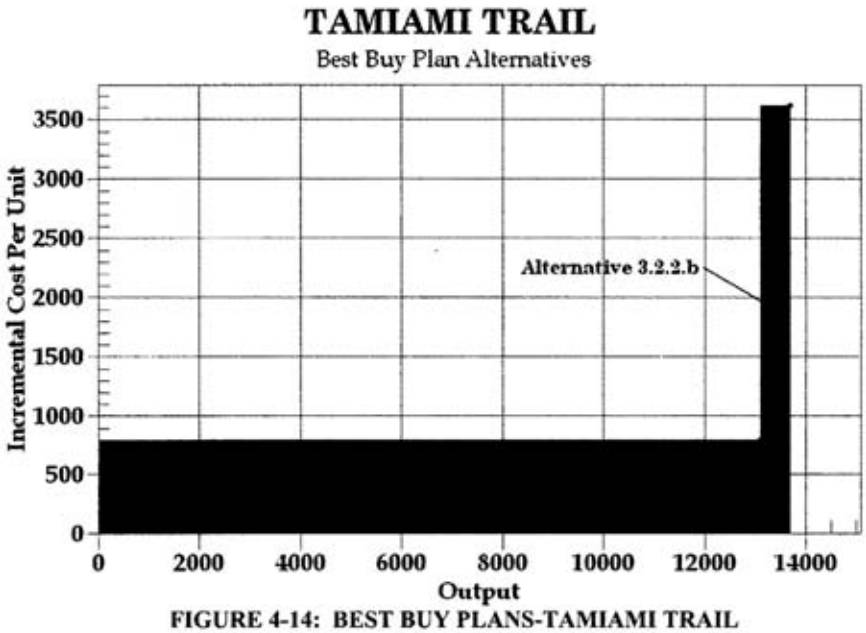

FIGURE 4-14: BEST BUY PLANS-TAMIAMI TRAIL CE/ICA RUN ON COMBINED AVERAGE ANNUAL HABITAT UNIT

4.5.3.5 Sensitivity Analysis

The preceding plan evaluation CE/ICA was conducted utilizing costs at a 90 percent confidence level. As previously described this implies that there is a 90 percent likelihood that the cost of construction would come in at this point or less. This high confidence level was selected to capture the risk associated with the costs of the project, and reduce the risk of underestimating the fully funded

project cost. This high confidence level warranted an additional analysis to ascertain that the results of the evaluation were not being skewed by incorporating this risk. This additional sensitivity analysis was conducted utilizing 50 and 80 percent confidence levels to examine the potential impact that utilizing less risk adverse costs would have on plan selection.

As can be seen in ***Table 4-12,*** the results of the CE/ICA do not change when lower cost confidence levels are used. Obviously the total economic investment is decreased for both of the lower confidence levels, due to the lower TCC, but this lower cost does not change the outcome of the analysis. The confidence level changes affect each alternative proportionately leading to the same alternatives being identified as the most efficient in production of HUs (best buys).

TABLE 4-12: SENSITIVITY OF CE/ICA TO DIFFERENT COST CONFIDENCE LEVELS

Alt.	Cost Confidence Level	Real Estate Cost	TCC	EDC	S&A	Construction, EDC and S&A Total	IDC Real Estate	IDC Construction	Total Economic Investment	Average Annual Cost (AAC)	Habitat Units (HU)	AAC HU	Cost Effective-Best Buy?
2.2.2a	50%	$5,900,000	$122,000,000	$2,440,000	$10,370,000	$135,000,000	$ 670,000	$ 6,000,000	$147,570,000	$ 7,930,000	8,559	$927	Cost Effective
2.2.2b	50%	$5,900,000	$ 141,000,000	$2,800,000	$12,000,000	$156,000,000	$ 670,000	$ 6,930,000	$169,500,000	$ 9,110,000	9,154	$995	Cost Effective
3.2.2a	50%	$5,900,000	$ 150,000,000	$3,000,000	$12,750,000	$166,000,000	$ 670,000	$ 9,290,000	$181,860,000	$ 9,770,000	13,109	$745	Cost Effective Best Buy
3.2.2b	50%	$5,900,000	$ 183,000,000	$3,700,000	$15,600,000	$202,000,000	$ 670,000	$11,330,000	$219,900,000	$ 11,810,000	13,705	$862	Cost Effective Best Buy
2.2.2a	80%	$5,900,000	$124,000,000	$2,480,000	$10,540,000	$137,000,000	$ 670,000	$ 6,090,000	$149,660,000	$ 8,040,000	8,559	$939	Cost Effective
2.2.2b	80%	$5,900,000	$ 144,000,000	$2,900,000	$12,200,000	$159,000,000	$ 670,000	$ 7,080,000	$172,650,000	$ 9,280,000	9,154	$1,014	Cost Effective
3.2.2a	80%	$5,900,000	$ 153,000,000	$3,060,000	$13,005,000	$169,000,000	$ 670,000	$ 9,480,000	$185,050,000	$ 9,940,000	13,109	$758	Cost Effective Best Buy
3.2.2b	80%	$5,900,000	$ 186,000,000	$3,700,000	$15,800,000	$206,000,000	$ 670,000	$11,520,000	$224,090,000	$ 12,040,000	13,705	$879	Cost Effective Best Buy

4.6 Additional Factors

4.6.1 Compatibility with Future Projects

As discussed during the screening of the 27 initial alternatives, L-29 Canal stages currently only go above 7.5 feet approximately 12 percent of the time based on analyzing the period of record from 1983 through 2007. This is achieved by operating the water control structure S-333 at the southeast corner of WCA-3A to minimize events with stages greater than 7.5 feet, for protection of the Tamiami Trail roadway embankment and flood protection for south Dade County based on the trigger gage G-3273. Instances where stages exceed 7.5 feet in the L-29 Canal are typically a result of direct rainfall on the area.

The pre-drainage system (as represented by NSM version 4.6.2) would produce a different hydroperiod for NESRS based on a different timing, volume, and distribution of flows much higher than the existing condition within the area. ***Figure 4-15*** compares the frequency of stage occurrences from three different model runs based on the same hydrologic (rainfall) conditions (1965 through 2000, a total of 13,149 modeled days) but different operational criteria and landscape. These model runs represent the NSM, existing conditions (referred to as ALT7R5, based on the IOP for the protection of the CSSS), and the future CERP (which assumes that all proposed CERP restoration features are in-place). The NSM and CERP analysis both use unconstrained flow in modeling the volume of water conveyed into NESRS. This figure shows the inherent problems of the current operations of the system in regards to NESRS being held too low due to constraints on the system and not being able to see the natural fluctuations of stages needed to support the ecology.

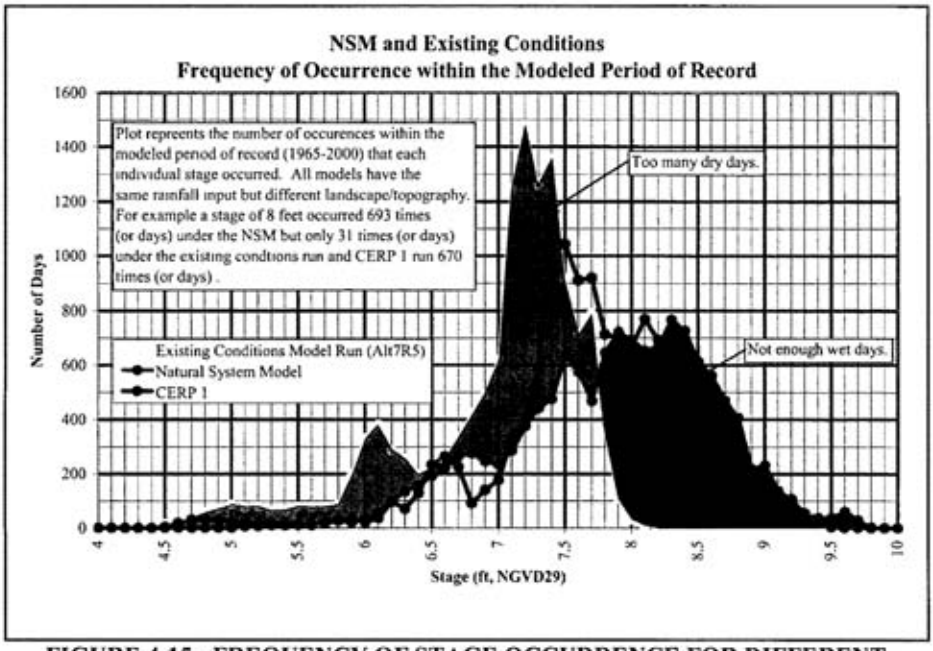

FIGURE 4-15: FREQUENCY OF STAGE OCCURRENCE FOR DIFFERENT MODEL SCENARIOS

Existing studies have determined that water levels must be raised higher than the stages considered in the final suite of alternatives. Section 601(b)(2)(C) of WRDA 2000 authorized raising and bridging of Tamiami Trail as an initial project of the CERP. It is therefore necessary to ensure that Tamiami Trail modifications projects are compatible with CERP. However, bridges constructed under this project would not have to be replaced or "un-done" by future projects. Any bridge constructed would be high enough to accommodate any anticipated stage in the L-29 Canal produced by CERP or other projects in the future. Modifications to the Tamiami Trail roadway embankment however would have to be made to incorporate higher stages and removal of sections of the roadway to increase the hydrologic connectivity to NESRS to produce a more natural sheet flow pattern between WCA-3B and ENP.

The degree of compatibility of the remaining roadway with future restoration projects is not as simple. On one hand, any length of road, at any height, represents a barrier to sheet flow and ecological connectivity. Future restoration projects may involve additional openings and/or additional water stage increases and associated road mitigation (road reinforcing). Differences among the LRR

alternatives of compatibility with these unspecified future restoration project depends on what features would in these future projects.

If an additional conveyance opening (bridge) was recommended for a future restoration project, then some of the asphalt and fill placed as part of the MWD Tamiami Trail project alternatives would have to be removed. For Alternatives 2.2.2a and 2.2.2b (stage 8.0), the amount of "new" material that would be removed would be less than for Alternatives 3.2.2a and 3.2.2b (stage 8.5). The lower road for the 8.0 stage alternatives would be more compatible than the higher road for the 8.5 stage alternatives.

If the future restoration project recommended in the L-29 Canal an additional increase in the stage (road height), then the asphalt and fill placed as part of the LRR alternatives would be usable to the new plan. The new project would have to provide less new material if Alternatives 3.2.2a or 3.2.2b (stage 8.5) were implemented than if Alternatives 2.2.2a or 2.2.2b (stage 8.0) were implemented. The 8.5 stage alternatives, with a higher road surface, would be more compatible than the 8.0 stage alternatives, with the lower road surface.

4.6.2 Real Estate

All four alternatives would require real estate transactions and agreements among the following public agencies: (1) FDOT and ENP for any new bridge, which would be located on land currently owned by ENP; (2) SFWMD and ENP for access and maintaining flows under any bridges that may be constructed; (3) USACE and ENP for temporary construction activities on ENP land; and (4) USACE and FDOT for construction of the road and/or bridge.

All four alternatives have road work included which would require temporary work area easements from each private landowner within the project footprint to construct access from the reinforced road down to the existing driveway or parking lot.

All four alternatives have a proposed bridge. Additional water would flow to an elevation of approximately 8.5 feet and may impact privately owned properties south of Tamiami Trail. At a minimum, perpetual flowage easements would be required on each parcel prior to implementing the operation of the project. If it is determined during the appraisal process that the value of the easement estate approaches fee value, it may be in the best interest of the government to acquire fee for the operation and maintenance of the project. The impacts to each parcel are discussed in Appendix F of this report.

In addition to the real estate requirements discussed above, Alternatives 2.2.2a and 3.2.2a for bridge construction require perpetual road and channel easements from FP&L as they own a parcel of land that runs north-south across the project.

Alternatives 2.2.2b and 3.2.2b bridge construction would cross the access road to the Lincoln Financial radio tower site. An alternate access to this facility would be required. If an alternate access route is not possible, the real estate interest required would be fee.

Since the width of Tamiami Trail would not be increased under any of the final four alternatives, the footprint of the reinforced road would not encroach on any privately owned properties.

4.6.3 Timing of Project Implementation

Construction of the eastern bridge of Alternatives 2.2.2a or 3.2.2a can start earlier than the western bridge of the other two final alternatives. The USACE began detailed design of the selected plan from the 2005 RGRR soon after its ROD was signed in January 2006, and was nearly complete with the design when this LRR was initiated. The eastern bridge of Alternatives 2.2.2a and 3.2.2a is identical to the eastern bridge of the 2005 RGRR plan and these alternatives can use the nearly completed design developed for the 2005 RGRR plan. The western bridge of Alternatives 2.2.2b and 3.2.2b is different from the western bridge of the 2005 RGRR plan in that it is only one mile long rather than two miles long. A geotechnical survey performed during the design phase of the 2005 RGRR plan discovered soil conditions of the area of the western bridge that require a redesign of the foundations for the western bridge. The differences in length and soil conditions prevent reusing much of the engineering and design initially developed for the 2005 RGRR plan, and additional time would be required for redesign. This would result in a later start date for construction.

Mitigation of the road to accommodate a stage of either 8.0 or 8.5 feet is different from raising and widening the road for the 2005 plan, which was to 9.7 feet stage, and would require additional engineering prior to construction. However, it is expected that road design, and the subsequent construction, could be completed within the time period needed for bridge construction.

The timing of construction influences the cost of construction-the longer the time to construction, the greater the cost growth due to the effects of risk factors and escalation. Construction market conditions continue to be volatile in south Florida and these conditions have been documented by FDOT, SFWMD and USACE. These volatile conditions would likely continue for the foreseeable future, since they are influenced by both world and local market conditions. Additionally, several large upcoming construction contracts associated with the Acceler8/CERP program would likely add to the competition for the labor, equipment and materials needed to construct these projects which would result in higher construction costs.

4.6.4 Evaluation of the Planning Objectives

Table 4-13 illustrates how each of the final four alternatives addresses each of the planning objectives. Alternative 1.0, the No Action Alternative, does not address any of the planning objectives.

TABLE 4-13: PLANNING OBJECTIVES FOR FINAL ALTERNATIVES

Objectives	1.1 No Action	2.2.2a Stage 8.0, Reinforce Road, 1-mile Bridge East	2.2.2b Stage 8.0, Reinforce Road, 1-mile Bridge West	3.2.2a Stage 8.5, Reinforce Road, 1-mile Bridge East	3.2.2b Stage 8.5, Reinforce Road, 1-mile Bridge West
Provide additional water into Shark River Slough	Average 177,000 acre feet per year. No change	Increase in average annual flow to 274,000, 55% increase over No Action;	Same as 2.2.2a	340,000 acre feet per year. 93% increase over No Action; 26% increase over Alt 2.2.2a	Same as 3.2.2a
Restore processes that produce and maintain ridge and slough communities	No connection to sloughs. High velocity near culverts is damaging.	Moderate restoration. Bridge alts pass more water into existing sloughs. Velocities at culverts and bridge are not damaging.	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
Restore slough vegetation	86 days with water depth >2 feet. No change	Substantially more days (1,428) with required condtions (water depth >2 feet) 1,560% inc over No Action	Same as 2.2.2a	Substantially more days (2,578) with required conditions (water depth >2 feet). 2,898% inc over No Action; 81% inc over 2.2.2a	Same as 3.2.2a
Reduce highway-caused mortality	No reductions. No change	Mortality reduced by 261 per year (9 percent)	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
Increase ecological connectivity between Shark River Slough and the WCAs north of the roadway	No change	No direct connection. Indirect increase due to the 1-mile connection of ENP to L-29 Canal; canal connects to S-333 and WCA-3A.	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
Increase peak flows to 1,400 cfs and target 4,000 cfs	Average peak flow 1,250 cfs. No change.	Peak flow 1,577 cfs. 26% increase over No Action		Peak flow 1,848 cfs. 48% inc over No Action; 17% inc over 2.2.2a	Same as 3.2.2a

4.6.5 Evaluation of the Planning Constraints

Some of the initial 27 alternatives did not satisfy one or more of the planning constraints and thus were eliminated from the final array of alternatives. All of the final four action alternatives satisfy all of the constraints identified by the team. The list of constraints is repeated here for ease of reference.

1. Maintain traffic along Tamiami Trail
2. Avoid causing additional damage to Tamiami Trail
3. Minimize adverse socioeconomic impacts on local businesses, residents
4. Avoid degradation of water quality in ENP or any of the contributing water bodies
5. Not adversely affect listed species
6. Start construction by 2010

4.6.6 Evaluation of Planning Criteria and Identification of the NER Plan

USACE policy (Engineering Regulation [ER] 1102-2-100) requires the use of four screening criteria in the evaluation of plans. The identification of the National Ecosystem Restoration plan incorporates the results of the CE/ICA analysis with the four planning criteria to make an informed plan selection decision. The planning criteria are acceptability, completeness, effectiveness and efficiency. Results are described below and summarized in ***Table 4-14***.

TABLE 4-14: SCREENING CRITERIA FOR EVALUATION OF PLANS

Criteria	1.0 No Action	2.2.2a Stage to 8.0, Reinforce Road, 1-mile Bridge East	2.2.2b Stage to 8.0, Reinforce Road, 1-mile Bridge West	3.2.2a Stage to 8.5, Reinforce Road, 1-mile Bridge East	3.2.2b Stage to 8.5, Reinforce Road, 1-mile Bridge West
Acceptability	No	Yes	Yes	Yes	Yes
Completeness	N/A	Complete	Complete	Complete	Complete
Effectiveness	No benefits; does not address planning objectives	Fewest benefits of the final four action Alts	Second fewest benefits; slightly more than Alt 2.2.2a	Provides the second most benefits, very similar to Alt 3.2.2b	Provides the most benefits
Efficiency (Avg annual cost/ avg annual habitat unit)	N/A	$961/aahu Second highest unit cost of the final Alts	$1,029/aahu Highest unit cost of the bridge Alts	$741/aahu Lowest cost per unit of benefit	$894/aahu Second lowest unit cost; intermediate between 3.2.2a and the 8.0 stage alts

Acceptability is the workability and viability of the alternative plan with respect to acceptance by state and local entities and the public as well as compatibility with existing laws, regulations and public policies. One aspect of acceptability is whether the alternative is feasible or doable with regard to technical, environmental, economic, social or similar reasons.

Completeness is the extent to which an alternative plan includes and accounts for all necessary investments or other actions to ensure the realization of the planned effects. All of the final four alternatives contain all of the features needed to achieve the predicted benefits.

Effectiveness is the extent to which an alternative plan contributes to the attainment of the planning objectives. The most effective alternatives make significant contributions to all of the planning objectives. Less effective alternatives make smaller contributions to one or more of the alternatives.

Effectiveness is a matter of degree rather than all or nothing. Among the final four alternatives, Alternatives 3.2.2a and 3.2.2b contribute more to the planning objectives. They provide the most AAHU lift, the most flow volume, the best conditions for restoring slough vegetation, and the greatest reduction in wildlife mortality (***Table 4-13*** and ***Table 4-14***). Alternatives 2.2.2a and 2.2.2b perform similarly to each other and provide substantial benefits, but are less effective in contributing to the objectives than Alternatives 3.2.2a and 3.2.2b.

Efficiency is the extent to which an alternative plan is the most cost-effective means of alleviating problems and realizing opportunities, consistent with protecting the nation's environment. It is a measure of allocation of resources. CE is one common measure of efficiency. Both monetary and non-monetary costs are considered. All four alternatives are cost effective in that if additional money were spent for a larger plan, more benefits would be achieved. The 8.5 foot stage plans (Alternatives 3.2.2a and 3.2.2b) have lower costs per unit of benefit gained than the 8.0 foot stage plans. Alternative 3.2.2a has the lowest cost per unit of benefit among the final alternatives.

The results of the CE/ICA analysis identified two alternatives as best buy plans; Alternatives 3.2.2a and 3.2.2b. The national ecosystem restoration (NER) plan is typically identified from the final set of best buy solutions by evaluating whether successive investments are worth the additional expenditure. Comparing alternatives 3.2.2a and 3.3.2b from Table 4-11, it is evident that 3.2.2b provides 5% more output (habitat units) than does alternative 3.2.2a, while the annual cost is 20% greater. The 596 additional units of output come at an incremental cost that is almost 5 times greater than the cost per unit of output for Alternative 3.2.2a. Given the steep increase in cost and relatively small increase in output, it was determined that Alternative 3.2.2a was the plan that reasonable maximized ecosystem restoration benefits compared to costs, and therefore was identified as the NER plan. This plan is consistent with federal objectives and is a complete and effective alternative.

4.6.7 Evaluation of Managers' Report Directives

The conference report for the WRDA 2007 contained language to the Chief of Engineers regarding the MDW project and the Tamiami Trail component. The directives in that report are not considered law, but are considered strong guidance to the project team. Section 1 of the LRR discusses some of these directives. ***Table 4-15*** presents the directives and the status of how well the final alternatives satisfy the directives.

TABLE 4-15: WRDA 2007 CONFERENCE REPORT MANAGERS' DIRECTIVES

Directive	Status
Take steps upon completion of 8.5 SMA to increase flows to Park of at least 1,400 cfs without significantly increasing risk of roadbed failure	Most initial alternatives can achieve 1,400 cfs peak flow. All of the final alternatives achieve 1,400
Reexamine prior reports and evaluate practicable alternatives	Complete
Recommendations consistent with directive in ENP Protection and Expansion Act; "improve water deliveries to the park and shall, to the extent practicable, take steps to restore natural hydrologic conditions within the Park." The managers direct that the flows to the Park have a minimum target of 4,000 cfs so as to address the restoration envisioned in the ENP Protection and Expansion Act.	4,000 cfs target was assessed. 4,000 cfs events require large storms which occur rarely. Only three alternatives would achieve 4,000 cfs. These were screened due to very high cost.
Take into account future modifications to Tamiami Trail may be performed under CERP; modifications that are not compatible or duplicative should be avoided.	Compatibility and duplication are considered
Submit for public review and comment	Review scheduled to begin early April 2008
Submit to Congressional committees by July 1, 2008	In-progress. On-schedule to meet this deadline.
Cost sharing arrangements are prospective only	Complete
Do not support arrangement where DOI is credited for land acquisition toward the costs of modifying water delivery to the Park. These costs are separate responsibilities within the missions of Army and Interior. Costs of one should not be used to offset the costs of the other.	Land acquisition costs are reported separately in the Real Estate appendix. Credit is not recommended.
Initiate evaluation of Tamiami Trail component of CERP as soon as practicable, including an evaluation of modifying Tamiami Trail from Krome Avenue to the boundary of Big Cypress National Preserve	Not started. Plan to initiate study once this LRR is complete.

4.7 Recommended Plan

The Recommended Plan is Alternative 3.2.2a, raise L-29 Canal stage constraint to 8.5 feet and a one-mile eastern opening and bridge. This study initially analyzed 27 alternatives, screened the total to four alternatives, and then after further analysis identified one alternative as the Recommended Plan–the best alternative among the final four alternatives. Alternative 3.2.2a would raise the constraint in the L-29 Canal one-foot to 8.5 feet NGVD. The Recommended Plan includes a one-mile bridge in the eastern section of the 10.7 mile length of road. The Recommended Plan also includes roadway reinforcement of the remainder of Tamiami Trail. Additional details of this alternative are in Section 6 of this report.

Alternative 3.2.2a represents a balance between alternatives that produce a very large quantity of ecosystem benefits but are very costly and alternatives that are less expensive but provide few ecosystem benefits. Alternative 3.2.2a meets both the requirements to exceed minimum flow and benefits to NESRS and to stay below the cost of the 2005 RGRR plan.

Alternative 3.2.2a makes more progress toward achieving objectives–increased water delivery, ridge and slough processes and connectivity, slough vegetation, and wildlife mortality–than all but one of the final four alternatives. CE/ICA shows that Alternative 3.2.2a is cost effective and has the lowest cost per unit of benefit. The average cost per HU and the incremental cost of the next larger plan, Alternative 3.2.2b, are higher than for Alternative 3.2.2a.

Construction on Alternative 3.2.2a can be initiated much earlier than two of the other final alternatives. The bridge of Alternative 3.2.2a is identical to the eastern bridge of the 2005 RGRR Selected Plan. The bridges of Alternatives 2.2.2b and 3.2.2b are less similar to the 2005 plan and would require additional time for additional design. Construction on the eastern bridge for Alternative 3.2.2a could start as early as October 2008 whereas the western bridge of Alternative 2.2.2b or 3.2.2b would not start until approximately one year later. Because of further design needed, roadway reinforcing for any of the final four alternatives could not start as quickly as the eastern bridge. Since completion of a bridge is expected to take longer than roadway reinforcing, an earlier start of a bridge represents the earlier completion of all construction and earlier achievement of ecosystem benefits. The recent history of rapid cost growth (Section 2 and Appendix C) also suggests that waiting to start construction would result in substantial escalation of cost.

Alternative 3.2.2a includes a one-mile bridge that would be able to handle any higher stage in the L-29 Canal that might be recommended by future projects. This bridge would not have to be retrofitted and would continue to provide unobstructed flow. The other three final alternatives would also attain this level

of compatibility. Some of the alternatives that were screened from the final analysis included raising the stage in the L-29 Canal but did not include bridges. As a result, if future restoration projects recommend higher stages in the L-29 Canal, all of the work completed under these alternatives would have to be retrofitted or replaced. No features would be "permanent" for these potential future actions.

Operations. The analyses performed during this study effectively compare alternatives, but are not able to fully analyze operational plans for the structures that deliver water to this project. The benefits described in the LRR/EA are potential benefits associated with the evaluation of the LRR alternatives based on a single constraint of 8.5 feet in the L-29 Canal. It must be recognized that additional constraints will be required by FDOT immediately before and during some large rainfall events in order to ensure the stability and safety of the highway. Therefore, when these FDOT constraints are applied to the recommended plan, there will be some change of benefits from those identified in this document. During the Combined and Structural and Operational Plan (CSOP) alternative planning process, the effects of these constraints on benefits will be thoroughly evaluated. In addition, there is an expectation that field monitoring, based on a reconfiguration of existing monitoring activities, will continue following implementation of the LRR features in conjunction with the CSOP operating plan. Such monitoring will allow for adaptive management to potentially mitigate any loss of benefits from those identified in this document.

4.8 Environmentally Preferred Alternative

The NPS is required to identify the environmentally preferred alternative in its NEPA documents for public review and comment. The NPS, in accordance with the DOI policies contained in the Department Manual (516 DM 4.10) and the Council on Environmental Quality's Forty Questions, defines the environmentally preferred alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (Section 101(b)) which considers: (1) fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assuring for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attaining the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserving important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieving a balance between population and resource use which would permit high standards of living and a wide sharing of life's amenities; and (6) enhancing the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

The Council on Environmental Quality's Forty Questions (Q6a), further clarifies the identification of the environmentally preferred alternative, stating "ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural, and natural resources."

Based on the analysis prepared for the 2005 RGRR/SEIS and input from other agencies and the public, the ROD for the RGRR/SEIS identified the environmentally preferred alternative for the Tamiami Trail Modifications component of the MWD Project as the 10.7 mile bridge (Alternative 17 in the RGRR/SEIS). This alternative was not recommended for implementation in the RGRR/SEIS because of its extremely high cost and significant adverse cultural and socio-economic impacts (ROD page 2). For this LRR, the 10.7 mile bridge alternative (Alternative 4.2.4) is again the environmentally preferred alternative. As before, this alternative was not recommended for implementation in the LRR because of its extremely high cost.

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SECTION 5

ENVIRONMENTAL EFFECTS

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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 EA are similar or identical to those of the 2005 RGRR/SEIS, which provides more detailed discussions of environmental impacts and is incorporated by reference.

5.1.1 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 EA, the intensity of impacts is evaluated within a local (e.g. construction footprint) or project area context, while the intensity of the contribution of effects to cumulative impacts is 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 Road Reinforcement & Add 1-Mile Eastern Bridge**	**Alt 2.2.2b Road Reinforcement & Add 1-Mile Western Bridge**	**Alt 3.2.2a Road Reinforcement & Add 1-Mile Eastern Bridge**	**Alt 3.2.2b Road Reinforcement & Add 1-Mile Western Bridge**
Surface Waters	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
Water Quality	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 2.2.2a	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 2a
HTRW	No effect	No effect	No effect	No effect	No effect
Water Deliveries to ENP	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
Parklands	No effect	8 5 acres lost to bridge and bridge approaches 6 3 acres temporarily affected	9.0 acres lost to bridge and bridge approaches 6.7 acres temporarily affected	Same as Alt 2 2 2a	Same as Alt. 2.2.2b

Biological Communities	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.
Average Annual Lift (Habitat Units)	No effect	8,559	9,154	13,109	13,705
Ecological Connectivity between WCA and ENP Marshes	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
Wetlands	No effect	2 29 acres filled, 6.6 acres temporarily affected 63,000 acres of improved quality.	8.95 acres filled, 6 72 acres temporarily affected 63,000 acres of improved quality.	Same as Alt 2 2.2a	Same as Alt. 2 2.2b

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Ridge and Slough Processes	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.
Protected Species					
Cape Sable Seaside Sparrow	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.
Eastern Indigo Snake	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 Eastern 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 Eastern 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 Eastern 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 Eastern Indigo Snake" during construction The project may affect, but is not likely to adversely affect the Eastern indigo snake

Florida Panther	No beneficial effect. Minor Florida panther cover habitat was 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.	A linear strip of native and exotic woody vegetation, which 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	A linear strip of native and exotic woody vegetation, which 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.	A linear strip of native and exotic woody vegetation, which 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	A linear strip of native and exotic woody vegetation, which 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.
Everglade Snail Kite	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 would 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 would 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 would 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 would allow releases from WCA-3A and potentially reduce adverse high stages in the WCA, which are believed to have degraded snail kite foraging habitat
Wood Stork	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.
Other Wildlife	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

Air Quality	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
Transportation	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
Public Recreation	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
Cultural Resources	No effect	No effect	No effect	No effect	No effect
Aesthetics	No effect	Potential for improved view of Everglades	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
Noise	No effect	Short-term localized noise in construction zones	Same as 2.2.2a	Same as 2.2.2a	Same as 2.2.2a
Businesses	No effect	Approximately 0.88 acres would be needed for permanent and temporary construction easements from FP&L. If reinforcement 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 reinforcement 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 reinforcement 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 reinforcement 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

5.2 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.

5.3 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 cfs.

Action Alternatives

Alternative 2.2.2a. Road Reinforcement and Add 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 (***Figure 5-2***). 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 and part of ENP; the remainder is owned by FP&L. 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 cfs, an increase in peak flow of 327 cfs over the No Action Alternative. The average annual flow would increase by 55 percent.

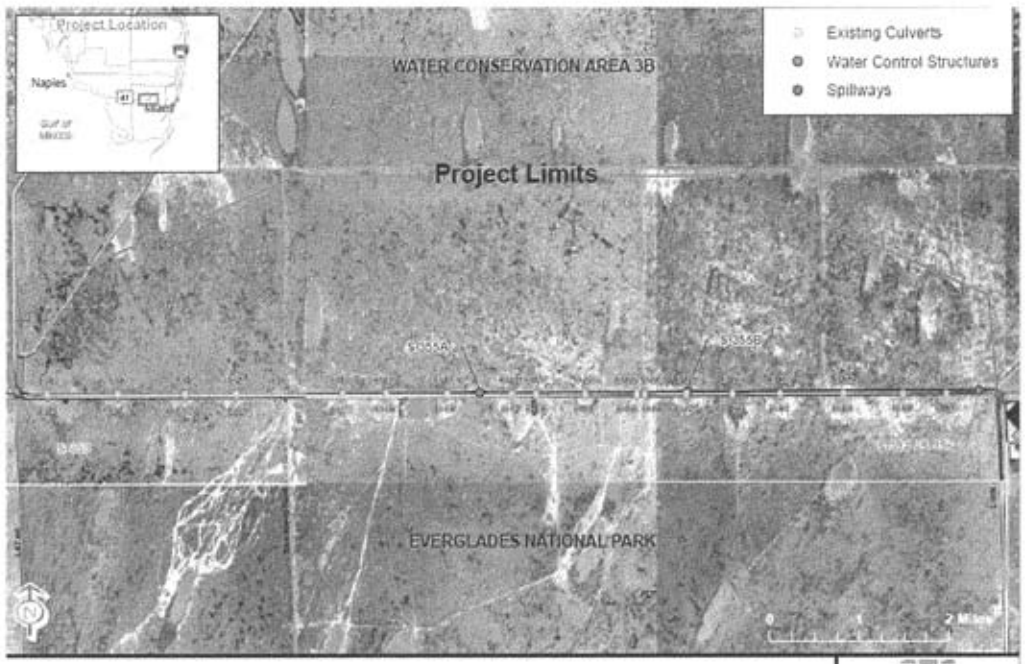

FIGURE 5-1: HYDRAULIC STRUCTURES

Alternative 2.2.2b. Road Reinforcement and Add a One-Mile Western Bridge (Stage Constraint of 8.0 Feet). A western bridge would be constructed near the western end of the approximately two-mile distance between Osceola Camp and Everglades Safari (***Figure 5-3***). 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 8.0 feet.

Alternative 3.2.2a. Road Reinforcement and Add 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 cfs. This would provide an increase in peak flow of 598 cfs and a 92 percent increase in average flow over the No Action Alternative.

Alternative 3.2.2b Road Reinforcement and 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.

5.4 Water Quality

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

Alternative 2.2.2a. Road Reinforcement and Add a One-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. Best management practices (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.

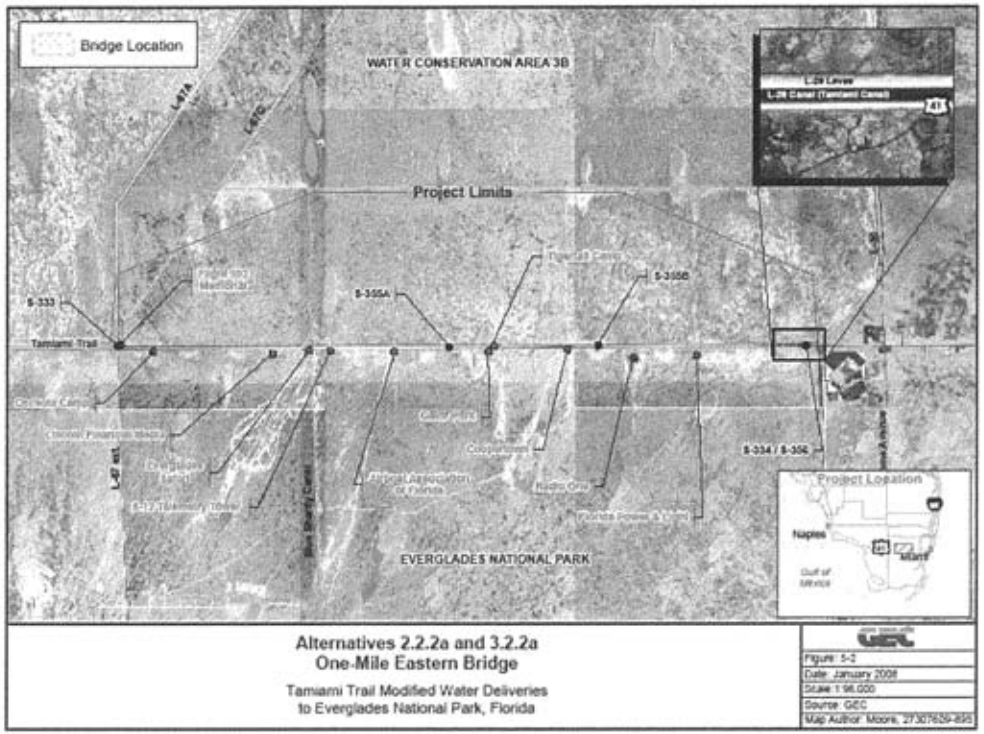

FIGURE 5-2: ALTERNATIVES 2.2.2A AND 3.2.2A ONE-MILE EASTERN BRIDGE

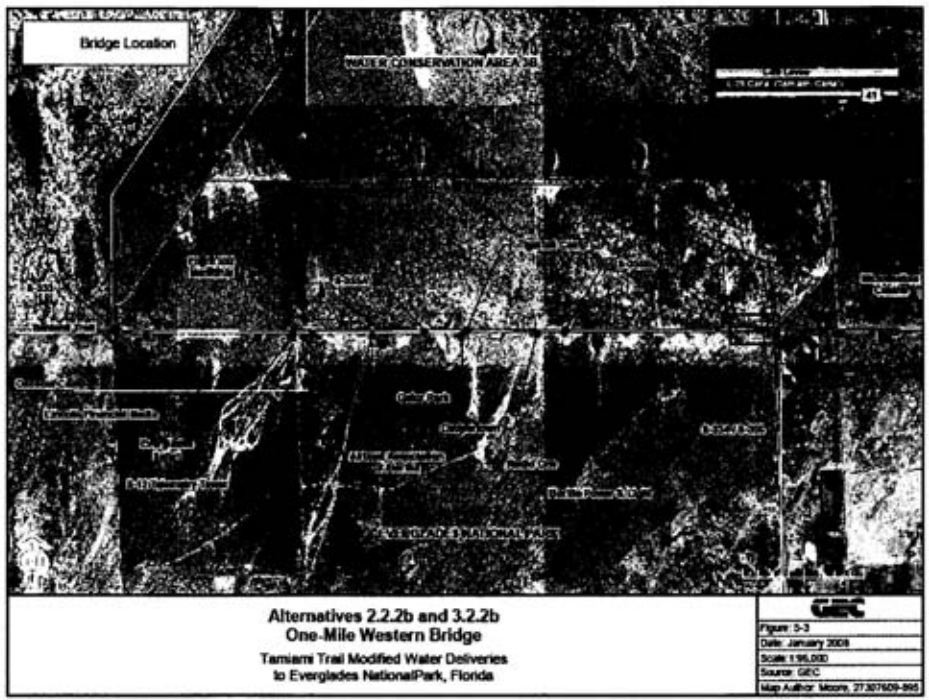

FIGURE 5-3: ALTERNATIVES 2.2.2B AND 3.2.2B ONE-MILE WESTERN BRIDGE

Alternative 2.2.2b. Road Reinforcement and Add 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. Road Reinforcement and Add 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. Road Reinforcement and 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.

5.5 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.

5.6 Special Environmental Resources

5.6.1 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 NESRS (% tot length)
	kacre-ft/yr	% Increase	cfs	% Increase	
No-Action	177	0%	1,250	0%	0.0
2.2.2a	274	55%	1,577	26%	9.0
2.2.2b	274	55%	1,577	26%	9.0
3.2.2a	340	92%	1,848	47%	9.0
3.2.2b	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. Road Reinforcement and Add 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 Road Reinforcement and 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.

5.6.2 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 nine 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. Road Reinforcement and Add 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 Road Reinforcement and Add One-Mile Western Bridge (Stage Constraint of 8.5 Feet). Effects would be the same as those of Alternative 3.2.2b.

5.6.3 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 is greater than two feet during wet season peak
   B. Number of days water depth is greater than three 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 4.4.1.

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

Alternative	Average Annual Habitat Units (HU)	Average Annual Lift (HU)
No-Action	9,103	0
2.2.2a Reinforcing the Road and Adding a 1-Mile Eastern Bridge (8-ft Constraint)	17,662	8,559
2.2.2b Reinforcing the Road and Adding a 1-Mile Western Bridge (8-ft Constraint)	18,257	9,154
3.2.2a Reinforcing the Road and Adding a 1-Mile Eastern Bridge (8.5-ft Constraint)	22,212	13,109
3.2.2b Reinforcing the Road and Adding a 1-Mile Western Bridge (8.5-ft Constraint)	22,808	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. Road Reinforcement and Add 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 Road Reinforcement and Add a One-Mile Western Bridge (Stage Constraint of 8.5 Feet). The bridge would provide an ecological connectivity of one mile.

5.6.4 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.

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

Description	Alternative								
	No Action	2.2.2a		2.2.2b[1]		3.2.2a		3.2.2b	
		Permanent Construction Easement	Temporary Construction Easement	Permanent Construction Easement	Temporary Construction Easement	Permanent Construction Easement	Temporary Construction Easement	Permanent Construction Easement	Temporary Construction Easement
Graminoid Wetlands	--	0.61	3.57	5.53	4.15	0.61	3.57	5.53	4.15
Forested Wetlands	--	1.38	2.72	--	--	1.38	2.72	--	--
Mixed Forest & Graminoid Wetlands	--	--	0.31	2.95	2.24	--	0.31	2.95	2.24
Uplands	--	6.67	--	0.43	0.33	6.67	--	0.43	0.33
Upland Forest	--	--	0.13	--	--	--	0.13	--	--
Open Water	--	0.3	--	0.04	--	0.3	--	0.04	--
TOTAL ACRES	0.00	8.96	6.73	8.95	6.72	8.96	6.73	8.95	6.72
TOTAL WETLAND ACRES	--	2.29	6.60	8.95	6.72	2.29	6.60	8.95	6.72

[1] 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. Road Reinforcement and Add 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***).

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. Road Reinforcement and Add 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 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. Road Reinforcement and Add 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 Road Reinforcement and Add a One-Mile Western Bridge (Stage Constraint of 8.5 Feet). Effects would be the same as those of Alternative 2.2.2b.

5.6.5 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 IOP as described in the December 2006 IOP FSEIS. As part of the FWS 1999 BO 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 BO of November 17, 2006, evaluated additional RPAs 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 BOs for the CSSS. The closest occupied CSSS nest lies ten 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 CSSS.

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 Eastern 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 ESA 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 FWS 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 bridge. 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 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 FWC 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 FWS "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.

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.

5.6.6 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. Road Reinforcement and Add a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet. A one-mile conveyance would aid in the restoration of hydropatterns in NESRS, 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 Road Reinforcement and Add a 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.

5.7 Air Quality

No-Action Alternative. The No-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 CAA 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.

5.8 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 reinforcing 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. During hurricane evacuations, the contractor would secure the area and provide two way travel on the road unless otherwise designated by evacuation requirements.

Under the action alternatives, Tamiami Trail itself would be reinforced. 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 one-mile western bridge (***Figure 5-3***). Features of the bridge and transitions would be the same as those of the eastern bridge.

The effects to traffic were considered. However, it was concluded that differences in traffic, traffic delays, and road user costs among alternatives would not be sufficient to affect the selection of a recommended alternative.

- Because bridge would be constructed adjacent to the existing roadway rather than within the existing road alignment, bridge construction would not significantly impact traffic flow.
- All final alternatives include reinforcing the same length of road.
- Barring unforeseen construction constraints, two-way traffic would be maintained during weekends, when most of the traffic is evident.
- Staging areas would be the same for all alternatives.
- The main difference among alternatives would the duration of construction for the different road heights.

During design, a traffic control plan would be completed for the selected alternative to minimize impacts during construction and provide for workers' safety.

5.9 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 Road Reinforcement and Add a 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 MWD to the ENP-GRR/SEIS project area; four being eligible or potentially eligible to the NRHP. 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 NHPA (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 archeological 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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. Road Reinforcement and Add 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 Road Reinforcement and Add a 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. Road Reinforcement and Add a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet). Construction of the eastern bridge would require the acquisition of property rights from 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 reinforcing of the highway occurs at the private landowner's property access, temporary work area easements would be required.

Alternative 2.2.2b. Road Reinforcement and Add 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, reinforcing of the road may require work area easements form private landowners.

Alternative 3.2.2a. Road Reinforcement and Add 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 Road Reinforcement and Add a 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 FP&L, 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 reinforcing 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 Code of Federal Regulations (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 ENP and 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 WRDA 2000, which established 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

Past Actions/Authorized Plans	Current Actions and Operating Plans	Reasonably Foreseeable Future Actions and Plans	Expected Impacts
Construction of the Tamiami Trail (1928, Florida Department of Highways) C&SF Project, 1948 (Creation of L-28 and L-29 Levees and enclosure of WCAs).Completion of S-12 Gates with relocation of Tamiami Trail w. of S-333 (1962) Modified Water Deliveries to ENP (USACE, ENP). Authorized 1992.	Tamiami Trail Modifications LRR (this EA) Conveyance between WCA-3A and WCA-3B (Conveyance and Seepage Control Project) (USACE/ENP) Authorization of Mod Waters, 8.5 Square Mile Area, 2000. Construction of 8.5 SMA levees, canals, and pump station (USACE).	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	Opening of L-67 A and C Levees under Conveyance and Seepage control will add water available to move through WCA-3B to L-29 and ENP. Pump Station S-357 S. of 8.5 Square Mile Area will provide additional seepage control to lands E of L-31 N; connection to C-111 Impoundment areas will aid in rehydrating Taylor Slough part of ENP.
Water Control Operations: WCA-3A Water Management Plan. 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; current constraint is el. 6.8 feet at G-3273 gauge.	Modifications to IOP, currently proposed, include incorporation of Mod Waters' S-357 pumping station. Subject of an independent NEPA documentation, expected for coordination in July of 2008.
ENP Protection and Expansion Act	ENP GMP (ENP) Determination of real estate actions.	General Management Plan expected to be complete 2009. ENP will document under NEPA. Decision on real estate still pending as of this EA.	Impact on private tourist developments along the Trail in the acquisition area depends on conclusions of ENP General Management Plan.
MWD to ENP–Raising Tigertail Camp (USACE/ENP)	Real Estate Acquisition and Osceola Camp raising (ENP)		Tiger Tail Camp has been raised to expected "CERP" water levels (above 10 ft.). ENP is in discussions with Osceolas; Osceola Camp will likewise be raised above CERP flood levels. (Not part of this EA).

C-111 Project	Build-out of C-111 under 1999, 2002, 2006 Sparrow BO, IOP. Changes to Canal 111 (C-111) were authorized in 1994 after Corps published a C-111 GRR. Changes are to make the C-111 Canal system, previously an agricultural flood control system, compatible with restoration of the lower Taylor Slough drainage sub-basin of Everglades National Park. New features in 1994 included seepage control impoundments to be built on the eastern edge of the former East Everglades Area (Park acquisition area).	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.	C-111 Project has been altered as authorized in ENP Act of 1989 to facilitate restoration of the Taylor Slough region of ENP. A series of N-S linear impoundments receive seepage water from L-31 N and hold it to decrease the rate of seepage eastward from the Park and re-direct waters to Taylor Slough headwaters. This project is under construction; expected completion in 2013.
SFWMD	Lower East Coast Regional Water Supply Interim Plan (SFWMD)		
CERP Projects	CERP-Broward County Water Preserve Areas Project (SFWMD) awaiting authorization. PIR approved by HQ in 2007. CERP WCA-3 Decompartmentalization (USACE/SFWMD)	When authorized, Broward County WPA will build large impoundments and a seepage management area E. of WCA-3B to reduce seepage loss and reduce stormwater pumping into WCA-3A Decompartmentalization of the WCA-3's would further degrade L-29 Levee, partially fill Miami Canal and reduce structure based flow in favor of sheet flow. Additional conveyance features through Tamiami Trail will be studied.	Storm water deliveries to WCA-3 will decrease, increasing overall water quality available for delivery to ENP. Filling or partially blocking Miami Canal will reduce structure flow and increase sheet flow; additional conveyance structures and blockages in L-67 Canals will increase flow into WCA-3B. Additional conveyance features under WCA 3 Decomp. should increase sheet flows, decrease adverse high water stages in WCA-3, and re-connect WCA 3 and ENP portions of Shark Slough.

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 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 percent of the total influx. The remaining 30 percent 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 percent delivered to Western Shark River Slough (WSRS) (via the S-12 structures) and 55 percent 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 one half to one and a half feet. For a wet year, depths are about twice the average. For a dry year, depths average from one half to one 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 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 VPD in 2000 to an estimated 9,200 VPD 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. On-going and future projects are expected to provide some degree of restoration to the habitats of protected species. Consultation under Section 7 of the ESA would 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 CSSS 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 *Borrichia 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 km2) 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 km2) 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. 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

Resource	Past Actions	Present Actions	Proposed Action	Future Actions	Cumulative Effect
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 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.	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. 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.

Florida Panther	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.	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.	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.	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.	Panthers are at considerable risk of extinction. Only 80 to 100 remain, making this one of the most endangered mammals.
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, including the indigo snake. Active management at military installations in Florida targets the 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 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.
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. 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 reinforced 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. Road Reinforcement and Add a One-Mile Eastern Bridge (Stage Constraint of 8.0 Feet). Commitments described for the previous alternatives would be required for reinforcing 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. Road Reinforcement and Add a One-Mile Western Bridge (Stage Constraint of 8.0 Feet). Commitments described for the previous alternatives would be required for reinforcing 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. Road Reinforcement and Add a One-Mile Eastern Bridge (Stage Constraint of 8.5 Feet). Commitments described for the previous alternatives would be required for reinforcing 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 Road Reinforcement and Add a One-Mile Western Bridge (Stage Constraint of 8.5 Feet). Commitments described for the previous alternatives would be required for reinforcing 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

Primary (or direct) impacts are those that are caused by the action and occur at the same time and place. Secondary (or indirect) impacts are caused by the action and are later in time or farther removed in distance, bur are reasonably foreseeable. The modification of Tamiami Trail is a construction project; the primary impacts of the project are those caused by construction activities.

Secondary impacts involve those linked to the project but occur subsequent to construction, and would include the potential for an increased conveyance of flows under Tamiami Trail. The flow regime would be determined through a new water management plan and NEPA document on the Combined Structural and Operating Plan (CSOP). Work on CSOP could begin in July 2008.

Providing a greater capacity for the conveyance of flows under Tamiami Trail would provide opportunities (See Section 4.2.2) for:

1. The delivery of more water into the eastern ENP and NESRS, restoring the balance of distribution between eastern and western deliveries, as proposed in the MWD GDM.
2. Restore seasonal flooding and timing of deliveries that would enhance suitability for native vegetation and decrease the potential for invasive species colonization.
3. Increase the quantity of water into NESRS, which would increase the quality and quantity of ridge and slough habitat.

Anticipated beneficial secondary impacts of the project are discussed in Appendix E, Environmental Benefits Analysis, and throughout Section 5.0, Environmental Effects of Alternatives. Potential ecological benefits include the restoration of ridge and slough processes, the restoration of vegetative communities, and the restoration of fish and wildlife resources.

Improvements to NESRS inside ENP could be realized through a potential in crease in water levels of up to two feet.

In addition to those benefits within the area downstream from Tamiami Trail, the project would provide greater flexibility for increased water releases. This

would reduce the need for storage of water in WCAs, which would decrease ponding and promote sheet flow. The WCA-3A ecosystem would potentially experience less frequent adverse high stages in its southwestern corner.

Additional water provided to ENP would increase the potential for inundating low-lying areas of businesses, commercial properties, and the Airboat Association of Florida site. The Tigertail Camp was raised in anticipation of higher stages; negotiations are ongoing between ENP and the Osceola family for raising the Osceola Camp to alleviate the flooding potential.

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 reinforcing 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 full compliance with section 309 of the Clean Air Act. Full compliance was achieved through the coordination and review of this EA with the Environmental Protection Agency. 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 would be included in the final EA. This project would be in compliance with the Act.

5.25.12 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.

5.25.13 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.

5.25.14 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.

5.25.15 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.

5.25.16 National Environmental Policy Act of 1969

Environmental information on the project has been compiled and this EA has been prepared in compliance with NEPA. With signing of the Finding of No Significant Impact (FONSI) this EA is in full compliance with the Act.

5.25.17 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.

5.25.18 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 (CERLA) 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.

5.25.19 Rivers and Harbors Act of 1899

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

5.25.20 Submerged Lands Act of 1953

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

5.25.21 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.

5.25.22 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.

5.25.23 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.

5.25.24 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.

5.25.25 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.

5.25.26 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.

5.25.27 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.

5.25.28 E.O. 13089, Coral Reef Protection

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

5.25.29 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.

5.25.30 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.

5.26 References

Council on Environmental Quality (CEQ), Executive Office of the President. 1997. Considering Cumulative Effects Under the National Environmental Policy Act. Washington, D.C.

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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SECTION 6

RECOMMENDED PLAN

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6.0 RECOMMENDED PLAN

Based on the limited reevaluation and the review of all existing data and reports concerning the TTM, Alternative 3.2.2a, Raise Canal Stage to 8.5 Feet and Construct a One-Mile Eastern Conveyance Opening, is recommended for implementation under the MWD authorization (***Figure 6-1***).

As part of the Recommended Plan, the federal government would acquire certain real estate rights from FDOT allowing for the conveyance of water as part of the Tamiami Trail project. In order to obtain the perpetual rights to flow water, FDOT would receive compensation. These rights include both a perpetual channel and perpetual flowage easement interests. The channel easement includes conveyance of water for a one-mile-wide stretch of land. Due to the fact that there is an existing roadway at that location, USACE would construct a one-mile bridge that would act as a replacement to the existing Tamiami Trail roadway. In addition, the flowage easement allows for the legal right to flow higher levels of water through and under the property now occupied by the existing Tamiami Trail for the entire expanse of the project area. Placing higher water levels in the L-29 Canal would adversely impact the existing roadway. As such, portions of the roadway would require reinforcing the road and road base to avoid degradation of the road as a result of the higher water stages. Under Substitute Facilities Doctrine, compensation for these real estate rights is based on the cost of a substitute or replacement of the facility that would be lost. Therefore, USACE would construct a one-mile long bridge with approaches as compensation for the loss of the existing Tamiami Trail roadway due to the construction of the channel, and compensation would also be provided to preclude potential damages to the remaining highway resulting from increased stages in the L-29 Canal.

Descriptions of the Recommended Plan and its features are provided in the paragraphs below.

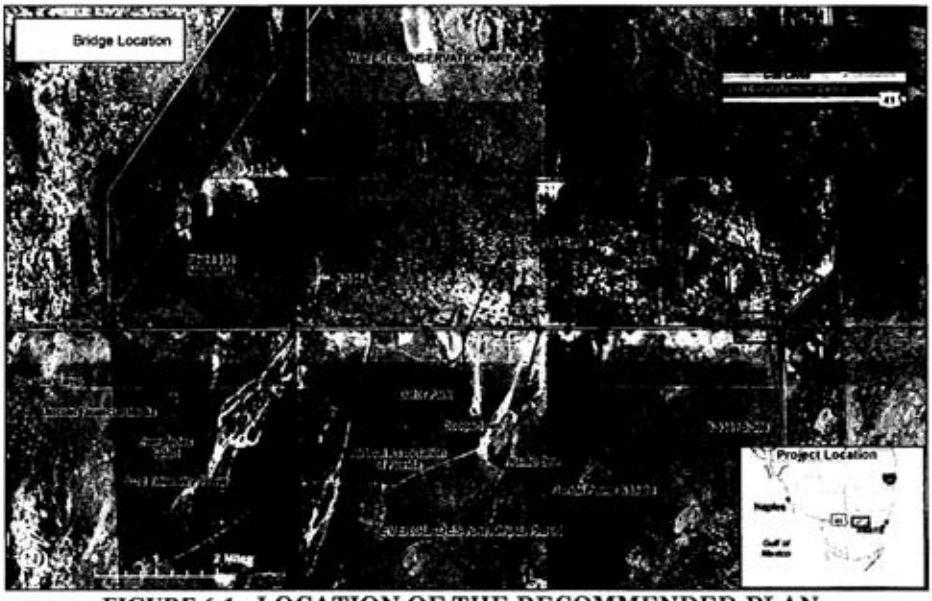

FIGURE 6-1: LOCATION OF THE RECOMMENDED PLAN

6.1 Modifications

6.1.1 Conveyance

The Recommended Plan would enable hydraulic conveyance through Tamiami Trail by removing one mile of the existing highway, embankment and associated culverts. This would allow one mile of connectivity between the L-29 Canal and ENP. A one-mile eastern bridge, coupled with an increased stage of 8.5 feet, would increase annual flow volumes by about 92 percent, to 339,703 acre-feet per year; peak flows would increase by about 48 percent, to 1,848 cfs. Additionally, conveyance over the remainder of Tamiami Trail would be provided through the use of the existing and improved culverts.

6.1.2 One-Mile Eastern Bridge (Location, Length, Height, Remove Culverts, Travel Lane Widths)

A one-mile bridge would be constructed as compensation to FDOT for the real estate rights to remove the one mile of Tamiami Trail and maintain motor vehicle traffic. The bridge would start approximately 3,000 feet east of Radio One and end about one mile west of S-334 (***Figure 6-1***). After completion of bridge construction, the unneeded portion of the highway embankment would be removed. The bridge would provide two 12-foot-wide travel lanes with ten-foot shoulders and outside barriers.

The existing highway would require a transition from the existing alignment to the bridge. The transitions to the bridge would have five feet paved shoulder and five feet of grassed shoulder. Guardrails would be located at the outside edges of these shoulders. The profile would be reinforced significantly for transitioning to the bridge and would be established per applicable drift, maintenance, and navigation bridge clearances, while minimizing humps in the profile. The low cord of the bridge would be at 14.75 feet NGVD.

6.1.3 Raise L-29 Canal Maximum Operating Limit to 8.5 feet, NGVD

Implementing Alternative 3.2.2.a is expected to raise the Maximum Operating Limit in the L-29 Canal to 8.5 feet NGVD, one foot above the existing operating limit of 7.5 feet NGVD. FDOT is allowing USACE to use a new standard (adopted in the March 2008 FDOT Flexible Pavement Design Manual) thereby reducing the required separation (Design Base Highwater Clearance) between the Design High Water (DHW) and the bottom of the road base. Design High Water (also referred to as Base Clearance Water Elevation) is defined as the average October wet season elevation plus the rainfall from a specific design storm event (10-year frequency, with duration (1 hr, 8 hr, or 24 hr) producing the highest stage and drawing down within a specific period). The old standard required either a higher base or a lower DHW. The use of this new standard with its reduced requirements for separation between the base and the DHW makes adherence to the DHW more imperative.

All inflows shall be cut off to the structures that influence this canal once the maximum operating limit of 8.5 feet NGVD is reached and in advance of certain stage and weather events. This one foot increase in the maximum stage elevation, coupled with improved hydraulic conveyance under the bridge, is expected to provide additional meaningful benefits as described in this LRR. In addition no changes (such as passive weirs in the L-29 Levee or removal of the L-67 Extension Levee without adequate engineering justification) shall be allowed which may cause stages to exceed the Maximum Operating Limit.

The benefits described in the LRR/EA are potential benefits associated with the evaluation of the LRR alternatives based on a single constraint of 8.5 feet in the L-29 Canal. The constraints that follow are required by FDOT in order to ensure the stability and safety of the highway. Therefore, when these FDOT constraints are applied to the recommended plan, there will be some change of benefits from those identified in this document. During the Combined and Structural and Operational Plan (CSOP) alternative planning process, the effects of these constraints on benefits will be thoroughly evaluated. In addition, there is an expectation that field monitoring, based on a reconfiguration of existing monitoring activities, will continue following implementation of the LRR features in conjunction with the CSOP operating plan. Such monitoring will

allow for adaptive management to potentially mitigate any loss of benefits from those identified in this document.

Operations of the C&SF system will ultimately depend on the operations of both the MWD and C-111 South Dade projects as defined in the CSOP. The operations of CSOP will have to be adjusted because the alternative recommended by this LRR does not allow stages high enough (i.e., 9.7 feet NGVD as proposed in the 2005 RGRR) to allow uncontrolled flow into the L-29 Canal. Specifically, the CSOP operations will have to be modified to include an L-29 maximum operating limit of 8.5 feet NGVD. Therefore, CSOP is dependent on the constraints set forth by this Recommended Plan. These constraints include:

A. All inflow structures to L-29 Canal will be closed and all inflows terminated, allowing the canal to naturally recede under the following scenarios. For the scenarios requiring a quantitative forecast the SFWMD Daily Quality Precipitation Frequency (QPF) will be used. All L-29 Canal stage references are as measured at the S-333 Tail Water unless this location is unavailable then S-334 Head Water may be used:

    1. Once the stage in the L-29 Canal reaches a stage of 8.5 feet NGVD, input from all structures that discharge into the canal shall be stopped until the level in L-29 Canal recedes beneath 8.5 feet NGVD. The operation of the MWD system, including management of inflows into L-29 Canal, will be determined as part of the CSOP evaluation. The trigger elevation that will allow the recommencement of flows and maintenance of the integrity of the roadway embankment will be determined in a manner consistent with the FDOT or other applicable design criteria and standards in force at the time of the preparation of the LRR.

    2. Two or three days (as soon as forecast information is available) before any named storm or tropical event is expected to impact the area, all inflow shall be stopped.

    3. Two or three days (as soon as forecast information is available) before an approaching rainfall event that is predicted to drop six inches or more inches of rainfall within a 72-hour period if the L-29 Canal stage is at or above 7.8 feet NGVD.

    4. Two or three days (as soon as forecast information is available) that a rainfall event is expected to result in stages that will meaningfully exceed 8.5 feet NGVD. For example, if the forecast is for 2 or more inches of rain and the L-29 stage exceeds 8.4 feet

NGVD; or if the forecast is for 3 or more inches of rain and the L-29 stage exceeds 8.3 feet NGVD; or if the forecast is for 4 or more inches of rain and the L-29 stage exceeds 8.2 feet NGVD; or if the forecast is for 5 or more inches of rain and the L-29 stage exceeds 8.1 feet NGVD.

B. The following information is provided to clarify expectations for development of the final operating plan and how operations will be monitored once implemented. The LRR Recommended Plan used 8.5 feet NGVD as the DHW elevation for purposes of establishing the roadway profile and pavement design. This DHW was calculated from a 36-year POR by averaging all October days within the initial CSOP model simulation. The LRR Recommended Plan assumed a 36-year POR average October wet season elevation of 7.89 feet NGVD to establish the 8.5 DHW. While the target stage for the L-29 Canal is 8.5 feet, it is understood that the average October wet season elevation is expected to be approximately 7.89 feet, NGVD based on multiple years (36-year simulated POR). Since this elevation is an average, during some individual years the average October elevation may exceed the 7.89 feet stage and other years it would be below 7.89 feet. The average elevation will be dependent on the meteorological conditions of that year. However when considering multiple years the October average should be at or below 7.9 feet NGVD. The final CSOP will be developed such that the average October elevation does not exceed 7.9 NGVD in the L-29 Canal for the model's period of record (1965 through 2000).

These evaluations could also result in the identification of additional criteria that may modify the benefits described in this report. It is the expectation of the participating agencies of the LRR that the subsequent CSOP evaluations will thoroughly analyze the impacts of these modifications and attempt to mitigate any adverse impacts to the level of benefits described in this report.

Agreements with FDOT and other State agencies are contingent on this 36-year POR average October wet season elevation of 7.89 feet NGVD. This elevation was based on modeling performed by the Government during the initial development of the CSOP plan. These model runs assumed sufficient road raising and bridges to allow unconstrained flow into the L-29 Canal. This average October stage will be verified in the following manner:

1. The 7.89 feet NGVD stage elevation is based on a simulated 36-year period of record (POR) modeling data which are the best information currently available. The CSOP team will be required to analyze the 36-year POR modeling average monthly water levels during October and compare the calculated DHW to that defined in this report (7.89 feet, NGVD). If the 36-year POR model simulated average October elevation is

above this stage, adjustments to CSOP shall be required operationally or structurally to ensure the design integrity of the roadway embankment and pavement. USACE will consult with SFWMD and FDOT so that the 36-year POR modeling results in an average October stage at or below the 7.89 feet NGVD.

2. Once the Tamiami Trail Modifications are constructed and operational, yearly average October water surface elevations will be computed (S333 tailwater) and shared with FDOT. After three years of operation, the average of the three years will be computed and compared to the predicted 36-year POR October average of 7.89 feet stage elevation. If the average October elevation is found to be more than 0.2 feet above this stage ($\geq$ 8.09 feet NGVD), adjustments shall be required operationally or structurally to ensure the design integrity of the roadway embankment and pavement. The condition of the roadway will be evaluated using the annual Florida Department of Transportation Pavement Condition Survey ratings for Crack, Rut and Ride. USACE will consult with SFWMD and FDOT on needed changes and implement them in a timely manner. After each subsequent year of operations, the average October elevation will be recalculated to include all operational years (e.g., after four years of operation, the average October elevation will use the four years of elevation data).

C. FDOT contemplates executing a Joint Participation Agreement (JPA) in favor of USACE on or about July 1, 2011 in the amount of its deferred maintenance. The present day value of that is $4.716 million and the funding would be provided prior to 30 September 2011. That contribution to project funding is contingent upon and subject to the following:
   1. The availability of funds.
   2. State budget authorizations.

In summary it is important to maintain the integrity and safe conditions for Tamiami Trail. In order to accomplish these conditions, certain assumptions were made on the best available data to predict how the stages in L-29 Canal would change during the wet season and during specific storm events. Certain contingencies were set in place to minimize impacts to the road base and to reevaluate the original assumptions. Potential benefits were based on the best information to date. As stated earlier, final benefits will be thoroughly evaluated and vetted through operating procedures under CSOP.

6.1.4 Highway Modification

During the construction of Tamiami Trail, FDOT placed culverts underneath the roadway. The federal government may not have the legal right to flow water under the road in a manner consistent with the needs of this project. Therefore, it is prudent for the federal government to acquire a flowage easement over the

full length of the project lands. For this project, it would be necessary to increase the water elevation north of Tamiami Trail in order to flow more water to the south underneath the road. This increase of the L-29 Canal stage is expected to adversely affect Tamiami Trail. In a case such as this, the USACE would be required to conduct a facility relocation. This type of transaction is in actuality an acquisition of an interest in real estate. In the present case, the USACE would make the road reinforcements in exchange for the flowage easement. No money would be exchanged between USACE and FDOT. USACE would construct the road reinforcement according to FDOT standards and turn over the operation and maintenance of the road to FDOT while FDOT would execute a flowage easement document to the USACE. The road, as repaired, then becomes known as the substitute facility.

6.1.5 Access to Existing Facilities/Sites

Access to all facilities and sites along Tamiami Trail would be maintained.

6.1.6 Drainage/Treatment of Stormwater Runoff

The grassed shoulders directly adjacent to the existing roadway provide some limited treatment of highway runoff.

The proposed bridge would increase the total impervious surface area (within the bridge footprint), but would have no practicable means of providing grassed shoulders or traditional swales for treatment of stormwater. Therefore, it would be necessary to provide a means to collect and trap contaminants from stormwater runoff (treatment of first flush) from the proposed bridge prior to discharge. There are a number of BMPs sediment removal technologies on the market that would target removal of sediments and gross pollutants from stormwater runoff while minimizing wetland impacts. USACE, in coordination with FDEP and FDOT, in order to meet state water quality standards and FDOT safety standards, has agreed to incorporate into the bridge design a treatment system that removes sediments and hydrocarbons from stormwater runoff as well as complying with the FDOT standard of routing water off traffic lanes. The new bridge deck would include drains that connect to a drainage collection and distribution system that would subsequently connect to separator units. Roadway and bridge specifications would continue to be coordinated with FDEP and FDOT as they are developed to ensure all mandatory requirements of FDOT and FDEP are met in the final design.

6.1.7 Utilities

The placement of utilities within the highway right-of-way is through permits issued to utility companies by FDOT. Utilities within the corridor that may be affected by the new construction include buried telephone facilities beyond the guardrails north and south of the roadway, fiber optic cables, and a 23 kilovolt overhead electric line about 100 feet south of the guardrail. All utilities within

the bridge and transitions would require relocation. The utilities on the roadway may require relocation, depending on the change in the shoulder width. Utility relocations would be coordinated with each utility owner.

6.1.8 Maintenance of Traffic during Construction

Existing traffic flow would be maintained with one lane of travel in each direction, except during paving operations. During paving operations, the travel would have to be one lane only with flag men at either end. This would be due to the work being done in the existing foot print of the existing roadway. The overlay of the existing roadway would be accomplished using a moving operation. For the proposed bridge, the existing traffic would be shifted to the northern shoulder to provide the necessary area for construction.

6.1.9 Real Estate

The federal government would require real estate rights in order to create a conveyance channel through Tamiami Trail, raise water levels in the L-29 Canal, and flow additional water through and under Tamiami Trail utilizing existing and improved culverts to NESRS.

The federal government would obtain real estate rights along the entire 10.7-mile project area from FDOT through a relocation agreement. The agreement would provide real estate rights for: temporary construction easement, perpetual flowage easement, and channel easement. The compensation to FDOT for these real estate rights would be a substitute facility – the construction of a bridge and roadway modifications as needed to mitigate for increased water levels.

It would be necessary to acquire real estate interests from FP&L for lands on which the project would be constructed. Efforts are currently under way to obtain an 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.

Flowage easements are also required from the private parcels located along Tamiami Trail before the higher water stages can be implemented. There are six remaining privately owned parcels located along the Tamiami Trail that are authorized for acquisition by DOI as part of the Everglades National Park Protection and Expansion Act (PL 101-229). Funding and the responsibility for these acquisitions are strictly borne by ENP; hence the costs for those acquisitions are not included in this report. Under the Everglades National Park Protection and Expansion Act, these properties were included within the ENP boundary map that was established by Congress; therefore, the Park is responsible for acquisition of those properties.

A flowage easement is required for the Airboat Association of Florida. This property was explicitly excluded from acquisition under the Everglades National Park Protection and Expansion Act. Acquisition of this easement is a TTM project action and cost.

Real estate requirements and issues are discussed in detail in the Real Estate Appendix (Appendix F).

6.2 Implementation

The following steps would take place prior to full implementation of the recommended plan:

6.2.1 National Environmental Policy Act Compliance

This LRR incorporates information contained in the November 2005 RGRR/SEIS by reference, and is considered to be tiered off the referenced EIS. To comply with the NEPA process, the formal public comment period for the Draft LRR-EA was 30 days beginning on April 9 and ending on May 9, 2008. A public meeting was held on April 22, 2008 in Miami and both written and oral comments were received. Additionally, the documents were posted on the Jacksonville District, USACE Environmental website during the comment period. After the close of the Draft LRR-EA comment period, this EA was revised and a Finding of No Significant Impact was signed by the District Engineer. The non-federal sponsor will present the LRR-EA to the SFWMD Governing Board, which is expected to issue a letter indicating support if the project is accepted.

The ENP is a cooperating agency under NEPA. An official letter inviting SFWMD, FWS, EPA, ENP, FWC and FDEP to be cooperating agencies (as defined by NEPA) was sent in March 2008. These agencies were chosen because of their special expertise in the area. The selection of these agencies to be invited as cooperating agencies does not exclude any other agencies from full participation in the project. ENP accepted the invitation; no other agency has responded to be a cooperating agency.

6.2.2 Preconstruction Engineering and Design

It is anticipated that the PED of the project would be competed by September 2008.

6.2.3 Land Management Agreement

Prior to SFWMD executing a PCA amendment with USACE, DOI and SFWMD must reach an agreement on how to manage the project features where such features extend into lands owned by the ENP. The executed agreement may be an attachment to the PCA amendment executed by SFWMD and USACE. SFWMD has also requested that USACE become signatory to this agreement.

6.2.4 Project Cooperation Agreement Amendment

A PCA amendment would be required between USACE and the non-federal sponsor, SFWMD. The PCA is a legally binding document between the federal government and the non-federal sponsor identifying the sponsor's duties and obligations for this project. The SFWMD is the project sponsor and represents local interests.

6.2.5 Highway Easement Deed

In order to construct the one-mile bridge, the project requires one hundred feet of land (50 feet permanent and 50 feet temporarily for construction) south of Tamiami Trail for the one mile width of the site of the bridge from the DOI. One legal mechanism for DOI to convey these parklands is by means of a HED. The DOI would consent to the deeding of these ENP lands by the FHWA to FDOT since these lands are required for the construction, operation, and maintenance of the project. The HED would be negotiated by DOI, FHWA, FDOT, SFWMD and USACE. In addition to conveying the rights necessary for the construction and OMRR&R of the highway (i.e., the bridge), this HED would also contain a perpetual channel easement and perpetual flowage easement. These additional rights would then allow for the construction, OMRR&R of a channel underneath the bridge and also allow for the flow of water through the channel. As the only grantee to the HED, all of these rights would then issue only to FDOT at this point. The HED is merely a temporary solution for transferring these lands to the state. It is the overall intention of DOI to seek specific legislation from Congress to convey the lands contained in this HED over to the state in fee.

6.2.6 Relocation Agreement

The USACE, not being a party to the HED conveyance, would not have the legal right to enter upon the property of FDOT. Therefore, the USACE would acquire the real estate interests contained in the HED through a separate agreement with FDOT. This separate document is the relocation agreement. The real estate rights that would be obtained in this agreement include: 1.) the right to enter FDOT lands to construct features and modify the existing roadway; 2.) a channel easement at the location of the bridge; and 3.) a flowage easement for the entire expanse of the roadway within the project limits. This flowage easement allows the USACE to flow water through/under the Tamiami Trail utilizing the existing and any improved culverts as well as the area underneath the bridge. As part of the project, water levels in L-29 Canal would be raised one foot to introduce more water into ENP. As compensation for the conveyance of these three real estate rights, FDOT would receive a newly constructed one-mile bridge to replace removal of one mile of existing roadway that is required as part of the channel easement. In addition, FDOT would receive the reinforcing of portions of lower lying roadway in order to offset the adverse impacts due to raised water levels in L-29 Canal as part of the USACE acquisition of 10.7 miles of land covered by the flowage easement. USACE would not only acquire rights

to FDOT-owned lands by this relocation agreement but would also receive rights to those lands that FDOT obtained under the HED from DOI/FHWA cited above.

6.2.7 Real Estate

It would be necessary to acquire real estate interests for lands on which the project would be constructed. In addition to the lands required for construction, it would be necessary to purchase real estate interests in tracts due to increased water levels. DOI, FDOT and private landowners own or hold interests in lands required for the project.

6.2.8 Construction Duration

Construction is scheduled to begin in October 2008. It is planned that a single contract would be awarded for both bridge work and road reinforcement, and work on these two components would occur at the same time. It is anticipated that construction would be completed in three and one-half years.

6.2.9 Monitoring

The project does not include specific hydrologic or ecological monitoring in addition to existing studies; however, there are many existing sampling stations and ongoing studies carried out by the CERP Monitoring and Assessment Plan (MAP) as well as EPA's Regional Environmental Monitoring and Assessment Plan (REMAP), the USGS's Everglades Depth Estimation Network (EDEN), USACE, and SFWMD, among others, that are on the ground and prepared to detect any changes in hydrology and vegetation. A summary of the monitoring network is provided in Appendix E.

6.3 Cost

6.3.1 Project Costs

The first costs for the Tamiami Trail items recommended under the MWD authority are shown in ***Table 6-1*** and are the 90 percent confidence level cost estimates. This confidence level means that there is a 90 percent chance that the final cost for this project would be equal to **or less than** the cost shown. The risk and uncertainty analysis was calculated for the total construction cost; thus the distribution of risk across the project elements is approximate. The entries in this table assume that the cost savings features are implemented and that the agreements among agencies necessary for these cost savings are signed executed. The savings features are listed below. Inability to implement all of these cost saving options would result in a higher cost of the project.

a. Per the FDOT Pavement Design Manual, the following road reinforcement plan is estimated for 8.5 feet high water elevation:
   i. For roadway with crown greater than 11.91 feet NGVD, mill road three inches (3") and replace with three inches (3") of asphalt
   ii. For roadway with crown elevation between 10.91 feet and 11.91 feet NGVD, mill road three inches (3") and replace with five inches (5") of asphalt
   iii. For roadway crown elevation less than 10.91 feet NGVD, mill down existing pavement until it is one foot above design high water. Then add asphalt base and structural course according to the FDOT design manual.
b. Use temporary rights-of-way and staging areas within the ENP property
c. Design optimizations along the bridge
d. Use fill from nearby SFWMD storage areas
e. Accelerate the award of construction contract(s) by one year, with award in late 2008 instead of late 2009

TABLE 6-1: MWD TAMIAMI TRAIL MODIFICATION COSTS

ITEM	Cost Estimate Including Cost Saving Options	Local Market Escalation Risk	Total
Construction			
Bridge	$60,100,000	$16,800,000	$76,900,000
Bridge - Transitions	$20,100,000	$5,600,000	$25,700,000
Road Modifications	$61,500,000	$17,300,000	$78,800,000
Subtotal	**$141,700,000**	**$39,700,000**	**$181,400,000**
Preconstruction Engineering and Design			$0
Engineering During Construction			$3,100,000
Contract Administration			$14,900,000
Lands And Damages			$5,900,000
Subtotal			**$23,900,000**
TOTAL First Cost			**$205,300,000**
Escalation to Mid-Point of Construction			$6,700,000
TOTAL Fully Funded Cost			**$212,000,000**

The risk and uncertainty analysis was calculated for the total construction cost; thus the distribution of risk across the project elements is approximate.

Table 6-1 does not include an entry for PED. USACE, Jacksonville District has already been funded for PED costs through September 2008, and PED is expected to be complete by that date. The total estimated first cost is $205,300,000. The fully funded cost estimate is $212,000,000, with the escalation to the midpoint of construction based on an award date of October 2008 and three and one-half year construction duration.

Comparison of Cost Estimates from the Draft LRR and the Final LRR

The costs in Table 6-1 above differ from the costs presented in Tables 4-7 and 4-10 of this final report, and the costs presented in Section 6 the draft LRR. The team incorporated additional design information, updated cost quotes, and applied a different cost estimating method (MCACES 2nd Generation (MII) software) for this newest cost estimate for the recommended plan. Appendix C provides additional information on the new cost estimate.

The estimated costs of the recommended plan are lower in this final report than they were in the draft report. The fully funded cost estimate decreased from $225,000,000 to $212,000,000. The costs without including escalation subtotal decreased from $177,000,000 to $165,600,000. The First Cost appears to have increased from $177,000,000 to $205,300,000. However, this increase of first cost is due to a different manner of displaying cost risk and cost escalation. The total amount of estimated cost escalation is approximately the same in the draft and final reports. The draft report combined the escalation risks and presented the total separately from the first cost. This final report splits the total escalation into escalation due to local market conditions and escalation captured by the published OMB escalation rate. USACE guidance is that the local escalation risk should be combined with the construction costs and thus become part of the First Cost. The OMB escalation is added to the First Cost to obtain the Fully Funded Cost estimate.

The costs in **Table 6-1** came from the MII estimate in Appendix C, Tables 5 and 7. Table 7 of this appendix displays values for sunk and previously funded PED costs that are not part of the evaluation and are not carried forward into **Table 6-1**.

6.3.2 Cost Sharing

Recent cost sharing for the MWD project has been 50/50 USACE/DOI funding. The proposed funding breakdown is shown in ***Table 6-2***. The Managers' Report for WRDA 2007 states that arrangements in this report for sharing of future costs between USACE and DOI will be tentative only. Thus this proposed cost sharing between the federal agencies may be changed with additional budgetary guidance. The State of Florida, through FDOT, has verbally agreed to provide $4,500,000 to the project.

TABLE 6-2: MWD TAMIAMI TRAIL COST-SHARING

ITEM	Cost
USACE	$100,400,000
DOI	$100,400,000
FDOT	$4,500,000
Total	**$205,300,000**

Because roadway construction is not a major part of the USACE construction authority, it is suggested that both USACE and DOI investigate contributions from other partners to reduce the overall project costs.

Actions that may be implemented in the future under CERP would be cost-shared 50/50 USACE/SFWMD.

6.3.3 Budgeting

The stage increase and the conveyance increase are both necessary to achieve the restoration benefits of the project. The benefits would not be achieved if only one were completed. It is expected that the funds for the entire estimated cost of the project would not be available at the start of construction, but would be budgeted and appropriated over several years. The cost estimate and construction schedule assume an October 2008 start and further assume that funding in future years would be available so that construction actions would not be delayed.

An adaptive management approach has been developed, in conjunction with the incremental adaptive management concept developed by the National Academies of Science in 2006. The monitoring program will rely on existing sampling locations and ongoing studies to test water deliveries and the vegetation response within Shark River Slough. The results of this monitoring would be used to inform the requirements for CERP implementation.

6.4 Operation, Maintenance, Repair, Rehabilitation and Replacement

The conveyance features system would continue to be operated and maintained as part of the C&SF project by SFWMD and USACE. SFWMD would be responsible for the OMRR&R of the conveyance area and the culverts as part of the project cost-sharing agreement. Other SFWMD responsibilities include cost-sharing, records maintenance, and assisting in managing the project in a manner consistent with applicable Federal and State laws and regulations, including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC 9601-9675.

Annual OMRR&R costs for the conveyance are expected to be $30,000.

FDOT would be responsible for maintaining the pollution abatement system, bridges, and roadway since these substitute facilities are compensation to FDOT for real estate rights rather than project features. OMRR&R of these facilities is not a TTM project cost.

6.5 Additional Considerations

6.5.1 Chief of Engineers Actions for Change

The Tamiami Trail study and report are consistent with the Chief of Engineers Actions for Change for Applying Lessons Learned during Hurricanes Katrina and Rita. These actions require a focus on system analysis, sustainability, risk-informed decision making and communication of risks, incorporate professional and technical expertise, and dynamic independent review.

System Analysis: The study is an integral part of the larger Everglades system, and is a priority for any system wide restoration. The project considered compatibility of the proposed features with future potential south Florida restoration efforts, with existing MWD features, and with the purposes and features of the Central and Southern Florida multipurpose project.

Sustainability The recommended plan was developed to be a sustainable restoration feature, and as a foundation for the larger Comprehensive Everglades Restoration Plan. In particular, the following items were considered during the planning:

- Minimizing O&M requirements to help facilitate long term, low cost benefits.
- Engineering flexibility, through the use of design features to help manage water under a variety of future scenarios.
- Stand alone benefits. The project was formulated to provide immediate benefits to the marsh, and work in conjunction with a variety of future scenarios.

Risk: Risk informed decision making was a vital element in the study, and has been integrated through the study process. In particular, two sources of risk and uncertainty were incorporated into the project planning:

- Cost risk and uncertainty: resulting in the potential for cost growth. In order to manage these risks, the study incorporated new risk-based cost estimating methods. Bridge construction and road excavation methods involve relatively low uncertainty. The costs of fuel and oil-based materials, aggregate, concrete, and steel were the major risk factors affecting cost estimates. The proposed early start of construction, autumn of 2008, is the best method to mitigate and minimize these risks.
- Ecological Response uncertainty: there is uncertainty in regard to the landscape changes associated with restored hydrology. This project will

be one of the first major restoration construction projects in the heart of the Everglades ecosystem. Existing hydrologic and ecological monitoring in south Florida will be used to assess the performance of the recommended plan and to aid decisions whether and how to modify operations of the system.

Technical Expertise and Independent Reviews The report was prepared by highly experienced staff from Jacksonville District, Everglades National Park, and other agencies located in south Florida. Draft versions of report were reviewed several times: Independent Technical Review by subject-matter experts throughout the Corps who were not involved in the study; External Peer Review by a panel of independent non-government experts; Model Review by a panel of independent non-government experts; and by the public. The LRR was amended and improved in response to each of these reviews.

6.5.2 Environmental Operating Principles

The project is consistent with the environmental operating principles and is expected to be a benefit to the environment. These principles are listed below along with the project consistency for each principle.

- Strive to achieve Environmental Sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
  Consistency: The basis of the TTM project is to create a sustainable, healthy and diverse Everglades Ecosystem.
- Recognize the interdependence of life and the physical environment, and consider environmental consequences of USACE programs and activities in all appropriate circumstances.
  Consistency: Project provides both immediate and potential long-term benefits to the Everglades ecosystem. The Recommended Plan has been fully reviewed for environmental impacts in NEPA document.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
  Consistency: The Recommended plan was formulated to provide larger ecosystem benefits while still considering and minimizing local impacts.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
  Consistency: Project complies with all National Environmental Policy Act guidelines as well as Endangered Species Act obligations

- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of the processes and work.

  Consistency: TTM is one piece of a larger puzzle of both Modified Water Deliveries as well as Comprehensive Everglades Restoration. Cumulative impacts of all relative projects were considered in the formulation and analysis of the Recommended Plan.

- Build and share an integrated scientific, economic and social knowledge base that supports a greater understanding of the environment and impacts of the work.

  Consistency: The LRR analysis was an inclusive and open process that engaged all stakeholders, interest groups and agencies.

- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find win-win solutions to the Nation's problems that also protect and enhance the environment.

  Consistency: Public input was encouraged through scoping as well as public and stakeholder meetings.

6.5.3 Key Social and Environmental Factors

The TSP above is a first step in overall restoration. It is recognized that by selecting a lower cost plan, additional actions would be required for complete restoration at a later date. These additional actions should keep with landscape changes and adaptive incremental restoration.

6.5.4 Stakeholder Perspectives and Differences

There are considerable differences of opinion on the best solution to the Tamiami Trail, which range from merely adding swales to the construction of the 10.7-mile bridge. The analysis presented in this LRR was designed to look objectively at the full range of values, and implement necessary first steps. However, many stakeholders would prefer a longer-term alternative for implementation. As a result, there may be considerable differences of opinion from stakeholders on the best recommended plan.

6.6 Remaining Modified Water Deliveries Project Features

MWD Project consists of major components:

1. 8.5 SMA Flood Mitigation component,
2. Conveyance and Seepage Control component,
3. Tamiami Trail component and
4. Revised operating plan that incorporates the new components.

The 8.5 SMA component is nearly complete, except for exotic and debris removal in the areas west and north of the protection levee. For the Conveyance and Seepage Control component, the following features are completed: S-355 A and

B gated structures in the L-29 Levee; S-333 modifications; four of the nine miles of L-67 Extension Levee degraded; S-356 pump station; and Tigertail Camp elevation raised.

Subsequent to the release of the Tamiami Trail LRR, USACE will address any design modifications for the remaining Conveyance and Seepage Control features in separate a NEPA document and Engineering Documentation Report (EDR). Remaining features include the following:

1. Structures S-345A, B, and C through the L-67A and C levees
2. Structures S-349 A, B, and C in the L-67A Borrow Canal
3. Degradation of five miles of L-67 Extension Canal and Levee
4. Structures through the L-29 Levee

Potential flooding of Osceola Camp will be addressed. ENP and representatives for the Osceola Camp are negotiating the details of the mitigation actions that would be performed.

The Tamiami Trail component (this LRR) has not been constructed.

To complete the MWD project, a revised operations plan will be developed in conjunction with C-111 South Dade project efforts under CSOP.

6.7 Funding Requirements to Complete the Modified Water Deliveries Project

Based on Alternative 3.2.2a for the Tamiami Trail component and completion of the remaining MWD features, the estimated balance to complete the MWD program from FY09 forward is $187.1 million dollars (based on FY08 escalated/fully funded dollars). The funding allocations in ***Table 6-3*** are based on three and one-half year construction duration for the TTM and completion of the remaining features. The estimates are based on engineering information and that may need to be re-examined if the project were to encounter a schedule slip. Because the Administration has not released budgetary guidance, costs beyond FY09 have not been determined between DOI and USACE. The State of Florida has verbally committed to contribute approximately $4.5 million dollars towards TTM. These monies would normally have been spent on their maintenance of the roadway.

TABLE 6-3: MWD REMAINING BUDGET REQUIREMENTS

Modified Water Deliveries Project
Funding Allocations to Complete Alternative 3.2.2a
1 Mile Eastern Bridge/Road Mitigation
($ in millions)
Dollars Reflected are Oct 07 Price Level (inflated/fully funded dollars)

	Through FY07	FY08 Enacted	FY09 Pres Bud	Remaining After FY09	Total Project
Costs					
8.5 Square Mile Area	170.4				170.4
Conveyance & Seepage	30.0		0.2	21.0	51.2
Tamiami Trail Modifications	45.5	18.4	54.6	93.5	212.0
Tamiami Trail Design *	11.0	5.7			16.7
Project Implementation Support	41.5	0.0	5.2	12.6	59.4
Mod Water Total TOTAL:	**298.4**	**24.1**	**60.0**	**127.1**	**509.6**
Funding					0.0
Department of the Interior	230.7	14.3	10.0		255.0
Corps of Engineers	67.7	9.8	50.0		127.5
State of Florida				4.5	4.5
To Be Determined				122.6	122.6
Mod Water Total TOTAL:	**298.3**	**24.1**	**60.0**	**127.1**	**509.6**

* Includes sunk costs for planning, pre-construction, engineering and design.

Under a separate NEPA process from the Tamiami Trail LRR, a pilot project is being considered that would determine the actual effects of spreader swales. ENP would lead the NEPA action for the pilot. If the pilot project demonstrates that the swales are successful, USACE and ENP would consider incorporating the swales as a part of the remaining Conveyance and Seepage Control component.

6.8 Restoration Beyond the Modified Water Deliveries Project

The Recommended Plan of the Tamiami Trail LRR increases water flows to the Park along 10.7 miles of the 20-mile stretch of Tamiami Trail from Krome Avenue to the eastern boundary of Big Cypress National Preserve. This action is consistent with the MWD authority which directs the Secretary of the Army to construct modifications to the C&SF project to improve water deliveries into the Park and, to the extent practicable, take steps to restore the natural hydrological conditions in the Park.

The LRR Recommended Plan would provide significant benefits by:

- allowing the L-29 Canal to be operated at stages up to 8.5 feet NGVD;
- increasing conveyance capacity under Tamiami Trail from 1,250 to 1,848 cfs; and
- increasing flow volumes to the Park by 92 percent.

The remaining activities discussed earlier in this report for the 8.5 SMA would be completed using prior appropriations. Implementation of a plan recommended in the Final Limited Reevaluation Report for Tamiami Trail is contingent upon sufficient appropriations necessary for the completion of the design, engineering, and construction of the features in the plan, to include conveyance and seepage features within WCA-3A and 3B, and the update to the operations and water control plans necessary to account for new project features. The accomplishment of all of these features and updates are in accord with the MWD project, as authorized in the Everglades National Park Protection and Expansion Act of 1989, PL101-229, and the first stage of restoring more natural deliveries into ENP. Future restoration features intended to improve the efficacy of this work and build upon it would be evaluated under other appropriate statutory authority.

SECTION 7

RECOMMENDATIONS

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7.0 RECOMMENDATIONS

I recommend that the MWD to ENP, C&SF project be modified to allow for improved water deliveries to ENP by modification, construction and implementation of the following items to Tamiami Trail in accordance with the Everglades National Park Protection and Expansion Act (P.L. 101-229, Section 104, 16 U.S.C. Part 410r-5 *et seq.),* December 1989.

The Recommended Plan includes features to convey the additional flows from L-29 Canal, north of the Tamiami Trail, south to the ENP. The Recommended Plan consists of the following components, which are described in Section 6, Recommended Plan.

1. Acquisition of the necessary real estate interests required for construction of the project from the Airboat Association of Florida, FP&L and FDOT.
2. Construction of a one-mile bridge and reinforcement of the remainder of the Tamiami Trail within the project area in order to counteract the project's higher water levels in the L-29 Canal. Road reinforcement is part of TTM and will be paid for by the MWD project. FDOT will contribute $4,500,000 to the road reinforcement as part of their normal maintenance program.
3. Acquisition of real estate interests from FDOT by means of a relocation agreement within the project area to include a channel easement, a flowage easement, a temporary work area easement and a right of entry for construction upon the FDOT lands in order to construct the project features.

The Limited Reevaluation Report (LRR) Recommended Plan's total first cost estimate (excluding escalation) is **$205.3 million**; its fully funded cost estimate, which includes escalation to the mid-point of construction, is **$212 million**.

The above recommendations are made with the provision that prior to project implementation, SFWMD, the non-federal sponsor, shall enter into a binding agreement, most likely in the form of a PCA or PCA amendment, between the Department of the Army and SFWMD for modification of the C&SF project, MWD to ENP project, which provides for the following regarding the conveyance features for the project:

a. OMRR&R of the project, or functional portion of the project, in a manner compatible with the project's authorized purposes and in accordance with applicable federal and state laws and regulations and any specific directions prescribed by the federal government;
b. Provide 25 percent of the cost of OMRR&R the project's conveyance features. The non-federal sponsor shall have no responsibility for OMRR&R of the substitute facilities, those being the modified roadway,

the constructed bridge and its ramps/approaches, the culvert structures underneath Tamiami Trail, along with sediment control within those culverts which shall all become the responsibility of FDOT;

c. Do not use federal funds to meet the non-federal sponsor's share of project OMRR&R costs unless the federal granting agency verifies in writing that the expenditure of such funds is authorized;
d. Give the federal government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-federal sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, OMRR&R, or completing the project. No completion, OMRR&R by the federal government shall relieve the non-federal sponsor of the responsibility to meet the non-federal sponsor's obligations, or to preclude the federal government from pursuing any other remedy at law or equity to ensure faithful performance;
e. Hold and save the United States free from all damages arising from the construction, OMRR&R of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;
f. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the CERCLA, PL 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the federal government determines to be required for the initial construction, operation, and maintenance of the project that were provided by the Non-Federal Sponsor and for which the Local Sponsor has received a land compensation payment. However, for lands that the federal government determines to be subject to the navigation servitude, only the federal government shall perform such investigations unless the federal government provides the non-federal sponsor with prior specific written direction, in which case the non-federal sponsor shall perform such investigations in accordance with such written direction;
g. Assume, as between the federal government and the non-federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the federal government determines to be necessary for the initial construction, operation, or maintenance of the project that were provided by the Non-Federal Sponsor and for which the Local Sponsor has received a land compensation payment;
h. Agree that, as between the federal government and the non-federal sponsor, the non-federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that would not cause liability to arise under CERCLA;

i. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce the level of protection it affords, hinder operation and maintenance, or interfere with its proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;
j. Not less than once each year, inform affected interests of the extent of protection afforded by the project;
k. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of three years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as would properly reflect total costs of construction of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 CFR Section 33.20;
l. Comply with Section 221 of P.L. 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the WRDA 1986, P.L. 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;
m. Comply with all applicable federal and state laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, P.L. 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army," and all applicable federal labor standards and requirements, including but not limited to 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantial change the provisions of the Davis-Bacon Act [formerly 40 U.S.C. 276a et seq.], the Contract Work Hours and Safety Standards Act[formerly 40 U.S.C. 327 et seq.] and the Copeland Anti-Kickback Act [formerly 40 U.S.C. 276c et seq.] ;
n. Comply with Section 402 of the WRDA 1986, as amended (33 U.S.C. 70lb-12), which requires a non-federal interest to participate in and comply with applicable federal floodplain management and flood insurance programs, prepare a flood plain management plan within one year after the date of signing a PCA Amendment,, and implement the plan not later than one year after completion of construction of the project; and,
o. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, P.L. 91-

646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, necessary for the initial construction, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

The recommendations contained herein reflect the information available at this time and departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Office of Management and Budget (OMB) as proposals for implementation funding. However, prior to transmittal to OMB, any sponsor, the state, interested federal agencies, and other parties would be advised of any modifications and will be afforded an opportunity to comment further.

Paul L. Grosskruger
Colonel, U.S. Army
District Engineer

SECTION 8

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8.0 INDEX

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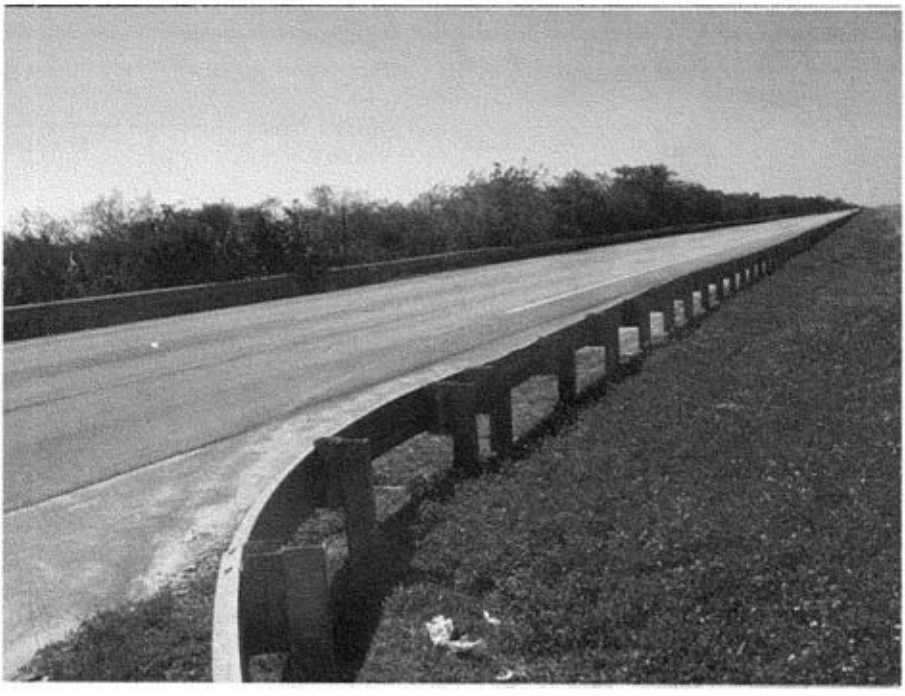
Everglades National Park

MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS
FINAL LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT

VOLUME 2, ANNEXES & APPENDICES



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U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EVERGLADES NATIONAL PARK

June 2008

This Report Contains Two Volumes

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MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK

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ANNEX A1
COASTAL ZONE MANAGEMENT CONSISTENCY

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FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES

Tamiami Trail Modifications
Dade County, Florida

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: The proposed plans and information will be submitted to the state in compliance with this chapter. Construction will not be located seaward of the line of mean high water or where it might have an effect on natural shoreline processes.

2. Chapters 163 (part II), 186, and 187, County, Municipal, State and Regional Planning. These chapters establish the Local Comprehensive Plans, the Strategic Regional Policy Plans, and the State Comprehensive Plan (SCP). The SCP sets goals that articulate a strategic vision of the State's future. Its purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic, and physical growth.

Response: The proposed project has been coordinated with various Federal, State, and local agencies during the planning process. The proposed project involves identifying a means for conveying increased flows of water under U.S. Highway 41 (Tamiami Trail) to the Everglades National Park (ENP) as part of the Modified Water Deliveries (MWD) Program to restore natural hydrologic conditions in ENP. The project would provide for the enhancement and assist in the restoration of the Everglades ecosystem. The project is in full compliance with the goals of this chapter.

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project would have little or no impact on disaster preparation. Full conformance and compliance consistent with the efforts of Division of Emergency Management is intended.

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within the state. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: Each type of resources protected to the extent practicable under this statute is addressed in the EA. The project is aimed at providing for full conformance and compliance with the goals of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: Implementation of the proposed plan does not require State acquisition of lands for the purposes of protection of environmentally sensitive areas.

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: To the northern boundary of the project area is Water Conservation Area 3B (WCA-3B) of the South Florida Water Management District, the Francis S. Taylor Wildlife Management Area. The Florida Fish and Wildlife Conservation Commission (FWC) manages this area for recreation. The project is not anticipated to adversely affect state lands; in fact, the proposed project attempts to restore hydrologic flows from WCA-3B to ENP. Full conformance and compliance with the requirements for protecting these resources is intended.

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: Historic structures in the project area include Coopertown, the Airboat Association of Florida, Tamiami Trail, and the Tamiami (L-29) Canal. The Tamiami Trail, itself a historic property eligible for NRHP listing, would be reconstructed with bridged portions of the highway embankment removed. No other historic structures would be affected by the project.

8. Chapter 288, Economic Development and Tourism. This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: 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. The project would have no adverse effect on the airboat tour businesses or other aspects of the area's ecotourism industry. The project is consistent with the goals of this section.

9. Chapters 334 and 339, Transportation. This chapter authorizes the planning and development of a safe, balanced and efficient transportation system.

Response: Tamiami Trail is not one of the "officially designated" evacuation routes authorized for reverse-laning. However, due to its location as the southern-most east-west artery in the state, Tamiami Trail provides critical eastbound and westbound coast-to-coast access between Miami and Naples. The use of Tamiami Trail as an "implied" evacuation route would require that the highway's evacuation route capabilities be maintained during hurricane season. This may influence construction phasing and maintenance of traffic flows during construction. During a hurricane evacuation, the contractor shall secure all loose items and provide for two way traffic on the highway unless otherwise designated by for evacuation. The project will be consistent with the goals of this chapter.

10. Chapter 370, Saltwater Living Resources. This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

Response: The proposed project would not adversely impact saltwater living resources. Based on overall impacts of the project, the project is consistent with the goals of this chapter.

11. Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to

perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project has been closely coordinated with the FWC and should have no significant adverse effects on freshwater aquatic or wild animal life. The project is expected to benefit wildlife through its contribution toward the hydrologic restoration of Northeast Shark River Slough in ENP.

12. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: The project sponsor is the South Florida Water Management District. The plans for withdrawal, diversion, storage, and consumption of water are fully coordinated with the sponsor, and a recommendation would be made with full concurrence from the State.

13. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: Compliance with State law will require the contractor to obtain a General Construction National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES program requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which will address the storage, generation, and disposal of hazardous and toxic substances. The retaining of grassed side-slopes along the sides of the highway and the incorporating of a stormwater collection and treatment system with the bridge would result in no adverse effect on water quality.

14. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This project does not involve the exploration, drilling or production of gas, oil or other petroleum products. Therefore, this chapter does not apply to the proposed project.

15. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development. This chapter also deals with the Area of Critical State concern program and the Coastal Infrastructure Policy,

Response: The proposed project will not promote any large-scale development or have an impact defined as regional development. Therefore, the project is consistent with the goals of this chapter.

16. Chapter 381 (selected subsections on on-site sewage and disposal systems) and 388 (Mosquito/Arthropod Control). Chapter 388 provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: The projects will not further the propagation of mosquitoes or other pest arthropods.

17. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation [now a part of the Florida Department of Environmental Protection (FDEP)].

Response: The project is in compliance with both the Clean Water Act of 1972 and the Clean Air Act of 1970. This project is being fully coordinated with FDEP. Full compliance with State regulations is accomplished.

18. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: The proposed project is not located on or near agricultural lands, including those considered to be prime and/or unique farmlands. Full compliance with State regulations is anticipated.

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ANNEX A2
404(b)(1) EVALUATION

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SECTION 404 (b)(1) EVALUATION REPORT

CENTRAL AND SOUTHERN FLORIDA STUDY MODIFIED WATERS DELIVERY TO THE EVERGLADES NATIONAL PARK

PROPOSED IMPROVEMENTS TO THE TAMIAMI TRAIL DADE COUNTY, FLORIDA

1.0 PROJECT DESCRIPTION

1.1 Location

The proposed work would be performed in the western-central portion of Miami-Dade County, Florida (***Figure A2-1***). The potentially impacted local areas are located on the south side of U.S. Highway 41, which is commonly called the Tamiami (Tampa to Miami) Trail. The Tamiami Trail, the L-29 Canal, and particularly the L-29 levee on the north side of the canal, form the southern boundary of the South Florida Water Management District's (SFWMD) Water Conservation Area 3B (WCA-3B). The south side of the Tamiami Trail is bounded by the Everglades National Park (ENP).

The limits of the proposed project begin slightly more than one mile west of the intersection of Krome Avenue and Tamiami Trail and extend approximately 10.7 miles to the west. The L-29 Canal, also known as the Tamiami Canal, runs along the north side of the Tamiami Trail through this area. The project limits are more definitively marked at each end by two water-control structures across the canal, S-334 on the east and S-333 on the west.

1.2 Description

1.2.1 Existing Conditions

Under the current authorized and approved Modified Waters Delivery (MWD) Plan, water would be transferred from WCA-3A to WCA-3B by constructing three new water control structures at Levee L-67A and three new water control structures at L-67C. Water would be passed from WCA-3B through S-355A and S-355B to the L-29 Canal and through the existing culvert system under the Tamiami Trail into Northeast Shark River Slough (NESS) of ENP. When the General Design Memorandum (GDM) was completed in 1992, it was believed that existing culverts under the roadway would be adequate to convey the flow of water. However, subsequent hydrological analyses revealed that the head height in the L-29 Canal required for the culverts to convey the increased water could adversely affect the structure of Tamiami Trail and overtop the highway under certain conditions.

A final general Re-evaluation Report and Second Supplemental Environmental Impact Assessment (RGRR/SEIS) was prepared to analyze alternatives for re-designing Tamiami Trail so that increased MWD water flows could be conveyed south into the park without encroaching upon the sub-grade or overtopping the road. The RGRR/SEIS recommended a raised and widened road profile with three miles of bridges. An ROD selecting this alternative was signed on January 25, 2006.

Under the conference language of the Water Resources Development Act of 2007, the intent of Congressional managers directs the Chief of Engineers to implement measures to improve water deliveries and adopt an adaptive management approach toward restoring flows to ENP. To achieve this improvement, the Chief of Engineers was directed to re-examine prior reports and to evaluate practicable alternatives for increasing the flow of water under the highway and into the Park. The Limited Reevaluation Report (LRR) documents previous and recent studies conducted and steps taken to restore the natural hydrologic conditions of Northeast Shark River Slough (NESS) to the extent practicable to improve water deliveries to the ENP. It provides a summary of the following information:

1. Updated cost estimates of previous plans proposed in the 2005 RGRR/SEIS for an improved water delivery system for ENP, including incorporation of cost saving measures and value engineering proposals.
2. Limited reevaluation of alternatives, including incremental cost analysis, for all proposed structural alternatives.
3. Potential environmental benefits to be obtained as a result of hydrologic changes produced by the different alternatives.

The LRR includes a general description of all viable alternatives, cost estimates, and environmental benefits analysis. Recommendations were developed considering environmental benefits produced, cost, related CERP flow needs and other relevant factors.

1.2.2 Recommended Plan

The Recommended Plan would include construction to enable greater flows of water from WCA-3B through the L-29 Canal, under the Tamiami Trail, and into ENP. The increased flows would be necessary to complete the MWD plan and allow the Comprehensive Everglades Restoration Plan (CERP) to proceed.

The Recommended Plan includes construction of a one-mile-long bridge in the eastern portion of the project area. This would create a hydraulic conveyance opening through Tamiami Trail by removing one mile of the existing highway, embankment, and associated culverts. A bridge would be constructed over the opening to replace the removed section of highway. The bridge would start

approximately one mile west of S-334 and proceed west approximately one mile, ending approximately 3,000 feet east of Radio One.

The bridge span would result in the removal of the S-16 and S-17 culvert sets (six culverts). Construction of the bridge and bridge approaches would reduce the number of culverts sets from 19 (55 individual culverts) to 17 (49 individual culverts).

The crown elevation of the unbridged portions of the roadway would be reinforced to approximately 11.55 ft NGVD by adding asphalt to areas of the highway that fall below that elevation.

The Recommended Plan also includes a 50-foot-wide construction easement along the southern side of the bridge. Vegetation would be removed from the easement to facilitate mobility and operation of cranes and other heavy equipment required to construct the bridge.

1.2.3 Affected 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 Recommended Plan to a land use database. ***Table*** A2-1 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 A2-1: Land Use Impacts

Land Use	Permanent Construction Easement	Temporary Construction Easement
Graminoid Wetlands	0.61	3.57
Forested Wetlands	1.38	2.72
Mixed Forest & Graminoid Wetlands	--	0.31
Uplands	6.67	--
Upland Forest	--	0.13
Open Water	0.3	--
Total Acres	8.96	6.73
Total Wetland Acres	2.29	6.60

Implementing the Recommended Plan 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 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 A2-1***).

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 A2-1).***

The existing highway embankment would be removed from the flow-way created by the bridge.

The Recommended Plan is would result in the long-term improvement in the quality of over 63,000 acres of wetlands in ENP.

1.2.4 Summary of Mitigation Features Incorporated into the Proposed Project

A "mitigation feature" is a management procedure, activity, or technique to reduce the severity of environmental impacts and/or offset impacts associated with a project.

In the development of the Recommended Plan, features that were incorporated to avoid, minimize, and compensate for potential adverse environmental effects include the removal of embankment where the bridge would be constructed. The removal of embankment would facilitate the restoration of sheet flow from the L-29 Canal southward into ENP. Therefore, the Recommended Plan offers far greater benefits to wetland habitat than it would adversely impact.

The Recommended Plan is part of a larger effort intended to improve the ecological quality of many thousands of wetland acres through the hydrologic restoration of ENP, to the extent practicable. Therefore, the Recommended Plan can be considered self-mitigating. The loss of wetland habitat associated with project construction would be fully compensated by the benefits.

Best Management Practices (BMPs) would be employed during construction activities in order to minimize erosion and control sediment transport off-site, including the retaining of grassed side-slopes along the sides of the highway and the incorporating of a stormwater collection and treatment system with the bridge. Final BMPs for controlling turbidity would be fully coordinated with DOI and FDEP prior to implementation.

Two wood stork (*Mycteria americana*) rookeries and snail kite management areas ***(Figure A2-1)*** exist near the project area, and restrictions would be in place during construction to minimize impacts.

1.3 Authority and Purpose

The Everglades National Park Protection and Expansion Act (Public Law [PL] 101-229, Section 104, 16 U.S.C. Part 410r-5 *et seq.*), December 1989, authorized the Secretary of the Army to undertake certain actions to improve water deliveries to the ENP and to take steps to restore natural hydrologic conditions. This Act provides the underlying authority for this project. Section 104 of the Act stated:

> *The Everglades National Park is a nationally and internationally significant resource and the park has been adversely affected and continues to be adversely affected by external factors which have altered the ecosystem including the natural hydrologic conditions within the park. Wildlife resources and their associated habitats have been adversely impacted by the alteration of natural hydrologic conditions within the*

park, which has contributed to an overall decline in fishery resources and a 90 percent population loss of wading birds.

The Act also provided direction for the U.S. Army Corps of Engineers (USACE) to initiate corrective actions to alleviate deterioration in natural resources of ENP attributed to changes in water conditions associated with construction of the Central and Southern Florida (C&SF) water management system. The Act stated:

Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park.

Such modifications shall be based upon the findings of the Secretary's experimental program authorized in Section 1302 of the 1984 Supplemental Appropriations Act (97 Stat. 1292) and generally as set forth in a General Design Memorandum to be prepared by the Jacksonville District entitled Modified Water Deliveries to Everglades National Park. *The Draft of such Memorandum and the Final Memorandum, as prepared by the Jacksonville District, shall be submitted as promptly as practicable to the Committee on Energy and Natural Resources and the Committee on Environment and Public Works of the United States Senate and the Committee on Natural Resources and the Committee on Public Works and Transportation of the United States House of Representatives*

The GDM called for in the Act was completed in June 1992. This GDM and its associated Environmental Impact Statement (EIS) for Modified Water Deliveries (MWD) to ENP is the authorizing document for structural modifications and additions to the existing C&SF Project required for the modification of water deliveries for ecosystem restoration in the ENP. The 1992 GDM stated,

The future without project condition will lead to the further deterioration of unique and outstanding ecological resources of the Everglades that are recognized and valued throughout the world. Therefore, based on the direction provided in the Everglades National Park Protection and Expansion Act of 1989, the goal is to restore natural hydrologic conditions in the Park to the extent practicable. Meeting this goal will lead to improvements in the abundance, diversity and ecological integrity of native plants and animals in the Park.

Section 528 of the Water Resources Development Act enacted October 1996 (PL 102-580) was entitled "Everglades and South Florida Ecosystem Restoration." This authorized a number of ecosystem restoration studies, now collectively known as the Comprehensive Everglades Restoration Plan (CERP). As a result of this Act, the USACE submitted a report to Congress on July 1, 1999, containing a comprehensive blueprint for Everglades restoration. Implementation of CERP would further increase the flow of water entering NESRS. The plan has subsequently been approved as the Water Resources and Development Act of 2000.

1.4 General Description of Dredged and Fill Material

1.4.1 General Characteristics

Where the transition to the new bridge would be constructed, the existing embankment and muck would be removed to bedrock, and a new soil embankment would be built. Fill material would be consistent with the requirements of FDOT Design Standard Index 505, which places restrictions on the characteristics of soils that may be used for highway embankments based on their plasticity and organic content. Consistency with FDOT standards would provide stability to the highway embankment. Testing would be performed as necessary to ensure that fill material meets the FDOT requirements. The embankment would also include a four-inch drainage layer of sieve material composed of crushed limestone. Concrete pilings placed in bedrock would provide support for the bridge.

1.4.2 Quantity of Material

Approximately 29,000 cubic yards of fill material would be used for the project.

1.5 Description of Proposed Discharge Sites

1.5.1 Location and Size

Because the bridge is offset to the south of the existing highway alignment by approximately 40 feet, approaches to the bridge must transition from the existing highway. Construction of bridge approaches would require an area of up to 80 feet south of the existing highway over a distance of approximately 1700 feet.

1.5.2 Type of Site/Habitat

The type of habitat adjacent to the existing Tamiami Trail includes long and short hydroperiod wetlands as well as an abundance of interspersed willowheads, bayheads, and hardwood hammocks. Sawgrass (*Cladium jamaicense*) communities dominate the long hydroperiod wetlands while muhly grass (*Muhlenbergia capillaris*) and black sedge (*Schoenus nigricans*) dominate the short period wetlands mostly influenced by NESS and local rainfall.

Four herbaceous wetland cover types are present in the Everglades: (1) sloughs with deep, permanent water levels, (2) sawgrass marshes with semi-permanent water levels and long hydroperiods, (3) wet peat prairies, and (4) wet marl prairies with shorter hydroperiods. The wetland cover types are differentiated by the average flooding depth and duration and by their predominant plant cover.

The dominant species of vegetation along the south side of Tamiami Trail is the invasive exotic species, the Brazilian pepper (*Schinus terebenthifolius*). The Brazilian pepper forms a corridor of 10-30 feet wide.

1.5.3 Timing and Duration of Discharge

Construction of the project is anticipated to begin in late 2008 and is expected to require 36 months to complete.

The FWS, using the Habitat Management Guidelines for the Wood Stork in the Southeast Region (Guidelines) (Ogden 1990) based on recent photography during nesting season, identified primary and secondary restriction zones. The primary zone is the most critical area and must be managed according to the guidelines to insure the colony survives. For the West Colony, a core area that contains nesting habitat has been designated by FWS to have a radius of 385 feet from the center of the colony. The primary zone for the West Colony extends an additional 1,300 feet in all directions from the core area for a radius of 1,585 feet. The FWS has designated the primary zone for the East Colony as a 1,300-foot radius from the colony center. The pond apple forest creates a visual barrier between the rookery and Tamiami Trail. The storks appear to have become somewhat acclimated to highway traffic noise.

The secondary zone may be used by wood storks for collecting nesting material and for roosting, loafing, and feeding (especially important for newly fledged young). The secondary zone of the West Colony extends an additional 1,000 feet beyond the primary zone for a total radius of 2,885 feet from the center of the colony. For the Tamiami East Colony, the secondary zone extends 1,200 feet beyond the primary zone for a total radius of 2,500 feet.

Approximately 3,700 linear feet of the Tamiami Trail are located within the primary zone of the Tamiami West Colony; none lies within the primary zone of the East Colony. In addition, approximately 5,000 linear feet of the highway lies within the secondary zones of the colonies.

FWS guidelines restrict such activities as "the construction of any building, roadway, tower, power line, canal, etc.", within the Primary Zone when active wood stork nesting is occurring. Therefore, between February (or the onset of

nesting activity) and through the onset of the rainy season (or when the young have fledged, highway construction should not be permitted in the reach of the highway affected. In addition, any activity that reduces the area, depth, or length of flooding in wetlands under and surrounding the colony should also be restricted during the nesting season. For the Secondary Zone (1,885 to 2,885 feet from the colony), it is recommended that no unauthorized human activity (on foot, airboat, or off-road vehicle [ORV]) 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.

While these are published guidelines, final decisions on restrictions to protect wood storks would occur after completion of ongoing consultations with FWS.

Because wading bird and snail kite nesting patterns, as well as Everglades mink territories, may vary with the prevailing hydrological conditions, surveys would be performed by a qualified biologist to determine whether any nesting efforts of state and federal protected species would potentially be affected prior to the commencement of construction activities.

1.6 Description of Disposal Methods

The Recommended Plan involves the placement of fill on the south side of the Tamiami Trail. The encroachment into ENP on the south side of the roadway extends up to 80 feet where transitions from the roadway to the bridge would be constructed.

The Recommended Plan also involves the removal of approximately one mile of existing highway and embankment where traffic would be served by the bridge. The fill material would be disposed approximately ten miles south of the project area in the C-111 Basin (Rocky Glades), which is owned by SFWMD. The material would be stockpiled south of the 8.5 Square Mile Area (8.5 SMA) and west of the Flow Way (***Figure A2-1***). Selected quantities of soils and organic peat may be evaluated for placement in the nearby Broward Water Preserve Area. Excavated fill may also be evaluated for backfill for the L-67 Extension project, where up to 50,000 cubic yards of material could be needed.

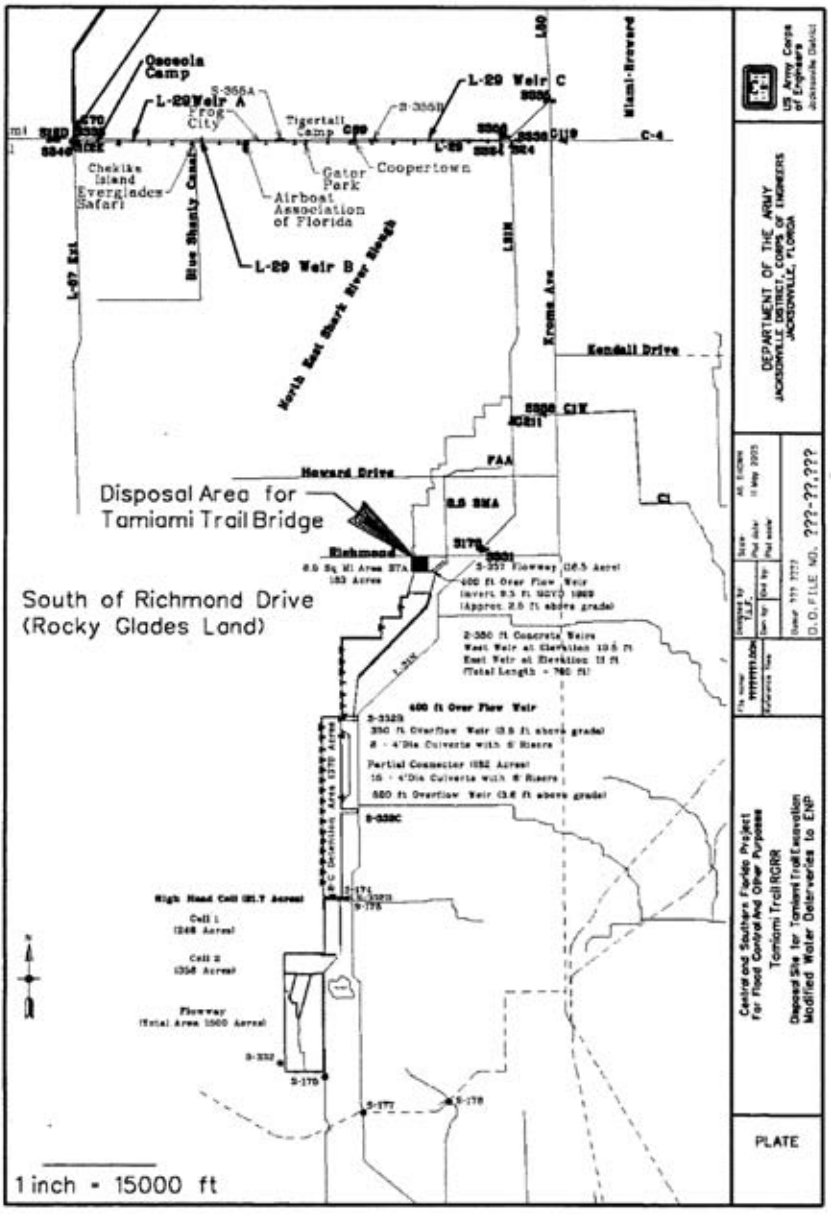

Figure A2-1: Embankment Disposal Site Location

2.0 FACTUAL DETERMINATIONS

2.1 Physical Substrate Determinations

2.1.1 Substrate Elevation and Slope

The elevation ranges from 9.8 feet, National Geodetic Vertical Datum (NGVD) 1929 to 10.1 feet NGVD, with very little slope.

2.1.2 Sediment Type

Sediment is nearly level and poorly drained, consisting of organic material eight to more than 51 inches deep. The black to dark brown muck is underlain by soft, porous limestone.

2.1.3 Dredged and Fill Material Movement

No movement of the fill material is expected.

Where the transition to the new bridge would be constructed, the existing embankment and muck would be removed to bedrock, and a new embankment of would be built. Fill material would be consistent with the requirements of FDOT Design Standard Index 505, which places restrictions on the use of plastic and organic soils used for highway embankments. Soils that fail to meet the standards may have a tendency to move or shift under a traffic load. Testing would be performed as necessary to ensure that fill material meets the FDOT requirements.

2.1.4 Physical Effects on Substrate

On the transitions to the bridge, the existing substrate would be removed to bedrock and replaced by soil capable of providing an embankment that would support a major highway.

The Recommended Plan would affect substrates outside the construction footprint. Through project implementation, the distribution of flows would occur more evenly through the conveyance channel created by the bridge and through the remaining culverts under the improved roadway. The improvement of water deliveries would contribute to the restoration in ENP of a substrate more suitable for vegetative communities by enabling a shift to open water, spikerush marsh, and slough communities, and by reducing the risk of ridge and tree island peat burning.

2.1.5 Other Effects

No change in the general type of substrate is expected in WCA-3B to the north of the project. The quality of the substrate in ENP to the south would be improved through project implementation.

2.1.6 Actions Taken to Minimize Impacts

The Recommended Plan incorporates actions to avoid and minimize impacts to aquatic communities. See Section 1.2.4, *Summary of Mitigation Features Incorporated into the Recommended Plan.*

2.2 Water Circulation, Fluctuation and Salinity Etermination

2.2.1 Water Quality

Existing water quality in the Everglades is greatly influenced by both urban and agricultural development-related activities of south Florida. The primary constituents of concern in ENP include nutrients, dissolved oxygen (DO), mercury, biochemical oxygen demand (BOD), and coliforms. In WCA-3B the constituents of concern are total phosphorus, DO, conductivity, mercury, and nitrite/nitrate nitrogen. Canals bordering the WCAs generally have very low DO levels typical of marsh waters.

Highway runoff potentially introduces contaminants such as metals, fuels, lubricants, combustion products, and toxic chemicals. Based on the low traffic volume along Tamiami Trail (5,200 vehicles per day), it can be inferred that the introduction of pollutants due to highway runoff is minimal. The bridge would be constructed with a pollution abatement system that would collect and treat stormwater runoff from the bridge.

2.2.1.1 Salinity

Not applicable.

2.2.1.2 Water Chemistry

The potential increase in sediment transport during construction would be minimized through the implementation of BMPs. Nutrient levels in the project area may increase slightly from sediment disturbing activities. No significant long-term increases in these conditions are expected as a result of the project.

The long-term water quality in ENP would not be affected by the proposed project.

2.2.1.3 Clarity

Turbidity may increase during construction, but would revert to pre-construction conditions once implementation of the project is complete.

2.2.1.4 Color

No expected change.

2.2.1.5 Odor

The soils in the project area contain thick layers of organic material from eight to 51 inches thick. The exposure of the muck may release odors; however, these fumes are not noxious.

2.2.1.6 Taste

Not applicable.

2.2.1.7 Dissolved Gas Levels

The release of organic materials from sediments may slightly increase BOD, and the release of reduced materials may slightly increase chemical oxygen demand (COD), both of which would have the effect of lowering dissolved oxygen concentrations in the ecosystem. These impacts would be temporary, limited only to the time of construction and soil-disturbing activities.

2.2.1.8 Nutrients

Nutrient levels in the project area may increase slightly from sediment disturbing activities. This impact would be temporary, during construction activities only. No long-term change in nutrient concentrations would occur from implementation of the project.

2.2.1.9 Eutrophication

Not applicable.

2.2.2 Current Patterns and Circulation

2.2.2.1 Current Patterns and Flow

Implementation of the Recommended Plan would have beneficial effects on the current pattern and flow of waters in the project area. Modifications to Tamiami Trail would provide the capacity for a design stage of 8.5 feet in the L-29 Canal. The distribution of flows would occur through a one-mile-wide conveyance channel and the remaining existing culverts.

2.2.2.2 Velocity

The existing culvert system concentrates flows from L-29 Canal under Tamiami Trail through localized points. Flow velocity has been a concern.

The Recommended Plan would reduce high flow velocity discharges beyond that of the No-Action Alternative. Rather than concentrating flows under Tamiami Trail at the existing 55 culverts, flows would be more evenly distributed through the conveyance channel. Additionally, the Recommended Plan would minimize the difference between the average velocity of flows at the road and those in the ENP marsh.

2.2.2.3 Stratification

The project would not affect stratification.

2.2.2.4 Hydrologic Regime

The hydrologic regime in south Florida has been drastically altered in the last hundred years through development of urban areas, agricultural practices, and the construction of systems of canals and levees. South Florida has become compartmentalized, and much of the former sheet flow over a vast expanse of Everglades has been concentrated in canals.

The implementation of the project would assist in the restoration of water deliveries to ENP. In turn, the natural ridge and slough processes would be restored.

2.2.3 Normal Water Level Fluctuations

Water levels fluctuate during the year. The wet season in south Florida extends from May to September when there exists a higher than average incident of rainfall. The dry season lasts from October through April.

Currently, WCA-3B helps to maintain water levels in ENP, serving as storage for runoff during the wet season for use during the dry season. Water releases into ENP are only allowed when the minimum water level is achieved.

The Recommended Plan would provide for a design stage in the L-29 Canal of 8.5 feet. By allowing for a higher design stage, the deep sloughs of ENP would be better capable of maintaining water storage potentially year-round, except during extremely dry years.

2.2.4 Salinity Gradients

Not applicable.

2.2.5 Actions That Would be Taken to Minimize Impacts

The Recommended Plan incorporates actions to restore water circulation and fluctuations in NESS. See Section 1.2.4, *Summary of Mitigation Features Incorporated into the Recommended Plan.*

2.3 Suspended Particulate/Turbidity Determinations

2.3.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites

No changes in suspended particulates and turbidity levels are expected in the vicinity of the disposal site.

2.3.2 Effects on Chemical and Physical Properties of the Water Column

2.3.2.1 Light Penetration

Sediments released during construction operations may periodically reduce light penetration. Photosynthesis and primary productivity in portions of the affected areas is not expected to decrease because light attenuation from very briefly suspended particulates would be negligible.

2.3.2.2 Dissolved Oxygen

Effects on BOD and COD levels are expected to be minimal.

2.3.2.3 Toxic Metals and Organics

No anticipated increase in toxic metals and organics exists.

2.3.2.4 Pathogens

This project would have no effect on pathogens.

2.3.2.5 Aesthetics

Implementation of the Recommended Plan would beneficially impact the aesthetics of the area, as exotic vegetation would be removed along the highway and, depending on the design, the bridge could offer an expansive view of the Everglades.

2.3.3 Effects on Biota

2.3.3.1 Primary Production

Photosynthesis and primary productivity in portions of the affected areas is not expected to decrease because light attenuation from very briefly suspended

particulates would be negligible. As these particulates settle, primary production would return to pre-project levels.

2.3.3.2 Suspension/Filter Feeders

No impact to suspension/filter feeders is anticipated.

2.3.3.3 Sight Feeders

No impact to sight feeders is anticipated.

2.3.4 Actions Taken to Minimize Impacts

The Recommended Plan incorporates actions to avoid and minimize impacts to aquatic communities. See Section 1.2.4, *Summary of Mitigation Features Incorporated into the Recommended Plan*. Aquatic communities are expected to benefit from the project.

2.4 Contaminant Determinations

Fill material would be inspected and tested as necessary to ensure that no contaminants are present.

2.5 Aquatic Ecosystem and Organism Determination

2.5.1 Plankton

No major changes in the plankton communities are anticipated as a direct result of the Recommended Plan.

2.5.2 Benthos

No impacts to the benthic community are anticipated.

2.5.3 Nekton

Impacts to nekton from implementation of the project are anticipated to be beneficial. During construction, elevated sediment levels during fill removal may occur; however, these impacts would be related to construction. Once construction is complete, improved water flow and distribution from WCA-3B and the L-29 Canal through Tamiami Trail to ENP would improve conditions and increase the total abundance of fishes in ENP.

2.5.4 Aquatic Food Web

The aquatic food web would not be adversely impacted.

2.5.5 Special Aquatic Sites Effects

2.5.5.1 Sanctuaries and Refuges

WCA-3B managed by the Florida Fish and Wildlife Conservation Commission (FWC) as the Francis S. Taylor Wildlife Management Area is located north of the project area, and ENP and NESS are located south of the project area. No excavated material would be placed within WCA-3B; however, encroachment of the highway to the south would be necessary to meet current FDOT highway construction standards.

ENP is designated in F.A.C. 62-302.700(9)(a) as an Outstanding Florida Water (OFW), which Florida Department of Environmental Protection (FDEP) defines as a water worthy of special protection because of its natural attributes. The OFW designation requires that existing ambient water quality be maintained. Therefore, turbidity and other water quality impacts would be restricted to a mixing zone approved by FDEP and would occur temporarily during construction activities only. Approximately 8.5 acres of parkland would be incorporated into permanent construction easement, and 6.6 acres of parkland would be in temporary construction easement.

2.5.5.2 Wetlands

Implementing the Recommended Plan would involve a permanent loss of 2.29 acres of wetlands that would be incorporated into permanent construction easement. In addition, 6.6 acres of wetlands would be temporarily affected by its use as an area to facilitate bridge construction; this area would be restored following construction.

Exotic vegetation present along the south side of Tamiami Trail has diminished the quality of wetland habitat in the project area. The dominant exotic species of vegetation, Brazilian pepper (*Schinus terebenthifolius*), exists in a 10 to 30-foot-wide corridor along the highway. The construction of modifications to Tamiami Trail presents the opportunity to remove existing exotic vegetation, thereby improving the quality of wetlands in the project area.

As discussed in the 2005 RGRR/SEIS, additional wetland benefits would be realized through restoration of water deliveries to ENP, ridge and slough processes and vegetative communities.

2.5.5.3 Vegetated Shallows

Historically, the area was predominantly ridge and slough habitat, a complex mosaic of marsh assemblages with distinct tree islands. Currently, WCA-3B and ENP are dominated by long and short hydroperiod wetlands with an abundance of interspersed willowheads, bayheads, and hardwood hammocks. Sawgrass

(*Cladium jamaicense*) communities dominate the long hydroperiod wetlands while muhly grass (*Muhlenbergia capillaris*) and black sedge (*Schoenus nigricans*) dominate the short hydroperiod wetlands. Four herbaceous wetland cover types are found in the project area: (1) sloughs with deep, permanent water levels, (2) sawgrass marshes with semi-permanent water levels and long hydroperiods, (3) wet peat prairies, and (4) wet marl prairies with shorter hydroperiods.

The Recommended Plan would help restore water deliveries to ENP and thus restore the quality of vegetative communities south of Tamiami Trail.

2.5.5.4 Coral Reefs

Not applicable.

2.5.5.5 Riffle Pool Complexes

Not applicable.

2.5.6 Threatened and Endangered Species

Six Federally protected species are known or are potentially encountered in the project area in the 2003 and 2005 Fish and Wildlife Coordination Act Report (FWCAR). These include the Cape Sable seaside sparrow (CSSS) (*Ammodramus maritimus mirabilis*), eastern indigo snake (*Drymarchon corais couperi*), Florida panther (*Puma [=Felis] concolor coryi*), snail kite (*Rostrhamus sociabilis*), West Indian manatee (*Trichechus manatus*), and wood stork (*Mycteria americana*). FWC also identified a wading bird rookery just north of the project area across L-29 Canal.

USFWS and FWC did not recommend protective measures or restrictions during construction for the Florida panther, snail kite, West Indian manatee, or the Frog City wading bird rookery. The project was also determined to not preclude compliance with the reasonable and prudent alternatives (RPA) established for conservation of the CSSS through the 1999 USFWS Biological Opinion. Protective measures would be put in place during construction to avoid and minimize impacts to the eastern indigo snake and the wood stork.

2.5.7 Other Wildlife

The American alligator (*Alligator mississippiensis*) and the Everglades mink (*Mustela vison evergladensis*) were reported in the FWCAR to be present in the area. These species are protected by the State of Florida.

After implementation of the project, wildlife mortality in the area is expected to decrease as a result of the one-mile elevated section.

2.5.8 Actions to Minimize Impacts

The Recommended Plan incorporates actions to avoid and minimize impacts to aquatic communities. See Section 1.2.4, Summary of Mitigation Features Incorporated into the Recommended Plan. Although not a part of the project purpose, wildlife crossings could be incorporated into the project as a betterment or enhancement if funded from another source, or the betterment can be included in another project.

2.6 Proposed Disposal Site Determinations

2.6.1 Mixing Zone Determination

ENP is designated in F.A.C. 62-302.700(9)(a) as an Outstanding Florida Water (OFW), which the Florida Department of Environmental Protection (FDEP) defines as a water worthy of special protection because of its natural attributes. The OFW designation requires that existing ambient water quality be maintained unless a variance is granted. The USACE will request, in the construction application request submitted to FDEP, a variance allowing a turbidity mixing zone within the ENP. The ENP supports this request. The mixing zone for this project would extend a length of 50 meters proceeding southward into the ENP as measured from the edge of the construction work zone.

2.6.2 Potential Effects on Human Use Characteristics

2.6.2.1 Municipal and Private Water Supply

No adverse effects would occur to municipal or private water supply.

2.6.2.2 Recreational and Commercial Fisheries

Indirect effects of the project on habitat of fishes are discussed in Section 2.5.3, *Nekton*. This Recommended Plan would have no adverse impacts on recreational and commercial fisheries.

2.6.2.3 Water Related Recreation

The project area is used for both consumptive (fishing, hunting, and frogging) and non-consumptive (i.e., wildlife viewing, camping, boating, airboating) recreational use. Access to businesses and other existing facilities would be maintained during and after construction. Bank fishing from the highway would be eliminated in the vicinity of the bridge, but access to the L-29 Canal would be maintained using the L-29 Levee road.

2.6.2.4 Aesthetics

During construction, the aesthetics of the area would be impacted by heavy equipment and construction related activities. However, after construction is completed, a net long-term gain would be realized. Exotic vegetation would be removed from the edge of the highway, and, depending on the design, the bridge could offer expansive views of ENP.

2.6.2.5 Parks, National Historic Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves

The Recommended Plan is part of a larger effort to restore ecological values to the Everglades. The implementation of this project would benefit both WCA-3B (Francis Taylor Wildlife Management Area) and ENP.

2.7 Determination of Cumulative Effects on The Aquatic Ecosystem

The project would restore hydrologic patterns and ecological connectivity in a portion of the Everglades ecosystem to the extent practicable. It is compatible with future actions to be taken throughout the area of south Florida and minimizes retrofit that would be necessary should future modifications of Tamiami Trail be undertaken.

2.8 Determination of Secondary Effects on The Aquatic Ecosystem

All benefits to flora and fauna would be secondary in that the direct effects of the project would be hydrological, but the secondary effects of the project would benefit the ecological components of the region. Both the vegetation and the fish and wildlife resources would be improved upon implementation of the Recommended Plan.

2.9 Actions Taken To Minimize Impacts

The Recommended Plan incorporates actions to avoid and minimize impacts to aquatic communities. See Section 1.2.4, *Summary of Mitigation Features Incorporated into the Proposed Project.* The project is designed to benefit aquatic communities.

3.0 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

3.1 Adaptation of The Section 404(B)(1) Guidelines to This Evaluation

No significant adaptations of the guidelines were made relative to this evaluation.

3.2 Evaluation of Availability of Practicable Alternatives to The Proposed Discharge Site That Would Have Less Adverse Impact on The Aquatic Ecosystem

The selection and screening of alternative actions were discussed in Section 4.0 of the LRR, Formulation and Evaluation of Alternatives. Section 5.0 of the LRR, Environmental Effects, discusses the environmental impacts of the No-Action Alternative and four action alternatives. No practicable alternative exists that meets the study objectives and does not involve discharge of fill into waters of the United States.

3.3 Compliance With Applicable State Water Quality Standards

The Recommended Plan would not violate any applicable state water quality standards with the possible exception of temporary and negligible increases in turbidity, which might occur during construction. All other standards would be maintained during and following the placement of excavated and fill material.

3.4 Compliance With Applicable Toxic Effluent Standard or Prohibition Under Section 307 of The Clean Water Act

This Recommended Plan would be in full compliance of Section 307 of the Clean Water Act and would not violate the Toxic Effluent Standards.

3.5 Compliance With The Endangered Species Act of 1973

The Recommended Plan would not harm any threatened or endangered species or their critical habitats. Coordination with USFWS has been maintained throughout the planning process for this project. USFWS comments concerning protected species were addressed in the 2005 RGRR/SEIS.

3.6 Compliance With Specified Protection Measures for Marine Sanctuaries Designated by The Marine Protection, Research and Sanctuaries Act of 1972

Not Applicable.

3.7 Evaluation of Extent of Degradation of The Waters of The United States

3.7.1 Significant Adverse Effects on Human Health and Welfare

The Recommended Plan would not result in adverse effects on human health and welfare.

3.7.1.1 Municipal and Private Water Supplies

This project would not be located near municipal water supply intakes or private water supplies.

3.7.1.2 Recreational and Commercial Fishing

Recreational bank fishing would be eliminated along the bridge where the highway embankment would be removed; however access to the L-29 Canal would remain from the L-29 Levee which can be accessed from the S-333 or S-334 water control structure.

3.7.1.3 Plankton

This project would not adversely affect plankton.

3.7.1.4 Fish

This project would not adversely affect fisheries resources. The project would on the contrary improve the total abundance of fishes in ENP based upon the improvement of water distribution and flow through the one-mile-wide conveyance channel in the eastern side of the project area.

3.7.1.5 Shellfish

This project would not adversely affect shellfish.

3.7.1.6 Wildlife

No adverse effect on wildlife is expected, rather the project would increase flows to ENP, thereby improving wildlife habitat. Construction of the bridge is would decrease wildlife mortality in the project area; in the area of the bridge, small animals could pass from ENP to the L-29 Canal without exposure to traffic.

3.7.2 Special Aquatic Sites

WCA-3B (Francis Taylor Wildlife Management Area) and ENP would not be adversely impacted by the Recommended Plan.

3.7.3 Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

Significant adverse effects of life stages of aquatic life are not anticipated.

3.7.4 Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability

Significant adverse effects on aquatic ecosystem diversity, productivity, and stability are not anticipated.

3.7.5 Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

The Recommended Plan would have no adverse impacts on recreational, aesthetic, and economic values.

3.7.6 Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

The Recommended Plan incorporates actions to avoid and minimize impacts to aquatic communities. The project is intended to benefit the aquatic ecosystem. See Section 1.2.4, Summary of Mitigation Features Incorporated into Proposed Project. Among features applicable to the substrate are the removal of highway embankment where the new bridge would be located, the incorporation of best management practices into construction activities, and the implementation of protective measures for the Tamiami East and West Wood Stork colonies.

3.8 Compliance

Based on the guidelines, the proposed project is specified as complying with the requirements of these guidelines with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the affected aquatic ecosystem.

3.9 References

U.S. Army Corps of Engineers. 1992. General Design Memorandum and Environmental Impact Statement, Modified Water Deliveries to Everglades National Park. Jacksonville District, U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2003. General Reevaluation Report and Supplemental Environmental Impact Statement for the Tamiami Trail Modifications. Jacksonville District, U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers. 2005. Final General Reevaluation Report/Second Supplemental Environmental Statement (RGRR/SEIS) for the Tamiami Trail Modifications, Jacksonville District, U.S. Army Corps of Engineers.

U.S. Department of Agriculture, Natural Resources Conservation Service. 1996. Soil Survey of Dade County Area, Florida.

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ANNEX A3
STATEMENT OF FINDINGS

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Statement of Findings for Wetlands and Floodplains

Proposed Tamiami Trail Modifications,
Modified Water Deliveries to Everglades National Park Project,
Limited Reevaluation Report and Environmental Assessment,
U.S. Army Corps of Engineers, April 2008

Submitted by:
South Florida Natural Resources Center
Everglades National Park
Homestead, FL 33030

Recommended: _____
Superintendent, Everglades National Park Date

Certified for Technical Adequacy
And Servicewide Consistency: _____
Chief, Water Resources Division Date

Approved: _____
Southeast Regional Director Date

Introduction

The U.S. Army Corps of Engineers (USACE) has prepared and made available for public review a Draft Tamiami Trail Limited Reevaluation Report (LRR) to the General Reevaluation Report/Second Supplemental Environmental Impact Statement for the Tamiami Trail Modifications (DRGRR/SSEIS) project. The purpose of this project is to modify flow into and improve wetland function within the Shark River Slough (SRS) region of Everglades National Park (EVER). This Statement of Findings (SOF) documents the wetland and floodplain impacts associated with this project.

Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands") require the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in floodplains and wetlands. The objectives of the Executive Orders are to avoid to the extent possible the long-term and short-term adverse impacts associated with occupancy, modification, or destruction of floodplains and wetlands and to avoid indirect support of development and new construction in such areas wherever there is a practicable alternative. The purpose of this SOF is to present the rationale for the location of the proposed plan in the floodplain/wetland area and to document the anticipated effects on these resources.

Project Description and Benefits

The Tamiami Trail Modifications (TTM) project would provide an array of environmental benefits to Everglades National Park (EVER). The project is part of the larger Modified Water Deliveries to Everglades National Park (MWD) project. The purpose of the MWD project is to restore wetland functions within the park by modifying water deliveries to the park and altering water management operations outside of the park. The project is jointly funded by the NPS and the US Army Corps of Engineers (USACE) and is expected to be completed in fiscal year (FY) 2012.

Hydrologic analysis has shown that the Tamiami Trail roadway and the existing culverts beneath it act to impede natural flow quantity, timing, and distribution. The proposed modifications to the Tamiami Trail would reduce these impediments, thus improving conveyance of flows and facilitating the restoration of more natural hydropatterns and sheetflow in SRS. The Tentatively Selected Plan (TSP) for the TTM proposes the addition of a one-mile long bridge at the eastern end of Tamiami Trail. The original highway and embankment, now present where the proposed bridge would be built would be removed. During construction, in accordance with USACE guidelines and in order to minimize wetland impacts, all necessary and typical construction best management practices would be employed.

Portions of the TSP are located within or immediately adjacent to the northern boundaries of EVER. Implementation of the TSP would result in impacts to

EVER lands including impacts to and loss of wetlands. The TSP location, including an engineering schematic and typical cross sections of the existing roadway, proposed roadway, proposed bridge approaches, and proposed bridge, is shown in Attachment A.

Alternatives Considered

Twenty-seven alternatives, along with the "No Action" Alternative, were considered in the LRR; however, only four alternatives were considered for detailed evaluation. Alternative 4.2.4, which included a ten-mile bridge, was environmentally preferred alternative in the RGRR, but deemed too expensive and not considered for detailed evaluation in the LRR. The TSP, as outlined in the LRR, provides approximately 28 and 46 percent of the average annual environmental lift of the environmentally preferred plan and TSP, respectively, identified in the RGRR and is considered a first step in achieving the restoration objectives of the project at a reasonable cost. The LRR TSP, a one-mile long eastern bridge and road reinforcement that allows for a stage of 8.5 ft in the L-29 Canal, differs substantially from the RGRR TSP. The RGRR TSP included an additional two miles of bridges in western SRS and allows stages in the L-29 Canal to rise to 9.7 feet. Other alternatives considered included combinations of bridges of different span lengths and locations. These alternatives often provided considerably more environmental benefits, but they were not considered for detailed evaluation as a result of cost and other factors. As suggested in the LRR, other projects, such as those in the Comprehensive Everglades Restoration Plan (CERP), need to be implemented to provide flows consistent with the RGRR TSP and that would result in substantial restoration of ENP wetlands.

The Project and the Everglades National Park Boundary

The project is defined as the length of Tamiami Trail (US Highway 41) from water control structure S-334 in the east for a distance of approximately 10.9 miles west to water control structure S-333. Impacts of the project would occur because the roadway, shoulder, side-slope, and right of way (ROW) would be shifted south as for the construction of the approaches to the new eastern bridge that would be constructed just south of the existing roadway. The Florida Department of Transportation (FDOT) owns the roadway and controls an adjacent, variable-width maintenance ROW on both sides of the highway. The highway runs generally east to west. In the project area, the authorized boundary of EVER runs parallel to the southern ROW of the highway. No boundary survey for either the ROW or the authorized boundary of EVER is currently available. A boundary survey would be completed as part of the project once design drawings are refined.

The crown-elevation of the roadway is variable. Increasing the elevation of the roadway is required to accommodate the increase the stage in the L-29 Canal to 8.5 feet. However this would be accomplished by building up the existing

roadway in accordance with FDOT guidelines without augmenting it's width outside the limits of the bridge approaches.

Uplands, Wetlands, and Floodplains Within the Project Area

Most of EVER is situated in areas prone to frequent and continual flooding due to low elevation, lack of extensive physical relief, and freshwater hydrologic inputs (rainfall, overland sheet flow, and direct surface water discharges). The project site is thus in an area that is subject to seasonal inundation. Lands impacted by the project are described below. Floodplains have not been delineated for the park by the Federal Emergency Management Agency through the National Flood Insurance Program. The US Fish and Wildlife Service (FWS) classification (Cowardin, 1992) of each wetland described below is indicated in parentheses.

The area to be affected by the physical footprint of the project (as opposed to the area to be affected by the restored flow regime) is a mix of mesic upland forest, emergent wetland including some shrub scrub and forested wetland area, and open water areas associated with existing roadway culverts. Immediately adjacent to, and south of the existing roadway for the entire project length (and located entirely on roadway spoils) is an approximately ten to 40 foot wide strip of mesic upland forest including a number of native tree species along with some invasive Brazilian pepper (*Schinus terebinthifolius*). At several locations the forested strip is broken by open water wetlands (POW) associated with roadway culverts. South of these open water wetlands there are willow (*Salix caroliniana*) and pond apple (*Anona glabra*) "heads" and forested wetlands (PFO), also associated with flows from roadway culverts. South of this forested strip is a broad expanse of palustrine emergent wetland (PEM) dominated by sawgrass (*Cladium jamaicense*) with some extensive patches of cattail (*Typha latifolia*) located at the northern edge.

Functions Provided by Wetlands within the Project Area

The primary functions that are provided by the wetlands that are to be impacted by the project include, most significantly, surface and subsurface water storage, but also the support of biogeochemical processes, the presence of a characteristic plant community, and the provision of fish and wildlife habitat. All of these functions are currently degraded within the area to be impacted; the project purpose is actually to restore these functions to very similar, adjacent wetlands.

Emergent Wetland Functions

The emergent wetlands within the project area function to provide water storage, the characteristic Everglades sawgrass vegetation community, support for biogeochemical processes, and fish and wildlife habitat. The water storage function is degraded through proximity to the existing roadway and altered distribution and timing of flows to the wetland. The characteristic vegetation community is degraded through the invasion of Cattail (*Typha latifolia*) into the

sawgrass community due to elevated nutrient levels. Support for biogeochemical processes occurs; nutrients flowing into the wetland from the roadway and lands outside of the park are uptaken, but high nutrient loading in the inflow have altered and degraded this function. These habitats are utilized by a variety of fishes, birds, invertebrates, reptiles, and amphibians; however, the habitat is degraded as a result of degradation of the above processes and proximity to the roadway.

Forested and Open Water Wetland Functions
The forested and open water wetlands within the project area function to provide water storage, a characteristic forested vegetation community, support for biogeochemical processes, and fish and wildlife habitat. The water storage function is degraded through proximity to the existing roadway and altered distribution and timing of flows to the wetland. The characteristic forested vegetation community is degraded through the invasion of Brazilian pepper; this invasive makes up five to 30 percent of the forest cover in the area. Forested and open water habitats are utilized by a variety of fishes, birds, and other wildlife; however, the habitat is degraded as a result of degradation of the above processes and proximity to the roadway. The forested habitat has been degraded by the alteration of soils via the dumping of spoils during roadway construction. Aquatic habitat in the open water areas is especially degraded by the presence of numerous exotic invasive fish species and elevated nutrient levels.

Floodplain Impacts
The plan would remove flow impediments to and improve water flow into SRS. Hence floodplain and floodplain processes would benefit from this project.

Federally Listed Threatened and Endangered Species
A total of six federally listed (five endangered, one threatened) species are known to exist in the project area: the wood stork, Cape Sable seaside sparrow (CSSS), snail kite, the Florida panther, the West Indian manatee (unlikely to occur in the vicinity of the project), and the eastern indigo snake. Due to the presence of these species, and as discussed in the LRR, some special precautions would be taken, including phased implementation of construction activities. No significant impacts to any of the species are expected.

Wetland Impacts
Based on calculations done by the USACE using concept-level design drawings and assuming that the impacted area is wetland, the TSP would involve an impact of 8.89 acres of wetlands. These wetland impacts are based on a permanent and temporary construction easement associated with the project. The approximate associated wetland and upland impacts are as follows:

Permanent Construction Easement: 9.28 acres
- Graminoid wetlands (sawgrass, cattail): 0.61 acres
- Forested wetlands: 1.38 acres
- Open water: 0.3 acres
- Uplands (road toe): 6.99 acres

Temporary Construction Easement: 7.13 acres
- Graminoid wetland: 3.57 acres
- Forested wetland: 2.77 acres
- Mixed forest and graminoid wetland (pond apple, willow): 0.66 acres
- Upland forest: 0.13 acres

A total of approximately 8.99 acres of wetland is expected to be impacted during implementation of this project. Most of this area would be partially shaded, unusually deep, and possibly devoid of wetland soils; thus, only partial wetland functional value is expected.

Upon completion of bridge construction, the 7.13 acre Temporary Construction Easement (TCE) footprint would be restored by placing and grading wetland soils to restore natural contours and elevations, and removal of exotic species that may have colonized areas during or post-construction, and wetland plantings as needed.

In addition to the 7.13 acres of the TCE, the project has the potential to enhance function to more than 63,195 acres of wetlands in SRS through the improvement of flow (quantity, timing, and distribution), the promotion of sheet flow, and strengthened ridge and slough wetland processes. Therefore, when paired with an operational plan that allows additional water delivery to the project's full potential, all wetland and wetland function loss should be offset by both restoration of wetland acreage (under the bridge) as well as enhancement of downstream wetland function.

There are no practicable non-wetland alternatives to the selected plan because of the existing road alignment and the fact that all of the area, except some spoil areas (which are immediately adjacent to the roadway and which would all be impacted by the project), south of the roadway is wetland.

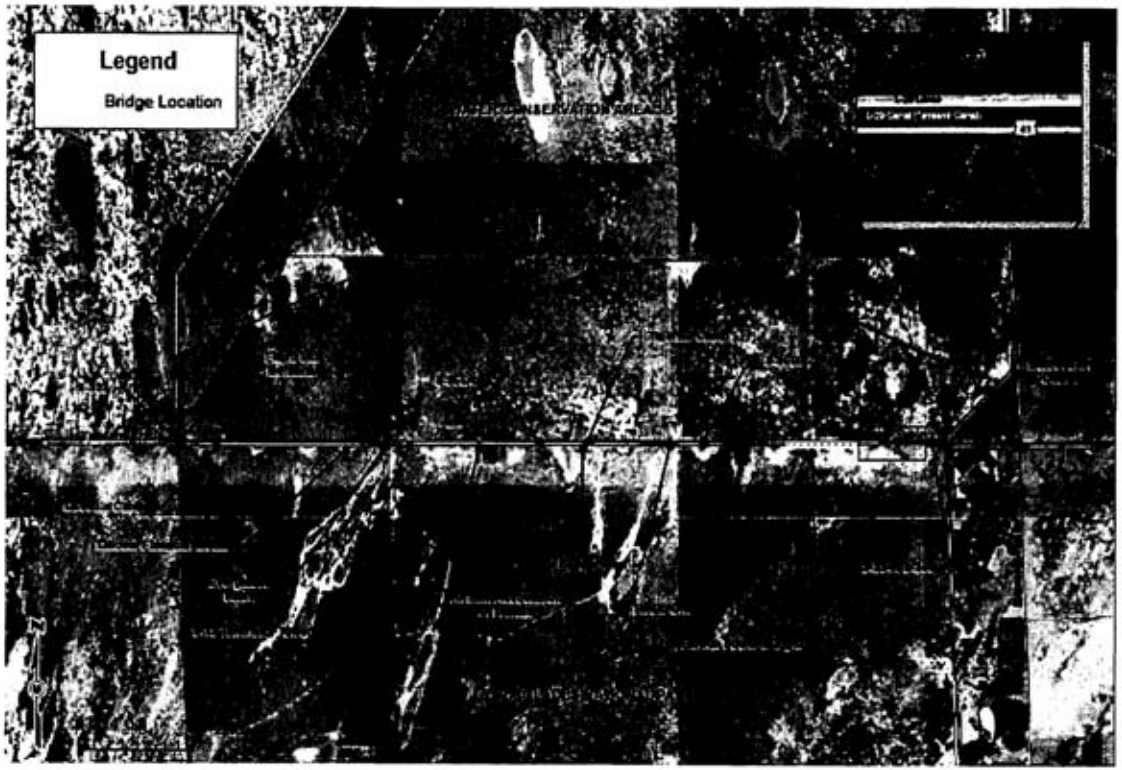
The wetlands to be enhanced or restored are primarily emergent wetlands (PEM) but also include forested, shrub scrub, and open water areas (PFO, PSS, and POW). All of the wetland types to be impacted along the project alignment are well represented within the restored area. Thus, the project would by enhancing hydrological function, benefit all of the types of wetlands impacted by the project, in greater quantities than that impacted and restore all lost wetland functions.

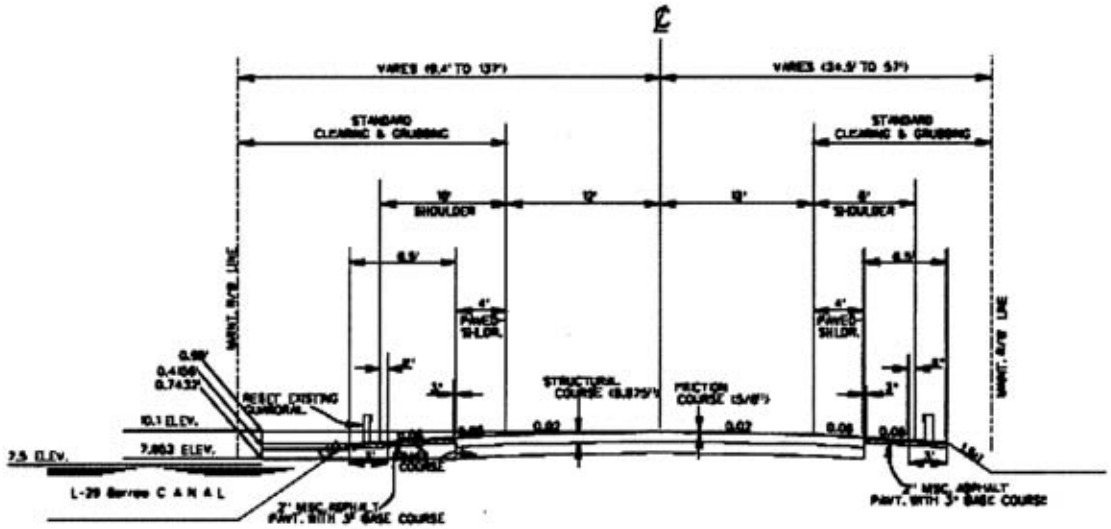
Conclusion

The NPS has concluded that the plan as outlined above, and in detail in the LRR, is a viable strategy to make progress towards meeting restoration goals and completing the TTM project. Hydrologic analysis has shown that the existing roadbed and culverts beneath it act to impede natural flow quantity, timing, and distribution. The project would modify the Tamiami Trail roadway by adding one-eastern bridge. The proposed modifications would reduce flow impediments; therefore, improving conveyance of flows and facilitating the restoration of more natural hydropatterns and sheetflow in SRS. While the project would adversely impact approximately 8.89 acres of wetlands, this impact would be outweighed by removal of road fill from the proposed bridge location, restoration of the TCE area, and by the enhancement of flow, providing long-term benefits to more than 63,195 acres of wetlands within the SRS region of EVER. Therefore, the NPS finds that the proposed action is consistent with the service-wide no net loss of wetlands policy and is acceptable under Executive Orders 11988 and 11990 for the protection of floodplains and wetlands.

Attachment A. Project site location, project engineering schematic, and typical cross sections of existing roadway, proposed roadway, proposed bridge approaches, and proposed bridge. NOTE: figures are not to scale.

Source: Draft Limited Reevaluation Report for the Tamiami Trail Modifications Modified Water Deliveries to Everglades National Park. U.S. Army Corps of Engineers, Jacksonville District, South Atlantic Division, April 2008


Legend
Bridge Location



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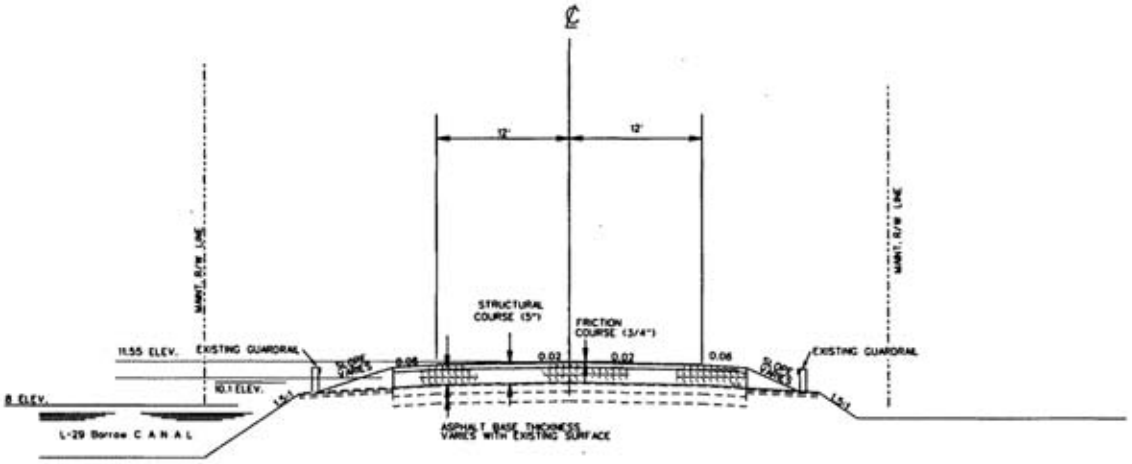
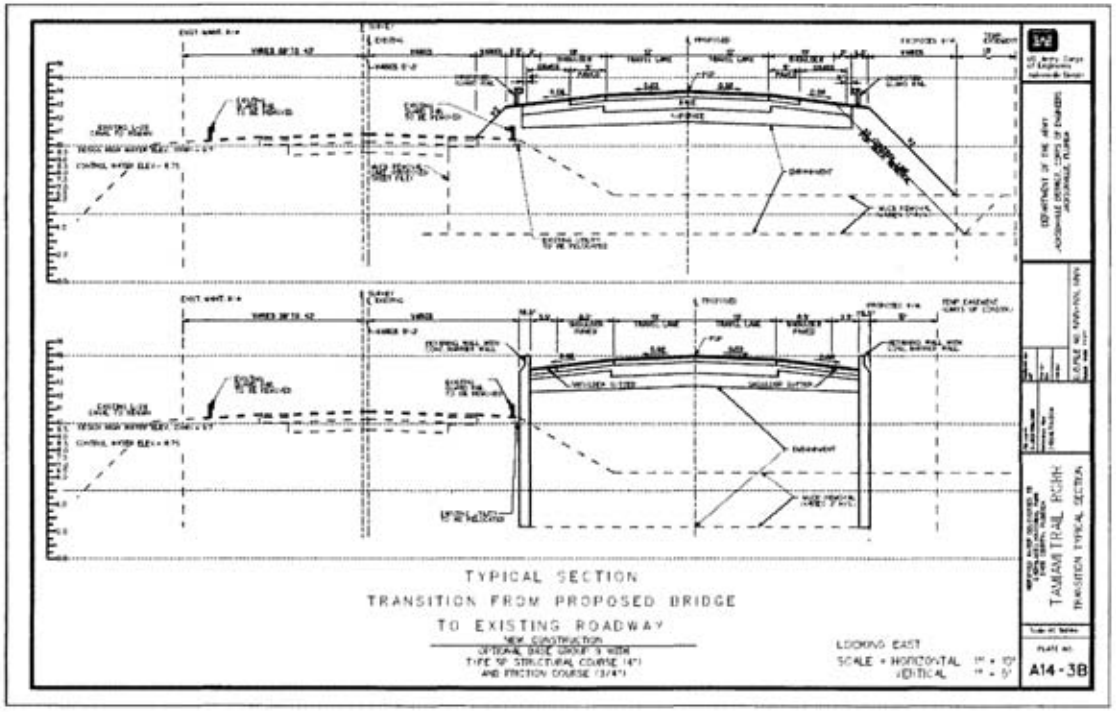
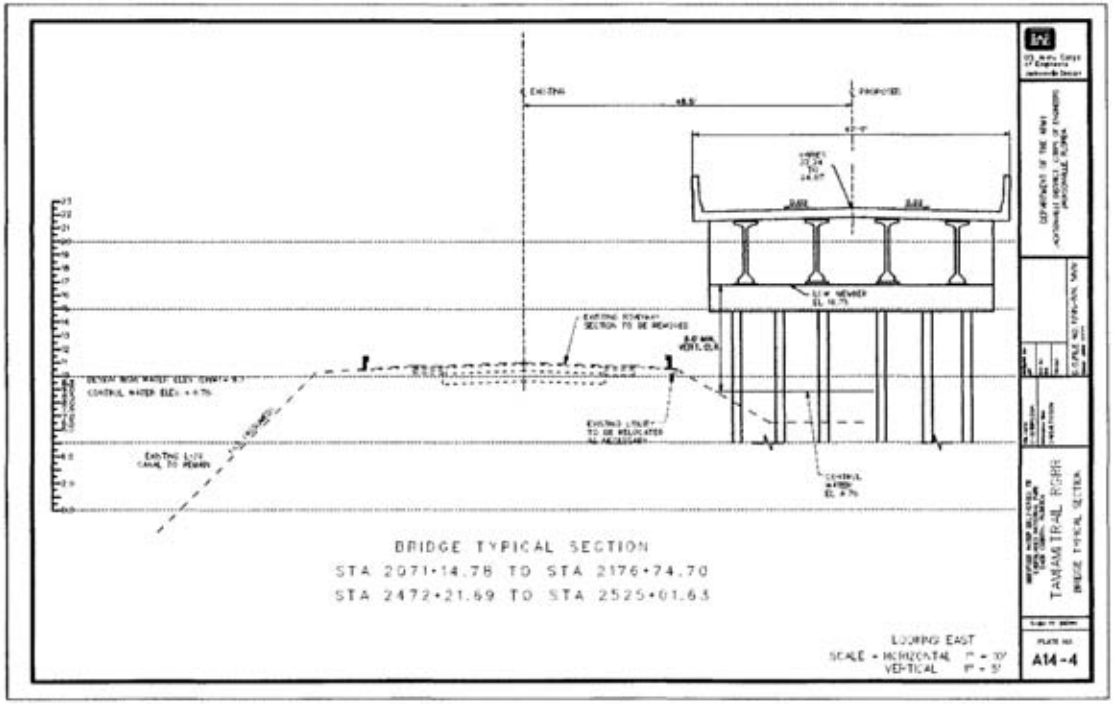


11.55 ELEVATION
PROPOSED CROSSECTION


TYPICAL SECTION
TRANSITION FROM PROPOSED BRIDGE
TO EXISTING ROADWAY
NEW CONSTRUCTION
OPTIONAL BASE GROUP 9 WIDE
TYPE SP STRUCTURAL COURSE (4")
AND FRICTION COURSE (3/4")
LOOKING EAST
SCALE = HORIZONTAL 1" = 10'
VERTICAL 1" = 5'
TAMIAMI TRAIL RCRR
TRANSITION TYPICAL SECTION
A14-3B


BRIDGE TYPICAL SECTION
STA 2071+14.78 TO STA 2176+74.70
STA 2472+21.69 TO STA 2525+01.63
LOOKING EAST
SCALE - HORIZONTAL 1" = 20'
VERTICAL 1" = 5'
TAMIAMI TRAIL NORTH
BRIDGE TYPICAL SECTION
A14-4

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ANNEX B
US FISH AND WILDLIFE SERVICE CONSULTATION

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US FISH AND WILDLIFE SERIVCE CONSULTATION
Tamiami Trail Modifications
Dade County, Florida

US Fish and Wildlife Service Consultation has begun and is ongoing.

---Original Message-----
From: Paul_Souza@fws.gov [mailto:Paul_Souza@fws.gov]
Sent: Thursday, June 05, 2008 6:07 PM
To: Griffith, Rebecca S SAJ; Grosskruger, Paul L SAJ;
Stuart.J.Applebaum@saj02.usace.army.mil
Cc: Cintron, Barbara B SAJ; Moore, Brooks W SAJ; Goral, Cem S SAJ;
Donald_Jodrey%DOI@fws.gov; Kevin_Palmer@fws.gov; Burns, Marie G SAJ;
Mark.Brown@usdoj.gov; Pam_Repp@fws.gov; Todd_Hopkins@fws.gov
Subject: LRR - Fish and Wildlife Service

Colonel, Stu, and Rebecca,

The Fish and Wildlife Service actively participated in the Limited Re-evaluation Review of the proposed Tamiami Trail Project. Since the Service had previously issued a Biological Opinion on the originally proposed Tamiami Trail project, we carefully reviewed our previous Biological Opinion in light of the Tentatively Selected Plan for the LRR. Based on this review, the Service has determined that the effects of the LRR would be less than those anticipated in the original Biological Opinion. In addition, the project promises to play a key role in improving conditions for fish, wildlife, and their habitats in the future.

We look forward to continuing our partnership to carefully develop, review, and implement projects like this one to help restore the Everglades.

Thanks and please let me know if you have questions.

Paul Souza
Field Supervisor
South Florida Ecological Services Office U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
772/562-3909 Office Phone
772/532-9775 Cell Phone
772/562-4288 Fax
www.fws.gov/verobeach

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

March 6, 2008

Rebecca Griffith, Ph.D.
Chief, Planning Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Dear Dr. Griffith:

The U.S. Fish and Wildlife Service (Service) has prepared this Planning Aid Letter (PAL) to accompany the Limited Reevaluation Report (LRR) for the Tamiami Trail component of the Modified Water Deliveries (MWD) to Everglades National Park (ENP) project in accordance with the Fish and Wildlife Coordination Act (FWCA) of 1958, as amended (16 U.S.C. 661 et seq.), and the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). This letter does not constitute the report of the Secretary of the Interior as required by section 2(b) of the FWCA, nor does it constitute a biological opinion under section 7 of the ESA. The purpose of this PAL is to provide planning technical assistance to the interagency team as they proceed with selecting an alternative for Tamiami Trail modifications that satisfies the goals and objectives of the MWD to ENP project.

Introduction

The primary purpose of the MWD to ENP project is to re-establish the hydrologic and ecological function of the historic Shark River Slough (SRS) flow path between Water Conservation Area 3A (WCA-3A), WCA-3B and North East Shark River Slough (NESRS) in ENP. In a 1992 General Design Memorandum (GDM), the U.S. Army Corps of Engineers (Corps) outlined a plan wherein water would be delivered from WCA-3 to the Levee-29 Borrow Canal (L-29) and from there to NESRS through the existing culverts under U.S. Highway 41 (Tamiami Trail). Subsequent hydrological analyses determined that the stages required in L-29 to convey increased flows could damage and/or overtop Tamiami Trail under certain conditions (Corps 2001). Two efforts since the 1992 GDM have sought to identify a feasible plan to modify Tamiami Trail: (1) the Draft General Reevaluation Report/Supplement to the 1992 Final Environmental Impact Statement (GRR/SEIS) on MWD to ENP (Corps 2001); and (2) the Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) and its ROD for the Tamiami Trail Modifications (Corps 2005, 2006). Both of these documents evaluated several alternatives and arrived at recommended plans. However, due to rising construction costs and other considerations the Corps was directed to produce a LRR to evaluate both previous and new alternative designs with consideration of new cost estimates.

TAKE PRIDE IN AMERICA

The Service, together with ENP, appreciates this opportunity to provide the following evaluation of alternatives included in the LRR and recommendations regarding the most environmentally beneficial plan.

Environmental Assessment

In this section we summarize the environmental assessment conducted by the team using 10 hydrologic and ecological performance metrics. To highlight differences between the modifications to Tamiami Trail, scores for each alternative are summarized and presented in Table 1. It is important to note that the tools and methodology applied in this assessment differ from those used in the 2005 RGRR. Time and resource constraints during the current assessment precluded the application of a hydraulic numerical model to generate hydrologic output for the suite of proposed alternatives. Instead, the Corps developed a spreadsheet application to analyze different design stages within the L-29 and resultant change in downstream NESRS hydrology. Output from the application included flow to L-29 and NESRS stage at selected ENP hydrologic monitoring locations from 1992 to 2006. These hydrologic outputs were summarized and used as surrogates for the ecological assessment of alternatives.

Alternatives

Currently, there are 26 alternatives that vary in structural complexity from using existing culverts to complete bridging of the road, along with incremental increase in L-29 design stage. To keep this letter brief, the alternatives have been categorized by the extent of roadway modification and L-29 stage. With the exception of the No Action alternative, 19 additional culvert sets and spreader swales are included in each of the other alternatives. For further detail of each alternative please refer to the LRR.

Category 1: No Roadway Raising – L-29 stage remains at 7.5 feet (ft) National Geodetic Vertical Datum (NGVD). This group includes the No Action alternative and alternatives that add additional culverts with spreader swales, add spreader swales south of existing culverts, or add up to 1 mile of bridging.

Category 2: Roadway Improvements – Raise Roadway Crown to 11.05 ft. This group includes alternatives that would allow L-29 stages to reach 8.0 ft NGVD. Alternatives include raising the low points of the road, adding additional culverts with spreader swales, or adding up to 3 miles of bridging.

Category 3: Roadway Improvements – Raise Roadway Crown to 11.55 ft. This group includes alternatives that would allow L-29 stages to reach 8.5 ft NGVD. Alternatives include raising the entire road, adding culverts with spreader swales, or adding up to 3 miles of bridging.

Category 4: Roadway Improvements – Raise Roadway Crown to 12.75 ft. This group includes alternatives that would allow L-29 stages to reach 9.7 ft NGVD. Alternatives include raising the entire roadway, raising the roadway and adding culverts with swales, or adding up to 10.7 miles of bridging.

Category 5: Structural Alternatives and/or Road Realignment – Raise Roadway Crown to 12.75 ft. This group of alternatives would allow L-29 stages to reach 9.7 ft NGVD. Alternatives include a northern alignment of Alternative 14 (Corps 2005), a northern alignment with 1 mile of bridging, a northern alignment with 1 mile of bridging and relocation of the L-67 levee, an ENP-proposed alternative using the current alignment with 1 mile of bridging and relocation of the L-67 levee, or pump stations along the L-29.

Assumptions

The environmental benefits quantified in this analysis are potential benefits whose realization will depend on development of future operational criteria and the implementation of Comprehensive Everglades Restoration Plan (CERP) projects to support additional flows to NESRS. Additionally, we assume that wet season stages can be used as a surrogate for other hydrologic metrics such as hydroperiod, recession rates, and drydown frequencies, which could not be predicted adequately using the Corps' spreadsheet application. For the purposes of this evaluation, the Service has used performance measures (PMs) developed by staff at ENP to evaluate wet season stages, since ENP is responsible for management of natural resources within the boundary of the evaluation area.

Performance Measures

1. Average annual flow volume. This quantitative hydrologic metric was calculated based on the Corps' spreadsheet application output and is the estimated annual average flow volume.

2. Potential connectivity between WCA-3B marsh and NESRS, as a percentage of total project length. This metric quantifies the direct marsh connection between the L-29 and NESRS marsh as a function of linear length of bridge constructed.

3. One-in-ten year total maximum discharge. This quantitative hydrologic metric was calculated based on the Corps' spreadsheet application output and is the estimated 1-in-10 year annual maximum discharge event. The annual maximum 7-day running average flow was ranked and a return period was then calculated.

4. Number of sloughs crossed by bridges. This quantitative metric was calculated based on a simple ratio of the number of sloughs beneath bridges to the total number of sloughs south of Tamiami Trail. Slough locations were determined by 1940s aerial photographs and High Accuracy Elevation Data transects north and south of Tamiami Trail.

5. Difference between average velocity in marsh and average velocity at road. This quantitative metric was calculated based on the Corps' spreadsheet application output and is the ratio of the estimated water velocity near the road to the water velocity in the marsh.

6. Flows from L-29 into the deep sloughs of NESRS. The benefits of different bridge lengths and locations were assessed considering each bridge location. A representative "marsh capacity" was estimated on 200 ft wide intervals using the U.S. Geological Survey helicopter ground elevations and Manning's "n" based flow equation used in the South Florida Water Management Model. The location of each bridge is then used to calculate the marsh capacity directly connected by a bridge opening. This marsh capacity for the bridge is then divided by the marsh capacity of the approximately 11 mile width of NESRS from the L-67 Extension to the L-31N levee (North American Datum 83 horizontal coordinates from 763,500 to 821,250) and expressed as percentage (Corps 2005).

7. Hydrologic suitability for slough vegetation: number of days water depth > 2.0 ft during the wet season peak (1 August – 31 October). This quantitative hydrologic metric was calculated based on the Corps' spreadsheet application output and describes the estimated total number of days water depth exceeds 2.0 ft during the wet season peak at ENP monitoring stations NESRS1 and NESRS2.

8. Hydrologic suitability for slough vegetation: number of days water depth > 3.0 ft during the wet season peak. This quantitative hydrologic metric was calculated based on the Corps' spreadsheet application output and describes the estimated total number of days water depth exceeds 3.0 ft during the wet season peak at ENP monitoring stations NESRS1 and NESRS2.

9. Hydrologic suitability for slough vegetation: average water depth during the wet season peak. This quantitative hydrologic metric was calculated based on the Corps' spreadsheet application output and describes the estimated average water depth during the wet season peak at ENP monitoring stations NESRS1 and NESRS2.

10. Reduction in wildlife mortality. This metric describes the estimated reduction in vehicular wildlife mortality and is derived from the length of roadway removed.

Benefits Analysis Results

The predicted Tamiami Trail benefits, presented in Table 1, summarize the results of the PM analyses for the 26 alternatives. The alternative with the highest raw value for each PM was assigned a value of 100 percent; the remaining alternatives were then given a percentage score relative to the maximum. The "Total PM Score" column in Table 1 provides a sum of all percentage scores for the 10 PM categories.

Overall, the 10.7-mile bridge alternative at the 9.7 ft L-29 stage (Alternative 4.2.4) was the highest scoring alternative. Likewise, the lowest ranking alternative was the No Action alternative at the 7.5 ft L-29 stage. The alternatives that add spreader swales or culvert sets with spreader swales at the 7.5 ft L-29 stage yield the smallest predicted benefits as compared to the No Action alternative.

Alternatives containing bridging options, higher stages in L-29 and increased length of bridging provide greater benefits compared to those alternatives lacking bridges and at lower L-29 design stages. For instance, adding a 1-mile western bridge at the 7.5 ft L-29 stage provides an 80 point increase in the total PM score as compared to adding culvert sets with spreader swales at the 7.5 ft L-29 stage. Increasing the L-29 stage from 7.5 ft to 9.7 ft for the 1-mile western bridge provides an increase of 284 points in the total PM score. Likewise, increased L-29 design stages for otherwise comparable alternatives provide consistently higher total PM scores. At the 9.7 ft L-29 stage, the 10.7-mile bridge alternative provides a 385 point increase in the total PM score relative to the 3-mile bridge alternative, and a 497 point increase in the total PM score benefit relative to the 1-mile western bridge alternative.

Potential Benefits to Endangered Species

The primary objective of the MWD to ENP project is to restore the quantity, quality, timing, and distribution of water deliveries to ENP. Redistribution of flow across the broader SRS and Tamiami Trail flow path will restore NESRS as a functional ecological component of the southern Everglades ecosystem (Service 1990, 1991, 1999; Corps 1992, 1999, 2000). Based on the metrics used in the environmental benefits section above, an alternative that includes at least 1 mile of bridge and raises the roadway to allow L-29 design stages to 8.0 ft will provide the flow necessary to begin achieving the benefits to species and their habitats described in this section.

As noted previously, the Corps' spreadsheet application is limited in spatial extent (*e.g.*, NESRS) and unable to simulate dry season recession rates or the frequency and duration of water level dry down below ground surface. This limits our ability, at this time, to conduct a thorough ecological evaluation using existing performance measures for threatened and endangered species. Instead, potential ecological benefits to threatened and endangered species are inferred from changes in flows and wet season stages in NESRS, as predicted by the Corps' spreadsheet application. The sections below provide brief narratives describing the anticipated potential benefits for each species from increasing flow to NESRS. These narratives concentrate on the potential benefit of restoring flows to NESRS consistent with system-wide ecological restoration as defined during the Restudy (Corps 1999.

A thorough threatened and endangered species analysis has already been initiated. The Corps has recently provided the Service with key information regarding potential project impacts. We are currently reviewing this information and will complete consultation in a timely manner consistent with project time lines.

Wood stork

It is widely believed that hydrologic restoration of NESRS and eastern ENP is essential to significant recovery of wading bird populations in ENP (Tabb 1963; Service 1990, 1991, 1999; Corps 1992, 1999; Ogden et al. 1992). The population declines observed throughout ENP in the 1960s coincides with the hydrologic isolation of NESRS and subsequent lowering of water levels in the upstream Everglades ecosystem by the compartmentalization of WCA-3 (Leach et al. 1972; Corps 1992; U.S. Department of Justice 1999). Reintroduction of flows to NESRS will likely increase stages in the Rocky Glades and Taylor Slough. This movement towards historic seasonal flow distributions will increase water depths and hydroperiods within these areas that will improve the quality and quantity of forage fish that support wood stork *(Mycteria americana)* nesting colonies in their current as well as historic locations.

Additional information regarding wading bird colony protection zones delineated by the Service, for protection of the colonies during construction, will be provided in subsequent PALs.

Cape Sable seaside sparrow

Since 1992, the decline in the overall Cape Sable seaside sparrow *(Ammodramus maritimus mirabilis)* population has been significant, and there has been no evidence of improvement (Pimm et al. 2002; Service 2006a; Elderd and Nott 2007). Subpopulation A of the sparrow, located in Northwest Shark River Slough (NWSRS) has been impacted by high water levels from both natural rainfall events and large, unseasonable S-12 discharges (Pimm et al. 2002; Pimm and Bass 2002; Service 2006a; Eldred and Nott 2007). This area once supported nearly half of the total sparrow population from 1981 to 1992 (Service 1999, 2002, 2006a; Pimm et al. 2002; Pimm and Bass 2002; Elderd and Nott 2007). Redistributing 55 percent of the current SRS water budget into NESRS will undoubtedly benefit NWSRS by reducing S-12 A, B and C discharges during the early wet season. In addition, decreased total S-12 wet season discharges could reduce wet season water depths and possibly decrease hydroperiods to be more consistent with species and habitat needs. Additionally, the reintroduction of flows to NESRS and increased stages downstream is expected to help reestablish historic hydroperiods in the eastern marl marshes of the Rocky Glades and Taylor Slough, benefiting eastern subpopulations of the sparrow.

Everglade snail kite

The Everglade snail kite *(Rostrhamus sociabilis plumbeus)* has experienced pronounced population fluctuations over the past 30 years. These fluctuations are primarily associated with the regulation of water levels by the C&SF project and natural meteorological trends (Nicholson 1926; Howell 1932; Bent 1937; Sprunt 1945, 1954; Stieglitz and Thompson 1967; Service 1990, 1991, 1999; Corps 1992). Specifically, in WCA-3A snail kites have been impacted by the maintenance of unnaturally high stages (Kitchens et al. 2002; Martin et al. 2003; Service 2006a). This condition is believed to have reduced suitable nesting substrate and foraging opportunities. The loss of over half of the wetlands in central and southern Florida

during the last century, coupled with habitat degradation and fragmentation to many remaining wetlands, has increased the importance of WCA-3A in sustaining the overall kite population. Redistributing 55 percent of the current SRS water budget into NESRS, when combined with future operational improvements to WCA-3, is expected to reduce unnaturally high wet season stages in WCA-3A that have been impacting nesting substrate and reducing foraging opportunities. Additionally, restoration of the historic SRS flow way will enhance the function of wetland snail kite habitat in WCA-3B and NESRS.

Conclusions

Restoration of the historic SRS flow distribution will ultimately benefit fish and wildlife and their habitats including threatened and endangered species. Similar to the conclusions drawn in previous FWCA reports (Service 2003, 2005, 2006b) on the Tamiami Trail component of the MWD to ENP project, we have determined that the 10.7-mile bridge alternative will provide the greatest environmental benefit. However, given Congressional guidance with respect to this project we support the Corps' selection of an alternative that, at a minimum, raises the L-29 design stage to at least 8.0 ft and includes up to 1.0 mile of bridge. The selected alternative will meet the requirements of the WRDA Managers Amendment while providing a reasonable increase in environmental benefits.

The selected alternative with an L-29 design stage of 8.0 ft and at least 1.0 mile of bridge is consistent with future CERP projects. This limited bridging alternative also provides the opportunity for addressing key restoration uncertainties using Incremental Adaptive Restoration, if implemented in conjunction with other MWD features such as L-67 A and L-67-C levee conveyance and removal of the L-29 levee and/or borrow canal.

In summary, the modification of the Tamiami Trail to allow increased flows to NESRS is a critical step required to make progress towards restoration of the Everglades ecosystem. We commend the Corps' sustained efforts to complete this component of the MWD to ENP project. We pledge our continuing support in planning of restoration projects to maximize opportunities and minimize potential adverse effects to the natural system. For assistance or if you have questions regarding this letter, please contact me or Fish and Wildlife Biologist Kevin Palmer at 772-562-3909, extension 280.

Sincerely yours,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

cc:
Corps, Jacksonville, Florida (David Apple, Barbara Cintron)
DEP, West Palm Beach, Florida (Inger Hansen)
DERM, Miami-Dade County, Miami, Florida
District, West Palm Beach, Florida (Paul Linton)
DOI, Miami, Florida (Terrance Salt)
ENP Homestead, Florida (Dave Sikkema, Dave Hallac)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Miles Meyer)

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Table 1. Tamiami Trail Limited Reevaluation Report Benefit Matrix.

	ALTERNATIVES	% Average Annual Flow Volume (ac-ft)	Potential connectivity of WCA-3B Marsh and NESS, percent of total length	% One in ten year maximum discharge (cfs)	% Number of sloughs crossed by bridges	% Differences between average velocity in marsh and average velocity at road	Flows into NESS provided via bridge (%)	% Total number of days at NESRS1 and NESRS2 water depth > 2 ft. during wet season peak	% Total number of days at NESRS1 and NESRS2 water depth > 3 ft. during wet season peak	% Average water depth at NESRS1and NESRS-2 during wet season peak (ft.)	% Reduction in wildlife mortality (# average annual deaths avoided)	Total PM Score
Category 1: L-29 design stage 7.5 ft, No roadway raising												
1.1	no action (19 culvert sets)	37.4%	0.00%	33.0%	0.00%	1.80%	0.00%	2.81%	0.00%	57.5%	0.00%	133
1.2	spreader swales (20ft x 1000ft)	38.1%	0.00%	33.8%	0.00%	2.50%	0.00%	2.42%	0.00%	58.4%	0.00%	136
1.3	add culvert sets (19 - 3x58 dia) with swales (2)	38.8%	0.00%	33.0%	0.00%	3.30%	0.00%	2.55%	0.00%	58.8%	0.00%	138
1.4a	add 1-mile eastern bridge	43.1%	9.00%	36.2%	9.52%	26.0%	11.0%	3.30%	0.00%	61.9%	9.34%	209
1.4b	add 1-mile western bridge	43.1%	9.00%	36.2%	9.52%	26.0%	20.0%	3.30%	0.00%	61.9%	9.34%	218
Category 2: L-29 design stage 8.0 ft, Roadway improvements - Crown 11.95 ft												
2.1	raise road (low points only)	50.8%	0.00%	40.7%	0.00%	1.80%	0.00%	11.0%	0.00%	67.7%	0.00%	172
2.2.1	raise low points, add culverts with swales	53.2%	0.00%	40.7%	0.00%	1.80%	0.00%	23.3%	0.00%	69.9%	0.00%	189
2.2.2a	raise road, add 1-mile eastern bridge	58.0%	9.00%	40.8%	9.52%	26%	11.0%	46.7%	0.27%	73.5%	9.34%	284
2.2.2b	raise road, add 1-mile western bridge	58.0%	9.00%	40.8%	9.52%	26%	20.0%	46.7%	0.27%	73.5%	9.34%	293
2.2.3	raise low points, add 2-mile + 1-mile bridges	62.0%	28.0%	42.1%	19.0%	65%	42.9%	63.1%	0.27%	76.5%	28.0%	427
Category 3: L-29 design stage 8.5 ft, Roadway improvements - Crown 11.55 ft												
3.1	raise road	64.3%	0.00%	42.5%	0.00%	1.80%	0%	76.6%	0.37%	77.9%	0.00%	263
3.2.1	raise road, add culverts with swales	67.1%	0.00%	43.4%	0.00%	1.80%	0%	82.6%	0.46%	79.6%	0.00%	275
3.2.2a	raise road, add 1-mile eastern bridge	72.0%	9.00%	47.3%	9.52%	26%	11%	84.3%	0.64%	83.2%	9.34%	352
3.2.2b	raise road, add 1-mile western bridge	72.0%	9.00%	47.3%	9.52%	26%	20%	84.3%	0.64%	83.2%	9.34%	361
3.2.3	raise road, add 2-mile + 1-mile bridges	75.3%	28.0%	47.3%	19.0%	65%	42.9%	84.3%	1.46%	85.4%	28.0%	477
Category 4: L-29 design stage 8.7 ft, Roadway improvements - Crown 12.75 ft												
4.1	raise road	86.8%	0.00%	55.4%	0.00%	1.80%	0.00%	84.4%	74.0%	93.4%	0.00%	396
4.2.1	raise road, add culverts with swales	88.4%	0.00%	57.1%	0.00%	1.80%	0.00%	84.4%	89.4%	94.2%	0.00%	415
4.2.2a	raise road, add 1-mile eastern bridge (RGRR)	91.3%	9.00%	57.2%	9.52%	26.0%	11.0%	84.4%	100%	95.1%	9.34%	483
4.2.2b	raise road, add 1-mile western bridge (RGRR)	91.3%	9.00%	57.2%	9.52%	26.0%	20.0%	84.4%	100%	95.1%	9.34%	502
4.2.3	raise road, add 2-mile + 1-mile bridges (RGRR)	92.4%	28.0%	59.1%	19.0%	65.0%	42.9%	84.4%	100%	95.6%	28.03%	614
4.2.4	10.7-mile bridge (RGRR)	100%	100%	100%	100%	100%	100%	100%	99.3%	100%	100%	999
Category 5: L-29 design stage 8.7 ft, Structural alternatives or road realignment												
5.1	northern alignment of A8.14	92.4%	28.0%	59.1%	19.0%	65.0%	42.9%	84.4%	100%	95.6%	28.03%	614
5.2	northern alignment with 1-mile bridge	91.3%	9.00%	57.2%	9.52%	26.0%	20.0%	84.4%	100%	95.1%	9.34%	502
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	100%	9.00%	100%	9.52%	13.0%	20.0%	37.1%	29.4%	75.2%	9.34%	403
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	100%	9.00%	100%	9.52%	13.0%	20.0%	37.1%	29.4%	75.2%	9.34%	403

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National Park Service
Everglades National Park

MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS
LIMITED REEVALUATION REPORT AND
ENVIRONMENTAL ASSESSMENT

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June 2008

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MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK

TAMIAMI TRAIL MODIFICATIONS LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT

APPENDICES

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U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

US Army Corps
of Engineers

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
EVERGLADES NATIONAL PARK

June 2008

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APPENDIX A
BACKGROUND

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1.0 PROJECT AUTHORITY

The Everglades National Park Protection and Expansion Act, (PL 101-229, Section 104,16 U.S.C. Part 410r-5 *et seq.*), December 1989, authorized the Secretary of the Army to undertake certain actions to improve water deliveries from the Central and Southern Florida (C&SF) Project to the Everglades National Park (ENP).

TITLE I--EVERGLADES NATIONAL PARK EXPANSION

SEC. 101. FINDINGS, PURPOSES AND DEFINITION OF TERMS.

(a) FINDINGS-The Congress makes the following findings:

(1) The Everglades National Park is a nationally and internationally significant resource and the park has been adversely affected and continues to be adversely affected by external factors which have altered the ecosystem including the natural hydrologic conditions within the park.
(2) The existing boundary of Everglades National Park excludes the contiguous lands and waters of the Northeast Shark River Slough that are vital to long-term protection of the park and restoration of natural hydrologic conditions within the park.
(3) Wildlife resources and their associated habitats have been adversely impacted by the alteration of natural hydrologic conditions within the park, which has contributed to an overall decline in fishery resources and a 90 percent population loss of wading birds.
(4) Incorporation of the Northeast Shark River Slough and the East Everglades within the park will limit further losses suffered by the park due to habitat destruction outside the present park boundaries and will preserve valuable ecological resources for use and enjoyment by future generations.
(5) The State of Florida and certain of its political subdivisions or agencies have indicated a willingness to transfer approximately 35,000 acres of lands under their jurisdiction to the park in order to protect lands and water within the park, and may so transfer additional lands in the future.
(6) The State of Florida has proposed a joint Federal-State effort to protect Everglades National Park through the acquisition of additional lands.

(b) PURPOSE-The purposes of this Act are to--

(1) increase the level of protection of the outstanding natural values of Everglades National Park and to enhance and restore the ecological values, natural hydrologic conditions, and public enjoyment of such area by adding the area commonly known as the Northeast Shark River Slough and the East Everglades to Everglades National Park; and

(2) assure that the park is managed in order to maintain the natural abundance, diversity, and ecological integrity of native plants and animals, as well as the behavior of native animals, as a part of their ecosystem.

(c) DEFINITIONS-As used in this Act:

(1) The term `Secretary' means the Secretary of the Interior.
(2) The term `addition' means the approximately 107,600 acre area of the East Everglades area authorized to be added to Everglades National Park by this Act.
(3) The term `park' means the area encompassing the existing boundary of Everglades National Park and the addition area described in paragraph (2).
(4) The term `project' means the Central and Southern Florida Project.

SEC. 102. BOUNDARY MODIFICATION.

(a) AREA INCLUDED-The park boundary is hereby modified to include approximately 107,600 acres as generally depicted on the map entitled `Boundary Map, Everglades National Park Addition, Dade County, Florida', numbered 160-20,013B and dated
September 1989. The map shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior.
(b) BOUNDARY ADJUSTMENT-The Secretary may from time to time make minor revisions in the boundaries of the park in accordance with section 7(c) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 4601-4 and following). In exercising the boundary adjustment authority the Secretary shall ensure all actions will enhance resource preservation and shall not result in a net loss of acreage from the park.
(c) ACQUISITION-(1) Within the boundaries of the addition described in subsection (a), the Secretary may acquire lands and interests in land by donation, purchase with donated or appropriated funds, or exchange. For purposes of acquiring property by exchange, the Secretary may, notwithstanding any other provision of law, exchange the approximately one acre of Federal land known as `Gilberts' Marina' for non-Federal land of equal value located within the boundaries of the addition. Any lands or interests in land which are owned by the State of Florida or any political subdivision there of, may be acquired only by donation.
(2) It is the express intent of Congress that acquisition within the boundaries of the addition shall be completed not later than 5 years after the date of enactment of this section. The authority provided by this section shall remain in effect until all acquisition is completed.
(d) ACQUISITION OF TRACTS PARTIALLY OUTSIDE BOUNDARIES-When any tract of land is only partly within boundaries referred to in subsection (a), the Secretary may acquire all or any portion of the land outside of such boundaries in order to minimize the payment of severance

costs. Land so acquired outside of the boundaries may be exchanged by the Secretary for non-Federal lands within the boundaries, and any land so acquired and not utilized for exchange shall be reported to the General Services Administration for disposal under the Federal Property and Administrative Services Act of 1949 (63 Stat. 377).

(e) OFFERS TO SELL-In exercising the authority to acquire property under this Act, the Secretary shall give prompt and careful consideration to any offer made by any person owning property within the boundaries of the addition to sell such property, if such owner notifies the Secretary that the continued ownership of such property is causing, or would result in undue hardship.

(f) AUTHORIZATION OF APPROPRIATIONS-(1) Subject to the provisions of paragraph (2), there are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act. (2) With respect to land acquisition within the addition, not more than 80 percent of the cost of such acquisition may be provided by the Federal Government. Not less than 20 percent of such cost shall be provided by the State of Florida.

(g) ASSISTANCE-Upon the request of the Governor of the State of Florida, the Secretary is authorized to provide technical assistance and personnel to assist in the acquisition of lands and waters within the Kissimmee River/ Lake Okeechobee/ Everglades Hydrologic Basin, including the Big Cypress Swamp, through the provision of Federal land acquisition personnel, practices, and procedures. The State of Florida shall reimburse the Secretary for such assistance in such amounts and at such time as agreed upon by the Secretary and the State. Notwithstanding any other provision of law, reimbursement received by the Secretary for such assistance shall be retained by the Secretary and shall be available without further appropriation for purposes of carrying out any authorized activity of the Secretary within the boundaries of the park.

SEC. 103. ADMINISTRATION.

(a) IN GENERAL-The Secretary shall administer the areas within the addition in accordance with this Act and other provisions of law applicable to the Everglades National Park, and with the provisions of law generally applicable to units of the national park system, including the Act entitled `An Act to establish a National Park Service, and for other purposes', approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1-4). In order to further preserve and protect Everglades National Park, the Secretary shall utilize such other statutory authority as may be available to him for the preservation of wildlife and natural resources as he deems necessary to carry out the purposes of this Act.

(b) PROTECTION OF ECOSYSTEM-The Secretary shall manage the park in order to maintain the natural abundance, diversity, and ecological integrity

of native plants and animals, as well as the behavior of native animals, as a part of their ecosystem.

(c) PROTECTION OF FLORA AND FAUNA-The park shall be closed to the operation of
airboats--

(1) except as provided in subsection (d); and

(2) except that within a limited capacity and on designated routes within the addition, owners of record of registered airboats in use within the addition as of January 1, 1989, shall be issued nontransferable, nonrenewable permits, for their individual lifetimes, to operate personally-owned airboats for noncommercial use in accordance with rules prescribed by the Secretary to determine ownership and registration, establish uses, permit conditions, and penalties, and to protect the biological resources of the area.

(d) CONCESSION CONTRACTS-The Secretary is authorized to negotiate and enter into concession contracts with the owners of commercial airboat and tour facilities in existence on or before January 1, 1989, located within the addition for the provision of such services at their current locations under such rules and conditions as he may deem necessary for the accommodation of visitors and protection of biological resources of the area.

(e) VISITOR CENTER-The Secretary is authorized and directed to expedite the construction of the visitor center facility at Everglades City, Florida, as described in the Development Concept Plan, Gulf Coast, dated February 1989, and upon construction shall designate the visitor center facility as `The Marjory Stoneman Douglas Center' in commemoration of the vision and leadership shown by Mrs. Douglas in the protection of the Everglades and Everglades National Park.

SEC. 104. MODIFICATION OF CERTAIN WATER PROJECTS.

(a) IMPROVED WATER DELIVERIES-(1) Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park.

(2) Such modifications shall be based upon the findings of the Secretary's experimental program authorized in section 1302 of the 1984 Supplemental Appropriations Act (97 Stat. 1292) and generally as set forth in a General Design Memorandum to be prepared by the Jacksonville District entitled `Modified Water Deliveries to Everglades National Park'. The Draft of such Memorandum and the Final Memorandum, as prepared by the Jacksonville District, shall be submitted as promptly as practicable to the Committee on Energy and Natural Resources and the Committee on Environment and

Public Works of the United States Senate and the Committee on Interior and Insular Affairs and the Committee on Public Works and Transportation of the United States House of Representatives.

(3) Construction of project modifications authorized in this subsection and flood protection systems authorized in subsections (c) and (d) are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the park in particular and shall not require further economic justification.

(4) Nothing in this section shall be construed to limit the operation of project facilities to achieve their design objectives, as set forth in the Congressional authorization and any modifications thereof.

(b) DETERMINATION OF ADVERSE EFFECT-(1) Upon completion of the Final Memorandum referred to in subsection (a), the Secretary of the Army, in consultation with the South Florida Water Management District, shall make a determination as to whether the residential area within the East Everglades known as the `Eight and One- Half Square Mile Area' or adjacent agricultural areas, all as generally depicted on the map referred to in subsection 102(a), will be adversely affected by project modifications authorized in subsection (a).

(2) In determining whether adjacent agricultural areas will be adversely affected, the

Secretary of the Army shall consider the impact of any flood protection system proposed to be implemented pursuant to subsection (c) on such agricultural areas.

(c) FLOOD PROTECTION; EIGHT AND ONE-HALF SQUARE MILE AREA-If the Secretary of the Army makes a determination pursuant to subsection (b) that the `Eight and One-Half Square Mile Area' will be adversely affected, the Secretary of the Army is authorized and directed to construct a flood protection system for that portion of presently developed land within such area.

(d) FLOOD PROTECTION; ADJACENT AGRICULTURAL AREA-(1) If the Secretary of the Army determines pursuant to subsection (b) that an adjacent agricultural area will be adversely affected, the Secretary of the Army is authorized and directed to construct a flood protection system for such area. Such determination shall be based on a finding by the Secretary of the Army that:

(A) the adverse effect will be attributable solely to a project modification authorized in subsection (a) or to a flood protection system implemented pursuant to subsection (c), or both; and

(B) such modification or flood protection system will result in a substantial reduction in the economic utility of such area based on its present agricultural use.

(2) No project modification authorized in subsection (a) which the Secretary of the Army determines will cause an adverse effect pursuant to subsection (b)

shall be made operational until the Secretary of the Army has implemented measures to prevent such adverse effect on the adjacent agricultural area: Provided, That the Secretary of the Army or the South Florida Water Management District may operate the modification to the extent that the Secretary of the Army determines that such operation will not adversely affect the adjacent agricultural area: Provided further, That any preventive measure shall be implemented in a manner that presents the least prospect of harm to the natural resources of the park.

(3) Any flood protection system implemented by the Secretary of the Army pursuant to this subsection shall be required only to provide for flood protection for present agricultural uses within such adjacent agricultural area.

(4) The acquisition of land authorized in section 102 shall not be considered a project modification.

(e) PERIODIC REVIEW-(1) Not later than 18 months after the completion of the project modifications authorized in subsection (a), and periodically thereafter, the Secretary of the Army shall review the determination of adverse effect for adjacent agricultural areas.

(2) In conducting such review, the Secretary of the Army shall consult with all affected parties, including, but not limited to, the Secretary, the South Florida Water Management District and agricultural users within adjacent agricultural areas.

(3) If, on the basis of such review, the Secretary of the Army determines that an adjacent agricultural area has been, or will be adversely affected, the Secretary of the Army is authorized and directed, in accordance with the provisions of subsection (d), to construct a flood protection system for such area: Provided, That the provisions of subsection (d)(2) shall be applicable only to the extent that the Secretary, in consultation with the Secretary of the Army, determines that the park will not be adversely affected.

(4) The provisions of this subsection shall only be applicable if the Secretary of the Army has previously made a determination that such adjacent agricultural area will not be adversely affected.

(f) CURRENT CANAL OPERATING LEVELS-Nothing in this section shall be construed to require or prohibit the Secretary of the Army or the South Florida Water Management
District from maintaining the water level within any project canal below the maximum authorized operating level as of the date of enactment of this Act.

(g) NO LIMITATION ON OTHER CLAIMS-If the Secretary of the Army makes a determination of no adverse effect pursuant to subsection (b), such determination shall not be considered as a limitation or prohibition against any available legal remedy which may otherwise be available.

(h) COORDINATION-The Secretary and the Secretary of the Army shall coordinate the construction program authorized under this section and the land acquisition program authorized in section 102 in such a manner as will

permit both to proceed concurrently and as will avoid unreasonable interference with property interests prior to the acquisition of such interests by the Secretary under section 102.

(i) WEST DADE WELLFIELD-No Federal license, permit, approval, right-of-way or assistance shall be granted or issued with respect to the West Dade Wellfield (to be located in the Bird Drive Drainage Basin, as identified in the Comprehensive Development Master Plan for Dade County, Florida) until the Secretary, the Governor of the State of Florida, the South Florida Water Management District and Dade County, Florida enter into an agreement providing that the South Florida Water Management District's water use permit for the wellfield, if granted, must include the following limiting conditions: (1) the wellfield's peak pumpage rate shall not exceed 140,000,000 gallons per day; (2) the permit shall include reasonable, enforceable measures to limit demand on the wellfield in times of water shortage; and (3) if, during times of water shortage, the District fails to limit demand on the wellfield pursuant to (2), or if the District limits demand on the wellfield pursuant to (2), but the Secretary certifies that operation of the wellfield is still causing significant adverse impacts on the resources of the Park, the Governor shall require the South Florida Water Management District to take necessary actions to alleviate the adverse impact, including, but not limited to, temporary reductions in the pumpage from the wellfield.

(j) PROTECTION OF NATURAL VALUES-The Secretary of the Army is directed in analysis, design and engineering associated with the development of a general design memorandum for works and operations in the `C-111 basin' area of the East Everglades, to take all measures which are feasible and consistent with the purposes of the project to protect natural values associated with Everglades National Park. Upon completion of a general design memorandum for the area, the Secretary shall prepare and transmit a report to the Committee on Energy and Natural Resources and the Committee on Environment and Public Works of the United States Senate and the Committee on Interior and Insular Affairs and the Committee on Public Works and Transportation of the United States House of Representatives on the status of the natural resources of the C-111 basin and functionally related lands.

1.1 Project Purpose

Modify the Central and Southern Florida Project to improve water deliveries to Everglades National Park and, to the extent practicable, take steps to restore the Park's natural hydrologic conditions.

1.2 Project Structural Components

The Project consists of three major structural components: (a) 8.5 Square Mile Area (SMA) Flood Mitigation component, (b) Conveyance and Seepage Control component, and (c) Tamiami Trail Component. In addition to the major

structural features, the project also provides funding for operational evaluations, water quality treatment evaluations, hydrologic and ecological investigations, as well as project management support to the U.S. Army Corps of Engineers (USACE) and Everglades National Park (ENP).

1.2.1 8.5 Square Mile Area Component

1.2.1.1 8.5 Square Mile Area Purposes:

Provide flood mitigation to the agricultural and urban areas within the 8.5 Square Mile Area associated with the project-induced higher water levels in the restored Northeast Shark Slough of ENP.

1.2.1.2 8.5 Square Mile Area Feature Current Status:

- The 1992 General Design Memorandum specified the construction of a seepage collector canal and levee along the boundary shared by ENP and the 8.5 SMA in order to provide the area with the required mitigation for the impacts associated with the Project. The location of the seepage collector pump (S-357) was on the north side of the area and discharged into the L-31N Canal for subsequent reintroduction into Northeast Shark Slough via the S-356 pump station.
- Concerns over the potential impacts of the 1992 plan on the restoration of Northeast Shark Slough, impacts to landowners within the area, and new information on restoration requirements of park wetlands prompted a reevaluation of the 1992 design.
- The first reevaluation was conducted by the local sponsor, the South Florida Water Management District (SFWMD), based on a recommendation of a committee appointed by then Governor Lawton Chiles. The initial decision (1998) of the Governing Board of the SFWMD was full buyout of the area. This decision was reversed in 1999 by a newly appointed Governing Board that subsequently recommended that USACE complete another evaluation of alternatives.
- A General Reevaluation Report and Supplemental Environmental Impact Statement was completed in July 2000 recommending Alternative 6D. The Corps signed a Record of Decision in December 2000 endorsing the selection of the new plan. This plan specifies the following features (see ***Figure A-1)***:
  - Acquisition of the western 2100 acres of the 8.5 SMA
  - Acquisition of land within the construction footprint
  - Construction of a more interior canal and western levees to provide the needed mitigation for the remaining 8.5 SMA not acquired
  - Construction of the S-357 pump station on the south side of the 8.5 SMA with an associated Stormwater Treatment Area within the C-111 Project

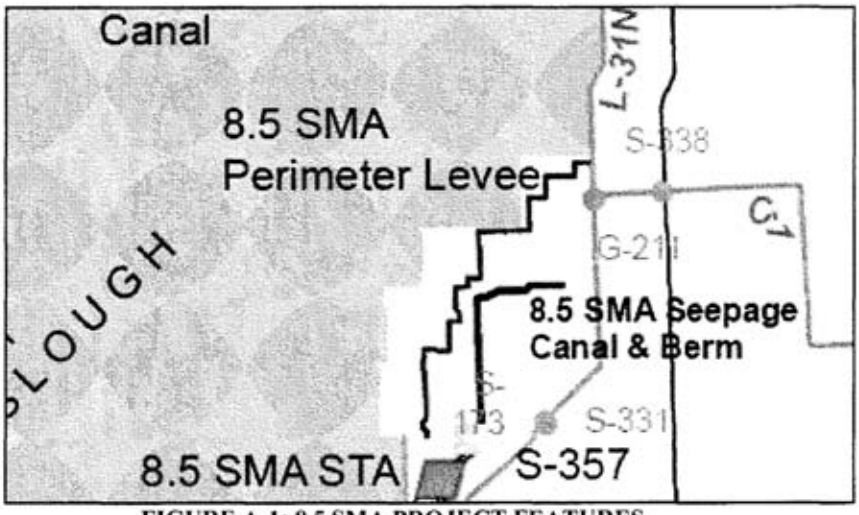

FIGURE A-1: 8.5 SMA PROJECT FEATURES

- Litigation concerning the authority of the USACE to acquire land within the area delayed implementation. The USACE suspended all activities on the MWD Project, including the 8.5 SMA component, from July 2002 until March 2003 when legislation allowed for the resumption of land acquisition.
- Of the 842 tracts needed, 841 have been acquired to date including all lands needed for construction. One tract is in condemnation proceedings. The Corps currently has title to all tracts but can not move forward without the final Order of Possession. Efforts are being made to explain to the courts the urgency of having this land to help expedite the process. All lands acquired by USACE for the 8.5 SMA component will be transferred to ENP and SFWMD.
- Home Demolition and land cleanup activities began in 2002 and were completed in January 2008. Preparing the lands for construction was an unprecedented undertaking given the extent of the existing residential area. During the home demolition and cleanup efforts, there were many findings including legal and illegal landfills. Hazardous waste and tons of debris and trash were discovered from illegal dumping activities. Remaining actions include exotic and debris removal for the areas west and north of the protection levee.
- A contract for the construction of the S-357 pump station was awarded on 20 September 2005 and the contractor was issued a Notice to Proceed on 02 November 2005. In May 2006, the contractor was also awarded three options to the contract to construct the perimeter levee and seepage canal,

construct the flow-way and stormwater treatment area, and perform debris removal. Testing of the pump station will occur in February 2008 and construction will finish by May 2008. Transfer of the facility to the South Florida Water Management District will occur upon completion of the S-331 modifications.

1.2.2 Conveyance and Seepage Control Features

1.2.2.1 Conveyance and Seepage Control Features Purposes:

Convey water from Water Conservation Area 3A to Water Conservation Area 3B and subsequently into Northeast Shark Slough, eliminate the barriers to natural flow patterns between Northeast Shark Slough and West Shark Slough, and return Northeast Shark Slough seepage back into the L-29 Canal.

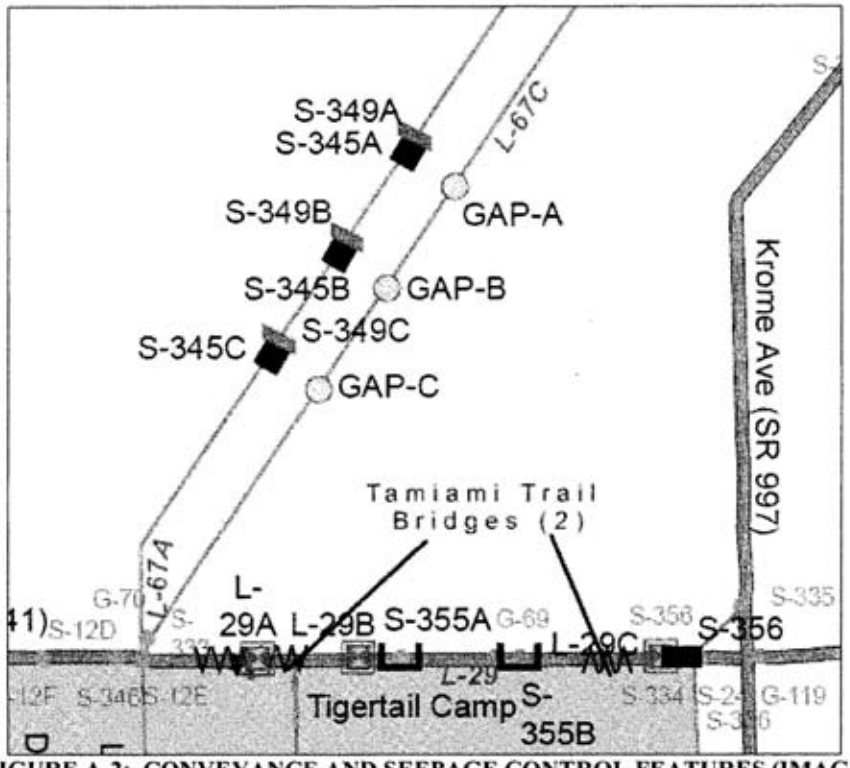

FIGURE A-2: CONVEYANCE AND SEEPAGE CONTROL FEATURES (IMAGE SHOWS THE 2005 PLAN FOR TAMIAMI TRAIL)

1.2.2.2 Conveyance and Seepage Control Feature Current Status:

- The 1992 General Design Memorandum specified the construction of the following conveyance and seepage control features:
  1) Structures S-345A, B, and C through the L-67A and C Levees
  2) Structures S-349A, B, and C in the L-67A Borrow Canal
  3) Spillway structures S-355A and B in the L-29 Levee
  4) Pump Station S-356 between L-31N Canal and L-29 Canal
  5) Degradation of the L-67 Extension Canal and Levee
- The following features are complete:
  1) S-355A and B gated structures in the L-29 Levee
  2) S-333 modifications
  3) 4 of 9 miles of L67 Extension Levee degraded
  4) S-356 pump station
  5) Tigertail Camp elevation raised

- New information on the restoration requirements of the Everglades ecosystem prompted an interagency reevaluation of the 1992 features.
- The Corps will address any design modifications for this component in the NEPA documentation and Engineering Documentation Report. It is expected to address the L-67A and L-67C Levees and the L-67A Canal.

1.2.3 Tamiami Trail Modification

1.2.3.1 Tamiami Trail Modification Purposes:

Modify Tamiami Trail to allow increased water volumes, improve ridge and slough processes, increase slough vegetation, and reduce wildlife mortality.

1.2.3.2 Tamiami Trail Status

See Section 1 of the LRR for Tamiami Trail history and background.

APPENDIX B:
ENGINEERING

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RECOMMENDED PLAN:

The Recommended Plan is Alternative 3.2.2a, one-mile eastern bridge, allowing L-29 Canal stage of 8.5 feet National Geodetic Vertical Datum (NGVD), and road reinforcement to mitigate for the 8.5-foot stage. The Recommended Plan is described further below.

INTRODUCTION:

Modifications to the U.S. Highway 41 (Tamiami Trail) are required between spillway structures S-333 and S-334 to allow proper conveyance of the Modified Water Deliveries (MWD) to the Everglades National Park (ENP) project flows and to mitigate the impact of the resulting higher water surface elevations on the roadway.

Upon direction from Congress after substantial cost increases, the Department of the Interior and U.S. Army Corps of Engineers (Corps) reevaluated the 2005 Revised General Reevaluation Report (RGRR) Plan and developed less costly alternatives from the 2005 Plan. 27 alternatives as described below were considered.

GENERAL NOTES:

1. All design information for the road and bridge(s) is contained in the original 2005 RGRR. The 2005 RGRR is located at http://www.saj.usace.army.mil/dp/mwdenp-c111/index.htm the engineering information is in Appendix D. This information was used to evaluate all the alternatives. All asphalt work was based on the depth of asphalt needed for the Alternative 14 in the 2005 RGRR and crown heights were lowered as necessary.

2. The locations of all bridges were as proposed under the 2005 RGRR, which is south of the existing Tamiami Trail. This alignment allows existing transportation lanes to be open during construction to allow easier maintenance of traffic. When a one-mile length for the western bridge was considered, the most western mile section of 2005 RGRR plan was used.

3. Design elevations were based on the following hydraulic requirements and pertinent water levels. As water levels in the canal are held at lower stages than the Natural System Model (NSM), the elevations for design high water (DHW) are lowered proportionally. The control water elevation (CWE) for the bridges remains the same for each alternative.

    a. Roadway DHW elevation: Defined in the H&H Appendix (Appendix D). This water level is only used to establish the vertical clearance requirements for the reinforced roadway.

b. Bridge CWE: Defined as the average high water elevation assuming a natural systems condition, based on regional hydrologic model and a 36-year simulated period of record. This elevation does not represent a stage that would be maintained but a stage used to determine the required low chord elevation for the proposed bridge. Between the 2005 RGRR and the 30% design, Florida Department of Transportation (FDOT) required a bridge low cord height of 8 feet from the CWE. This height restriction was relieved to 6 feet low cord height from the CWE to reflect the current FDOT standard and has been adjusted in this report.

4. Geotechnical data for the 60% design of Alternative 14 is located at ftp://ftp.saj.usace.army.mil/pub/Public_Dissemination in the folder titled, 'Tamiami_Trail'. One file is titled 'Roadway Geotechnical Report' and the other 'Bridge Geotechnical Report'. These data were utilized in estimating the cost for the bridge foundations.

5. All alternative bridges had two 12-foot travel lanes with 10-foot shoulders. The approaches to the bridges also had 12-foot travel lanes with 10-foot shoulders. The approaches had a 2-on-1 side slope. The approach shoulders are paved for five feet and grassed for the remaining five feet.

6. All alternatives were evaluated by reviewing the 10.7 miles of road.

ALTERNATIVE GROUPS:

The 27 alternatives were arranged into five groups or categories. The categories were separated by L-29 Canal stage and the extent of mitigation thought appropriate to safely allow the higher stages in L-29 Canal.

CATEGORY 1 – NO ROADWAY MITIGATION:

Category 1 had no increase in L-29 Canal stage. This category included enhanced flow modification features, without roadway modifications.

Alternative 1.1: No Action (***Figure B-1***). The No Action alternative maintained existing conditions for the Tamiami Trail. This alternative did not allow additional discharges into the ENP as envisioned in the 1992 General Design Memorandum (GDM). It has a stage constraint in L-29 Canal of 7.5 feet, NGVD average water elevation.

Alternative 1.2: Spreader swales south of culverts. This alternative introduced spreader swales at each set of culverts. The swale dimensions (***Figure B-2***) were 30 feet wide and 1,000 feet long (bottom width). The assumption used to determine the quantities was the peat was four feet thick and required a 1-on-3 side slope. The swales would be constructed by

removing the trees and shrubs from the culvert openings and then removing the peat to rock to the width and length of the swale thus providing a place for the water to overflow. These swales were included in all designs to allow the culverts to continue to operate. Any additional openings require a cleared area for water to flow. Consideration of this alternative may be evaluated separately by a pilot test currently in NEPA scoping. If the test is conducted and provides appreciable benefits, then the remaining swales could be considered for construction as part of the remaining conveyance and seepage control features through a separate NEPA process. Swales would require minimal maintenance.

Alternative 1.3: Culverts only. Add 19 sets of three five-foot diameter culverts to the road for a total of 535 feet or 0.1 mile of opening. The new sets of culverts were placed between the existing culverts reducing the culvert set spacing from ~3,000 feet to ~1,500 feet. The exact location of the culverts would be determined by field investigation. The culverts would be installed by jacking and boring under the road. These culverts would include swales as described above.

Alternative 1.4a: Add 1-mile eastern bridge. This alternative would meet the minimum opening requirement necessary to affect a change in the elevations of marsh. The alternative did not allow water elevations to increase in the L-29 Canal. The cross section and crown elevations are not changed from existing. The bridge CWE for this alternative is 8.75 ft NGVD. The bridge low cord would be six feet above this elevation for inspection purposes. The low cord elevation would be 14.75 ft NGVD.

Alternative 1.4b: Add one-mile western bridge. This alternative is the same as above, except for the foundation design. Because of poorer soil conditions in the western section, the foundations required battered piles and additional piles that were not required for the eastern bridge. The bridge location was the western one-mile portion of the 2005 RGRR Alternative 14 western bridge. It would have more private real estate impacts during construction than the eastern bridge.

Alternative 1.5: Is similar to Alternative 5.4, but would not include additional levees. This alternative included a one-mile western bridge. The road elevation itself would have to be a minimum of 13 feet NGVD at the crown. The road cross section would be similar to Alternative 4.2.3. Modeling was not performed for this alternative. It was assumed to have the same hydraulics as 1.4b. Modeling would have to occur prior to beginning design. Any additional features would be evaluated as part of the conveyance and seepage features.

CATEGORY 2–LIMITED ROADWAY MITIGATION:

Mitigate the low areas to allow an increase of water levels in the L-29 Canal to 8.0 ft NGVD. Raising the L-29 Canal elevation to 8.0 feet NGVD did not meet the required elevation variations of the NSM as proposed in the Combined Structural and Operational Plan (CSOP) or Comprehensive Everglades Restoration Plan (CERP). The roadway for this set of alternatives was approximately one foot above the low area of the road. This category involved minimal roadway width improvement. The template did not change from the original template except in the low areas. The figures for this alternative are shown in the low areas. The existing roadway has two 12-foot lanes with one ten-foot shoulder and one eight-foot shoulder which has varying pavement depth. The travel lanes and six feet of the shoulder had an average of 8.75 inches asphalt with the remaining shoulder having two inches asphalt. Improvement sections had two 12-foot lanes with two ten-foot shoulders (five feet paved and five feet grassed). The existing side slope is approximately 1.5-to-1. The improved sections were designed with a side slope of 2-to-1.

Alternative 2.1: Mitigate low sections of road (***Figure B-3***). This alternative mitigated the top of the road crown to 11.05 ft NGVD, which met the current criteria established with FDOT on the cross section crown elevation (3.05 feet above the average water elevation) at that time. The roadway design used here was the same as the 2005 RGRR design. This alternative does not address the need for additional openings in the road; however, it does provide some improvement. This alternative would have a stacking effect at the road and into Water Conservation Area (WCA) 3B that would not provide the benefits that an opening through Tamiami Trail would provide with road reinforcement.

CATEGORY 2.2–LIMITED ROADWAY MITIGATION WITH INCREASED OPENING:

Limited changes were introduced to the roadway along with additional openings.

Alternative 2.2.1: Mitigate road, add culverts. This alternative mitigated the road as described in Alternative 2.1 and added 19 sets of three five-foot diameter culverts to the road for a total of 535 feet or 0.1 mile of opening. The new sets of culverts were placed between the existing culverts reducing the culvert set spacing from ~3,000 feet to ~1,500 feet. The exact location of the culverts would be determined by field investigation. The culverts would be installed by jacking and boring under the road. Thus the road reinforcement can be concurrent with culvert installation. Swales were included at each new set of culverts for costing purposes and later eliminated from this study.

Alternative 2.2.2a: Mitigate low sections of road and add 1-mile eastern bridge (***Figure B-4***). This alternative met the minimum opening requirement necessary to affect a change in the elevations of marsh. The cross section and crown elevations were the same as in Alternative 2.1. The bridge CWE for this alternative is 8.75 feet NGVD. The bridge low cord was designed to six feet above the CWE elevation for inspection purposes. The low cord elevation was 14.75 feet NGVD.

Alternative 2.2.2b: Mitigate low sections of road and add one-mile western bridge (***Figure B-5***). This alternative was the same as above except for the foundation design. Because of poorer soil conditions in the western section, the foundations required battered piles and additional piles that were not required for the eastern bridge. The bridge location was the western one-mile portion of the 2005 RGRR Alternative 14 western bridge. It would have more private real estate impacts during construction than the eastern bridge.

Alternative 2.2.3: Mitigate low sections of road and add two-mile and one-mile bridges (***Figure B-6***). This alternative met the opening requirements necessary to affect a change in the elevations of the marsh. The design parameters do not change from above.

CATEGORY 3–MAJOR ROAD MITIGATION:

Roadway modifications were designed for category three alternatives to allow an increase of water levels in L-29 Canal to 8.5 feet NGVD. Raising the L-29 Canal elevation to 8.5 feet NGVD did not meet the required elevation variations of the NSM as proposed in the CSOP or CERP. The roadway for these alternatives has a travel lane width of 12 feet and shoulders of ten feet. At the elevation for the crown, more of the road would have to be widened. This design required two 12-foot travel lanes and two ten-foot shoulders (five feet paved and five feet grassed). The side slope design of the improved sections was 2-to-1.

Alternative 3.1: Mitigate road (***Figure B-7***). This alternative mitigated the top of the road crown to 11.55 feet NGVD, which meets the current criteria established with FDOT on the cross section crown elevation of 3.05 feet above the average water elevation. This roadway design was the current 2005 RGRR design. This alternative did not address the need for additional openings in the road; however, it provides some improvement. This alternative had a stacking effect at the road and did not provide the benefits that an opening and road reinforcement would provide.

CATEGORY 3.2–MAJOR ROAD MITIGATION WITH INCREASED OPENINGS:

Major changes were introduced to the roadway along with additional openings.

Alternative 3.2.1: Mitigate road, add culverts. This alternative mitigated the road as described in Alternative 3.1 and added 19 sets of three five-foot diameter culverts to the road for a total of 535 feet or 0.1 mile of opening. The new sets of culverts were placed between the existing culverts reducing the culvert set spacing from ~3,000 feet to ~1,500 feet. The exact location of the culverts would be determined by field investigation. The culverts would be installed by jacking and boring under the road thus the road reinforcement could be concurrent with jacking and boring.

Alternative 3.2.2a: Mitigate road, add one-mile eastern bridge (***FigureB-8***). This alternative meets the minimum opening requirement necessary to affect a change in the elevations of marsh. The cross section and crown elevations were the same as in Alternative 3.1. The bridge CWE for this alternative was 8.75 feet NGVD. The bridge low cord was designed six feet above the CWE elevation for inspection purposes. The low cord elevation was 14.75 feet NGVD.

Alternative 3.2.2b: Mitigate road, add one-mile western bridge (***Figure B-9***). This alternative was the same as above except for the foundation design. Because of poorer soil conditions in the western area, the foundations required battered piles and additional piles that were not required for the eastern bridge. The bridge location was the western one-mile portion of the 2005 RGRR Alternative 14 western bridge. It would have more private real estate impacts during construction than the eastern bridge.

Alternative 3.2.3: Mitigate road, add two-mile and one-mile bridges (***Figure B-10***). This alternative meets the opening requirements necessary to affect a change in the elevations of the marsh. The design parameters did not change from above.

CATEGORY 4–MAJOR ROAD MITIGATION IN PREVIOUS REPORTS ESCALATED TO TODAY'S DOLLARS:

Roadway modifications were designed to allow an increase of water levels in L-29 Canal to 9.7 feet NGVD. Raising the L-29 Canal elevation to 9.7 feet NGVD meets the required elevation variations of the NSM as proposed in the CSOP or CERP. This alternative required that the entire road be mitigated. This modification required two 12-foot travel lanes and two ten-foot shoulders (five feet paved and five feet grassed). The roadway shifted to the south by approximately a lane width to make it easier to maintain traffic. The side slope design was 2-to-1.

Alternative 4.1: Mitigate road (***Figure B-11***). This alternative mitigated the top of the road crown to 12.75 ft NGVD, which meets the current criteria established with FDOT on the cross section crown elevation of 3.05 feet above the average water elevation. This roadway design was the same as the current 2005 RGRR design. This alternative did not address the need for additional openings in the road. It provided some improvement but would have a stacking effect at the road and would not provide the benefits that an opening and road reinforcement would.

CATEGORY 4.2–MAJOR ROAD MITIGATION WITH INCREASED OPENINGS IN PREVIOUS REPORTS ESCALATED TO TODAY'S DOLLARS:

Major changes were introduced to the roadway along with additional openings.

Alternative 4.2.1: Mitigate road, add culverts. This alternative mitigated the road as described in Alternative 4.1 and added 19 sets of three five-foot diameter culverts to the road for a total of 535 feet or 0.1 mile of opening. The new sets of culverts were placed between the existing culverts reducing the culvert set spacing from ~3,000 feet to ~1,500 feet. The exact location of the culverts would be determined by field investigation. The culverts would be installed by jacking and boring under the road thus the road reinforcement could occur concurrently with jacking and boring.

Alternative 4.2.2a: Mitigate road, add one-mile eastern bridge (***Figure B-12***). This alternative meets the minimum opening requirement necessary to affect a change in the elevations of marsh. The cross section and crown elevations are the same as in Alternative 4.1. The bridge CWE for this alternative was 8.75 feet NGVD. The bridge low cord was designed six feet above the CWE elevation for inspection purposes. The low cord elevation was 14.75 ft NGVD.

Alternative 4.2.2b: Mitigate road, add one-mile western bridge (***Figure B-13***). This alternative was the same as above except for the foundation design. Because of poorer soil conditions in the western area, the foundations required battered piles and additional piles that were not required for the eastern bridge. The bridge location was the western one-mile portion of the 2005 RGRR Alternative 14 western bridge. It would have more private real estate impacts during construction than the eastern bridge.

Alternative 4.2.3: Alternative 14 from RGRR, mitigate road, add two-mile and one-mile bridges (***Figure B-14***). This alternative meets the opening requirements necessary to affect a change in the elevations of the marsh. The design parameters did not change from above.

Alternative 4.2.4: 10.7-mile bridge. This alternative meets the minimum opening requirement necessary to affect a change in the elevations of marsh. The cross section and crown elevations were the same as in Alternative 4.1. The bridge CWE for this alternative was 8.75 feet NGVD. The bridge low cord design was six feet above the CWE elevation for inspection purposes. The low cord elevation was 14.75 feet NGVD. Short segments of the roadway would be reconstructed at each end of the bridge with only a modest alignment transition from bridge to roadway. Full water quality treatment for the road is required because this is considered new construction.

CATEGORY 5–ALTERNATIVE ALIGNMENTS:

Limited evaluation of the alternative alignments was conducted and rough order of magnitude estimates were calculated. All alternatives in this section assumed new roadway, except for Alternative 5.4 and 5.5. The travel lanes for the roadway and bridges were 12 feet with ten-foot shoulders. For the roadway, the shoulders had a five-foot paved section and a five-foot grassed section. The side slopes were designed at 2-to-1. The northern alignments assumed full stormwater treatment with ditches that flowed into dry retention areas. This treatment was required because the Florida Department of Environmental Protection (FDEP) viewed the northern alignment as new construction. As such all the stormwater treatment requirements for new construction apply.

Alternative 5.1: Northern alignment of Alternative 14 (2005 recommended plan) north of L-29 Levee (***Figure B-15***). This alternative moved the RGRR design to the L-29 Levee. The L-29 Levee would have to be removed. The suitable material from the levee removal would be used in the construction of the road on the northern alignment. The S-355A and B structures would have to be removed. Each of two curves transitioned from the existing road to the levee for approximately 1.0 mile to 1.14 miles for a total of 2.24 miles. Two bridges to cross the canal and two bridges for conveyance were designed. The two bridges crossing the canal would be constructed as part of the access curves to the levee and back to the Tamiami Trail. A minimum of three access ramps were needed to the new alignment. The top elevation of the road was 12.75 feet NGVD. The bottom cord elevation of the bridges was 14.75 feet NGVD. The cross section of the road required water treatment as this construction would be considered new. All other road alternatives do not require water treatment as they are considered modifications to an existing structure.

Alternative 5.2: Northern alignment of a one-mile bridge on L-29 Levee (***Figure B-16***). This alternative was similar to Alternative 5.1 except that the two-mile bridge would not be constructed as part of this alternative. There would still have to be an additional bridge for access to the L-29 Levee.

The roadway elevations would be the same as well as the bridge elevations. The access ramps would be the same.

Alternative 5.3: Northern alignment with one-mile bridge and realignment of L-29 (***Figure B-17***). This alternative included moving the L-67 Extension to the Blue Shanty Canal edge. It was moved about 500 feet further to the east in order for the curves to fit into the area. The conveyance bridge was on the curves and additional bridging was needed. The L-29 Levee would have to be degraded and compacted to make it a suitable subgrade for the roadway. The structure in L-29 would be similar to the S-334 structure in the 1994 General Reevaluation Report (GRR) which was capable of passing 1,230 cubic feet per second (cfs) of water. The levee to the south and the levee to the north would be constructed to elevation 13 feet NGVD. The levee would have 4-on-1 side slopes for maintenance until it is removed at a later date. The road would have to be mitigated to cross the levee which would position the crown at 15 feet NGVD over the levee. The road elevation itself would have to be a minimum of 13 feet NGVD at the crown. The road cross section would be similar to the cross section for Alternative 5.1. This alternative did not have any modeling and would have to be modeled prior to beginning design. The remaining features would be evaluated as part of the conveyance and seepage features.

Alternative 5.4: One-mile bridge and realignment of L-29 Levee (***Figure B-17***). This alternative included moving the L-67 extension to the Blue Shanty Canal edge. This alternative also included a one-mile bridge. The structure in L-29 would be similar to the S-334 structure in the 1994 GRR and that structure was capable of passing 1,230 cfs. The levee to the south and the levee to the north would be constructed to elevation 13 feet NGVD. The road would have to be mitigated to cross the levee which would position the crown at 15 feet NGVD over the levee. The road elevation itself would have to be a minimum of 13 feet NGVD at the crown. The road cross section was similar to Alternative 4.2.3. There was no modeling for this alternative and it would have to be modeled prior to beginning design. The roadway was located on lane width south of the existing Tamiami Trail. The travel lanes for the roadway were 12-foot lanes with ten-foot shoulders (five feet paved and five feet grassed). The side slopes were designed 2-to-1. The remaining features would be evaluated as part of the conveyance and seepage features.

Alternative 5.5: Pump stations along L-29 Levee. The size of these pump stations were not modeled. There was no determination of the size of the station or the amount of water it would have to continually pump. Constructing the pump station to convey water across Tamiami Trail would still require reinforcing the road and providing an outlet through the road.

Levee protection for the road could be constructed to solve the problem of inundation to the roadway base and to keep from reinforcing the entire road. The pump stations provided point source discharges into a protected marsh land that would be detrimental to marsh growth.

FINAL FOUR ALTERNATIVES:

The final four alternatives considered after screening criteria were met are Alternatives 2.2.2a, 2.2.2.b, 3.2.2a and 3.2.2b. The alternative descriptions are in the paragraphs above. The schedule for these alternatives is based on the time to get the design modifications complete, real estate, contracting, and required permits. The schedule for each alternative is as follows:

Alternative 2.2.2a–Add one-mile eastern bridge and mitigate road to accommodate a canal elevation of 8.0 feet NGVD has construction duration of three years. The start date for the construction is October 2008.

Alternative 2.2.2b–Add one-mile western bridge and mitigate road to accommodate a canal elevation of 8.0 feet NGVD has construction duration of three and a half years. The start date for the construction is August 2010.

Alternative 3.2.2a–Add one-mile eastern bridge and mitigate road to accommodate a canal elevation of 8.5 feet NGVD has construction duration of three years. The start date for the construction is October 2008.

Alternative 3.2.2b–Add one-mile western bridge and mitigate road to accommodate a canal elevation of 8.5 feet NGVD has construction duration of three and a half years. The start date for the construction is August 2010.

On December 14, 2007 FDOT provided pavement design guidelines for roadways that do not have the standard design clearance between the design high water elevation and the lime rock base. Based on this information the design for each alternative is as follows:

For the 8 foot elevation:

If the road is above 11.41, mill off three inches of asphalt and replace with three inches of asphalt.

If the road is between 11.41 and 10.41, mill off three inches of asphalt and replace with five inches of asphalt.

If the road is below 10.41, reconstruct the road to so that the black base is one foot above the design high water elevation of eight feet. The design was from the edge of shoulder instead of the edge of pavement. This gives a crown of 10.54.

For the 8.5 foot elevation:

If the road is above 11.91, mill off three inches of asphalt and replace with three inches of asphalt.

If the road is between 11.91 and 10.91, mill off three inches of asphalt and replace with five inches of asphalt.

If the road is below 10.91 feet, reconstruct the road to so that the black base is one foot above the design high water elevation of 8.5 feet. The design was from the edge of shoulder instead of the edge of pavement. This gives a crown of 11.04 feet.

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LIMITED REEVALUATION REPORT
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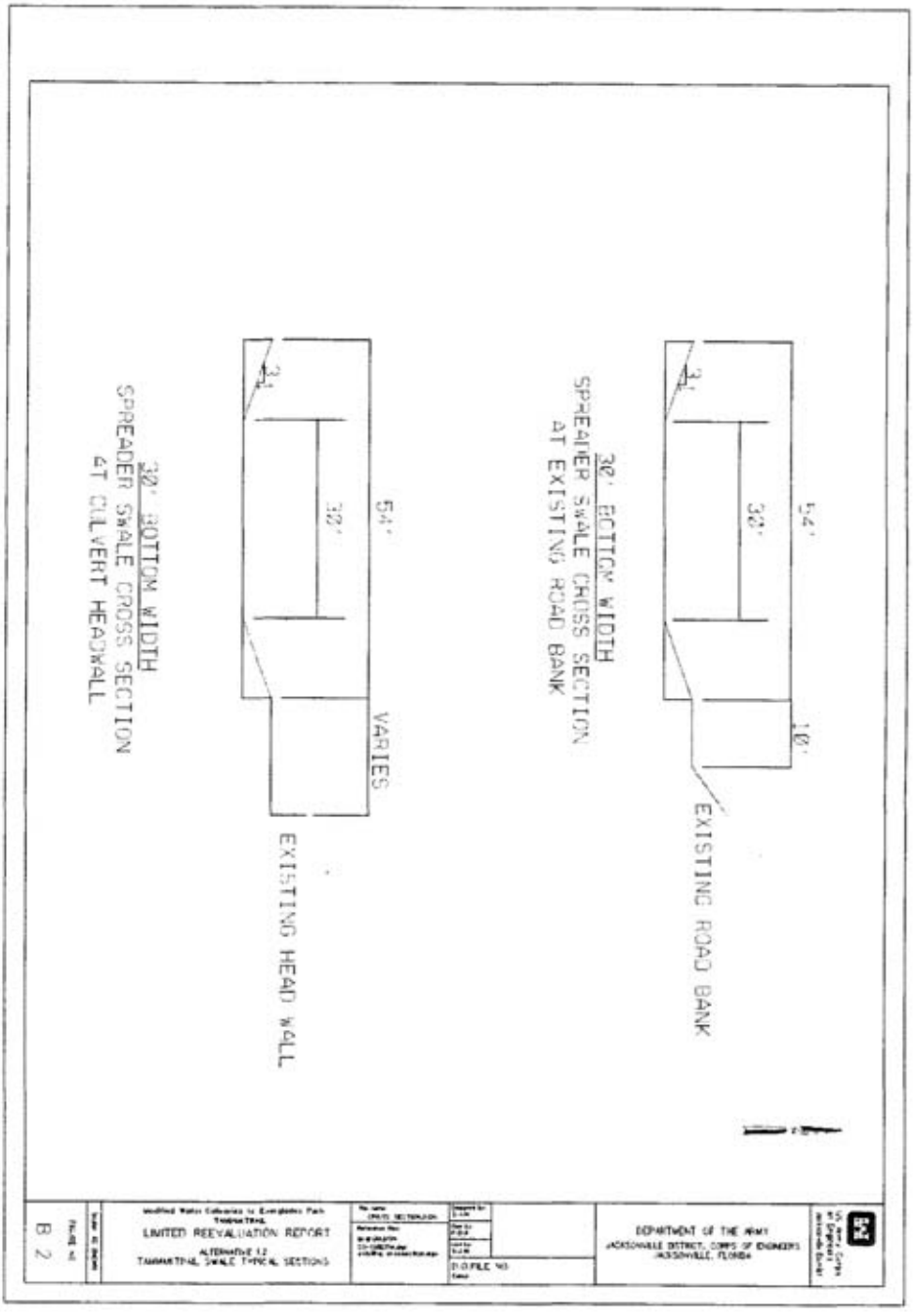
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA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AT CULVERT HEADWALL
3:1
32'
54'
VARIES
EXISTING HEAD WALL
30' BOTTOM WIDTH
SPREADER SWALE CROSS SECTION
AT EXISTING ROAD BANK
3:1
32'
54'
10'
EXISTING ROAD BANK
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ALTERNATIVE 1.2
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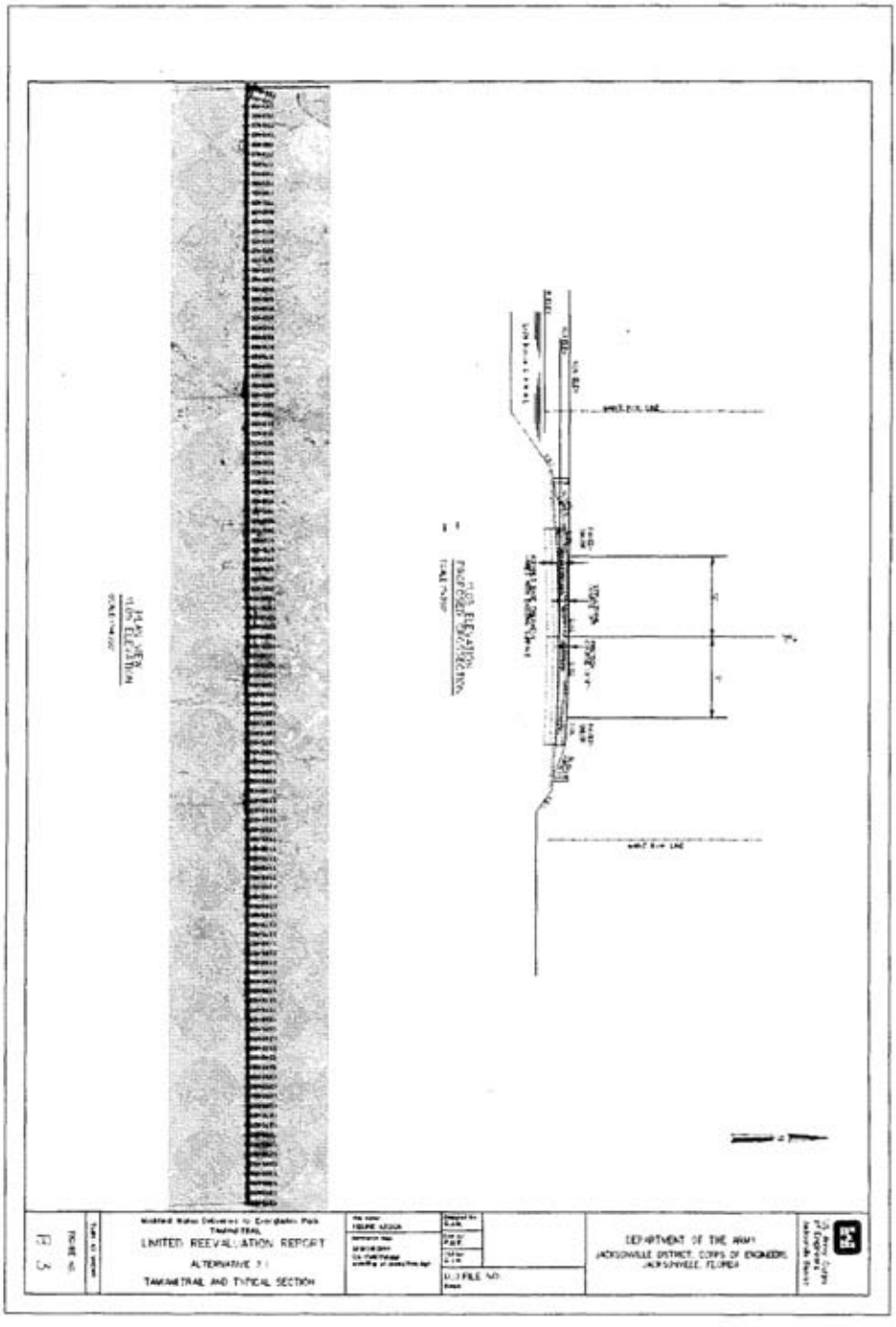
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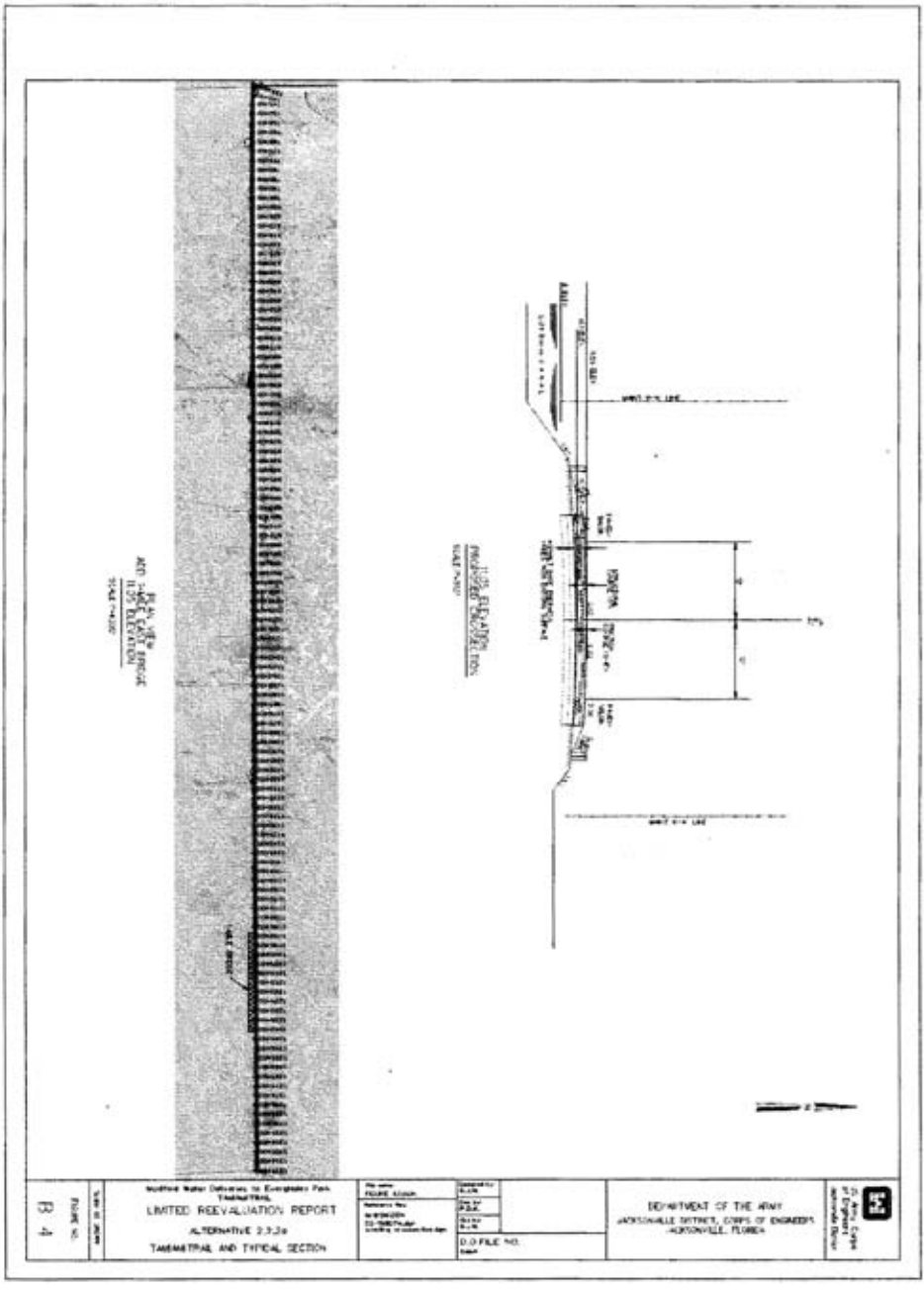
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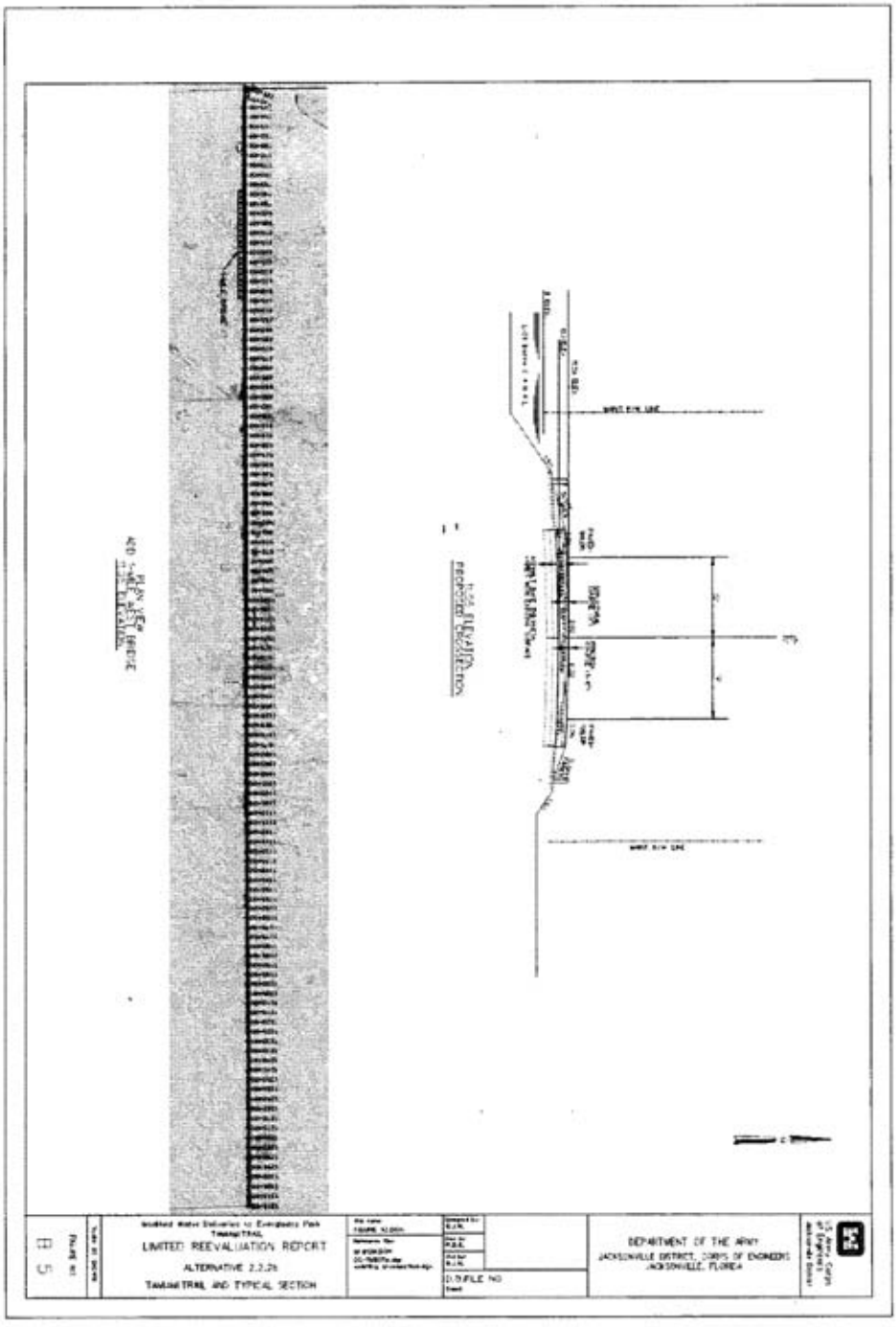
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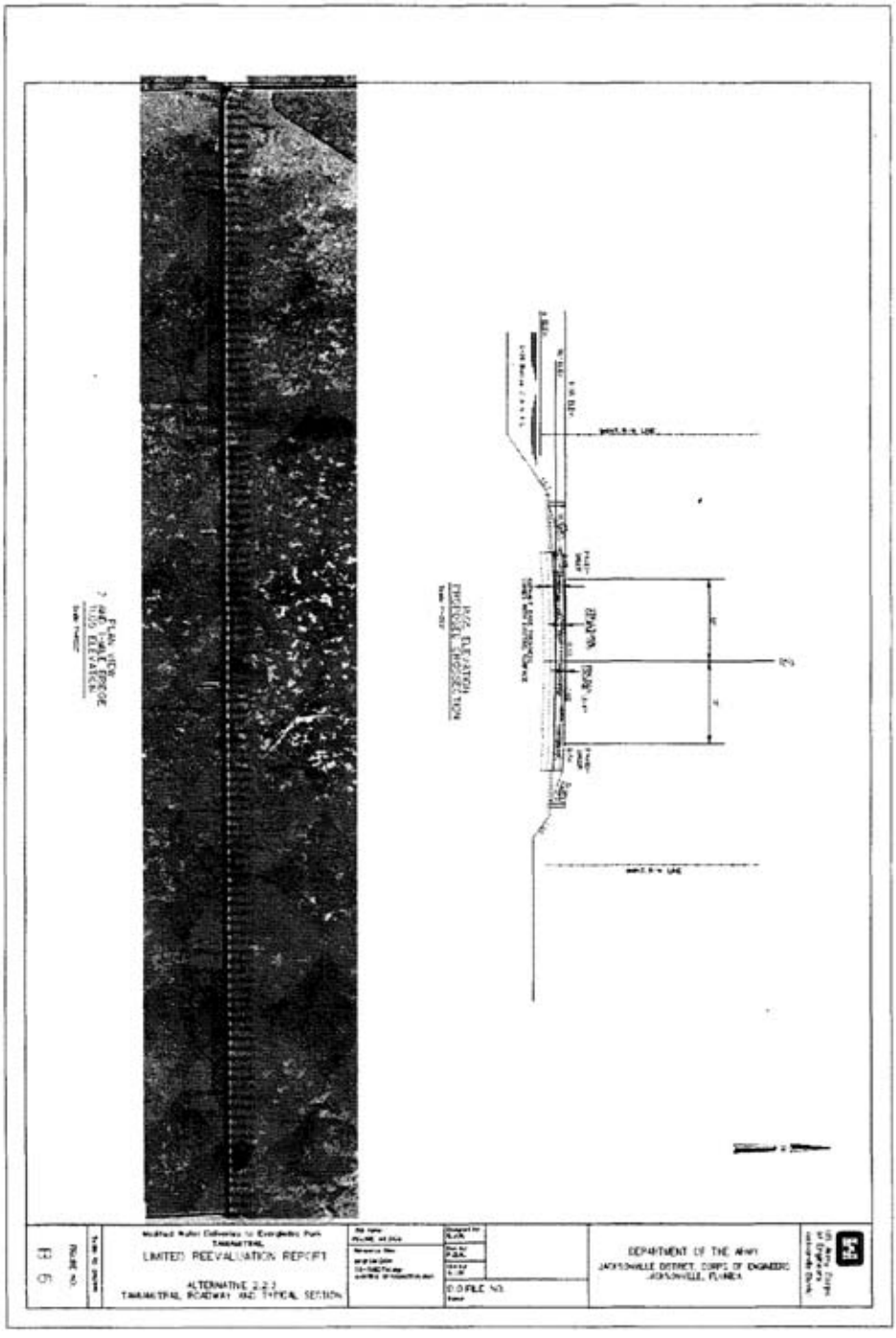
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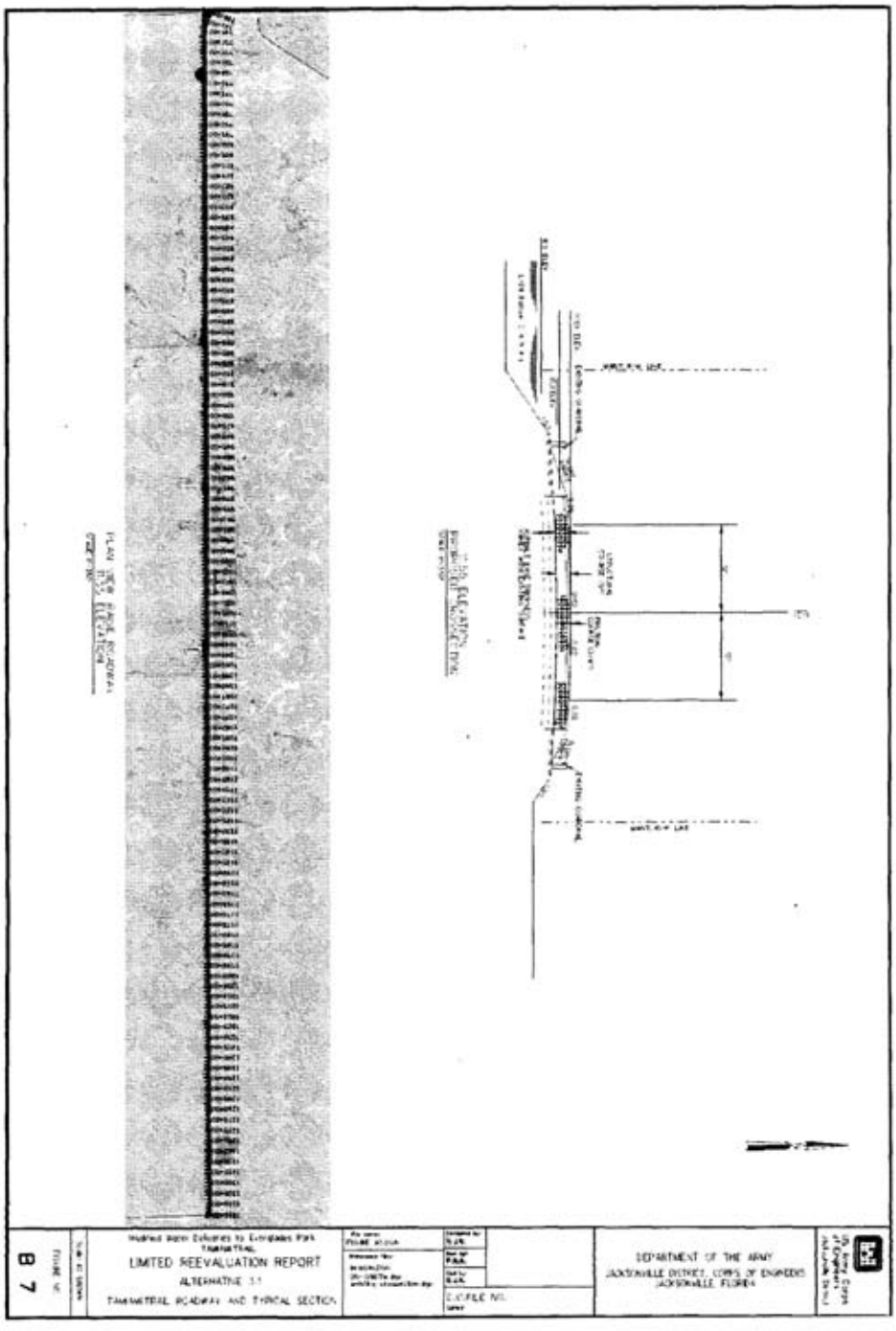
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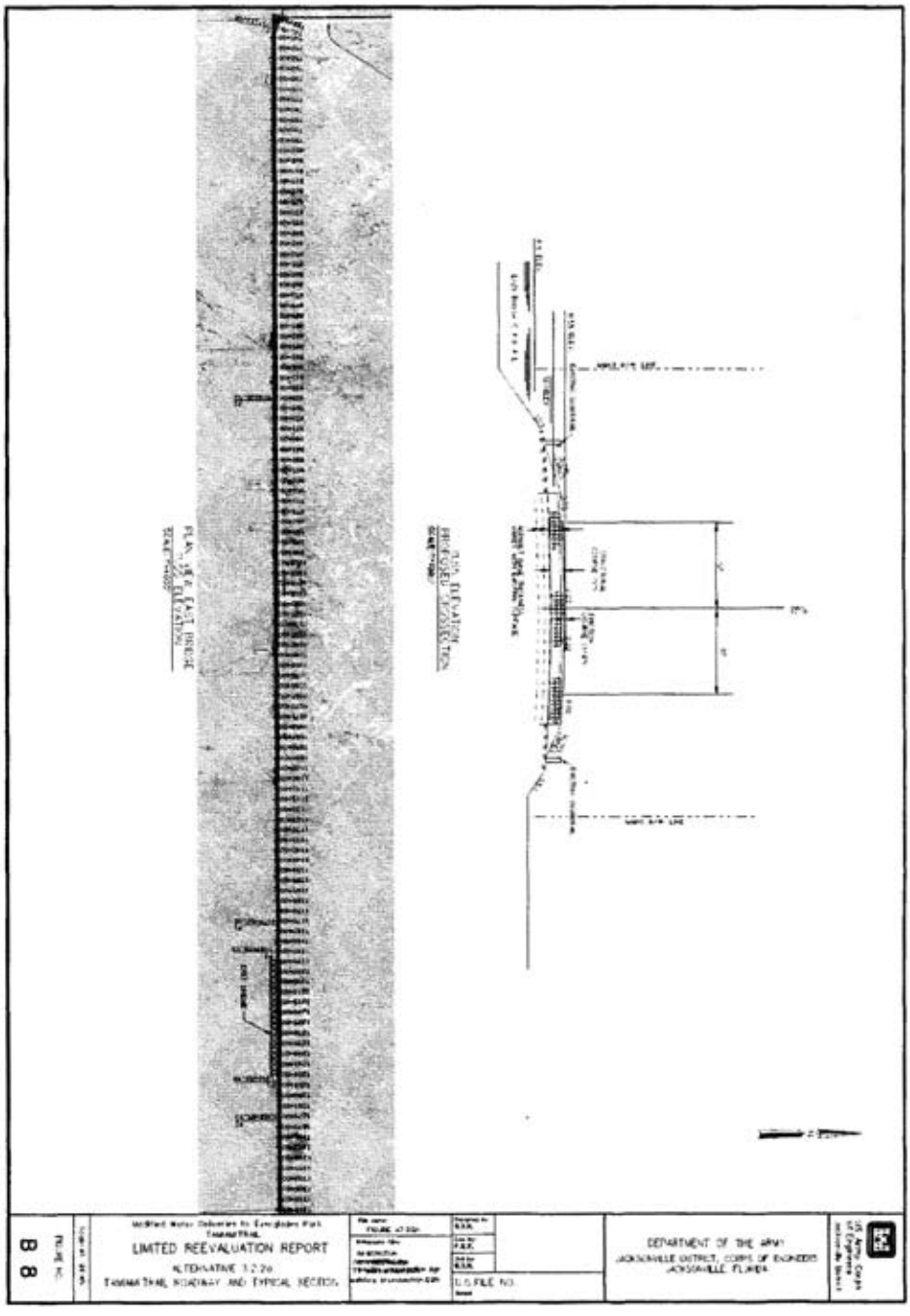
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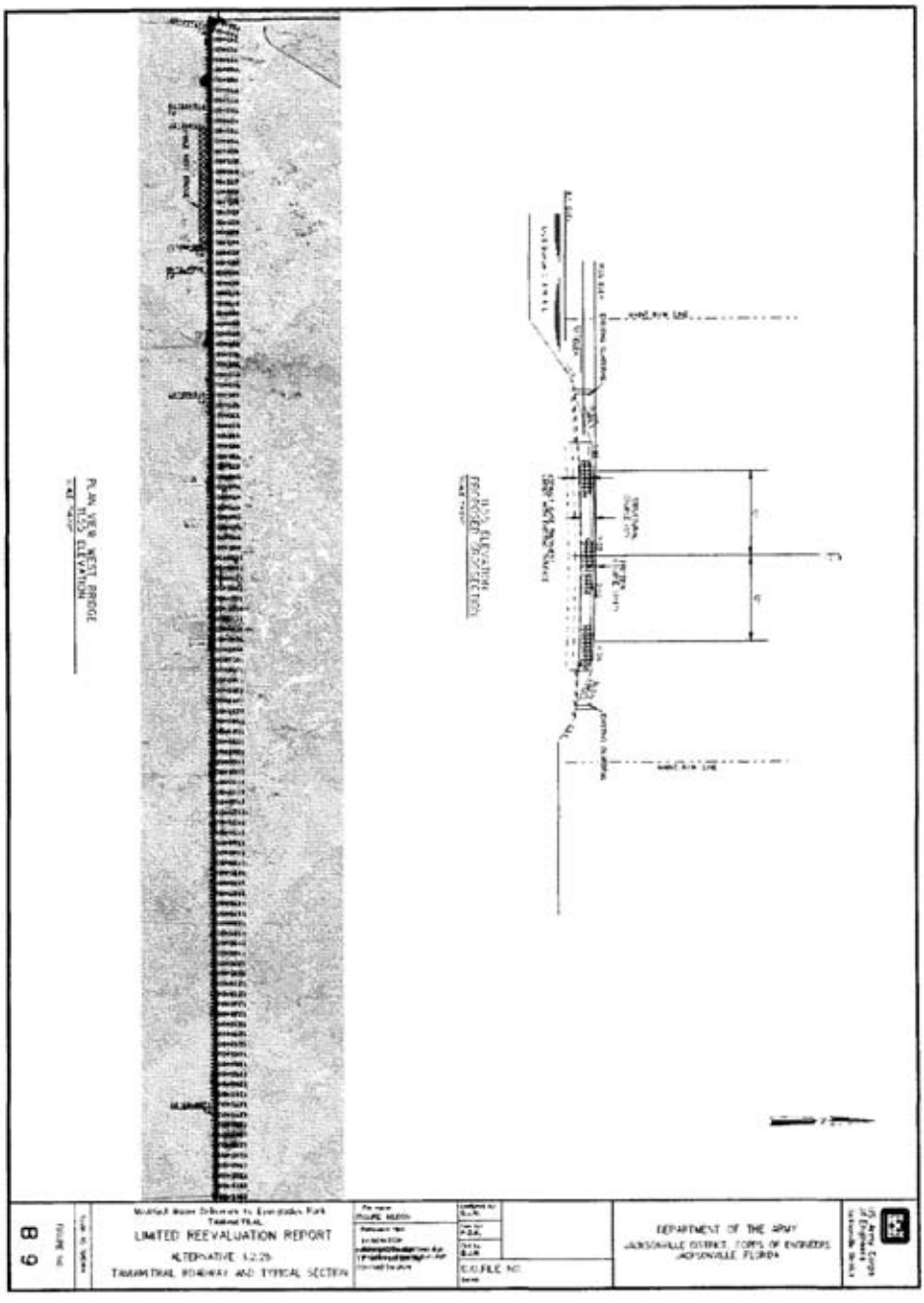
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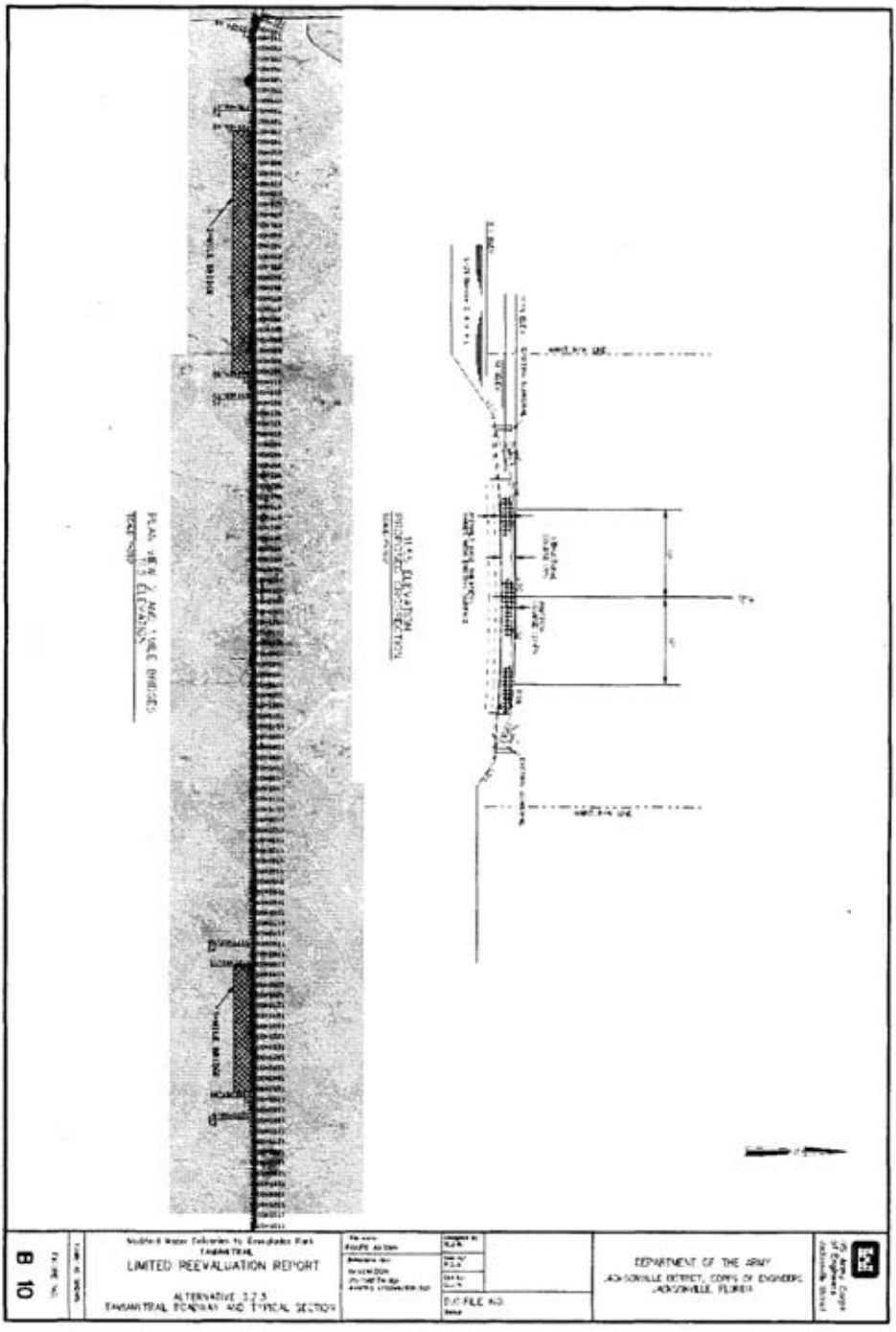
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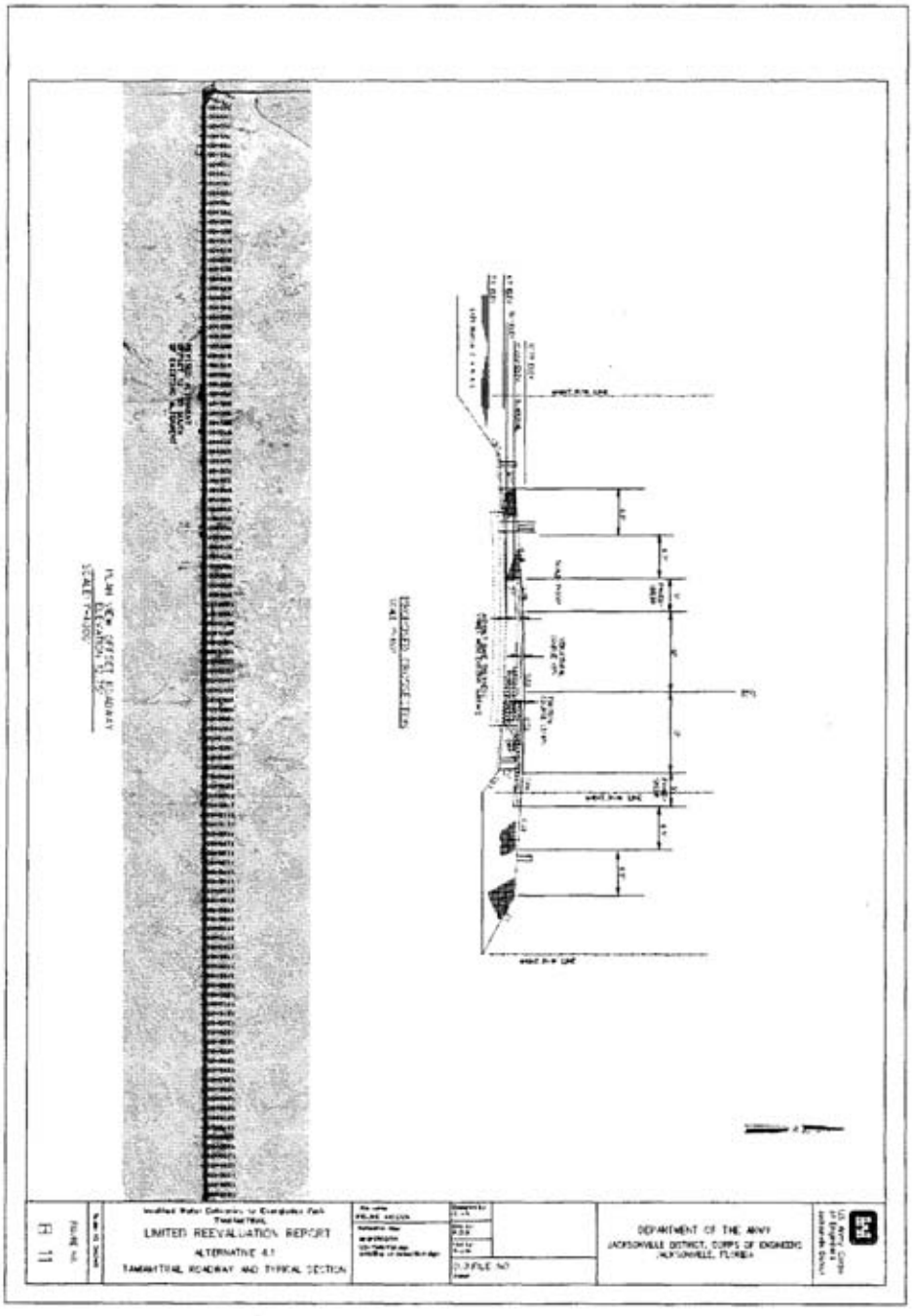
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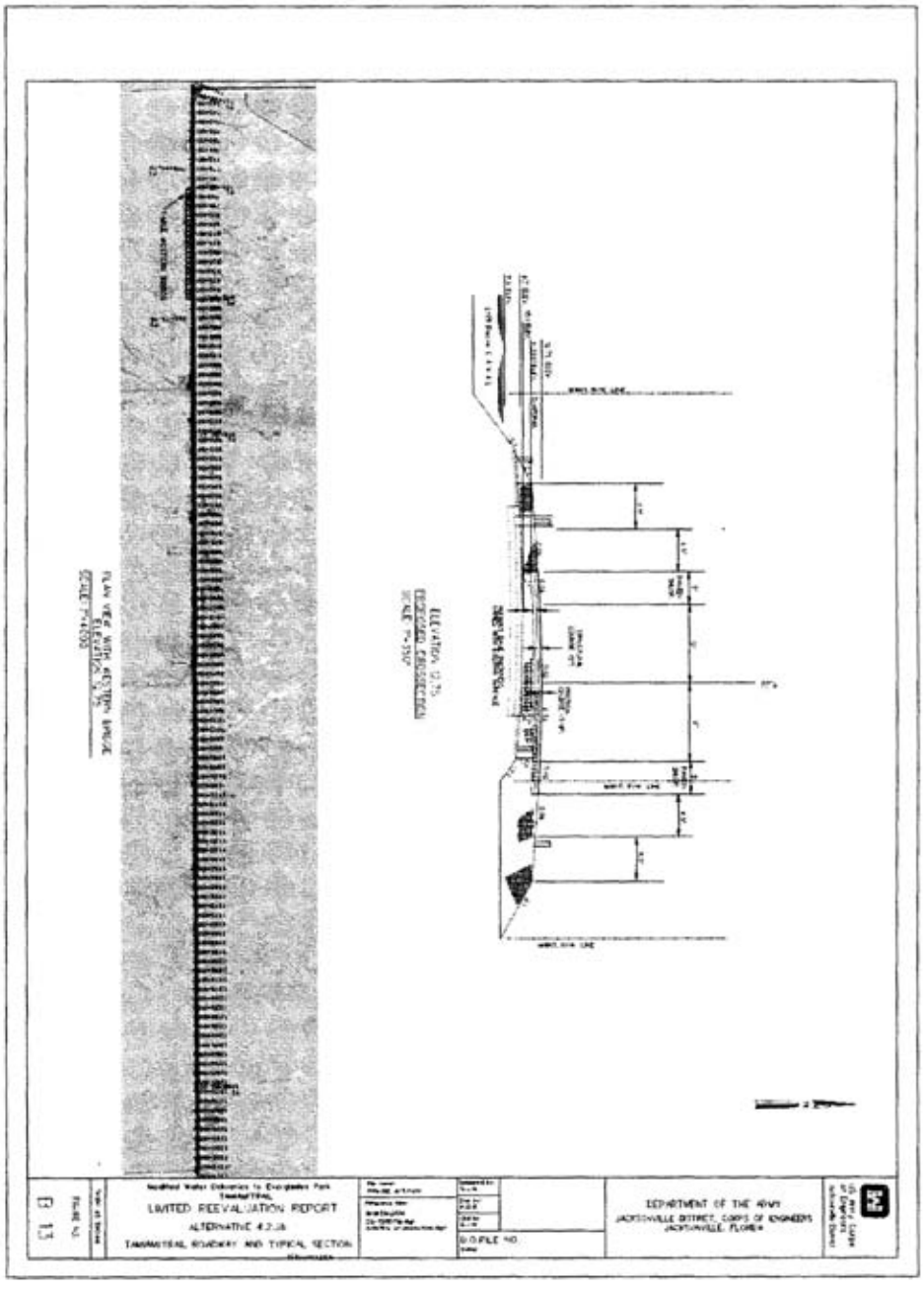
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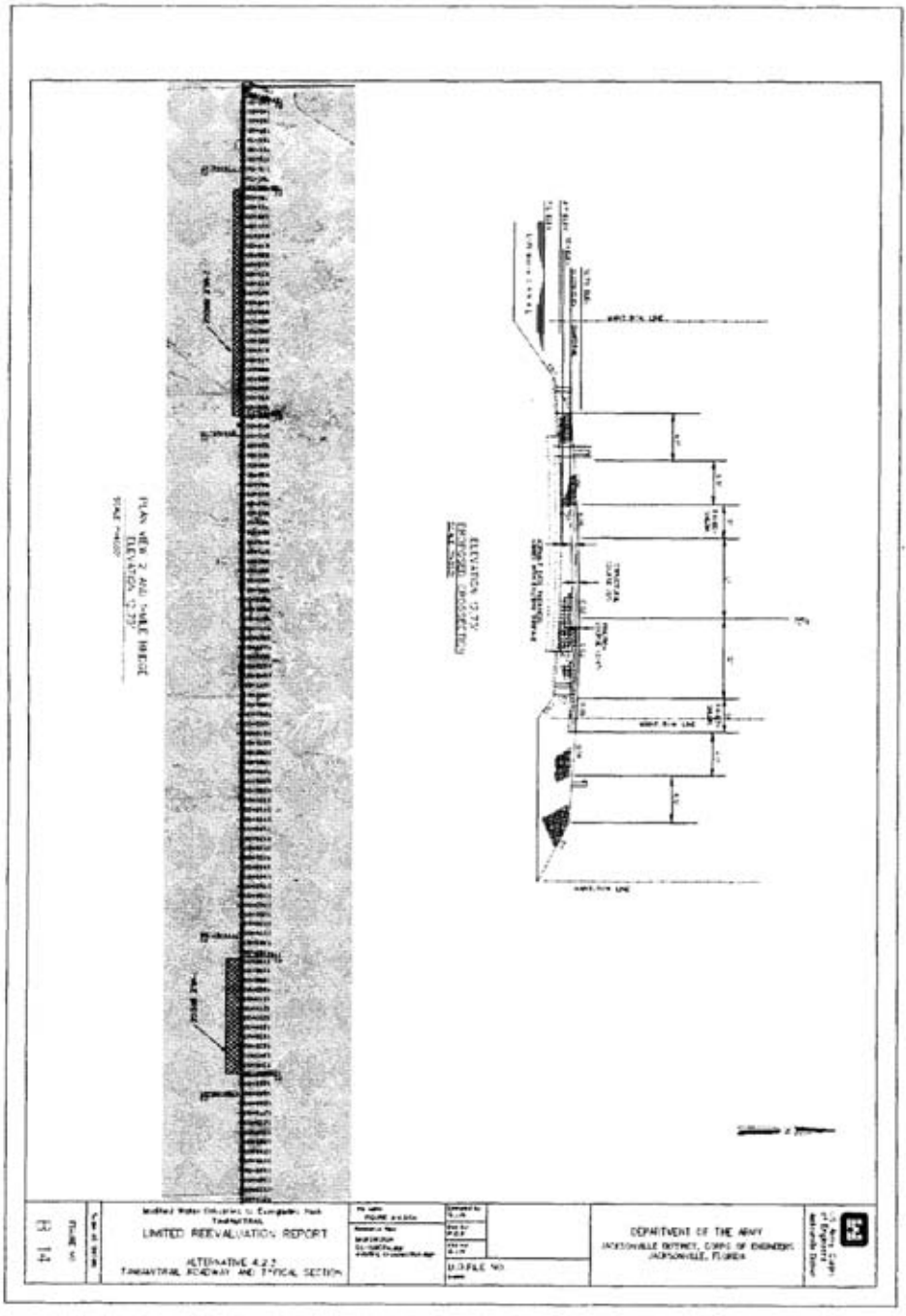
JACKSONVILLE, FLORIDA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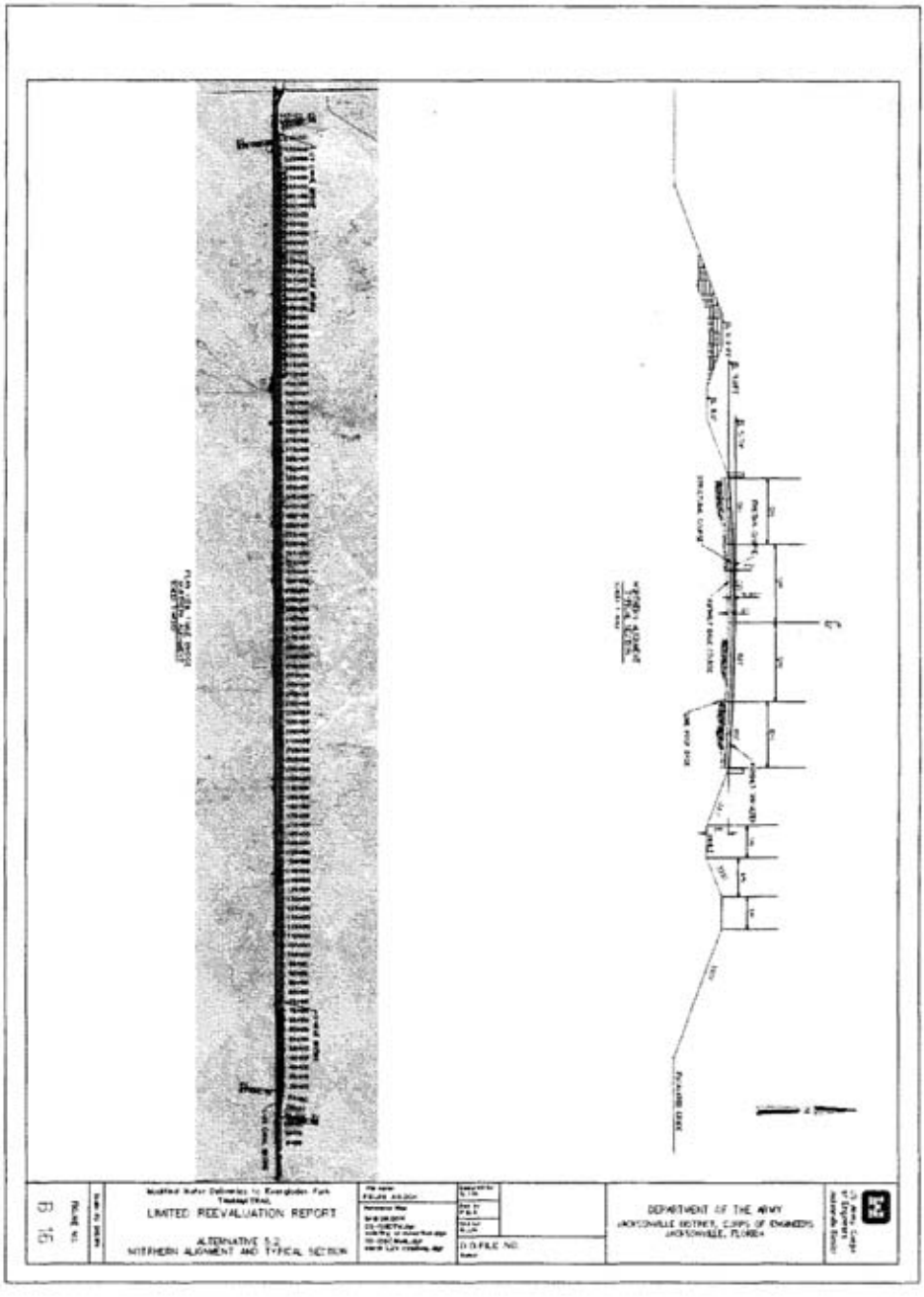
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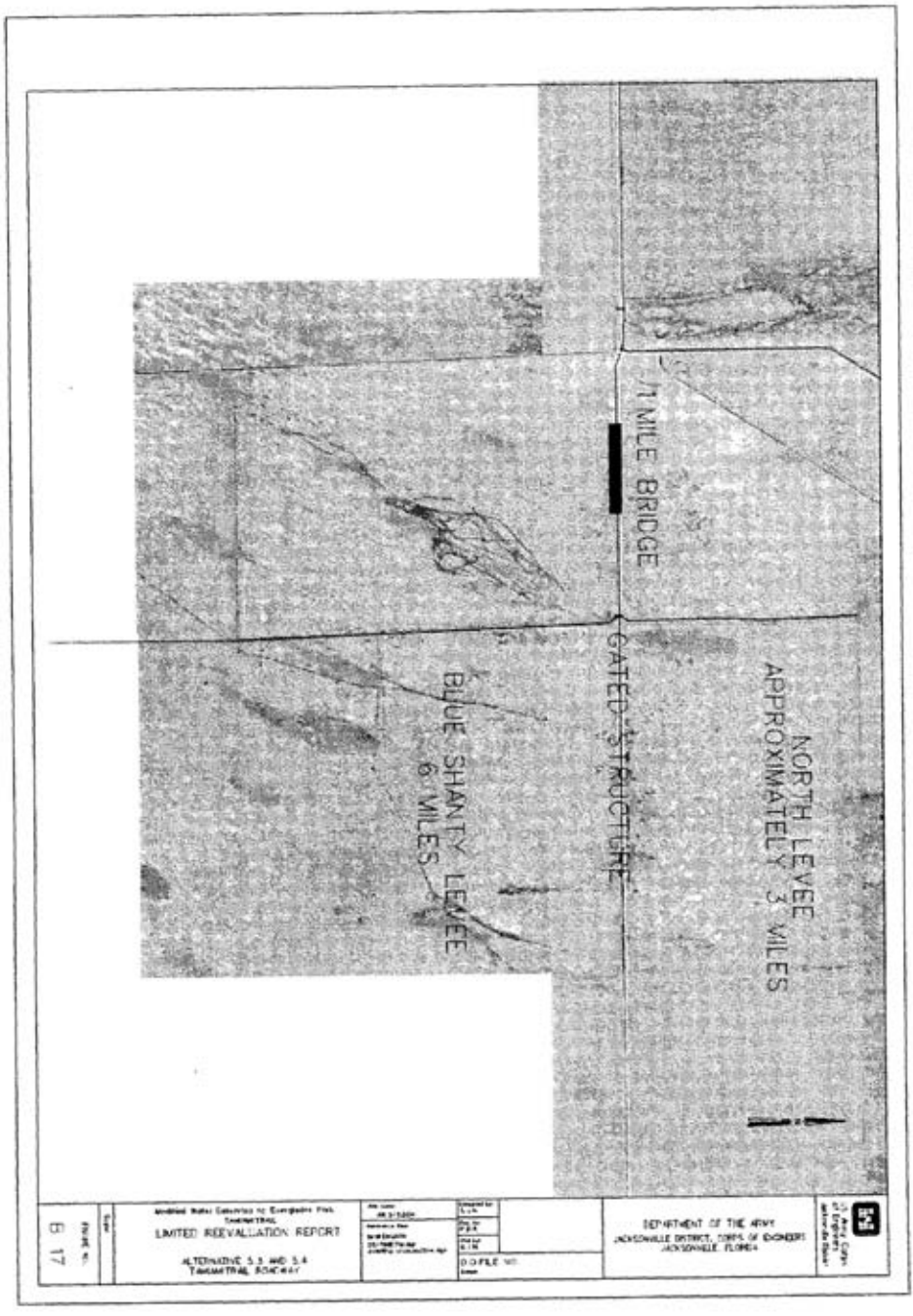
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APPROXIMATELY 3 MILES
7 MILE BRIDGE
GATED STRUCTURE
BLUE SHANTY LEVEE
6 MILES
LIMITED REEVALUATION REPORT
ALTERNATIVE 5.3 AND 5.4
DEPARTMENT OF THE ARMY
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APPENDIX C
COST ENGINEERING

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INTRODUCTION

The construction cost estimate for the 2005 Revised General Reevaluation Report (RGRR) Tamiami Trail modifications selected plan (called Alternative 14) has changed significantly over the last two years. The following table provides a list of cost estimates for the 2005 RGRR Alternative 14 plan, which is the Limited Reevaluation Report (LRR) Alternative 4.2.3, a 2-mile western bridge, one-mile eastern bridge and requisite road reinforcing to accommodate a 9.7 feet stage in the L-29 Canal.

Table 1: List of 2005 RGRR Alternative 14/LRR 4.2.3 Plan Estimates

Estimate	Date	Price Level	Construction Cost
2005 RGRR Alt 14	August 2005	FY-05	$125.1 Million[1]
Alt 14 @ 30 Percent Design	March 2007	FY-07	$277.1 Million[2]
Alt 14/LRR Alt 4.2.3	April 2008	FY-08	$304.6 Million[3]

Notes:
1. Includes a contingency of 25 percent.
2. Includes a contingency of 25 percent.
3. 90 percent confidence level estimate with escalation to mid-point of construction.

COST INCREASES FROM THE REVISED GENERAL REEVALUATION REPORT TO THE 30 PERCENT DESIGN

Increase in Construction Material Prices

Between the RGRR and 30 percent current working estimate (CWE), construction materials price increases added approximately $60 million to the construction cost. Other cost increases include maintenance of traffic and mobilization, both as a result of new survey information, as well as escalation through construction. The RGRR cost estimate did not include escalation through construction, however as the project approaches bid this cost must be incorporated. These other cost increases added approximately $25 million to the overall construction estimate. It is important to note there was no significant scope growth or quantity "busts" as the design progressed to this point, except for some increases in asphalt and embankment quantities as more accurate survey and geotechnical data was obtained.

Pricing in the RGRR was based on Florida Department of Transportation (FDOT) unit pricing, given the nature of this project and its similarity to other FDOT work. The unit prices were adjusted as necessary to account for market conditions. The adjusted unit prices were independently verified by the U.S. Army Corps of Engineers (USACE) to ensure accuracy and were validated against bid prices maintained by FDOT. FDOT staff both reviewed the preliminary design a presented in the RGRR and found it technically adequate and consistent with their experiences. In addition, the RGRR estimate was

compared with FDOT historic bid prices available in the summer of 2005 and was again found to be consistent.

The 30 percent CWE used actual construction material price quotes received from manufacturers, conversations with FDOT and construction contractors regarding construction methods and equipment. It is important to note that the 30 percent CWE unit prices were based on current estimates of the labor, equipment and materials (forward pricing). FDOT unit prices are based on historic data of actual contract unit prices. When recent FDOT experience is considered, these prices are more closely aligned. While there are different assumptions between the RGRR and 30 percent CWE (i.e., better survey data, current pricing data), no errors or omissions were found in the RGRR estimate. The increased cost estimate is primarily the result of extraordinary market forces that would have affected any construction project similarly.

Table 2: FDOT Historic Bid Data - Florida Statewide Weighted Average Prices

Material	Unit	FY 03/04	FY 04/05	Percent Change	FY 05/06	Percent Change	FY 06/07 (Jul-Feb)	Percent Change
Earthwork	CY	$4.73	$5.66	+19.7%	$7.93	+40.1%	$7.43	-6.31%
Asphalt	TN	$57.62	$68.49	+18.9%	$90.81	+32.6%	$103.58	+14.1%
Structural Concrete	CY	$546.32	$653.43	+19.6%	$892.89	+36.7%	$778.40	-12.8%
Structural Steel	LB	$1.51	$1.34	-11.3%	$1.68	+25.4%	$2.08	+23.8%
Reinforcing Steel	LB	$0.67	$0.86	+28.4%	$0.96	+11.6%	$0.95	-1.04%

Independent Technical Review and Department of the Interior Cost Estimate

An Independent Technical Review (ITR) of the 30 percent design CWE was conducted in December 2006 by the Cost Engineering Center of Expertise at Walla Walla District. Overall, the ITR team concluded that the 30 percent design cost estimate accurately captured the anticipated construction costs given the design and market conditions. In addition, an independent construction cost estimate of approximately $254 million was developed for the Tamiami Trail Modifications selected plan by a Department of the Interior (DOI) contractor (revised estimate dated 7 March 2007). This estimate was also based on the 30 percent design completed by the USACE. A technical analysis of the DOI cost estimate identified several differences in scope and engineering assumptions; however the overall conclusions were consistent with the USACE 30 percent CWE these differences were discussed and resolved between the DOI and the

USACE in January 2007. It is interesting to note that DOI indicated that the range of accuracy of their estimate is between $216 million and $330 million.

Risk and Uncertainty Considerations

The cost estimates for the RGRR and the 30 percent design did not include risk and uncertainty analyses. Jacksonville District recognized the need to perform a risk based analysis on the 30 percent CWE, however at the time it was decided to go forward with only the point estimate in order to begin resolving the problem of significant cost growth revealed by the 30 percent CWE. The ITR team also identified several areas of risk and uncertainty that needed to be included in the risk analysis. Combined, these risk elements had the potential to drive the actual construction costs significantly higher and these were evaluated and mitigated as much as possible.

THE LIMITED REEVALUATION REPORT COST ESTIMATE

Cost Model

As indicated, the 30 percent design CWE for the Tamiami Trail RGRR selected plan was based on the 30 percent design quantities and estimates on the labor, material (including price quotes from vendors and contractors), and equipment necessary to construct the project. The LRR cost estimate also used the 30 percent design quantities as well as additional information from the 60 percent design geotechnical report plus updated vendor price quotes. In addition, prices and unit costs were validated against FDOT historic bid data for accuracy.

The 2005 RGRR and 30 percent design cost estimates for the RGRR selected plan served as the starting point for the LRR cost estimate for the RGRR selected plan. There were very few changes in the scope of the project since the 30 percent design was complete. The final geotechnical report did provide updated foundation requirements for the eastern and western bridges. The western bridge would require more and longer piles than originally designed, which increased the cost (and schedule) for the project. Using the 30 percent design CWE as a basis, a parametric cost model was constructed to allow various alternatives to be evaluated against each other. This model was based on selecting and structuring cost elements that were common across all the alternatives, establishing unit prices and pro-rating quantities. The parametric model was calibrated to the 30 percent CWE to less than a two percent difference. In addition, this model was reviewed by the Independent Technical Review (ITR) team as part of the ITR for this report.

Point Estimate and Construction Contingency

The results of the parametric model yielded the "best", or point, estimate of expected construction cost that is able to be made given the limited information available on the variations of the base alternative, as well as new alternatives where the design information was significantly less than the 30 percent design level. Traditionally, a construction contingency would be added to this cost to cover the elements of the project that are yet to be designed as well as anticipated variations in quantities and pricing. Construction contingency is not used to anticipate new elements of work or significant variations in scope. Similarly, construction contingency is not used to anticipate market conditions or the impact of extreme events. If these conditions warrant consideration in the construction cost estimate, then they must be accounted for separately. Historically, contingency was assigned to a project based on the level of design in accordance with Engineering Manual (EM) 1110-2-1302. For this LRR, contingency was not applied in the traditional sense.

Risk and Uncertainty Analysis

In September 2007, the USACE mandated the use of risk and uncertainty analysis for major civil works projects in Engineering and Construction Bulletin (ECB) Number 2007-17, Application of Cost Risk Analysis Methods to Develop Contingencies for Civil Works Total Project Costs. The bulletin states that "A formal cost risk analysis shall be prepared for all decision documents requiring Congressional authorization for projects exceeding forty million dollars." Further, it states, "During the pre-construction engineering and design (PED) phase, a new cost risk analysis shall be conducted upon major changes in design and for each update in the Total Project Cost Estimate." The bulletin defines the cost risk analysis as "the process of identifying and measuring the cost and schedule impact of project uncertainties on the estimated total project cost. When considerable uncertainties are identified, cost risk analysis can establish the areas of high cost uncertainty and the probability that the estimated project cost would or would not be exceeded. This gives the management team an effective additional tool to assist in the decision-making process associated with project planning and design."

The bulletin does not provide specific guidance on how to conduct the cost risk analysis other than to direct the use of Crystal Ball software. Crystal Ball is a commercial, off-the-shelf software tool that performs risk analyses using Microsoft Excel as a base platform. This, however, is only the tool that facilitated the repetitive computations involved in a Monte Carlo type evaluation. The actual process of "risk analysis" for this project was based on the model in "Guide to Risk Assessment and Allocation for Highway Construction Management", Report No. Federal Highway Administration (FHWA)-Public Letter (PL)-06-032 produced by the FHWA. In summary the

three main steps were risk identification, quantitative risk analysis (computations) and risk mitigation. This can and should be an iterative process where risks are identified, quantified, mitigated (when possible), and re-evaluated for their effect on project costs or schedules. The process of quantitative risk analysis is not intended to be the goal, it is these results that should be used to focus the PDT's efforts to efficiently and effectively reduce either the cost/schedule, or reduce the probability of undesirable events occurring that would increase either dollars or duration. Keep in mind that reductions in dollars or duration are not the only goals. A successful risk analysis may actually show an increase in projected cost. The important thing here is to identify these items before they become bad surprises during construction.

Risk Elements for the Limited Reevaluation Report

The cost estimates developed for the LRR was guided by the risk analysis methodology directed in ECB 2007-17. Items that had the most impact on risk were identified as follows: Embankment Fill; Bridge Foundation; Transition Retaining Walls; Temporary Right of Way for Construction; Aggregate and Asphalt Materials; and Asphalt Disposal / Recycling.

The Lake Belt quarry issue has greatly increased the uncertainty associated with the availability and price for aggregate and fill material, as evidenced by the large variation in prices and the hesitancy of many vendors to provide quotes. Oil prices also add uncertainty impacting both fuel and asphalt. Finally, the constraints on right-of-way severely limit potential contractors and forcing them to use costly and inefficient construction methodologies. Since these methods are not fully developed, additional uncertainty is added. Based on these and other concerns, a cost-risk assessment was performed for all of the alternatives included in the LRR matrix using the cost model (based on the 60 percent design CWE for Alternative 14) as a basis for the estimate.

Major Estimate Assumptions

The following are the major assumptions for the cost model used to develop the costs in the LRR:

1. Embankment or aggregate materials would be available within a 15-mile radius, including disposal areas.
2. All fill and aggregates would be purchased from a commercial source.
3. Milled asphalt would have to be disposed in a landfill.
4. Retaining walls would be needed for the transition embankments.
5. Asphalt would have to be brought up uniformly across the road cross section in three to four inch lifts to allow for uninterrupted traffic flow.
6. Safety and access limitations would make top-down construction of the bridges the prudent method for construction.

7. No utility re-location costs were included.
8. All construction activities (roadway and bridge construction) occur during the same construction period, which is assumed to be three and a half years.

90 Percent Confidence Interval

The results of the risk and uncertainty analysis are presented as a frequency of occurrences, percentile results, and contribution to variance. Using this information and considering that the cost identified in this report represents the total authorization limit for this project, the 90 percent confidence level was selected as the appropriate level for the Total Construction Cost (TCC). This means that there is a 90 percent chance that the final cost for this project (at fiscal year [FY]-08 pricing levels) would be equal to **or less** than this cost. This is an extremely important point and is different than how USACE project costs have traditionally reported. In the past, USACE civil works projects generally include a cost estimate for authorization and subsequent appropriation from Congress. Congressional authorization allows for inflationary cost increases on the project not to exceed 20 percent (also called the 902 limit). For the Tamiami Trail Modifications project, though, this is not the case since the Modified Water Deliveries (MWD) project is not subject to 902 limits. As a result, the cost estimate must provide the total budget necessary to complete the project without having to request additional funding short of extreme events (i.e., hurricanes, acts of terrorism). The use of a 90 percent confidence level cost estimate, along with future escalation, is meant to ensure that this is the case.

Market Conditions and Escalation

Generally, civil works projects are escalated using annual indices in accordance with the Civil Works Construction Cost Index System (EM 1110-2-1304). The indices consider changes in labor, equipment and material costs and are essentially lagging indicators of inflation. The indices are used only for near-term escalation for two years or less. Beyond that timeframe it is necessary to evaluate market conditions. The 90 percent TCC estimates were escalated to the mid-point of construction, and then adjusted based on recent inflation trends in the construction industry and the anticipated construction schedule for each alternative. Since 2003, there has been unprecedented inflation in the construction industry due to rising oil prices, huge demand from overseas economies, natural disasters, and the continuing globalization of the construction industry. Since 2005, the Producer Price Index for construction inputs has increased at more than three times the rate of the Consumer Price Index (typically used to measure overall inflation). Leading construction economists predict this may be a new trend, not just an anomaly. Therefore, the adjustment rates used for the LRR alternatives (see ***Figure 1***) were greater than typical inflationary rates and provide a relatively conservative estimate for

potential cost increases into the future. For the Tamiami Trail Modification project, adjustment was based on historic increases from 2003 to 2007 (see ***Figure 2, Figure 3*** and ***Figure 4***) and industry forecasts from groups such as AGC (Association of General Contractors). It is very difficult to predict inflation even one year out let alone five to ten years.

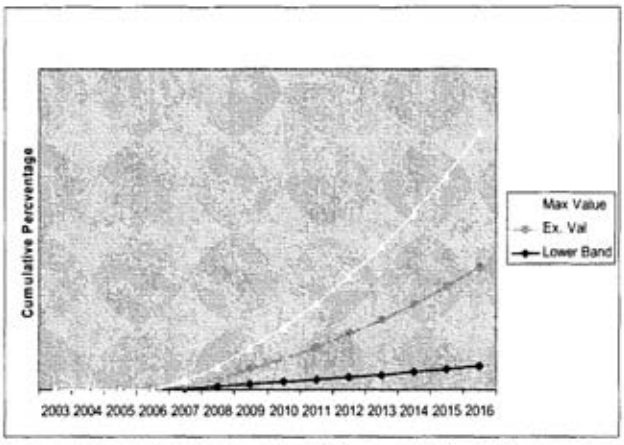

Figure 1: Market Conditions and Escalation

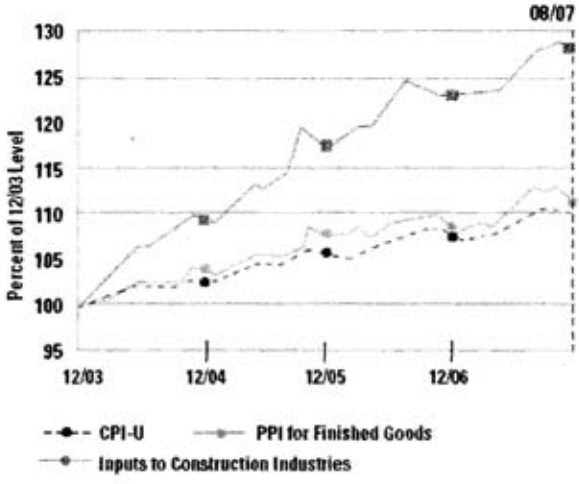

Figure 2: Cumulative Change in Consumer, Producer, and Construction Price Indices
(Source: Association of General Contractors Construction Inflation Alert–October 2007)

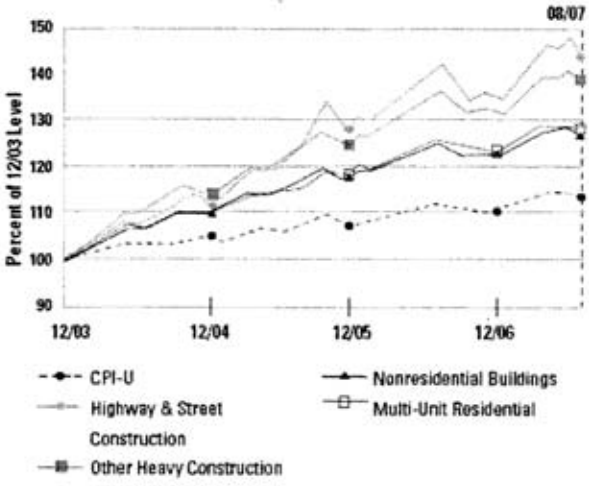

Figure 3: Cumulative Change in Producer Price Indices for Selected Construction Types

(Source: Association of General Contractors Construction Inflation Alert–October 2007)

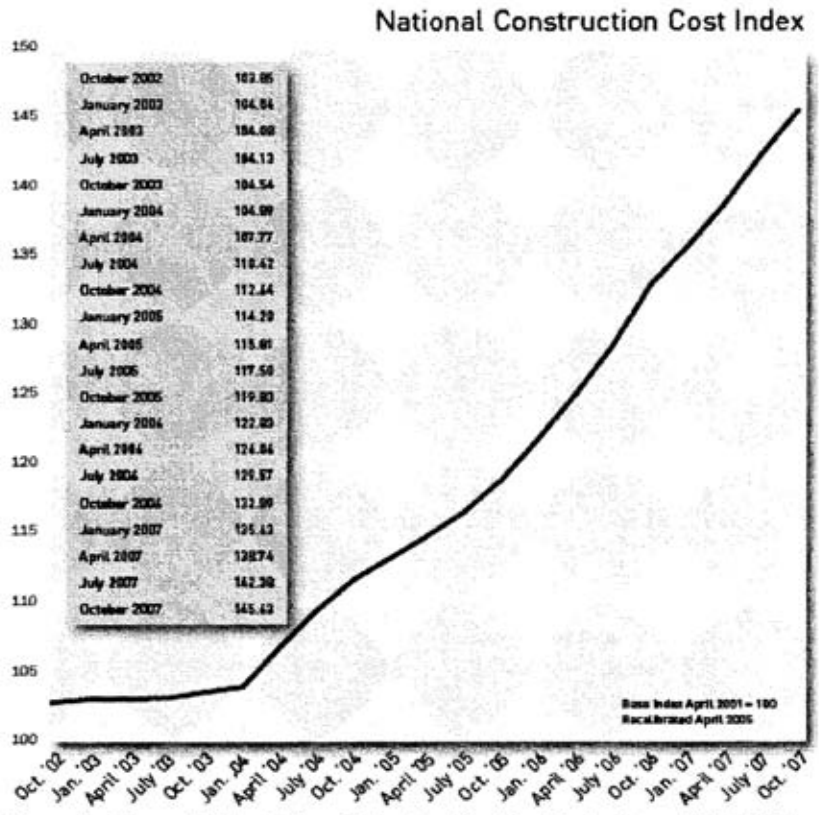

Figure 4: Change in the National Construction Cost Index from 2002–2007
(Source: Quarterly Construction Cost Report, 2007 Fourth Quarter Issue -Rider Levett Bucknall)

Cost Saving Options

In an effort to reduce construction costs and mitigate risk, the following cost saving options were evaluated for the final suite of alternatives. Not all cost saving alternatives are applicable to all alternatives. It is important to note that these alternatives were evaluated using the parametric model built to screen the array of alternatives and that only some of these options have been finalized by the approving agencies. The approximate cost savings shown are for Alternative 3.2.2a and are calculated at the 90 percent confidence limit:

- Reduce asphalt placement based on revised FDOT criteria received January 2008
  - -- Savings: ~$20 million (FDOT)
- Additional Temporary RoW for Construction
  - -- Savings: ~$10 million (DOI/Everglades National Park [ENP])
- Reduction in Low Chord Height for Bridge Inspection
  - -- Savings: ~$7 million (FDOT)
- Obtain Fill Material from L-31(N) Spoil Mounds
  - -- Savings: ~$6 million (South Florida Water Management District [SFWMD]/U.S. Army Corps of Engineers [USACE])
- Eliminate Spreader Swales from all Alternatives
  - -- Savings: ~$9 million (USACE)

In addition to these options, there is the possibility that the scheduled contract award date can be moved up to October 2008. If this is done, an additional $30 million could be saved in future escalation. In addition, it was determined that the assumed level of supervision and administration (S&A) could be reduced from ten to eight and a half percent and still have sufficient funds available for adequate administration of the contract.

Cost Estimate for Tentatively Selected Plan

Based on the results of the parametric model, the cost estimate for the TSP, Alternative 3.2.2a, is $328.1 million (based on a Total Construction Cost @ 90 percent confidence of $198.8 million plus costs for real estate, future PED, EDC, S&A, and escalation). **This cost can be reduced if the cost saving options discussed above are approved and incorporated into the final plan.** Assuming that these changes are made, the cost of the TSP could be reduced to $226.6 million as follows:

Original Construction Cost @ 90% Confidence	$ 198,800,000
- Reduce Asphalt Placement w/ New FDOT Criteria	$ 12,200,000
- Obtain Additional Temporary Right-of-Way	$ 12,000,000
- Reduce Low Chord Elevation	$ 5,200,000
- Obtain Fill from L-31(N) Spoil Mounds	$ 5,900,000
- Remove Spreader Swales	$ 8,700,000
Revised Construction Cost @ 90% Confidence	**$ 154,800,000**

+	Real Estate	$ 5,900,000
+	Future PED	$ 1,500,000
+	S&A (reduced from 10% to 8.5%)	$ 13,200,000
+	EDC (2%)	$ 3,100,000
+	Escalation (based on October 2008 Award)	$ 48,100,000
Total Cost of TSP if all Potential Cost Savings are Implemented		**$ 226,600,000**

Risk Analysis Results for the Tentatively Selected Plan

As discussed earlier, a risk analysis was done for all alternatives evaluated in the initial array. This analysis provides a distribution of potential costs based on the uncertainties associated with various components of the project. For the TSP shown in the initial array, the risk analysis produced the cost distribution shown in ***Table 3***.

The major risk factors that influence this alternative include the price of asphalt, suitable fill, pre-stressed concrete piling, AASHTO Beams, concrete for bridge decking, and pre-drilling of piles. Based on discussions with material suppliers and economic forecasts for the construction industry, it is apparent that the volatility in pricing for all of these items comes from either the cost of oil, the availability of fill and aggregate (depending upon the extent of a court order to halt mining in the Lake Belt area of South Florida), or a combination of both oil and fill.

When the cost-saving options are applied to the TSP, some of these risks can be mitigated by either reducing or eliminating the need for some of the more volatile materials. For the TSP estimate assuming incorporation of all cost saving options, the risk analysis produced the cost distribution shown in ***Table 4***.

The major risk factors that influence this alternative include the price of asphalt, pre-stressed concrete piling, AASHTO Beams, concrete for bridge decking, pre-drilling of piles, and asphalt disposal. Although many of the risk factors are the same for both alternatives, the required amount of purchased items such as asphalt and suitable fill has been reduced or eliminated. This reduces both the point estimate as well as the associated risk.

Table 3: Alternative 3.2.2a -- Cost-Risk Distribution

	Risk Analysis Results			
	0.1% Confidence	50% Confidence	90% Confidence	99.9% Confidence
Roadway Improvements **	$ 61,300,000	$ 66,900,000	$ 69,900,000	$ 79,200,000
Bridge - Transitions **	$ 14,000,000	$ 15,300,000	$ 16,000,000	$ 18,100,000
Bridge - Remove Old Rdwy **	$ 2,800,000	$ 3,100,000	$ 3,200,000	$ 3,600,000
Bridge - Structure w/ Abutments **	$ 64,700,000	$ 70,700,000	$ 73,800,000	$ 83,600,000
Other - MOT, Mob, Swales **	$ 31,500,000	$ 34,400,000	$ 35,900,000	$ 40,700,000
Total Construction Costs	**$ 174,300,000**	**$ 190,400,000**	**$ 198,800,000**	**$ 225,200,000**
Real Estate	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000
Planning, Engineering & Design	$ 6,500,000	$ 6,500,000	$ 6,500,000	$ 6,500,000
Engineering During Construction (2%)	$ 3,500,000	$ 3,800,000	$ 4,000,000	$ 4,500,000
Supervision & Administration (10%)	$ 17,400,000	$ 19,000,000	$ 19,900,000	$ 22,500,000
Escalation (43.5% based on Oct 2009 Award)	$ 84,900,000	$ 92,700,000	$ 96,900,000	$ 109,700,000
Total Project Cost	**$ 288,600,000**	**$ 314,400,000**	**$ 328,100,000**	**$ 370,400,000**

** The Risk & Uncertainty analysis was calculated for the Total Construction Cost. The distribution of risk across project elements is approximate.

Table 4: Alternative 3.2.2a w/ Potential Cost Saving Options -- Cost-Risk Distribution

	Risk Analysis Results			
	0.1% Confidence	50% Confidence	90% Confidence	99.9% Confidence
Roadway Improvements **	$ 30,400,000	$ 32,200,000	$ 33,100,000	$ 35,800,000
Bridge - Transitions **	$ 12,500,000	$ 13,200,000	$ 13,600,000	$ 14,700,000
Bridge - Remove Old Rdwy **	$ 3,500,000	$ 3,700,000	$ 3,800,000	$ 4,100,000
Bridge - Structure w/ Abutments **	$ 68,400,000	$ 72,600,000	$ 74,500,000	$ 80,600,000
Other - MOT, Mob **	$ 27,400,000	$ 29,000,000	$ 29,800,000	$ 32,300,000
Total Construction Costs	**$ 142,200,000**	**$ 150,700,000**	**$ 154,800,000**	**$ 167,500,000**
Real Estate	$ 5,900,000	$ 5,900,000	$ 5,900,000	$ 5,900,000
Planning, Engineering & Design	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000
Engineering During Construction (2%)	$ 2,800,000	$ 3,000,000	$ 3,100,000	$ 3,400,000
Supervision & Administration (8.5%)	$ 12,100,000	$ 12,800,000	$ 13,200,000	$ 14,200,000
Escalation (28.1% based on Oct 2008 Award)	$ 44,100,000	$ 46,800,000	$ 48,100,000	$ 52,000,000
Total Project Cost	**$ 208,600,000**	**$ 220,700,000**	**$ 226,600,000**	**$ 244,500,000**

** The Risk & Uncertainty analysis was calculated for the Total Construction Cost. The distribution of risk across project elements is approximate.

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Final Cost Estimate for Tentatively Selected Plan

After selection of the TSP, a detailed cost estimate, based on the best available engineering and design information, was developed for the TSP. The development of this final construction cost estimate is in compliance with ER 1100-2-1302. For this estimate, the parametric model used to screen alternatives and select the TSP was abandoned and the final TSP estimate was developed using the MCACES 2nd Generation (MII) software, which is the USACE standard for construction cost estimates. The final TSP estimate is based on the 60% design for the 1-mile bridge and a conceptual design for the roadway raising based on the recent FDOT roadway criteria. In addition, updated price quotations were obtained for construction materials and the contingency level was based on the results of the risk and uncertainty analysis discussed below. The final MII construction cost for the TSP (Alternative 3.2.2a with cost saving options) is shown in ***Table 5***.

One change in this estimate from previous estimates is the handling of the escalation. During the Independent Technical Review of the draft report, guidance was received on how to delineate current market conditions from traditional escalation rates. Since the official escalation rate for future years is computed by OMB, escalation in excess of that rate should be treated as a risk/uncertainty and rolled into the contingency derived from the risk analysis. Therefore, while the total escalation rate did not change, it is divided into two parts in the MII estimate: the OMB escalation rate, based on an anticipated construction start date of December 2008, is shown in the column labeled "Escalation" and the cost associated with the risk that escalation will exceed the OMB rates (based on historic trends) is shown in the column labeled "MiscOwner". This splitting of escalation does not change the total project cost, but it does re-distribute the costs in the parametric model estimate shown in ***Tables 3 and 4***.

Final Risk Analysis for Tentatively Selected Plan

Once the final MII estimate was developed for the TSP, a final risk and uncertainty analysis was also performed to establish the final contingency of 40% based on the 90% confidence level. While this final analysis is similar to the risk and uncertainty analyses run on the earlier parametric estimates, discussed above, it should be noted that the risk analysis dealt primarily with construction uncertainties (construction methodologies, quantities, pricing) that could be identified and quantified by the entire Project Delivery Team. Risks associated with events beyond the current fiscal year, such as future increases in material prices, are accounted for in the escalation analysis. Furthermore, there are a number of external risks associated with this project outside the control of the project delivery team (i.e. approval of a Highway Easement Deed, acquisition

of real estate easements from Florida Power and Light, execution of a PCA, availability of funds, actual funding stream, etc.) that could impact the anticipated construction award date of September 2008 and, ultimately, the cost of the project. These risks have been identified and their potential impact has been clearly communicated throughout USACE, ASA(CW), and with all sponsors and stakeholders. However, the financial impacts associated with these external risks have not been quantified in the risk and uncertainty analysis or included in the costs presented.

The results of the Risk Analysis are presented in the cost distribution curve shown in ***Table 6***.

Total Project Cost Summary

Finally, a Total Project Cost Summary was prepared for this project based on the final MII estimate and risk assessment. This summary is presented in ***Table 7***.

Table 5: Final MII Construction Cost Estimate for Alternative 3.2.2a w/ Cost Saving Options

Print Date Mon 2 June 2008
Eff. Date 5/24/2008

U.S. Army Corps of Engineers
Project: TTM LRR T5P - Total Project Cost
COE Standard Report Selections

Time 14:49:29

Title Page

There are three MII files, and an excel spreadsheet for risk analysis, plus supporting spreadsheets for other quantities and quote info.
Pricing and other variances are in related spreadsheets and not incorporated into this file.
MII v2.3 used since my PC does not have sufficient RAM to run v3.0. (MIIv2.2 Report Script used.)
Notes to reviewers:

Escalation is based on OMB/CCWIS factors
Misc. Owner Markup represents cost increases in excess of those in Risk Analysis due to unforseen market conditions and is based on 2003 - 2008 Historic Data & AGC Projections.
Construction window target is 3.5 years.
Total cost input provided to EN-C for RE, PE&D & S&A.

Estimated by
Designed by CESAJ
Prepared by Anthony L. DiPiero, P.E., C.C.E.
Preparation Date 5/24/2008
Effective Date of Pricing 5/24/2008
Estimated Construction Time Days
This report is not copyrighted, but the information contained herein is For Official Use Only

Labor ID: S_FL_5-08 EQ ID: EP05R03

Currency in US dollars

TRACES MII Version 2.2

Table 5 (continued): Final MII Construction Cost Estimate for Alternative 3.2.2a w/ Cost Saving Options

Print Date Mon 2 June 2008
Eff. Date 5/24/2008

U.S. Army Corps of Engineers
Project : TTM LRR TSP - Total Project Cost
COE Standard Report Selections

Time 14:49:29
Project Cost Summary Report Page 1

Description	Quantity	UOM	ContractCost	Contingency	MiscOwner	Escalation	ProjectCost
Project Cost Summary Report			**101,219,426.18**	**40,487,770.47**	**39,678,015.06**	**6,674,975.79**	**188,060,187.51**
08 Roads, Railroads and Bridges	**1.00**	**LS**	**101,219,426.18**	**40,487,770.47**	**39,678,015.06**	**6,674,975.79**	**188,060,187.51**
			6,445,003.15				*8,200,431.99*
0002 Roadway	**9.65**	**MI**	**42,903,950.40**	**17,161,572.16**	**16,818,340.72**	**2,829,325.43**	**79,713,168.71**
			1,257,602.97				*2,150,705.54*
0002A MOT	**9.65**	**MI**	**11,170,868.66**	**4,468,347.46**	**4,378,980.51**	**736,609.64**	**20,754,806.27**
0002B Site Work	**9.65**	**LS**	**2,835,311.63**	**1,134,124.65**	**1,111,442.16**	**186,976.33**	**5,267,854.76**
			2,994,385.50				*5,563,776.06*
0002C Paving - Repave Only	**9.65**	**MI**	**28,897,750.11**	**11,559,100.04**	**11,327,918.04**	**1,905,679.47**	**53,690,447.67**
			7,187,040.68				*13,313,968.42*
0003 Transitions	**2.00**	**EA**	**14,334,099.36**	**5,733,639.74**	**5,618,966.95**	**945,270.78**	**26,631,976.83**
			27.92				*51.87*
Excavation	**53,000.00**	**CY**	**1,479,511.24**	**591,804.49**	**579,968.40**	**97,567.26**	**2,748,851.39**
			66.88				*124.26*
Fill	**131,200.00**	**CY**	**8,775,020.49**	**3,510,008.20**	**3,439,808.02**	**578,673.99**	**16,303,510.72**
			1,613.84				*3,000.21*
2E01671 Retaining Wall	**3,000.00**	**LF**	**3,047,507.27**	**1,219,002.91**	**1,194,622.85**	**200,969.70**	**5,662,102.72**
			66.88				*124.26*
2E01200 Limerock Base	**3,850.00**	**CY**	**257,495.70**	**102,999.48**	**100,939.49**	**16,980.91**	**478,418.57**
			66.88				*124.26*
160 Stabilizing	**3,850.00**	**CY**	**257,495.70**	**102,999.48**	**100,939.49**	**16,980.91**	**478,418.57**
			172.53				*320.55*
0334 1 Asphaltic Concrete	**2,519.00**	**TON**	**433,643.60**	**173,217.44**	**169,753.09**	**28,557.32**	**804,571.46**
			178.76				*332.13*
337 Asphaltic Concrete Friction Course	**470.00**	**TON**	**84,019.37**	**33,607.75**	**32,935.59**	**5,540.71**	**156,103.41**
			8,520.81				*15,476.33*
0004 1 mile Bridge Sta. 1240 to 1192	**5,280.00**	**LF**	**45,981,396.42**	**17,592,568.57**	**17,240,707.40**	**2,900,379.68**	**81,715,041.97**
0004A Site Work	**1.00**	**LS**	**6,345,540.37**	**2,538,216.15**	**2,487,451.83**	**418,460.47**	**11,789,668.81**
			2,679.24				*4,977.87*
0004B Substructure	**5,280.00**	**LF**	**14,146,363.08**	**5,658,545.23**	**5,545,374.33**	**932,890.40**	**26,283,173.04**
			3,699.35				*6,873.16*
0004C Superstructure	**5,280.00**	**LF**	**19,533,488.46**	**7,812,995.38**	**7,656,735.48**	**1,288,081.67**	**36,290,300.99**
			740.43				*1,375.41*
Bridge Drainage System	**5,280.00**	**LF**	**3,907,004.51**	**1,562,801.80**	**1,531,545.77**	**260,947.04**	**7,261,899.12**

Labor ID: S_FL_5-08 EQ ID: EP05R03

Currency in US dollars

TRACES MII Version 2.2

Table 6: Risk Distribution for Alternative 3.2.2a w/ Cost Saving Options
(Based on Final MII Construction Cost Estimate)

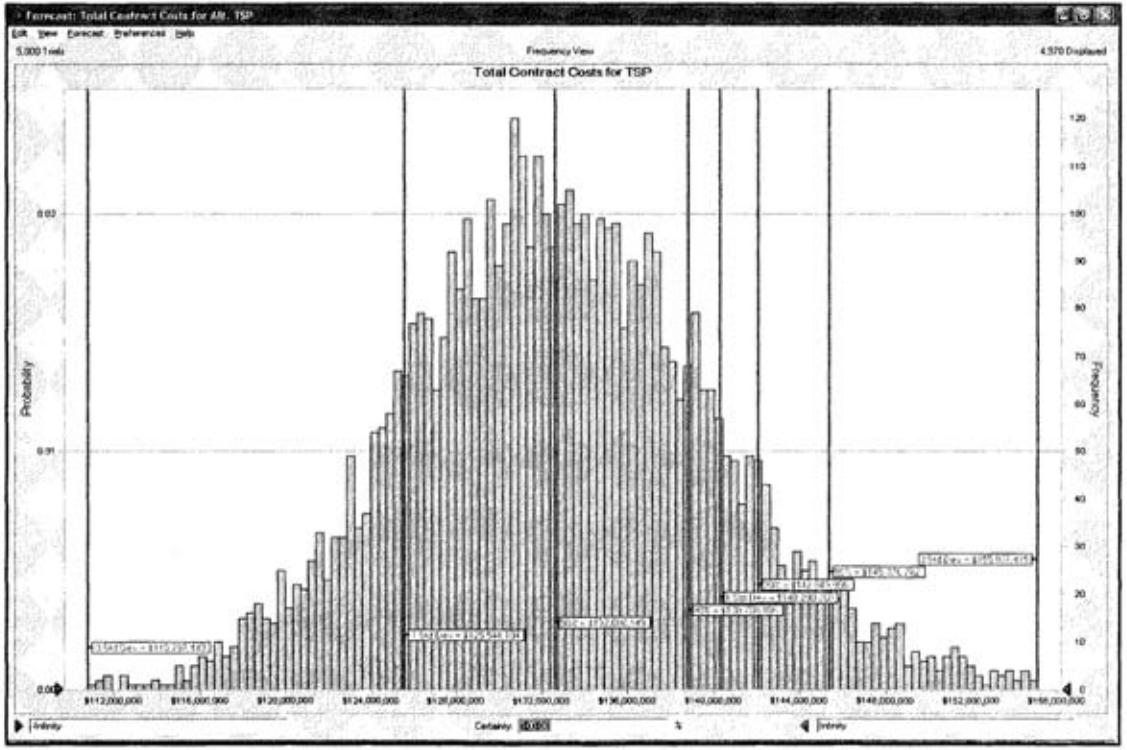

Table 7: Total Project Cost Summary

Feature Code	Description	Sunk Cost	Estimated Cost	Total Cost
01	**LANDS & DAMAGES**	**$ -**	**$ 5,900,000**	**$ 5,900,000**
	Airboat Assoc, FPL Easement, Admin Costs, etc.	*$ -*	*$ 5,900,000*	*$ 5,900,000*
02	**RELOCATIONS**	**$ -**	**$ -**	**$ -**
	None	*$ -*	*$ -*	*$ -*
08	**ROADS, RAILROADS, & BRIDGES**	**$ -**	**$ 188,062,000**	**$ 188,062,000**
	Roadway	*$ -*	*$ 79,714,000*	*$ 79,714,000*
	Transitions	*$ -*	*$ 26,632,000*	*$ 26,632,000*
	1-mile Bridge	*$ -*	*$ 81,716,000*	*$ 81,716,000*
30	**PLANNING, ENGINEERING, & DESIGN**	**$ 7,200,000**	**$ 1,400,000**	**$ 8,600,000**
	Limited Re-evaluation Report	*$ 1,300,000*	*$ 300,000*	*$ 1,600,000*
	Plans & Specifications	*$ 5,900,000*	*$ 1,100,000*	*$ 7,000,000*
31	**CONSTRUCTION MANAGEMENT**	**$ -**	**$ 18,000,000**	**$ 18,000,000**
	Supervision & Administration	*$ -*	*$ 14,900,000*	*$ 14,900,000*
	Engineering During Construction	*$ -*	*$ 3,100,000*	*$ 3,100,000*

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APPENDIX D
HYDROLOGY AND HYDRAULICS

SPREADSHEET MODEL DOCUMENTATION

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1. Problem Identification

As part of the Limited Reevaluation Report (LRR) for the Tamiami Trail Modifications (TTM) of the Modified Waters Deliveries (MWD) to Everglades National Park (ENP) project it became necessary to incrementally analyze different control stages within the L-29 Borrow Canal (L-29BC). This analysis would allow benefits to be calculated as a function of stage increase and opening size. To incrementally look at the benefits that different stage constraints on Tamiami Trail would produce a simple spreadsheet model was developed that looked at volumetric change based on inflow.

2. Existing Structures and Gage Locations

Within the boundaries of this project area, five US Army Corps of Engineers (USACE) structures (S-333, S-355A, S-355B, S-334, and S-356) and 19 sets of culverts that pass water from the L-29BC (also referred to as L-29 Canal) south through Tamiami Trail (US 41) into North East Shark River Slough (NESRS) exist. A brief description of these features follow:

A. S-333 is a reinforced concrete, gated spillway with discharge controlled by one cable operated, vertical lift gate. The gate is operated to make releases from Water Conservation Area 3A (WCA-3A) into the Tamiami Canal (L-29BC). This structure has a maximum discharge rate of 1,350 cubic feet per second (cfs).

B. S-355A and S-355B are reinforced concrete, gated spillways with discharge controlled by one cable operated, vertical lift gate. Each structure is capable of a maximum discharge of 1000 cfs. These structures are a part of the MWD to ENP project and are designed to pass water from Water Conservation Area 3B (WCA-3B) into NESRS. This transfer of water is via the L-29BC and the combination of culverts and a new bridge being proposed by this project along Tamiami Trail. The S-355A and S-355B structures are not currently operated due to stage constraints in the L-29BC.

C. S-334 is a reinforced concrete, gated spillway with discharge controlled by one cable operated, vertical lift gate. Operation of the gate is manually controlled, and the gate is operated to make releases from the L-29BC into the L-31N canal (South Dade conveyance system [SDCS]). This structure has a maximum discharge rate of 1230 cfs.

D. As part of the 2002 Interim Operational Plan (IOP) Emergency Contract the interim pump station S-356 was constructed. S-356 is a 500 cfs (four pumps at 125 cfs each) diesel-driven pump station that pumps water from the L-31N Canal into the L-29BC for the purpose of protecting the Cape Sable

seaside sparrow (CSSS) and for returning increased seepage water from NESRS into L-31N due to the implementation of the MWD Project.

E. The 19 sets of culverts are made up of a total of 55 barrels with diameters ranging in size from 48 to 60 inches. The total discharge capacity is based on upstream and downstream stages across the Tamiami Trail.

F. ***Table 1*** lists the gages/structures used for the analysis and ***Figure 1*** show the location of these features.

Table 1: General Structure and Gage Information

Gage/Structure	Data Type	Frequency	Statistics Type	Period of Record		Agency
				Start	End	
NESRS-1	Stage (ft, NGVD)	Daily	Mean	23-Jul-76	Present	USGS
NESRS-2	Stage (ft, NGVD)	Daily	Mean	26-Jul-76	Present	USGS
NESRS-3	Stage (ft, NGVD)	Daily	Mean	2-Aug-84	Present	USGS
NESRS-4	Stage (ft, NGVD)	Daily	Mean	24-Jul-85	Present	USGS
NESRS-5	Stage (ft, NGVD)	Daily	Mean	24-Jul-85	Present	USGS
Angels	Stage (ft, NGVD)	Daily	Mean	9-Apr-84	Present	SFWMD
G-3272	Well (ft, NGVD)	Daily	Mean	10-Jun-83	Present	SFWMD
G-3273	Well (ft, NGVD)	Daily	Mean	14-Mar-84	Present	SFWMD
NP-206	Stage (ft, NGVD)	Daily	Mean	1-Oct-74	Present	ENP
RG-1	Stage (ft, NGVD)	Daily	Mean	13-Jan-98	Present	ENP
R3110	Stage (ft, NGVD)	Daily	Mean	11-Oct-84	Present	ENP
S-333						
Discharge	Flow (cfs)	Daily	Mean	12-Oct-78	Present	SFMWD
Headwater	Stage (ft, NGVD)	Daily	Mean	12-Oct-78	Present	SFMWD
Tailwater	Stage (ft, NGVD)	Daily	Mean	12-Oct-78	Present	SFMWD
S-12A						
Discharge	Flow (cfs)	Daily	Mean	1-Oct-63	Present	USGS
Headwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
Tailwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
S-12B						
Discharge	Flow (cfs)	Daily	Mean	1-Oct-63	Present	USGS
Headwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
Tailwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
S-12C						
Discharge	Flow (cfs)	Daily	Mean	1-Oct-63	Present	USGS
Headwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
Tailwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
S-12D						
Discharge	Flow (cfs)	Daily	Mean	1-Oct-63	Present	USGS
Headwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
Tailwater	Stage (ft, NGVD)	Daily	Mean	1-Oct-63	Present	USGS
Rainfall	Rainfall (in)	Daily	Mean	2-Oct-63	Present	USGS
40 Mile Bend Pan Evaporation	Rain (in)	Dialy	Mean	6-Jan-40	Present	NOAA

ENP – Everglades National Park
NOAA – National Oceanographic and Atmospheric Administration
SFWMD – South Florida Water Management District
USGS – US Geographical Survey

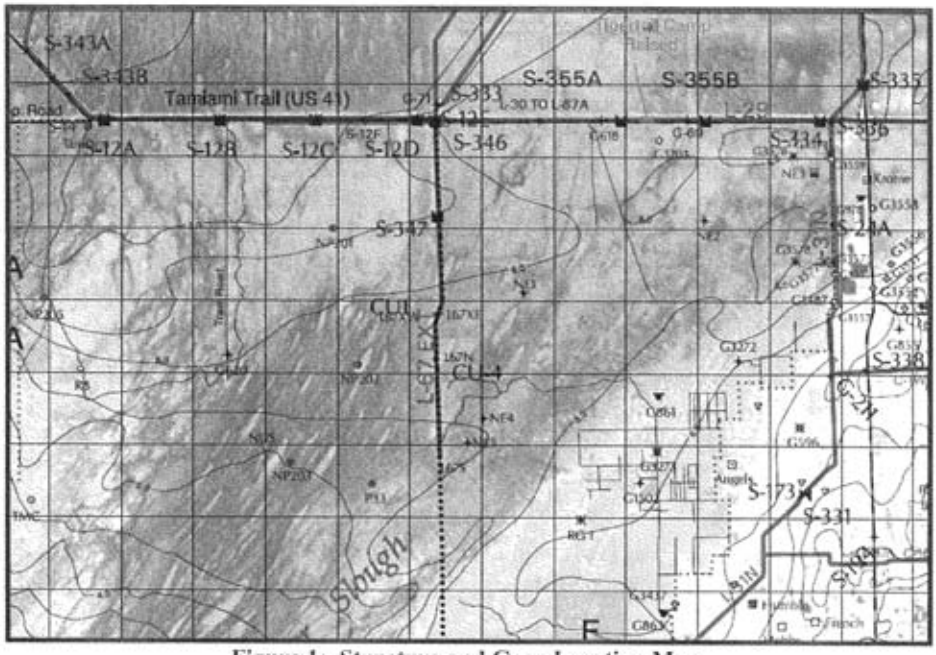

Figure 1: Structure and Gage Location Map

3. Current Operations

The discharges into the L-29BC (limited currently to S-333) are limited by stages that would cause impact to the current roadway (elevation 7.5 ft, National Geodetic Vertical Datum [NGVD]). This elevation is based on communications with the Florida Department of Transportation (FDOT). Discharges are additionally constrained based on stages at G-3273 (elevation 6.8 ft) for the protection of south Dade County. L-29BC is used for two separate purposes:

A. Water Supply Releases: S-333 can be used in conjunction with S-334 to make water supply releases to south and east Dade County (SDCS). The total delivery would be the amount necessary to maintain the appropriate stages at S-331, S-25B and S-22.

B. Regulatory releases from WCA-3A to ENP are made from S-333 and the S-12's. The structures would be operated in accordance with the IOP for the Protection of the CSSS (IOP, 2002 and later 2006). When water levels at G-3273 (a stage recorder located to the west and north of the 8.5 Square Mile Area [8.5 SMA]) have been above 6.8 ft, NGVD for 24 hours, S-333 would be closed.

4. Required and Desired Water Volumes

The flow requirement of 4,000 cfs has generated considerable confusion. The Everglades National Park Protection and Expansion Act (Public Law [PL] 101-229) Sec 104(a) (1) did not authorize a specific flow rate but states:

> "Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park."

The final report Part 1 Supplement 54 General Design Memorandum and Environmental Impact Statement Modified Water Deliveries to Everglades National Park, Florida June 1992, Section H. Recommended Project (page 52) defines the measures that the natural hydrologic conditions would be measured as:

> "The goal of restoring natural hydrologic conditions would be met in terms of all three of its dimensions: location, timing and volume:
>
> * Location–The historic path of Shark River Slough would be restored by bringing WCA-3B and NESRS back into the flow-way between WCA-3A and ENP.
>
> * Timing–Water flows through the restored Shark River Slough would reflect natural local meteorological conditions, including the extremes of natural droughts and floods, and variations in the annual seasonal and long-term cycles.
>
> * Volume–The volume of water delivered would reflect the naturally available supplies based on local meteorological conditions, except in cases where operations of the Central and Southern Florida (C&SF) project for other authorized project purposes necessitate increased or decreased deliveries. Natural hydroperiods would be restored."

The MWD is not authorized a specific flow but rather a volume to the extent practicable that would reflect the naturally available supplies based on local meteorological conditions. In the past confusion has revolved around the volume and timing of flows with a specific flow rate. The final report Part 1 Supplement 54 General Design Memorandum and Environmental Impact Statement Modified Water Deliveries to Everglades National Park, Florida June 1992, Section I. Environmental Analysis (page 58) states:

"Hydrologic restoration of WCA-3B is also essential to restoring natural water conditions in the Park. Diversion of flood waters from WCA-3A into detention in WCA-3B would decrease the volume of and, in some cases, the need for regulatory water releases in to the Park from WCA-3B. This would reduce the frequency of unnatural distributions of water across SRS, and further reduce the occurrences of alligator nest flooding south of the S-12s. The ability to discharge an additional 2,000 cfs of water in to NESRS through the new S-355 structures and 1,300 cfs through S-333, would allow full restoration of historic water depths in the center of the slough, thereby causing reflooding of the short-hydroperiod marshes on the eastern slope of the slough. This would accrue a11 the wildlife benefits from increased primary and secondary productivity previously discussed. In addition, aquifer recharge, reestablishment of groundwater flows, surface water reconnection between SRS and Taylor slough, and restoration of estuarine productivity would be maximized."

The 4,000 cfs flow rate is based on the total capacity of the recommended structures of the 1992 MWD to ENP Project GDM to deliver water (Volume) into the L-29BC between structures S-333 and S-334 and then hydraulically conveyed through the Tamiami Trail (US41) embankment to ENP. This total capacity (4,000 cfs) is based combining the design discharge capacity of the following structures: S-333 (1,350 cfs), S-355A (1,000 cfs), S-355B (1,000 cfs), and S-356 (950 cfs). The 4,000 cfs represents an infrequent high flow event that is desirable for the system to be able to pass for geomorphologic changes.

5. Conceptual Model Layout

The spreadsheet model was developed to take into consideration two components: 1) the change in storage in the marsh that different stage constraints within L-29BC could produce based upon delivering water into NESRS and 2) the interaction with the downstream marsh and the L-29BC stage. The model is based on computing a stage at NESRS-2 based on mass balance and then using an equation to relate that stage to the L-29BC stage (***Figure 2***).

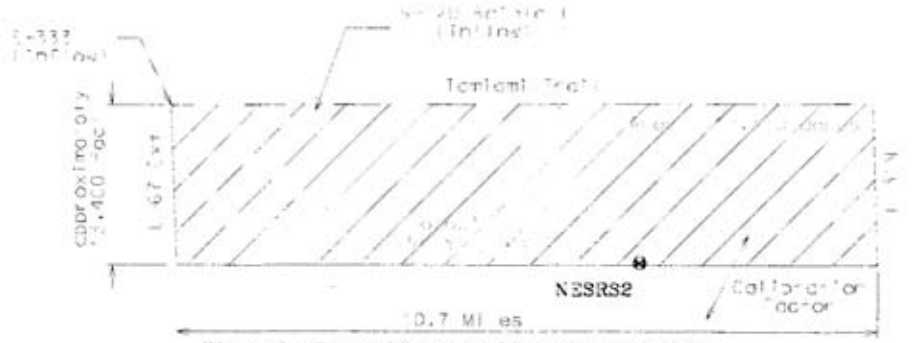

Figure 2: General Layout of Spreadsheet Model

$$\Delta S = Inflow - Outflows \pm CF \qquad \textbf{Equation 1}$$

where

ΔS = change in stage at NESRS (ft)
Inflow = S-333 discharges + Rainfall applied to an area (ft)
Outflows = Evaporation + Flow Out (Marsh Flow) applied to an area (ft)
CF = Calibration Factor that takes into consideration unknown factors such as seepage in and out, variability in rainfall, and flow south (ft)

6. Calibration

The model was calibrated to the historic period of record (POR) from January 1, 1983 through August 15, 2007. The following historical data were used for this time period: S-333_TW, S-333_Q, NESRS2, S-12A_Q, S-12B_Q, S-12C_Q, S-12D_Q, S-12D_Rainfall, and 40 Mile Bend Evaporation. The input parameters are as follows:

A) Inflows

1) S-333

The volume of water discharged at S-333 was assumed to enter NESRS and was converted to a stage increase by the following equation:

$$I_{S\text{-}333} = (1.98 * Q)/A \text{ (ft)} \qquad \textbf{Equation 2}$$

where

$I_{S\text{-}333}$ = stage increase associated with inflow volume discharged at S-333 (ft)
1.98 = constant used to convert cubic feet per second (cfs) to acre-feet per day
Q = actual average daily discharge at S-333 (cfs)

A = area (acres), distance from Tamiami Trail to the NESRS-2 gage (13,400 feet) multiplied by the distance along Tamiami Trail (10.7 miles); equal to 17,380 acres.

2) Rainfall

Rainfall was taken from the S-12D gage recorded in inches per day and was converted to feet per day. Rainfall was assumed to be applied over the entire domain of the spreadsheet analysis (17,380 acres).

B) Outflows

1) Evaporation

Evaporation was taken from the 40 Mile Bend Pan Evaporation gage located approximately ten miles west of the project area. This gage is recorded in inches per day and was converted to feet per day. This value was used as a net loss to the stage at NESR-2. The value evaporation was assumed as a net loss to the area. So if the pan evaporation lost 0.001 feet in a day then within the spreadsheet analysis the stage would decrease this amount during that particular day. Missing values were assumed zero and are covered by the Calibration Factor discussed below.

2) Flow Out

Flow out was computed based on a linear approximation of velocity versus stage. Velocity values were assumed as:

Stage (ft)	Velocity (ft/s)
5.5	0.001
12.0	0.015

$$Q_{flow} = \left[\frac{(0.015-0.001)}{(12-5.5)} * (NESRS2 - 5.5) + 0.001\right] * (d * L) \qquad \textbf{Equation 3}$$

where

Q_{flow} = average daily volumetric flowrate or discharge (cfs)
$NESRS2$ = the stage at the NESRS-2 monitoring gage (ft)
d = the depth at NESRS2 assumed to be stage minus 5.5 feet
L = the length along Tamiami Trail (56,496 ft)

This calculation produces a range of discharges to the south out of the conceptual model from 0 and 5,500 cfs. These values were then converted to decreases in stage at NESRS-2 by the following equation:

$$O_{flow} = \frac{1.98 * Q_{flow}}{A} \text{ (ft)} \qquad \textbf{Equation 4}$$

where

O_{flow} = stage decrease related to discharge released (ft)
Q_{flow} = volumetric flowrate or discharge released (cfs)
A = area (acres)
1.98 = constant used to convert cubic feet per second (cfs) to acre-feet per day

An 'if" statement was used to prevent the flows from being computed below a stage of 5.5 feet (or simply put when stages are lower than 5.5 ft, then Q = 0 cfs). Early in the spreadsheet model development the values for velocity were experimented with at different ranges. However based on the nature of the model and the length of the area (56,496 ft), small variations in the velocity term created huge losses of flows or simply put created an imbalance of inflows and outflows. The final decision was based on a range that produced the smallest term in the calibration factor (discussed below).

C) Calibration Factor

The CF was added in order to compensate for other unknowns in the system such as seepage in and out of the area, variability or missing rainfall, missing or incorrect evaporation data and flow south. For missing rainfall data and evaporation values it was assumed these values would be zero and that the calibration factor would provide the correction for the missing data. The term was computed based on calculating the measured stage difference (Equation 1) at NESRS-2 and solving for the calibration factor.

$$\Delta S = I_{S\text{-}333} + I_{rain} - ET - O_{FLOW} - CF$$

where

ΔS = change in stage at NESRS (ft)
$= NESRS2_n - NESRS2_{n-1}$

Solve for CF

$$CF = I_{S\text{-}333} + I_{rain} - ET - O_{FLOW} - (NESRS2_n - NESRS2_{n-1})$$

where

CF = *calibration facto*
$I_{S\text{-}333}$ = stage increase associated with inflow volume discharged at S-333 (ft)
I_{rain} = stage increase from rainfall (ft)
ET = evapotranspiration, loss of water from the soil both by evaporation and by transpiration from the plants growing there (ft)
O_{FLOW} = stage decrease related to discharge released (ft)
$NESRS2_n$ = historical stage at the current time step (ft)
$NESRS2_{n-1}$ = historical stage the day before current time step (ft)

The CF was not a constant per stage (***Figure 3***) and attempts to fit a curve through the value resulted in poor matches due to the high variability. So the CF was applied for each time step then the calibration looked at the fit to the L-29BC Stage. Missing historical data was interpolated in two manners: 1) in small gaps or periods with little difference (based on observation at other gages within the area, NESRS-1 and NESRS-3) a linear interpolation between data points was performed, 2) Larger gaps were filled based on a correlation to other gages in the area (NESRS-1 and NESRS-3).

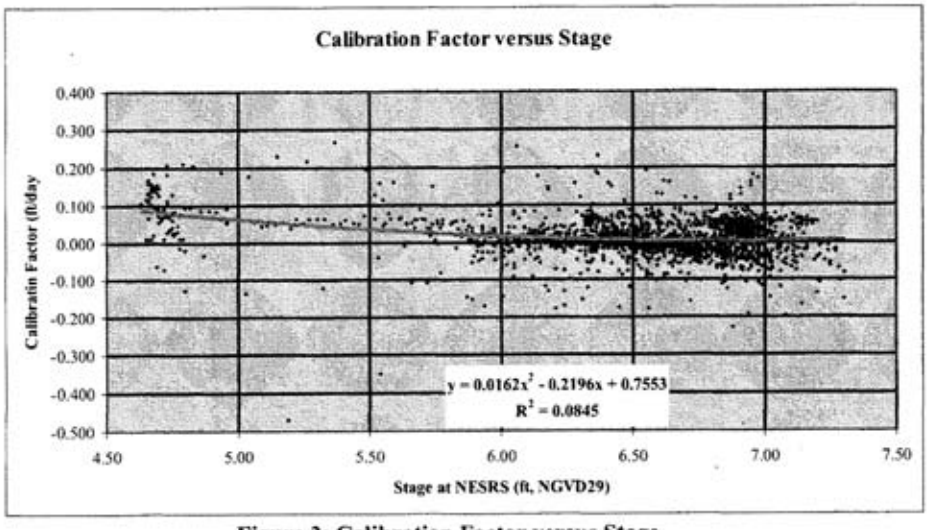

Figure 3: Calibration Factor versus Stage

D) Calibration to the L-29BC Stage.

Two approaches were investigated for developing an equation to correlate a canal stage from the NESRS-2 gage.

1) Curve Fitting Historical Data

The stage difference was computed between the S-333 tailwater recorder and the NESRS-2 gage and then plotted in regards to the discharge at S-333 (***Figure 4***).

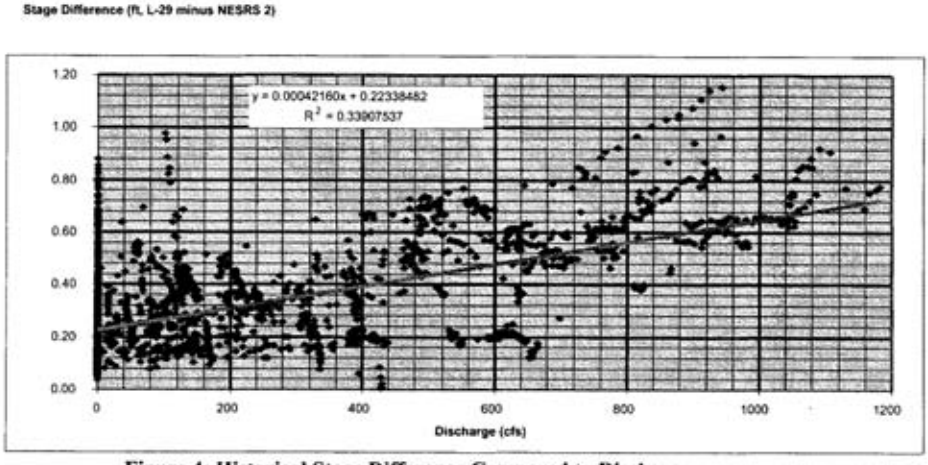

Figure 4: Historical Stage Difference Compared to Discharge

2) RMA-2 Results from the 2005 Revised General Reevaluation Report.

The results from the RMA-2 model from the 2005 Revised General Reevaluation Report (RGRR) for Tamiami Trail were used to compute a head differential or stage differential (ΔH) term based on the size of the opening in the Tamiami Trail embankment (***Figure 5***). This differential was used in a linear equation (**Equation 5**), which was then used to derive a canal stage based on the stage at NESRS-2. The head differential between the marsh and the L-29BC for the existing culverts was assumed to be ΔH = 0.22 ft when the discharge was 0 cfs, and ΔH = 1.2 ft when the discharge was 4,000 cfs. The ΔH term computed was then added to the NESRS-2 stage to compute the L-29 BC stage (**Equation 6**).

$$\Delta H = \left[\left(\frac{Q_{S\text{-}333} - 0cfs}{4{,}000cfs - 0cfs}\right) * (1.2\,ft - 0.22\,ft)\right] + 0.22\,ft \qquad \textbf{Equation 5}$$

where

ΔH = marsh headloss factor (ft)

$Q_{S\text{-}333}$ = volumetric discharge (cfs) at structure S-333

$$L29BC = NESRS2 + \Delta H \qquad \textbf{Equation 6}$$

When flows at S-333 were zero then the L-29 BC stage was computed based **Equation 7**.

$$L29BC = L29_{n-1} + I_{Rain(n)} - ET_{(n)} - Q_{out(n)}$$ **Equation 7**

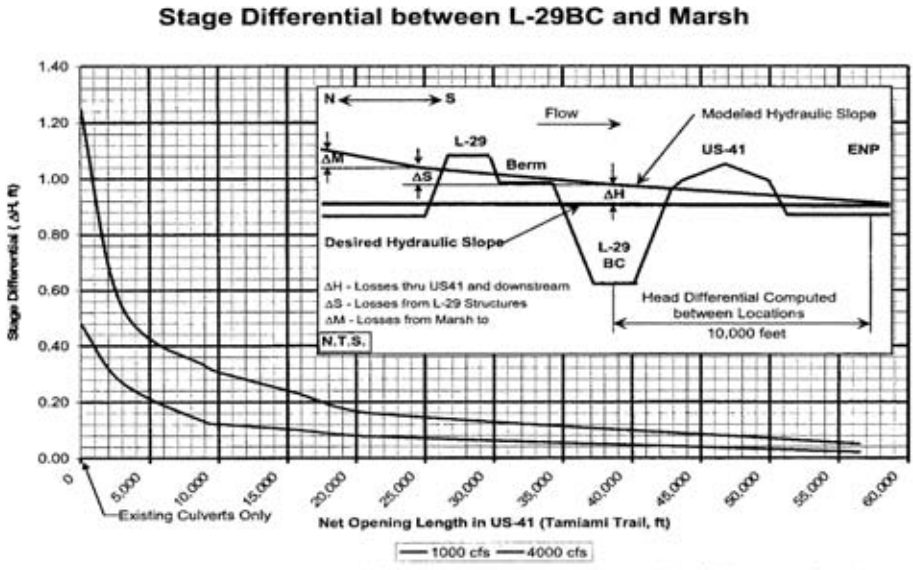

Figure 5: Computed RMA-2 Stage Differential between Marsh and L-29 Borrow Canal

3) Calibration Results

Both methods produce reasonable results in matching the general trends of canal stages (***Figure 6***). The RMA-2 calibration run was only off on average by minus 0.123 ft (***Figure 7***) when compared to the historically delivered flows. For alternative comparison analysis though it was decided to remain with the RMA-2 calculations so that the ΔH term could be easily manipulated per alternative. In addition the RMA-2 modeling looked at higher flowrates up to the target of 4,000 cfs, where historical data did not get over 1400 cfs.

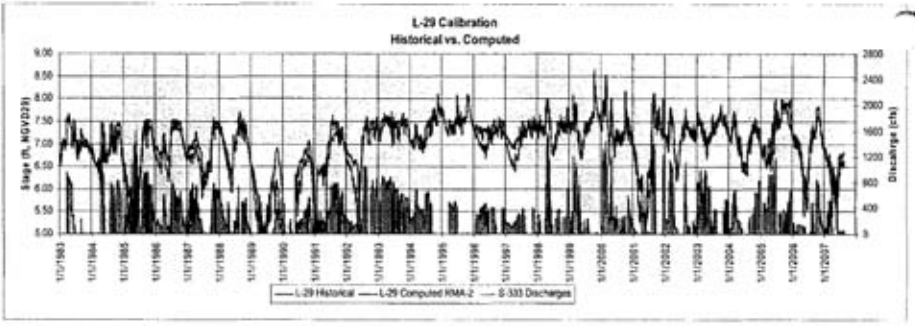

Figure 6: Computed Stage verus Historical L-29 Borrow Canal

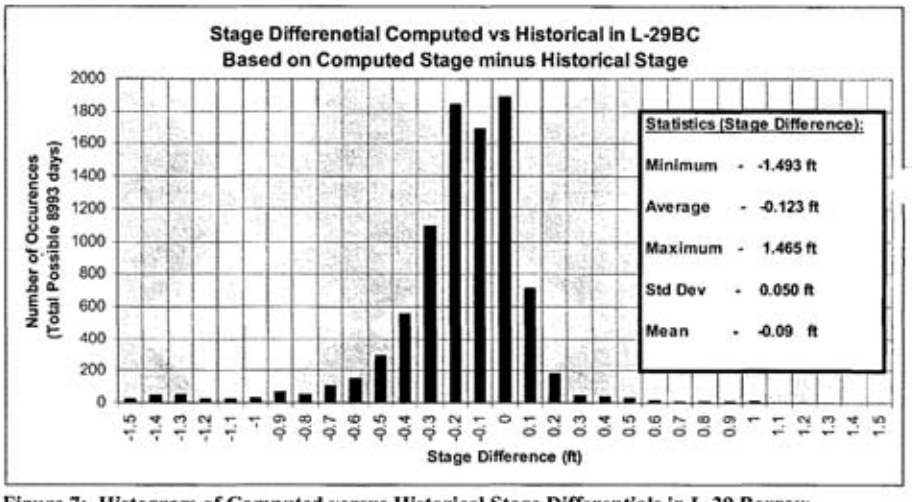

Figure 7: Histogram of Computed versus Historical Stage Differentials in L-29 Borrow Canal

7. Alternative Modeling Strategy

To model alternatives and the effect of different stage constraints the following assumptions were made for all alternatives:

A) Calibration Factor (CF)

The CF remained constant. The goal of the model was to determine the increased flow volumes under different L-29BC stage constraints and opening configurations.

B) Inflows at S-333

Inflows at S-333 were computed based on summing the historical flows delivered to ENP (S-12A, S-12B, S-12C, S-12D, and S-333) and multiplying by 55 percent (***Figure 8***). The 55 percent value was the target flow distribution for the MWD to ENP project. This method was chosen to avoid an operational model that would take more time to develop and that would simply use the effect of meeting the target distribution of 55 percent of the flows to the east. In short if the capability existed for distributing the flows 45 percent to the west and 55 percent to the east then this volume in correlation with different stage constraints on the L-29BC would produce these results for the different alternatives.

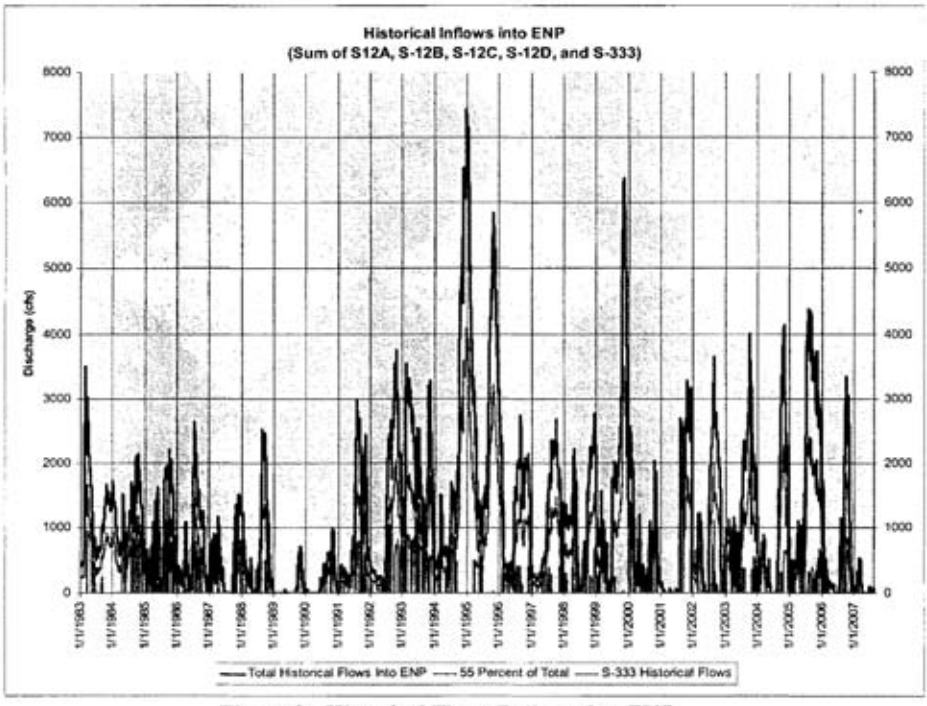

Figure 8: Historical Flows Delivered to ENP

To gain a perspective of the historical water availability of the system a daily flow duration curve (***Figure 9***) was developed from the period of record from 1 January 1983 through 15 August 2007 (approximately 25 years of data or 8,993 days). This curve counts the number of days that discharges actually exceeded a certain value. From the curve only approximately 3.25 percent of the days (292 days out of 8,993 days) actually saw a total delivery [S-12A + S-12B + S-12C +S-12D + (S-333 – S-334)] greater than 4,000 cfs to ENP. When 55 percent of the total is computed then only eight days out of 8,993 days actually have a possibility of discharging 4,000 cfs to the east based on historical discharges.

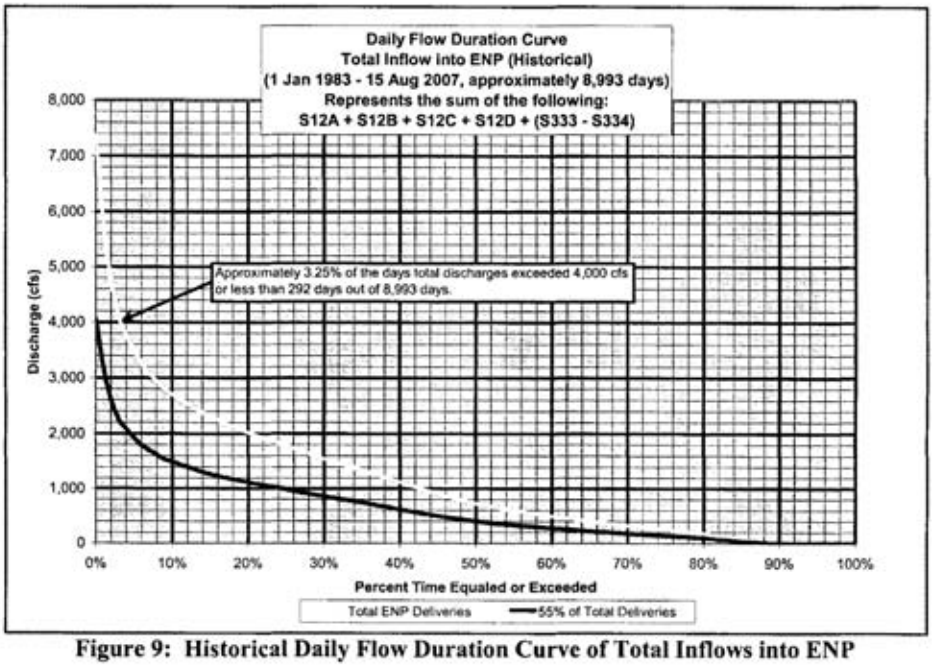

Figure 9: Historical Daily Flow Duration Curve of Total Inflows into ENP

C) Rainfall

Remained constant.

D) Evaporation

Remained Constant.

E) Marsh Outflow

Same calculation as the calibration model.

F) Marsh Headloss Factor

One of two factors that changed per alternative. This factor was based on the RGRR analysis from 2005 where multiple alternatives were analyzed under different flow regimes. From this analysis two curves were developed based on head differential between the marsh and the L-29BC and flow (***Figure 5***). It was assumed that a linear approximation could be used between the curves. The head differential between the marsh and the L-29BC for the one mile bridge option was ΔH = 0.2 ft when the discharge was 0 cfs, and ΔH = 0.42 ft when the discharge was 4,000 cfs. Then if the flowrate was equal to 800 cfs, the ΔH term would be equal to:

$$\Delta H = \left[\left(\frac{Q_{S-333} - 0cfs}{4{,}000cfs - 0cfs}\right) * (0.42\,ft - 0.2\,ft)\right] + 0.2\,ft \qquad \textbf{Equation 8}$$

$$\Delta H_{800cfs} = 0.244\,ft$$

where

ΔH = marsh headloss factor (ft)

Q_{S-333} = volumetric discharge (cfs) at the S-333 Structure

G) Stage Constraint on the L-29 Borrow Canal

The stage constraint controlled whether or not flows could be discharged into the model. If the stage in the L-29BC was higher than the constraint then flows went to zero. It should be noted that for the lower stage constraints this produced daily flows that might produce high discharges. However, these high discharges would then create a stage that would turn off the flows for several days. From a real time operational perspective, weekly adjustments are made to the structures to target a specific flow. If the spreadsheet model ran weekly average flows then one would get a better perspective of how water would be discharged into NESRS. This happens because the spreadsheet model simply looks at distributing 55 percent of the total flows into the L-29BC, not small increments of the percentage. The goal was to keep the model simplistic so that it would run quickly.

H) Relocation of L-67 Extension to Blue Shanty Canal

This alternative followed a similar analysis as the other alternatives but divided the area within NESRS into two separate areas: 1) the area east of the Blue Shanty Canal which used the NESRS-2 gage and 2) the area west of the Blue Shanty Canal which used the NESRS-1 gage (***Figure 10***). In this alternative flows were initially distributed proportionally east and west of the newly relocated L-67 Extension Levee (72 and 28 percent, respectively). Once

the eastern side (NESRS-2) violated the stage constraint then all flows were delivered west of Blue Shanty Canal. This rule allowed the plan to deliver the full potential of flows into NESRS. A slight increase over the head differential was applied based on the lack of culverts to aid in the discharge of large volumes of water to the west of the Blue Shanty Canal and that under larger discharges the flow area was reduced by approximately 72 percent. The other alternatives all had a majority of culverts present to aid in the delivery of water to NESRS. The discharge to the west however used the same differential as used for the existing conditions analysis.

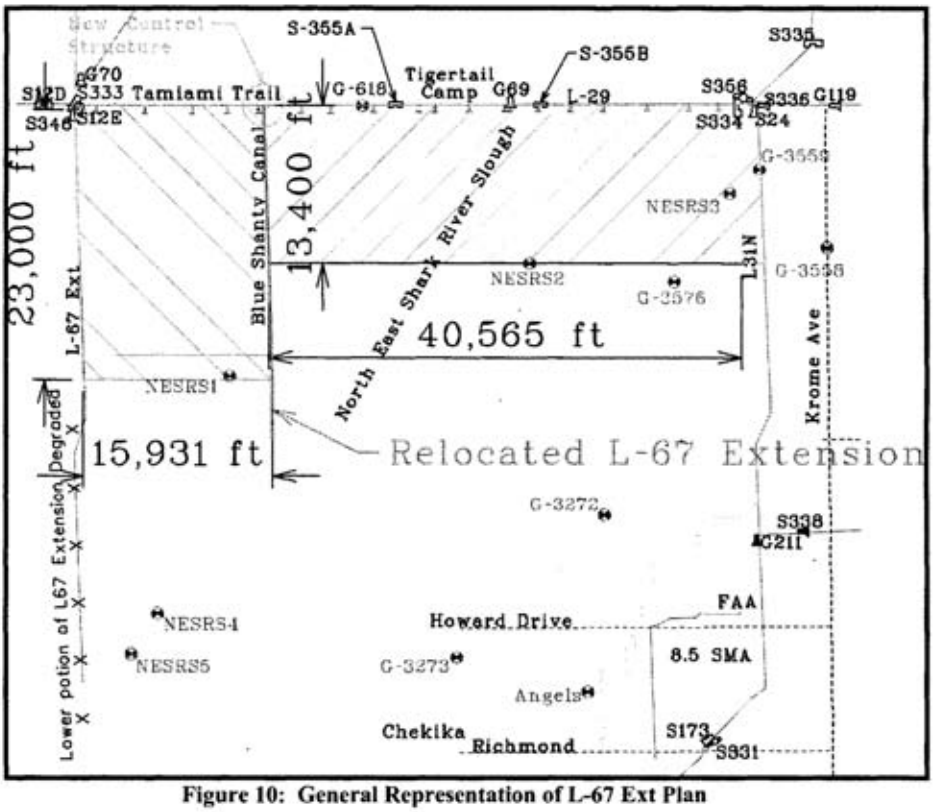

Figure 10: General Representation of L-67 Ext Plan

8. Alternatives:

A) Alternative 1–No Roadway Improvements

All alternatives in this category had an L-29BC stage constraint of 7.5 feet.

1) Alternative 1.1-No Action

This alternative represents the existing conditions of the system, 19 sets of existing culverts. This alternative was used as the basis for which all other alternatives were compared. The marsh headloss factor used for this alternative was ΔH=0.22 ft for 0 cfs and ΔH=1.2 ft for 4,000 cfs (***Table 2***).

2) Alternative 1.2–Existing Culverts with Spreader Swales

To increase the efficiency of the culverts downstream spreader swales were constructed, assumed to have a 30 foot bottom width and 1000 foot length centered on the culvert. In terms of efficiency it was assumed that the spreader swales would increase the efficiency by ten percent on the lower end of discharges and 12 percent on the higher end of discharges. This factor was applied by changing the head differential between the marsh and the L-29BC (ΔH=0.2 ft for 0 cfs and ΔH=1.06 ft for 4,000 cfs). Best professional judgment was used for the selection of the reduction value.

3) Alternative 1.3–Existing Culverts with 19 Additional Culverts and Swales

No improvements to the road were made but 19 sets of culverts were added to the roadway. Each new set of culverts would contain three pipes. Each pipe would be five-foot diameter reinforced concrete. All culverts existing and new would have a downstream spreader swale constructed similar to Alternative 1.2. The head differential between the marsh and the L-29BC for this alternative was based on ***Figure 5*** with a net opening of approximately 600 feet and using the net reduction of 10 and 12 percent reduction as done in Alternative 1.2; ΔH=0.2 ft for 0 cfs and ΔH=0.94 ft for 4,000 cfs.

4) Alternative 1.4a-One-mile Eastern Bridge

No improvements to the road but a one-mile bridge would be constructed on the eastern end of the project area where the 2005 RGGR proposed to construct the one-mile bridge. The head differential between the marsh and the L-29BC for this alternative was; ΔH=0.2 ft for 0 cfs and ΔH=0.42 ft for 4,000 cfs.

5) Alternative 1.4b-One-mile Western Bridge

No improvements to the road but a one-mile bridge would be constructed on the western end of the project area within the area 2005 RGGR

proposed to construct the two-mile bridge. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.2 ft for 0 cfs and ΔH=0.42 ft for 4,000 cfs.

6) Alternative 1.5-Reinforce Western Section of Road and One-mile Western Bridge

Same as Alternative 1.4b except road in this vicinity was reinforced to 13.00 ft crown. A one-mile bridge would be constructed on the western end of the project area within the area 2005 RGGR proposed to construct the two-mile bridge. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.2 ft for 0 cfs and ΔH=0.42 ft for 4,000 cfs.

B) Alternative 2–Roadway Improvements to Reinforce Road Crown to 11.05 ft

All alternatives in this category had an L-29BC stage constraint of 8.0 feet.

1) Alternative 2.1–Reinforce only Low Points of Existing Roadway

Same as Alternative 1.1 except the stage constraint was changed to 8.0 feet for the L-29BC.

2) Alternative 2.2.1–Reinforce Low Points and Add 19 Additional Culverts and Swales

Same as Alternative 1.3 except the stage constraint was changed to 8.0 feet for the L-29BC.

3) Alternative 2.2.2a–Reinforce Low Points and Add One-mile Eastern Bridge

Same as Alternative 1.4a except the stage constraint was changed to 8.0 feet for the L-29BC.

4) Alternative 2.2.2b-Reinforce Low Points and Add One-mile Western Bridge

Same as Alternative 1.4b except the stage constraint was changed to 8.0 feet for the L-29BC.

5) Alternative 2.2.3-Reinforce Low Points and Add Two-mile West and One-mile East Bridge

This alternative was the 2005 RGRR plan with a lowered stage constraint in the L-29BC (8.0 feet). The head differential between the marsh and the L-29BC for this alternative was ΔH=0.06 ft for 0 cfs and ΔH=0.3 ft for 4,000 cfs.

C) Alternative 3–Roadway Improvements to Reinforce Road Crown to 11.55 ft

All alternatives in this category had an L-29BC stage constraint of 8.5 feet.

1) Alternative 3.1–Reinforce only Low Points of Existing Roadway

Same as Alternative 1.1 except the stage constraint was changed to 8.5 feet for the L-29BC.

2) Alternative 3.2.1–Reinforce Low Points and Add 19 Additional Culverts and Swales

Same as Alternative 1.3 except the stage constraint was changed to 8.5 feet for the L-29BC.

3) Alternative 3.2.2a–Reinforce Low Points and add One-mile Eastern Bridge

Same as Alternative 1.4a except the stage constraint was changed to 8.5 feet for the L-29BC.

4) Alternative 3.2.2b-Reinforce Low Points and Add One-mile Western Bridge

Same as Alternative 1.4b except the stage constraint was changed to 8.5 feet for the L-29BC.

5) Alternative 3.2.3- Reinforce Low Points and add Two-mile West and One-mile East Bridge

Same as Alternative 2.2.3 except the stage constraint was changed to 8.5 feet for the L-29BC.

D) Alternative 4–Roadway Improvements to Reinforce Road Crown to 12.75 ft

All alternatives in this category had an L-29BC stage constraint of 9.7 feet.

1) Alternative 4.1–Reinforce only Low Points of Existing Roadway

Same as Alternative 1.1 except the stage constraint was changed to 9.7 feet for the L-29BC.

2) Alternative 4.2.1–Reinforce Low Points and Add 19 Additional Culverts and Swales

Same as Alternative 1.3 except the stage constraint was changed to 9.7 feet for the L-29BC.

3) Alternative 4.2.2a–Reinforce Low Points and Add One-mile Eastern Bridge

Same as Alternative 1.4a except the stage constraint was changed to 9.7 feet for the L-29BC.

4) Alternative 4.2.2b-Reinforce Low Points and Add One-mile Western Bridge

Same as Alternative 1.4b except the stage constraint was changed to 9.7 feet for the L-29BC.

5) Alternative 4.2.3-Reinforce Low Points and Add Two-mile West and One-mile East Bridge

This alternative was the 2005 RGRR plan and the same as Alternative 2.2.3 except the stage constraint was changed to 9.7 feet for the L-29BC.

6) Alternative 4.2.4–Construct a 10.7-Mile Bridge (2005 RGRR)

Removed the existing Tamiami Trail (US Highway 41) throughout the project area and replaces it with a 10.7 Mile Causeway. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.01 ft for 0 cfs and ΔH=0.05 ft for 4,000 cfs.

E) Alternative 5–Structural Alternatives and/or Road Realignment

All alternatives in this category had an L-29BC stage constraint of 9.7 feet.

1) Alternative 5.1–Northern Alignment of Alternative 14 from 2005 RGRR

This alternative located the two-mile a one-mile bridge alternative to the north of the current location of the existing Tamiami Trail placing the roadway and bridges entirely onto the L-29 Levee. The L-29 Levee would be removed and three bridges would be constructed as part of the access curves to transition too and from the levee back onto Tamiami Trail. The top elevation of the road would be 12.75 feet. The bottom cord elevation of the bridges would be 14.75 feet. Water quality treatment of stormwater runoff was required. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.06 ft for 0 cfs and ΔH=0.3 ft for 4,000 cfs.

2) Alternative 5.2–Northern Alignment with One-mile Bridge

This alternative was similar to Alternative 5.1 except there was less bridging. A one-mile bridge would be constructed on the west side of Tamiami Trail to the north of the current location of the existing Tamiami Trail, placing the roadway and bridges entirely onto the L-29 Levee. The top elevation of the road would be 12.75 feet. The bottom cord elevation of the bridges would be 14.75 feet. Water quality treatment of stormwater runoff was required. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.2 ft for 0 cfs and ΔH=0.42 ft for 4,000 cfs.

3) Alternative 5.3–Northern Alignment with One-mile Bridge and Relocation of L-67 levee-Crown 13.0 feet

This alternative would concentrate all increased water stages and all road work between S-333 and the Blue Shanty Canal near the Everglades Safari. A one-mile bridge would be constructed between Osceola Camp and Everglades Safari, aligned along the existing L-29 Levee. There would need to be additional bridging to connect the new bridge to the

existing road alignment. The L-29 Levee would have to be degraded and compacted to make it a suitable sub-grade for the roadway. The road elevation itself would have to be a minimum of 13 ft, NGVD at the crown. This alternative included modifications to L-67A, L-67C, and L-29 levees and L-67A Canal to promote water flow from WCA-3A into a small portion of WCA-3B and then under the reinforced portion of Tamiami Trail and into NESRS. The proposed structural changes would include water conveyance features added in the L-67A Levee, degrading a portion of the L-67C and L-29 levees, and plugging portions of the L-67A Canal to promote sheetflow from WCA-3A, through WCA-3B and into NESRS. The proposed modifications also included plugs in the L67A Canal, with different degrees of backfilling, to investigate the changes in canal flow patterns, as well as, any adverse impacts to recreational boating and fishing. In addition, this plan included the construction of a new boat ramp to maximize recreational access while the canal plug studies are being completed. Construction of temporary levees along the current north-south alignment of the Blue Shanty Canal in southwestern WCA-3B and northern NESRS in ENP, and a new gated water control structure in the L-29 Canal at the temporary levee alignment. The levee to the south and the levee to the north would be constructed to elevation 13 ft, NGVD. The levee would have 4 to 1 side slopes for maintenance until it is removed at a later date. The road would have to be reinforced to cross the levee which would put the crown at 15 ft, NGVD over the levee. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.2 ft for 0 cfs and ΔH=0.6 ft for 4,000 cfs.

4) Alternative 5.4-Reinforce Low Points and Add One-mile Western Bridge

This alternative would concentrate all increased water stages and all road work between S-333 and the Blue Shanty Canal near Everglades Safari. A one-mile bridge would be constructed between Osceola Camp and Everglades Safari, aligned along the existing road. The remainder of the road within this section would be reinforced to a minimum elevation of 13 ft, NGVD at the crown. The road cross section would be similar to Alternative 4.2.3. The section of the L-29 Levee opposite this new bridge would be removed. This alternative would include moving the L-67 Extension eastward to the Blue Shanty Canal edge. The levee to the south and the levee to the north would be constructed to elevation 13 ft, NGVD. The road would have to be reinforced to cross the new levee which would put the crown at 15 ft, NGVD over the levee. The head differential between the marsh and the L-29BC for this alternative was ΔH=0.2 ft for 0 cfs and ΔH=0.6 ft for 4,000 cfs.

5) Alternative 5.5-Pump Stations along L-29

This alternative suggested adding pump stations. There was no determination of the size of the station or the amount of water it would have to continually pump and therefore was not modeled. In order for the pump station concept to work, the road would still require reinforcing the road and providing an outlet for water to pass through the road.

Table 2: Spreadsheet Model Controls

Alt	ALTERNATIVES	L-29 DESIGN STAGE (FEET)	RMA-2 Control Controls Hydraulic Slope between NESRS-2 and L-29BC	
1	**No roadway improvements**		**0 cfs**	**4000 cfs**
1.1	no action	7.5	0.22	1.20
1.2	spreader swales	7.5	0.20	1.06
1.3	add culvert sets (19 - 3x5ft dia) with swales **(2)**	7.5	0.20	0.94
1.4a	1-mile eastern bridge	7.5	0.20	0.42
1.4b	1-mile western bridge	7.5	0.20	0.42
1.5	reinforce western road section and 1-mile western bridge	7.5	0.20	0.42
2	**Roadway improvements - Crown 11.05ft**			
2.1	reinforce low points	8.0	0.22	1.20
2.2	*Roadway improvements with increased opening*			
2.2.1	reinforce low points, add culverts	8.0	0.20	0.94
2.2.2a	reinforce low points, add 1-mile eastern bridge	8.0	0.20	0.42
2.2.2b	reinforce low points, add 1-mile western bridge	8.0	0.20	0.42
2.2.3	reinforce low points, add 2-mile + 1-mile bridges	8.0	0.06	0.30
3	**Roadway improvements - Crown 11.55ft**			
3.1	reinforce road	8.5	0.22	1.20
3.2	*Roadway improvements with increased opening size*			
3.2.1	reinforce road, add culverts	8.5	0.20	0.94
3.2.2a	reinforce road, add 1-mile eastern bridge	8.5	0.20	0.42
3.2.2b	reinforce road, add 1-mile western bridge	8.5	0.20	0.42
3.2.3	reinforce road, add 2-mile + 1-mile bridges	8.5	0.06	0.30
4	**Roadway improvements - Crown 12.75ft**			
4.1	reinforce road	9.70	0.22	1.20
4.2	*Roadway improvements with increased opening size*			
4.2.1	reinforce road, add culverts	9.70	0.20	0.94
4.2.2a	reinforce road, add 1-mile eastern bridge (RGRR)	9.70	0.20	0.42
4.2.2b	reinforce road, add 1-mile western bridge (RGRR)	9.70	0.20	0.42
4.2.3	reinforce road, add 2-mile + 1-mile bridges (RGRR)	9.70	0.06	0.30
4.2.4	10.7-mile skyway (RGRR)	9.70	0.01	0.05
5	**Structural alternatives and/or road realignment**			
5.1	northern alignment of Alt 14	9.70	0.06	0.30
5.2	northern alignment with 1-mile bridge	9.70	0.20	0.42
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	0.2 West 0.22 East	0.6 West 1.2 East
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	9.70	0.2 West 0.22 East	0.6 West 1.2 East
5.5	pump stations along L-29	9.70	-	-

9. Spreadsheet Model Results:

A) Average Annual Discharge into North East Shark River Slough

The annual discharge into NESRS for each year was computed from 1983 to 2006 (***Figure 11)*** and then the average annual discharge was calculated for each alternative (***Figure 12***). It should be noted that based on the average annual discharge the different alternatives ranged from 176,559 to 471,587 acre-feet per year (a spread of 275,028 acre-feet per year). One should be careful using only average annual volumes delivered because it does not accurately reflect all of the constraints on the system. These constraints range from available volume of water, amount of rainfall, and stage constraint on the system. From ***Figure 12*** it can be seen that the stage constraint on the roadway plays a significant factor in the deliveries of water during the wet season. As the stage constraint increases then the ability to meet a more natural wet season hydroperiod becomes achievable. For example with a 7.5 foot constraint during the 1995 year NESRS was hydrated enough to prevent the release of flows, however

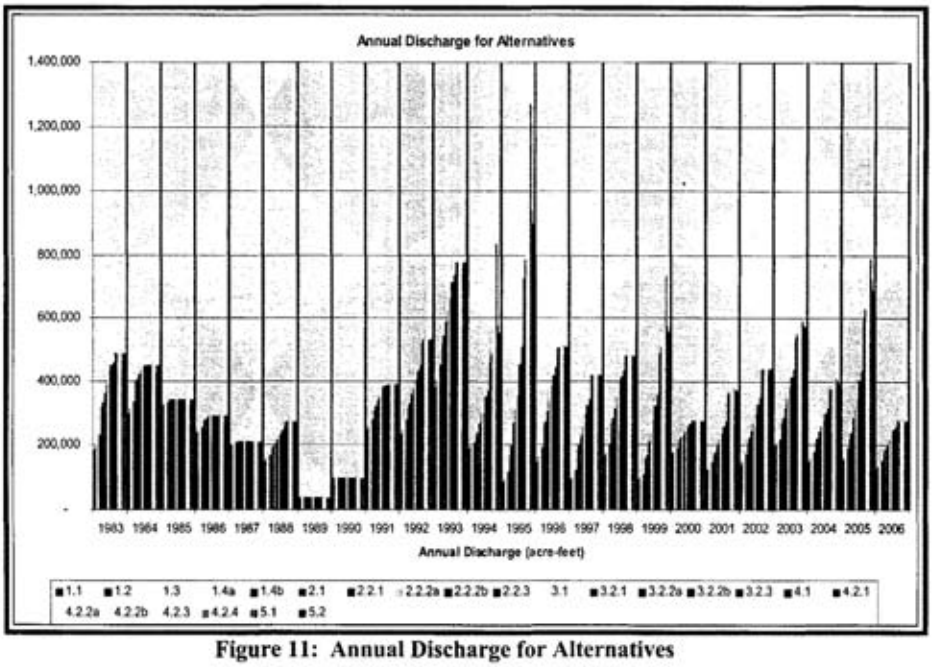

Figure 11: Annual Discharge for Alternatives

the annual discharge for 1995 was considerable less than average annual discharge. As the stage constraint increased however you see that the annual discharge for 1995 increase. In order to restore the natural hydroperiod within NESRS the system needs to be unconstrained to allow flows during all events.

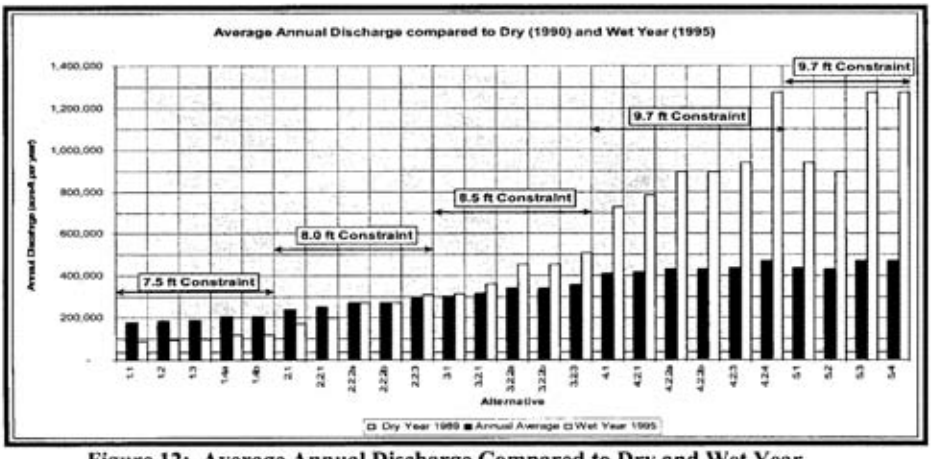

Figure 12: Average Annual Discharge Compared to Dry and Wet Year

B) Computed Stages at NESRS-2

The model computed a stage at NESRS-2 (***Figure 13***). One interesting point of note from the plot was that there were no significant differences during the dry year months. This finding can be easily explained by how the model assumed water moved through the system. This analysis was not an operations model looking at the best timing to deliver water; it simply looked at a specific day in the year and if the flows west to east could be redistributed then a certain stage would result. In short during the dry months all alternatives delivered basically the same volume of water resulting in similar stages. Similar results were seen during dry wet years.

In addition, a daily stage duration curve was produced that compares historical stages and modeled output (***Figure 14***) between the one-mile bridge with various Tamiami Trail stage constraints and historical data for the monitoring gage NESRS2. This figure shows that based on the model assumptions used that the bridge only increases the stages approximately 55 percent of the time. No difference was seen for the other 45 percent based on modeling assumptions used in the delivery of water to NESRS.

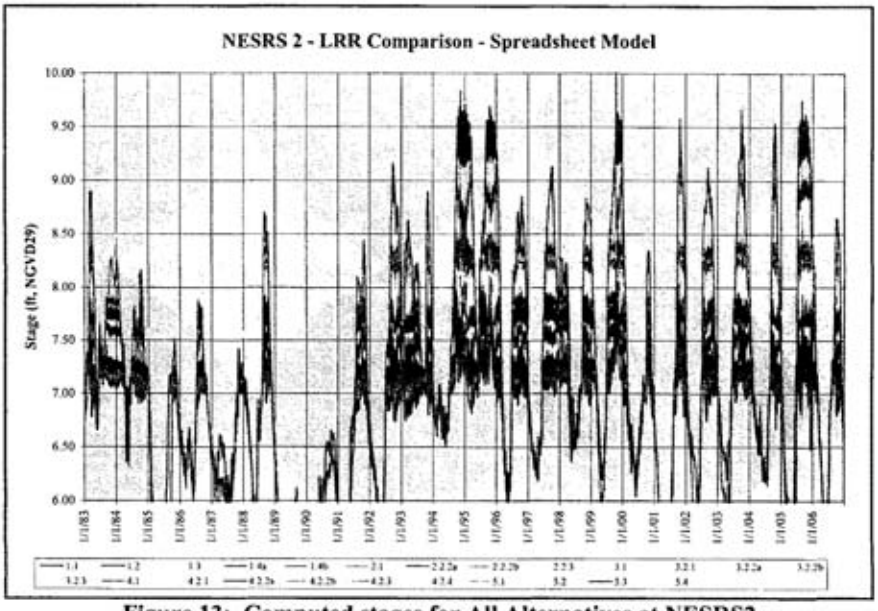

Figure 13: Computed stages for All Alternatives at NESRS2

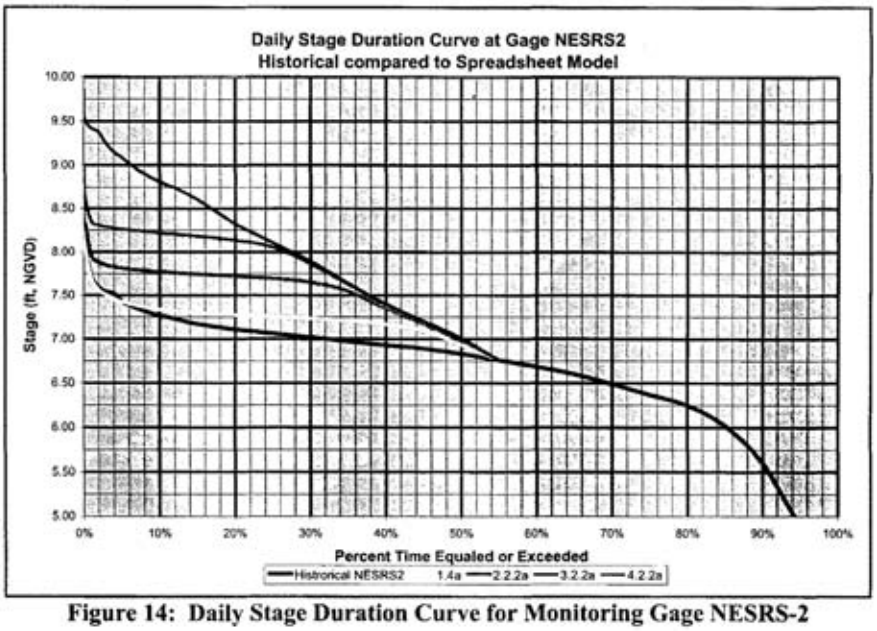

Figure 14: Daily Stage Duration Curve for Monitoring Gage NESRS-2

C) Computed Stages in L-29 Borrow Canal

The model computed a stage in L-29BC (***Figure 15***). From an analysis standpoint Alternatives 5.3 and 5.4 (which utilized movement of the L-67 Extension to the Blue Shanty Canal) in this plot showed the canal stage to the east of the new levee. The L-29BC stage to the west of the Blue Shanty Canal if shown would track slightly higher than the 10.7-mile bridge (Alternative 4.2.4). This slight increase was explained from a simple mathematical standpoint that when the same volume of water was distributed over 10.7 miles it had less stage difference than if it was distributed over approximately three miles.

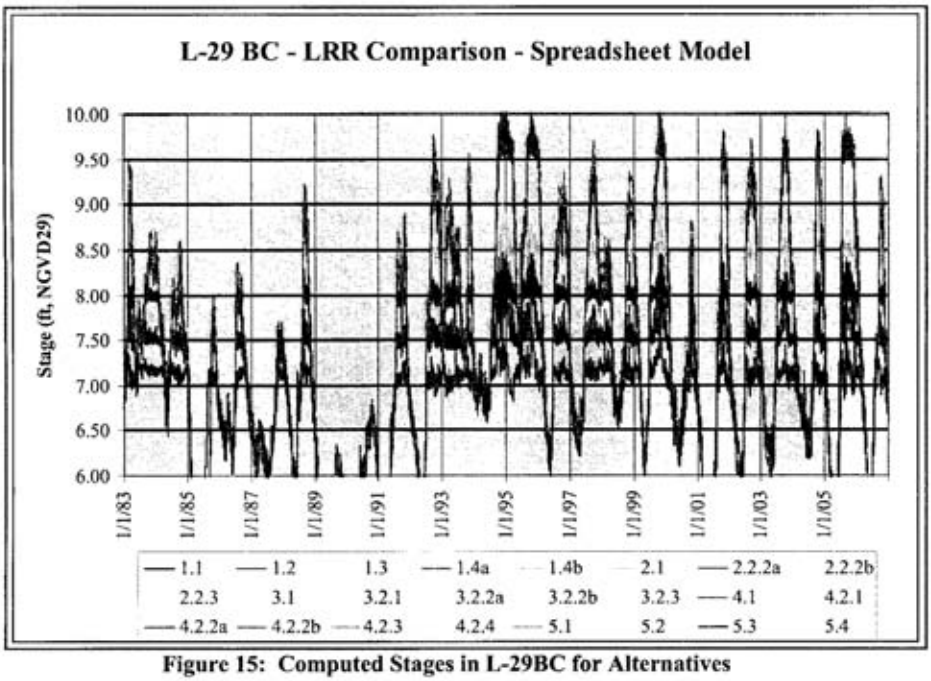

Figure 15: Computed Stages in L-29BC for Alternatives

In addition, a daily stage duration curve was produced that compares historical stages and modeled output (***Figure 16***) between the one-mile bridge with various Tamiami Trail stage constraints and historical data. This figure shows that based on the model assumptions used that the bridge only increases the stages approximately 55 percent of the time. No difference was seen for the other 45 percent based on modeling assumptions.

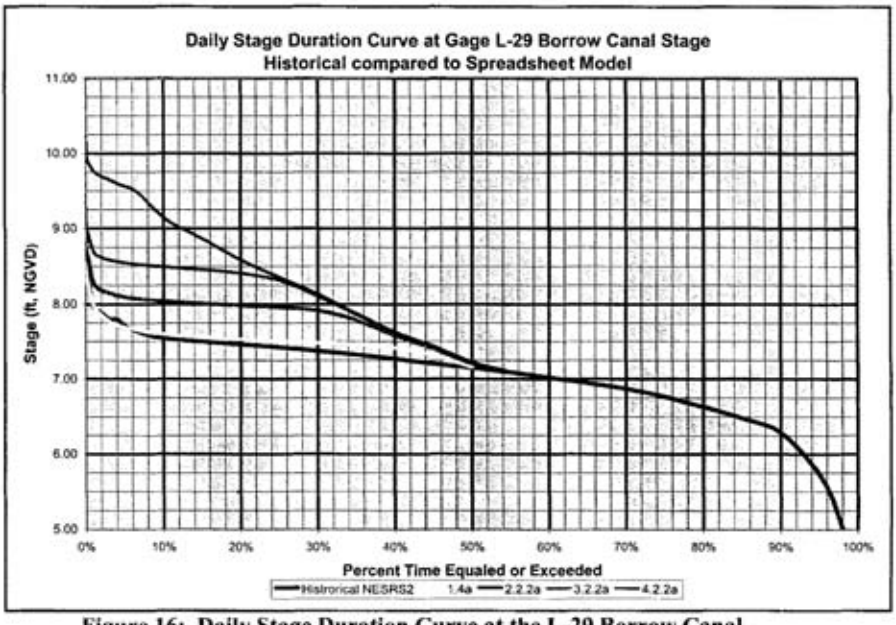

Figure 16: Daily Stage Duration Curve at the L-29 Borrow Canal

D) Correlations to Other Gages in North East Shark River Slough

For ecological evaluations correlations between NESRS-2 gage and other locations were performed based on historical data. ***Table 3*** depicts the equation and the R-squared value for these correlations. This information was used to help the ecologist understand the spatial impact of stage increases at NESRS-2. It should be noted that these gages correlated fairly well when water surfaces were above ground level but as the gages transitioned to groundwater the correlations were very poor. For the computation of stages based on the correlation factors as stages receded below ground level then historical stages were used. It was felt historical stages were acceptable because flow volumes during dry periods were the same for all alternatives.

Table 3: Correlation Equations and R Squared Value

Gage	Equation	
NESRS-1	y = 0.8504x + 1.1354	R^2 = 0.919
NESRS-3	y = 1.359x - 2.45	R^2 = 0.9023
NESRS-4	y = 0.8329x + 1.1346	R^2 = 0.8048
NESRS 5	y = 0.8989x + 0.5680	R^2 = 0.8414
R3110	y = 1.2745x - 4.2109	R^2 = 0.3075
NP-206	y = 1.205x - 2.5325	R^2 = 0.4587
RG-1	y = 0.141x5 - 4.671x4 + 60.951x3 - 390.92x2 + 1231.3x - 1519.3	R^2 = 0.5149
G-3273	y = 1.3224x - 2.7102	R^2 = 0.7855

10. Spreadsheet Model Assumptions and Uncertainty:

The spreadsheet model was developed in order to analyze the ecological effects of NESRS that different stage constraints and bridge sizes on Tamiami Trail would produce. This spreadsheet analysis/model looked at the area within NESRS in a simplified manner and the following general assumptions were made for all alternatives:

a) The area between Tamiami Trail (north side), the NESRS2 monitoring gage (south side), L-67Ext (west side), and L-31N (east side) could be defined as a simple storage area. As water was added/subtracted to the area the stage would increase/decrease based on a mass balance approach.

b) To compute the inflow volumes historical deliveries were used to prevent having to develop an operational model. This general assumption looked at the total deliveries into ENP [S-12A + S-12B + S-12C + S-12D + S-333)] and provided 55 percent of this volume into NESRS as long as the L-29BC was at a lower stage than the constraint for Tamiami Trail. If the L-29 stage was above the constraint flows were assumed to be zero. To smooth out the results for comparison purposes a seven day rolling average was used to compute the discharges into NESRS. For example, Alternative 1.2, during the period of 1-14 April 1995 computed flows (cfs) based on 55 percent of the volume were: 0, 1356, 0, 0, 1253, 0, 1435, 0, 0, 0, 1252, 0, 1172, and 0. In operations of the real system however we target a weekly flow volume to prevent the open/closing of the structure and to maintain a more steady flow. The computed seven-day running average produced flow results (cfs) of: 420, 614, 398, 398, 577, 373, 578, 578, 384, 384, 563, 384, 551, and 346.

c) If the flow volume was not delivered to NESRS then it was assumed it was discharged via the S-12s to NWSRS. This assumption produced no net change to the WCA-3A stage compared to historical conditions.

d) Bridge locations did not influence the ability of the spreadsheet model to deliver water. The spreadsheet model only consider topography in a very simplistic manner in regards of allowing flow out of the model and in terms of computing volumetric change. In reality the location of the bridge in conjunction with major sloughs would increase the volume of water delivered into NESRS. However this determination was beyond the scope of the spreadsheet model. It should be noted a separate analysis was used for Performance Measure 2.C (Flows into NESRS provided via bridge), see Appendix E for a description of the analysis.

e) A linear equation based on flow versus stage difference between L-29BC and NESRS2 was used to compute the stage in L-29BC. The basis for this linear equation was results from the RMA-2 modeling from the 2005 RGRR for TTM.

f) During development of the spreadsheet analysis a sensitivity analysis was performed on the outflow volume (O_{flow}, ***Equation 4***) to minimize the value of the Calibration Factor. The sensitivity was based on manipulating the velocity terms used in Equation 3. ***Table 4*** summarizes the statisitics of varying the velocity term plus or minus 50 percent and Figure 17 depicts the information on a Duration curve for the outflow volume and corresponding calibration factor.

Table 4 Sensitivity Analysis on Outflow Volume

Water Stage	Sensitivity 1 50% of V	Modeled Velocity Range	Sensitivity 2 150% of V
5.5 ft	0.0005	0.001	0.0015
12 ft	0.0075	0.015	0.0225

	Sensitivity 1	Modeled	Sensitivity 2
	Outflow (cfs per day)		
Minimum	0	0	0
Average	138	275	413
Maximum	636	1272	1909
Std Dev	87	173	261
Mean	145	290	436

	Sensitivity 1	Modeled	Sensitivity 2
	Calibration Factor		
Minimum	-0.823	-0.823	**-0.823**
Average	0.014	-0.002	-0.017
Maximum	0.399	0.376	0.358
Std Dev	0.054	0.028	0.060
Mean	0.011	-0.002	-0.015

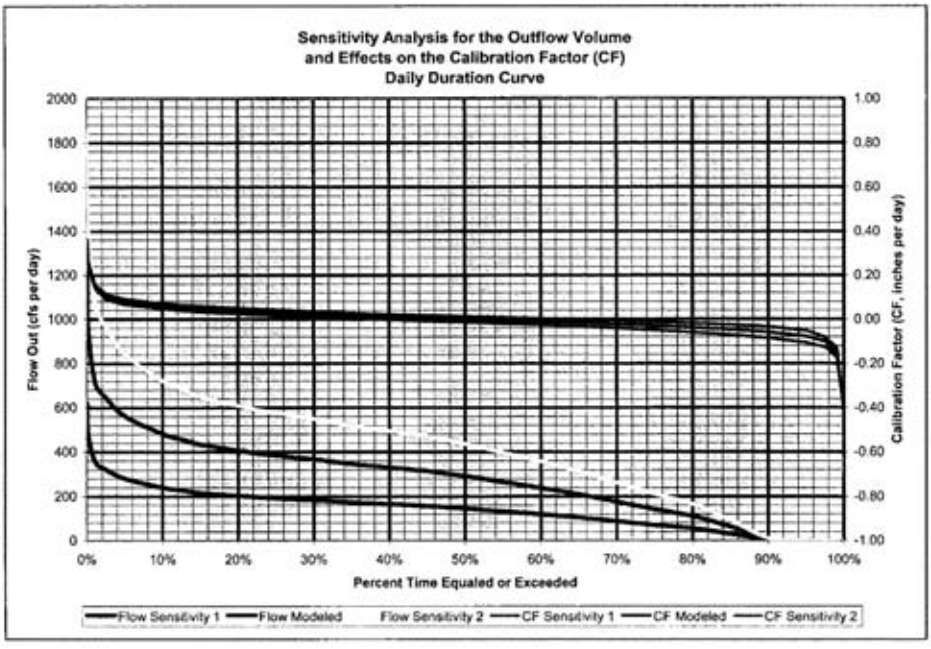

Figure 17 Daily Duration Curve of Sensitivity Analysis on Outflow Volume

To assess the impact of these variations of the outflow volume on the recommended plan (Alt3.2.2a) the resulting calibration factor from each sensitivity run and corresponding velocity terms were substituted into the spreadsheet analysis for Alternative 3.2.2a (1 mile eastern bridge and maximum operation limit of 8.5 ft NGVD). The results are plotted on Figure 18. As would be expected the more water allowed to flow out of the bottom of the modeled area the lower the resulting stage. In addition the lower stage allowed much more water to be delivered into NESRS (i.e., Sensitivity 1 delivered 280,500 acre-ft average annually while modeled recommended plan delivered 339,700 acre-ft and Sensitivity 2 delivered 376,500 acre-ft).

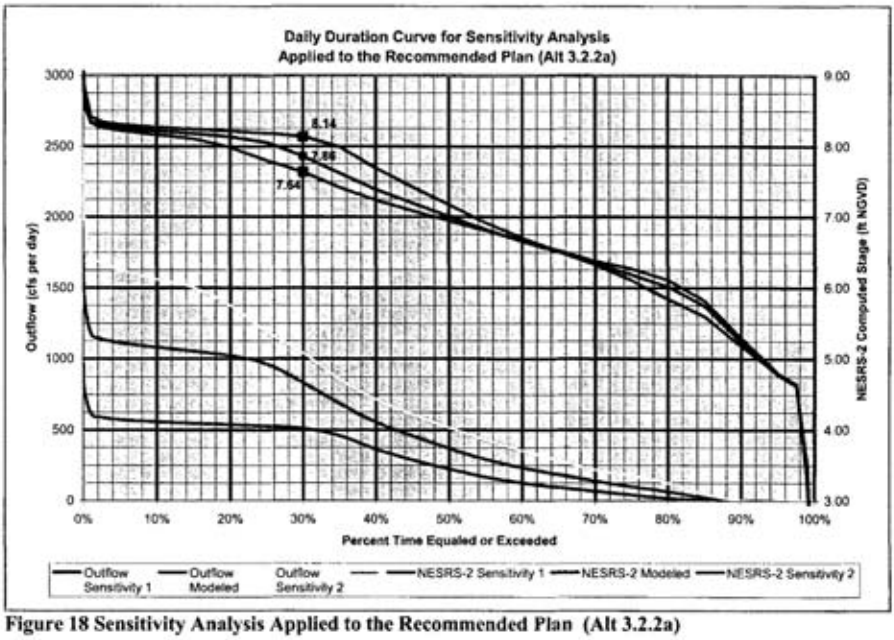

Figure 18 Sensitivity Analysis Applied to the Recommended Plan (Alt 3.2.2a)

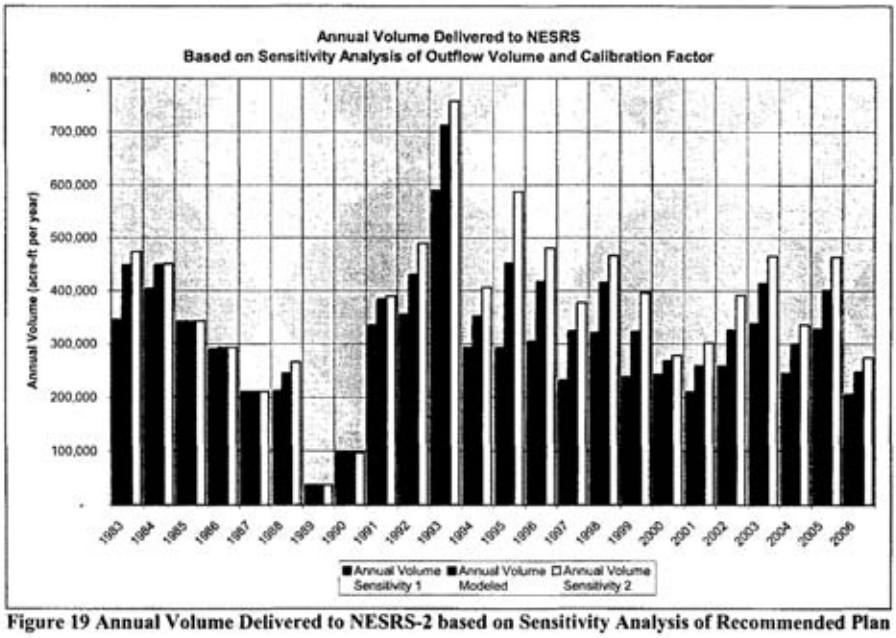

Figure 19 Annual Volume Delivered to NESRS-2 based on Sensitivity Analysis of Recommended Plan

The spreadsheet model does a very good job of interpreting the general trends that increased inflows would produce within NESRS as measured at the NESRS2 monitoring gage. However, stage predictions should not be considered absolutes from this analysis. This analysis is a simplification of a very complicated system developed for a comparison purposes between all of the different alternatives. The spreadsheet analysis was not developed to be a predictive model but rather a comparative analysis. It was developed to be an analysis that incrementally looked at stage increases in the L-29BC and the ability to deliver additional flow volume into NESRS due to that stage increase. The model did predict stage increases in relation to increase flows but should not be considered a predictive model.

11. RMA-2 Model Results from 2005 RGRR for the Tamiami Trail Modifications:

A) Objective of RMA-2 Modeling

The RMA-2 model was not used to determine the DHW but was used to evaluate the effects of bridge width and location when all other variables are held constant. The objective of this modeling analysis was to evaluate the velocity distribution south of the Tamiami Trail (US 41) and stage impacts that different bridge configurations would produce in NESRS. The goal of the Tamiami Trail Bridge is not only to pass an increased amount of flow into NESRS but also to create a more natural flow pattern (sheet flow) into NESRS. Velocities in excess of 0.1 ft/sec within ENP are assumed to be excessive and destructive to the ridge and slough processes of the Everglades. The RMA-2 model was used to determine the stage impact in the L-29BC due to flow expansion losses based on different bridge widths.

B) RMA-2 Model Parameters

Conditions within ENP were modeled using RMA2, the depth-averaged hydrodynamic model of USACE's TABS-MD modeling system. The model solves the depth-averaged (2D) nonlinear Navier-Stokes equations using an eddy viscosity turbulence closure. The Newton-Raphson iterative approach is used to solve the nonlinear equations. The model uses a fully implicit Galerkin finite element formulation, allowing for time steps as large as the variation in boundary forcing dictates.

1) Materials Specification

Six different material types were assigned within the model based on land features (***Table 5***). These land features varied from the marsh to the L-29BC.

Table 5: RMA-2 Model Material Types

Material Number	Land Type	Manning's N-Value
1	Marsh	Variable with Depth
2	L-29BC	0.035
3	Culverts thru Tamiami Trial	0.045
4	Just downstream of Culvert	Variable with Depth
5	Just downstream of S-12's	Variable with Depth
6	marsh along L-31N	Variable with Depth

2) Roughness Specification

Table 5 lists the corresponding land type with the Manning's N-value used. Where the variable with depth coefficient was used, the model utilized an equation for bottom roughness as a function of water depth equation. The mathematical form of the dependence of the Manning's friction coefficient with depth is

$$n = \frac{n_0}{d^{\alpha}} + n_v e^{-d/d_0} \qquad \text{Equation (4)}$$

Where, d = water depth (ft)
n_0 = scaling friction factor for depth dependence
n_v = scaling factor for exponential decay dependence (vegetative effects)
α = exponent on depth dependence
d_0 = reference depth for exponential decay

Figure 20 illustrates the depth dependence curve for the four material types that use this function. All four material types with a variable n-value used the same depth dependence curve.

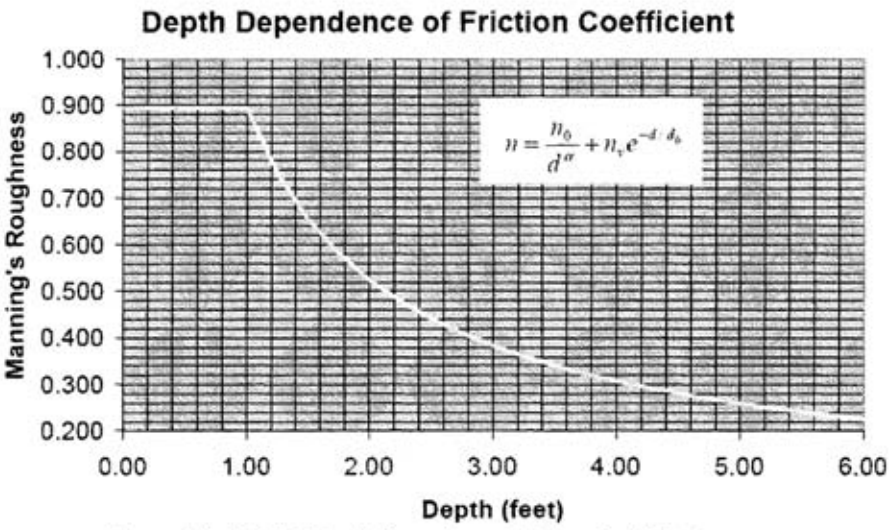

Figure 20: RMA-2 Depth Dependence Friction Coefficient

3) Topography

The model topography was developed from the best available data within the area. These sources included the USGS Helicopter Survey, the USGS Topometric Truck Survey, the SFMWD 5 foot Contour, and NHAP aerial photography (1950s-1960s). In addition, several USACE surveys of L-29BC were used to approximate the canal invert. The accuracy of the data is approximately 0.5 feet.

4) Culvert Locations

Culvert locations were approximated as gaps through Tamiami Trail. These locations were set to the same elevation as the marsh downstream of the culvert. To account for the increased area and ease of flow, the Manning's n-value was set higher than what would be typically used for a culvert structure. Based on limitations of the model to not exceed a 50 percent change in area between elements (the base grid along the south side of Tamiami Trail is 200 feet by 200 feet), the culverts were approximated as 12.5 feet wide. All culvert structures were approximated to the same width.

5) Boundary Conditions

The model uses two types of boundary conditions, 1) boundary discharge lines and 2) boundary headlines. Boundary discharge lines were defined for all inflow points along the northern boundary of the model

representing all structures. A boundary headline was used along the southern boundary to specify the starting water surface elevations from gage P-36. To determine the flows and stage for the model runs, a frequency analysis using the Log Pearson Type III Distribution was performed on the West Bookend Run (Combined Structural and Operational Plan [CSOP] Alternative 2 dated 010405 v5.5.4). The West Bookend Run was chosen because it was the most environmentally aggressive plan that put the largest volume of water into NESRS. Steady state simulations were performed for the following return period discharges: 1, 2, 5, 10, 20, 25, 50, and 100 year events.

6) Structure Locations
All structures and culverts were located in the general proximity of the real world coordinates plus or minus 100 feet based on the mesh configuration of the model. The new weirs on the L-29 Levee are based on the centerline locations of the CSOP model runs for WCA-3B.

C) RMA-2 Model Results

Several different results were analyzed from the RMA-2 Model output as part of the benefits analysis. A brief description follows for each set of information.

1. For each alternative, the velocity at the center of the bridge for the one-year and 100-year computed flows was compared to the marsh velocity at a distance of approximately 10,000 feet downstream of the road from the 10.7-mile bridge option. Velocities for these return periods are depicted in ***Figure 21*** and ***Figure 22***. The target is to minimize the difference in velocity between the bridge and the marsh. The higher velocities produced by the shorter bridge are extremely destructive to the ridge and slough environment of the Everglades immediately south of the Tamiami Trail.

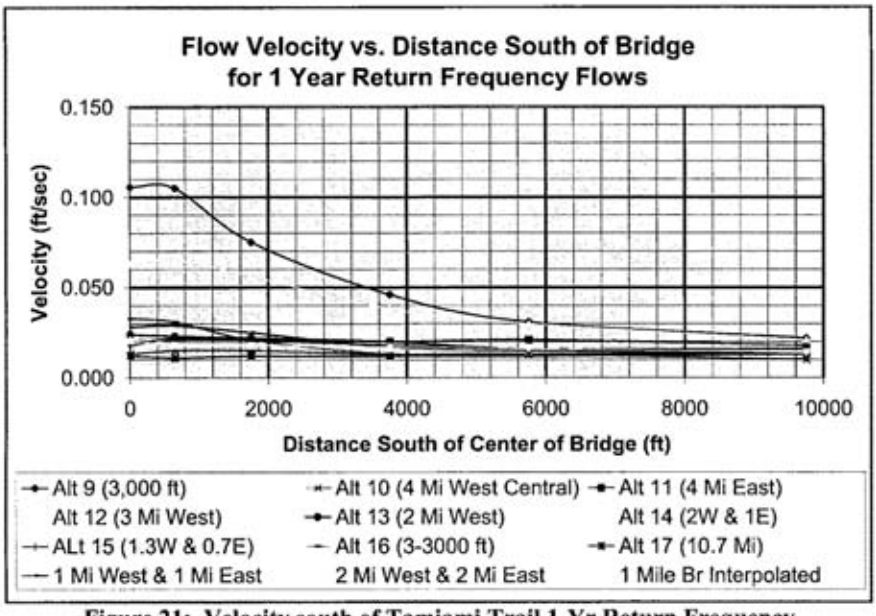

Figure 21: Velocity south of Tamiami Trail 1-Yr Return Frequency

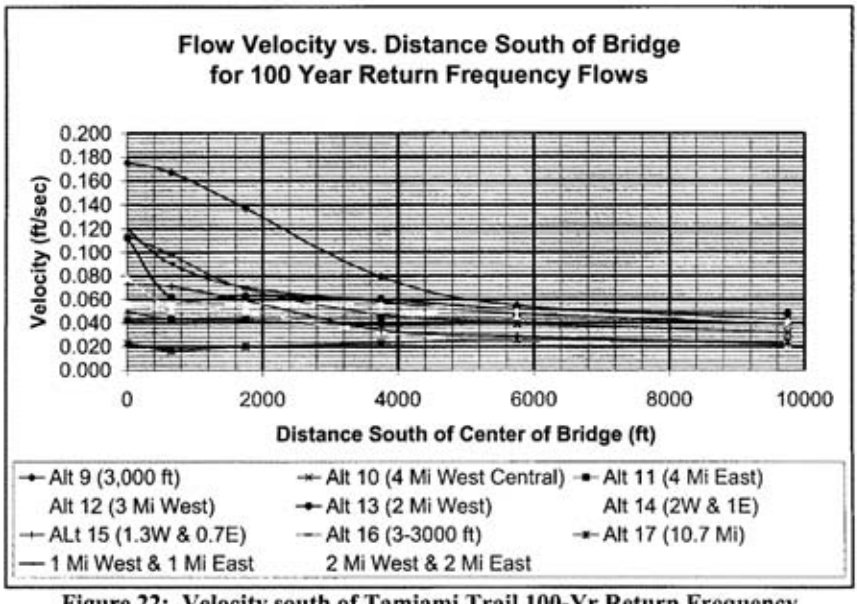

Figure 22: Velocity south of Tamiami Trail 100-Yr Return Frequency

2. For each alternative the area with velocities above 0.1 feet per second was computed. This allowed for a comparison of which alternatives would produce the least amount of impacted area (***Table 6)***. The calculations for the area are based on the area immediately south of Tamiami Trail and east of S-333.

Table 6: RMA-2 Analysis of Area of Impact of Velocity Greater than 0.1 ft/sec

		Acres Above
	No Action	187
Alt 9	3000 Foot	411
Alt 10	4 Mi Central	98
Alt 11	4 Mi East	105
Alt 12	3 Mi West	181
Alt 13	2 Mi West	220
Alt 14	2 Mi West & 1 Mi East	295
Alt 15	1.3 Mi West & 0.7 Mi East	300
Alt 16	Three - 3,000 foot	330
Alt 17	10.7 Mi	8

3. The backwater effect that the marsh produces is the main controlling factor in the stage in the L-29BC. Each bridge alternative analyzed as part of the Tamiami Trail RGRR/SEIS would produce a minimum amount of head loss across the embankment. For example in the Draft RGRR/SEIS in 2003, the recommended alternative had a 3,000-foot bridge to convey water south. The differences are the net opening of the bridge and the expansion losses created by the marsh as the water moves south and away from the bridge opening. To show the impact of embankment capacity (size of openings for culverts or bridge) vs. marsh resistance, a plot was generated from the RMA-2 model runs comparing the stage difference between the L-29BC and 10,000 feet downstream (ΔH) in the marsh for the various opening lengths considered (***Figure 5*** note existing culverts are indicated as zero bridge length in this graph). This clearly shows that bridge length affects the getaway capacity of the downstream marsh, and the longer the bridge the more efficient the marsh is at moving water south into NESRS. The L-29BC acts as a stage equalizer upstream of the roadway embankment and this increased stage is then propagated into WCA-3B as water is discharged through the S-355s and potentially other passive structures (ΔS) in L-29 (resulting in a stage increase for WCA-3B of $\Delta H + \Delta S$)

APPENDIX E
ENVIRONMENTAL BENEFITS ANALYSIS PROCEDURES

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Note to the Reader:

The study reported here was conducted in accordance with U.S. Army Environmental Operating Principles and the Chief of Engineers' "Four Themes", derived from U.S. Army Corps of Engineers (USACE) actions for change to the corporate culture. The purpose of the Environmental Operating Principles and Actions for Change is to better serve the Nation's water resources infrastructure.

USACE's Environmental Operating Principles are as follows:

- Strive to achieve Environmental Sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment, and consider environmental consequences of USACE programs and activities in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full life cycle of the processes and work.
- Build and share an integrated scientific, economic and social knowledge base that supports a greater understanding of the environment and impacts of the work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find win-win solutions to the Nation's problems that also protect and enhance the environment.

The Chief's "Four Themes" to be employed in all studies are:

1. Employ a comprehensive systems approach in all projects, including adaptive planning and engineering, with a focus on sustainability.
2. Practice risk-informed decision making. Employ risk-based concepts in planning, design, construction and major maintenance.
3. Communicate risk to the public effectively. Establish public involvement risk reduction strategies.
4. Incorporate professional and technical expertise in staff. Invest in research and development.

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Introduction

Representatives from five agencies–South Florida Water Management District (SFWMD), Everglades National Park (ENP), U.S. Fish and Wildlife Service (FWS), Florida Department of Environmental Protection (FDEP), and U.S. Army Corps of Engineers (USACE)–participated in the Modified Water Deliveries (MWD) Tamiami Trail Modification (TTM) Benefits Workshop held 23-24 October 2007 in Jacksonville, Florida. The team included engineers, hydrologists, and biologists. The TTM project area includes the 10.7-mile length of Tamiami Trail (U.S. Highway 41) between S-333 (near L-67 Extension) and S-334 (near L-30 and L-31N) and the downstream Northeast Shark River Slough (NESRS) of ENP.

The goal of the environmental benefits analysis was to identify the hydrologic and ecological conditions that would occur under the alternatives outlined in this Limited Reevaluation Report (LRR), develop consistent and quantifiable performance measures, and agree on targets for these measures. These conditions would be evaluated and compared to identify potential quantitative benefits for each alternative.

The team used a variety of sources of information during its analysis. These included historical photos and surveys produced before Tamiami Trail was constructed in the 1920s, data on flows through Tamiami Trail bridges and culverts in the 1940s, and current topographic information. The main source of information was a spreadsheet model used to estimate total annual flows into ENP and depths at gage NESRS-2. The team also reviewed and made extrapolations based on RMA-2 modeling of bridge lengths in Tamiami Trail. The team referred to analyses contained in the 2003 General Reevaluation Report (GRR) for TTM, the associated 2003 FWS Coordination Act Report (CAR), the May 2005 Draft Tamiami Trail Alternative Optimization Report prepared by the ENP, and the 2005 Revised General Reevaluation Report (RGRR) for TTM. Please refer to these earlier reports for additional information.

The interagency team used the benefits analysis in the 2005 TTM RGRR as a baseline for selecting performance measures and focused on ways to make adjustments and produce predictions that allowed relative comparisons among the new alternatives. In addition, the team was able to use hydrologic model data (Appendix D) to develop hydro-ecological performance measures. The hydrologic model was not available for evaluation of alternatives in the 2005 TTM RGRR.

The team went through the following sequence of steps: screen performance measures from the 2005 RGRR that could not be used, add additional performance measures, assign numerical scoring to the qualitative raw values,

estimate rate of change, and estimate the acreage in NESRS where the changes may occur.

A subteam worked with the scores, rates of change, and area to: normalize the scores, multiply by area to produce habitat units, factor in the rate of change, calculate the habitat unit benefit for each alternative as the difference between the with-alternative condition and future without project condition, and calculate the average annual benefit for a 50-year period of analysis.

Screen Performance Measures

The team considered the 13 performance measures displayed in the 2005 RGRR, removing the following from further consideration in this LRR due to the reasons listed below.

A. Proportion of area with low flow velocity (<0.1 f/s) discharges within one mile of the Tamiami Trail–no new RMA modeling was available.
B. Distribution of flows, east to west–this is largely affected by lengths of opening(s) in Tamiami Trail; no new RMA modeling was available.
C. Shift to open water, spikerush marsh and slough communities in NESRS–replaced with water depth performance measures that better link to white water lily slough vegetation performance.
D. Risk of ridge and tree island peat burning in NESRS–replaced by the water depth performance measures.
E. Invasion of exotic woody plant species-replaced by the water depth performance measures.
F. Total abundance of fishes in ENP marshes–the team assembled for this 2007 study was not able to use this performance measure. The performance measure is based on hydroperiods and time since last drydown. Because the spreadsheet model did not show differences in these parameters between alternatives, it was not useful for this evaluation.
G. Conditions for wading bird foraging and nesting–this performance measure was tied closely to the abundance of fish and thus was also removed.

Two performance measures were revised:

A. Reverse filling in of sloughs
B. Flows from L-29 Canal into deep sloughs of NESRS

Four new performance measures were developed:

A. One-in-ten year maximum discharge
B. Number of days water depth greater than two feet during wet season peak
C. Number of days water depth greater than three feet during wet season peak
D. Average water depth during wet season peak

The ten performance measures used in this analysis address important characteristics of ENP: hydrology, ridge and slough processes, vegetation, and wildlife mortality during movement. These ten performance measures reflect differences among alternative bridge lengths and openings, as well as stage in L-29 however, at least one performance measure is dependent on removing the L-29 levee and canal or on different upstream operations. In addition, all performance measures represent the capability to provide benefits of the structural alternatives. An operational plan was not developed for this project. Full realization of benefits is dependent upon an operational plan that utilizes the structural capacity of the alternatives.

Assumptions of Spreadsheet Model

See Appendix D–Hydrology and Hydraulics.

Description of the Performance Measures

This section presents a brief description of each of the ten performance measures–what they represent, how they were developed, the input information, units of measure, targets and the methods of calculation or estimation of values. The performance measures were placed into four groups for convenience. Values for all of the ten performance measures are contained in ***Table E-2*** which follows the text descriptions.

1. **Restore water deliveries to ENP** (hydrology)
   A. Average annual flow volumes
   B. One-in-ten year maximum discharge

2. **Restore Ridge and Slough Processes** (hydrology, connection to ecosystem of interest, sharp velocity ratios)
   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** (targets to restore deep marshes and slough hydropatterns)
   A. Number of days water depth at NESRS-1 and NESRS-2 greater than two feet during wet season peak (slough depth duration)
   B. Number of days water depth at NESRS-1 and NESRS-2 greater than three feet during wet season peak (deep slough conditions occurrence and duration)
   C. Average water depth during wet season peak (average slough conditions)

4. **Restore Fish and Wildlife Resources**
   A. Reduction in wildlife mortality (bridge length/road length ratio, given bridges are inaccessible to animals and may provide safe passage to some animals through the Trail).
   B. Potential connectivity of Water Conservation Area (WCA-3B) Marsh and NESRS as percent of total project length

Performance Measure 1.A Average Annual Flow Volumes

This performance measure presents the annual volume of water passed through the culverts and proposed bridges in the Tamiami Trail alternatives. Flows entering the L-29 Canal are controlled by precipitation and operation of upstream structures. For the TTM LRR, all alternatives were evaluated using the spreadsheet model described earlier in this document.

The underlying assumption is that ecological benefits in NESRS are directly related to additional water volume delivered across the 10.7 mile road segment. This is just another way of stating that current deliveries to the NESRS area located to the east of the L-67 levees are inadequate. For this performance measure, the target is 471,587 acre-feet average (the flow allowed by complete bridging of the road segment and maintaining a 9.7 foot stage in L-29).

Performance Measure 1.B. One-in-Ten Year Maximum Discharge

The National Research Council Report Progress Toward Restoring the Everglades: The First Biennial Review 2006 Committee on Independent Scientific Review of Everglades Restoration Progress (CISRERP) states that one of the key defining ecosystem processes that shaped and maintained the Everglades landscape was "sufficient water quantity", particularly the high volume flow events that many scientists (e.g. The Role of Flow in the Everglades Ridge and Slough Landscape, Science Coordination Team, South Florida Ecosystem Restoration Working Group, Approved by the SCT: January 14, 2003) believe shape and maintain the "corrugated" patterning of the ridge and slough landscape. The "One-in-Ten Year Maximum Flow" performance measure provides a mechanism to evaluate how well each of the LRR alternatives would shape and maintain this landscape patterning. The target for this performance measure is 3,468 cubic feet per second (cfs), the one-in-ten year flow delivered by the 10.7 mile bridge at 9.7 foot stage constraint in the L-29 Canal.

Performance Measure 2.A Number of Sloughs Crossed by Bridges

This performance measure is related to the alignment of the bridge with existing degraded sloughs south of Tamiami Trail as revealed by the U.S. Geological Survey (USGS) High Accuracy Elevation Data (HAED). Situating a bridge directly upstream of a degraded slough would maximize the potential for storm flow velocities to maintain sloughs by removing excess organic sediment that has accumulated in the sloughs since Tamiami Trail was constructed. The length of

the bridge has relevance only to the extent that it can encompass more sloughs within its flow cross-section. The performance measure is evaluated by counting the number of major sloughs that each bridge alternative crosses. The target for this performance measure is 21, the total number of sloughs crossed by Tamiami Trail.

Table E-1: Number of Sloughs Crossed by Each Bridge

Alternatives	Bridge(s)	Number of Sloughs Performance Measure
4.2.4	10.7 mile	21
5.1 4.2.3 3.2.3 2.2.3	2 mile + 1 mile	4
5.4, 5.3, 5.2, 4.2.2b, 4.2.2a, 3.2.2b, 3.2.2a, 2.2.2b, 2.2.2a, 1.4b, 1.4a	1 mile bridge	2
4.2.1, 4.1, 3.2.1, 3.1, 2.2.1, 2.1, 1.3, 1.2, 1.1	No bridge	0

Performance Measure 2.B Difference Between Average Velocity in Marsh and Average Velocity at Road

This performance measure describes how closely the water velocities near the road match the marsh velocity at a distance approximately 6,000 feet downstream of the road. The ideal situation is for the ENP lands to have marsh like velocities from the bridge south. The higher velocities shown in culvert-only alternatives are likely to be destructive to the ridge and slough environment immediately south of the Tamiami Trail because they can cause both scour and deposition of sediment fans.

The velocity at the center of the bridge for each alternative was compared against each alternative for a distance of approximately 6,000 feet downstream from the road. This analysis looked at the one- and 100-year return frequency discharges. The data for this performance measure (estimated velocities at the road for each alternative) are derived from RMA-2 model runs (referenced in the 2005 RGRR TTM report and reviewed for this TTM LRR performance measure).

The average velocity in the marsh that is used in the calculations for all alternatives is 0.024 feet per second.

Ratio: (average velocity in marsh) / (average velocity at road in center of bridge opening)

High velocities near the road result in low values for the performance measure. For example, a ratio of 0.5 would represent a velocity at the road that is two times the velocity in the marsh, and a ratio of 0.1 would represent a velocity at the road that is ten times the velocity in the marsh. These are then reported as percentages. Velocities near the road that are close to the velocities in the marsh have a high value approaching 100 percent which is the target for this performance measure.

Performance Measure 2.C Flows into Northeast Shark River Slough Provided via Bridge

While the existing culverts provide a hydraulic connection to the deeper sloughs existing within NESRS, the capacity is not commensurate with amount of flow expected in these deeper sloughs during both high and low flow conditions. Preferential flow through these deeper sloughs is even more pronounced during drier times.

The eastern portion of Shark Slough (from the L-67 extension to the L-31N Levee) varies in elevation from about 5.6 feet National Geodetic Vertical Datum (NGVD) to 7.2 feet NGVD. Without the obstruction of Tamiami Trail the preferential flow path from this varying elevation would be in the deeper sloughs. The distribution of flow within NESRS would become more uniformly distributed (from west to east) as depth increases and the relative depth differences reduce.

Average and High Flow Conditions

The stages in NESRS range from about 4 feet NGVD (about two foot below ground surface) to 9 feet NGVD with a median stage of about 7.5 feet NGVD. Ground elevations vary along the trail (***Figure E-1***). The median stage of 7.5 feet NGVD results in an average water depth of about 1.1 feet with a maximum depth of about 1.9 feet and a minimum depth of about 0.3 feet.

The increased connection provided by the bridge aligned with deeper portions of northeast Shark Slough facilitates increased flow where it should occur preferentially. When the water level is less than 0.5 foot above the ridges, most of the flow occurs in the deeper sloughs. It is important for water to be rapidly delivered to these deeper sloughs, commensurate with this capacity, during wet periods, to produce higher velocities desirable for the redevelopment and

maintenance of open water vegetation in these sloughs. This assessment assumes that sheet flow is based on the following equations

Manning Equation; $Q = (u/n)\ A\ Rh^{(2/3)}\ (hf / L)^{(1/2)}$
A depth dependent Manning n ($n = \sim d^{0.77}$)

Where:

A = Cross Section Flow Area = W * d
W = Flow Width
d = Flow Depth
P = Wetted Perimeter
R = Hydraulic Radium = A/P = (W * d) / W ~ d

Dry Conditions

The importance of these connections during drier periods is increased by the fact that both the existing condition and the expected range of the "with project" conditions (Tamiami Trail Bridge in conjunction with revised operations) are drier than the desired conditions as represented by the Natural System Model (NSM)[1]. The increased connection that a bridge provides over culverts in terms of capacity and connectivity (sheet flow with low velocity versus flow through culverts) is expected, for the same water availability, to have the following effects:

- Better distribution of the water; high water levels with more natural recession rates and less abnormal dry out as the limited water available can reach these sloughs.
- May reduce unnatural predation around the culverts due to their limited area.

Evaluation Procedure

The benefits of different bridge lengths and locations were assessed considering each bridge location. A representative "marsh capacity" was estimated on 200 foot wide intervals using the USGS helicopter ground elevations and Manning's "n" based flow equation used in the South Florida Water Management Model (SFWMM). The location of each bridge is then used to calculate the marsh capacity directly connected by a bridge opening. This marsh capacity for the bridge is then divided by the marsh capacity of the approximately 11 mile wide

[1] The Natural System Model depicts the hydrologic response of the pre-drained system to rainfall and other hydrologic conditions of the period from 1965 through 1995. It does not depict the conditions of the pre-drained Everglades system, although there is a misconception that it does; such data does not exist (1999 *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement*, a product of the *Central and Southern Florida Project Comprehensive Review Study*, also known as the *Restudy*).

NESRS from the L-67 Extension to the L-31N Levee (NAD83 horizontal coordinates from 763,500 to 821,250) and expressed as percentage.

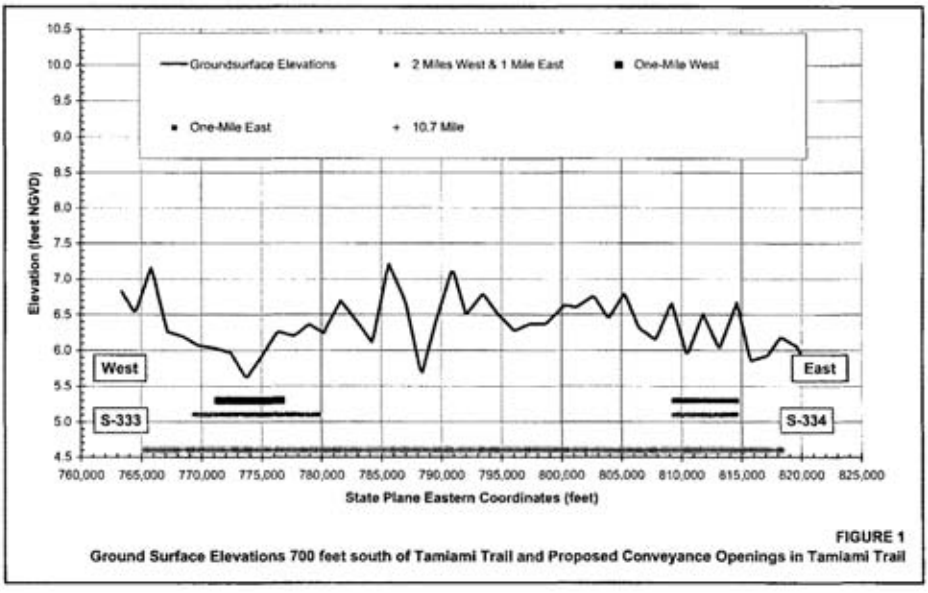

Figure E-1: Elevations Along Tamiami Trail and NESRS in the Study Area

Performance Measure 3.A Number of Days Water Depth is Greater Than Two Feet During Wet Season Peak

NESRS historically was part of the ridge and slough ("corrugated") Everglades landscape. Sloughs are conspicuous and major landscape features in the southern Everglades and are the main pathway of water flow through the natural Everglades. The slough community is present in areas with the longest hydroperiods and the deepest water that rarely dries out. It also has a distinct plant community which is a mixture of floating, submerged species, and sometimes emergent species. A dominant and characteristic species of pre-drainage native sloughs is the white water lily (*Nymphaea odorata*). Over the past 40 years of hydrologic isolation from the ecosystem to the north, NESRS has largely converted to a drier community of mixed sawgrass (***Figure E-2***). This performance measure evaluates the potential for alternatives to restore the historic landscape, and hydrologic suitability for white water lily as an indicator.

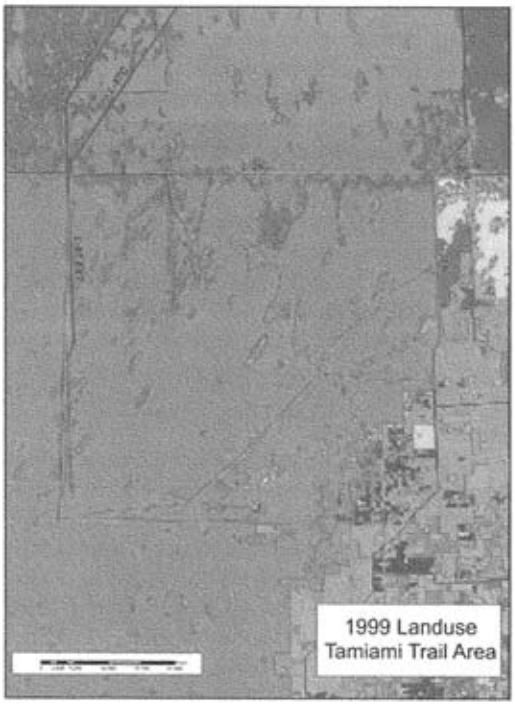

Figure E-2: Current Land Use Classification Showing Sawgrass Domination
The uniform purple shading indicates sawgrass; the pink ovals are the tree islands.

Today, white water lily is more abundant in deeper slough habitats and areas less subject to drydown events. Paleoecological studies indicate that pre-drainage ENP slough communities were once dominated by white water lily and banana lily prior to the widespread artificial draining of slough communities.

Many scientific studies and field observations indicate conditions where white water lily does better than other plants and is more abundant than other species. Depth and hydroperiod are all important. A number of studies suggest that white water lily does well where wet season average depths are between 60 centimeters (cm) (over two feet), and 100 cm (over three feet). White water lily has more root biomass at water depths of 60 cm and 90 cm than at 30 cm. White water lily is also most abundant where the hydroperiod in most years approaches 360 days and there are few years with dry down periods.

Performance Measure 3.A presents the number of days that water depth is greater than two feet (~60 cm) at NESRS-2 and NESRS-1 for the dates 1 August through 31 October (the wet season peak) for all years in the period of record. The greater the number of days at or above this depth, the better the conditions for white water lily and all slough vegetation. Performance of the alternatives for this performance measure is illustrated on ***Figure E-6*** in the last section.

Performance Measure 3.B Number of Days Water Depth is Greater Than Three Feet during Wet Season Peak

Performance Measure 3.B presents the number of days that water depth is greater than three feet (approximately 90 cm) at NESRS-2 and NESRS-1 for the dates 1 August through 31 October (the wet season peak) for all years in the period of record. The greater the number of days at or above this depth, the better the conditions for white water lily and all slough vegetation. Performance of the alternatives for this performance measure is shown on ***Figure E-7*** in the last section.

This performance measure supplements Performance Measure 3.A (days with depth greater than two feet) in describing the hydrologic conditions that favor slough vegetation, particularly white water lily. While the number of days with water depth greater than two feet is important to maintaining slough vegetation, the duration (number of days) with depth greater than three feet may be even more important in excluding non-slough vegetation from the sloughs. Many alternatives achieve depths greater than two feet. Within this group, there is little variation in the degree the alternatives restore slough conditions and vegetation. Only a few alternatives achieve depths greater than three feet; these alternatives should be the most effective in restoring sloughs. This performance measure alone would not be sufficient to evaluate the alternatives because only a few alternatives redistribute enough water to achieve this optimal condition. The analysis also requires Performance Measure 3.A to demonstrate the increased duration/depth that intermediate but still substantially effective alternatives would provide.

Performance Measure 3.C Average Water Depth During Wet Season Peak

This performance measure presents the average of daily water depths at NESRS-2 and NESRS-1 for the dates 1 August through 31 October for all years in the period of record. Performance of all the alternatives is shown in ***Figure*** E-3.

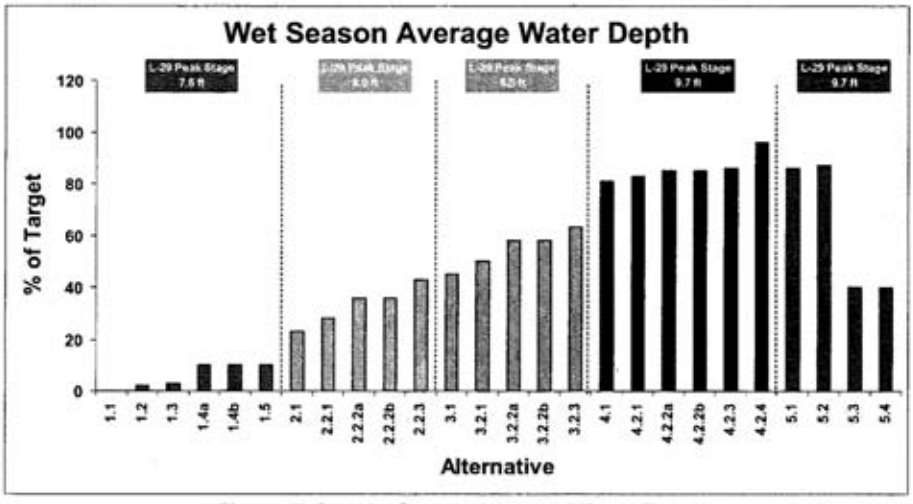

Figure E-3: Wet Season Average Water Depth

Performance Measure 4.A Reduction in Wildlife Mortality

This performance measure is based on average mortality data from FWS for Tamiami Trail. The data describe an average of 261 deaths per mile of road per year and assumes that this rate applies to the entire 10.7 mile long project area.

The deaths of small animals from collision with automobiles would continue to occur on the sections of Tamiami Trail that would be connected to the adjacent marsh and canal. The deaths would not occur on the bridged sections of Tamiami Trail because there would be no connection between the road surface and the marsh and canal habitat of the animals. The animals would not easily reach the road surface in these sections and then be at risk of being hit. However, because the L-29 canal and levee are not eliminated and because conditions may be artificially deep under the bridge, limited bridging (e.g., one mile) may simply redirect animals to cross at other sections of the unbridged Tamiami Trail.

The performance measure presents the numbers of deaths that would be avoided because of the presence of the bridge(s). It is calculated by multiplying 261 deaths per mile per year by the total length of the bridge(s) in miles. A short bridge would only result in a small reduction in mortality while a bridge that spans the entire project area would produce the maximum value of 2,737 deaths per year avoided.

Performance Measure 4.B Potential Connectivity of WCA-3B Marsh and NESRS as Percent of Total Project Length

This performance measure describes the potential connection between WCA-3B and NESRS if the L-29 Levee is removed under a future project. This performance measure is calculated by dividing the length of bridge opening in miles by 10.7 miles, the length of the longest possible bridge that could be constructed in the project area.

A 100 percent value indicates full *potential* connectivity and is the target. Note that this marsh to marsh connectivity would also require degrading the L-29 Levee that encloses the WCA-3 impoundments. Degrading L-29 is not authorized under the MWD legislation.

Table E-2: Values for Each Performance Measure

Alternatives	Bridge(s)	Connectivity Performance Measure
4.2.4	10.7 mile	100%
5.1 4.2.3 3.2.3 2.2.3	2 mile + 1 mile	28%
5.4, 5.3, 5.2, 4.2.2b, 4.2.2a, 3.2.2b, 3.2.2a, 2.2.2b, 2.2.2a, 1.4b, 1.4a, 1.5	1 mile bridge	9%
4.2.1, 4.1, 3.2.1, 3.1, 2.2.1, 2.1, 1.3, 1.2, 1.1	No bridge	0%

Performance Measure Values

The raw values for all of the performance measures described in the previous section are presented in ***Table E-3***. The values for the performances measures were expressed in many different units (i.e., percent, feet, acre-feet, and cfs).

Calculating Habitat Units and Benefits

Although the Tamiami Trail Project Delivery Team (PDT) evaluated many performance measures to ascertain how well each of the alternative plans performed on various criteria indicative of ecosystem restoration, (e.g., average annual flow volumes, number of sloughs crossed by bridges, number of days water depth is greater than two feet during wet season peak), habitat units derived from the performance measures were selected by the PDT as the metric that best integrated information regarding the quality and quantity of improved hydrologic and ecologic function within the study area. Habitat units are calculated by multiplying relative lift due to each alternative by the acreage benefitted.

Sometimes it is difficult to summarize the results when the analyses are performed separately for distinct performance indicators. This phenomenon often occurs simply because different management measures or alternative plans "do" different things, provide different types of output, and provide benefits to different biological communities. This is true for the Tamiami Trail features and alternatives, in which certain performance measures quantify output in flows and other hydrologic units, while other performance measures examine ecological responses as a percent or number of days.

In order to estimate total benefits from the various alternatives, the USACE must be able to perform cost effectiveness/incremental cost analysis (CE/ICA) on a metric that combines all performance measures output. Simply adding the performance measure output would be problematic, because the performance measures operate at vastly different scales (i.e., one performance measure only applies to a small geographic area), ecosystem responses to alternatives occur gradually through time, and the performance measures resources are represented in very different metrics (e.g., feet, acre-feet, percent, cfs). All three of these issues are addressed in the following description of the calculation of benefits.

The changes produced by most alternatives were assessed over the same acreage of NESRS, even though not all of the individual performance measures affected the same acreage and even though the alternatives themselves may affect different acreages. The main area for analysis and comparison 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. There is no firmly defined boundary on the south; the differences between alternatives and the without project condition gradually decrease as one moves south. For this study, the southern limit is defined by the team as an east-west line connecting the end of the L-67 Extension to 8.5 SMA. The total area is 63,195 acres. Refer to ***Figure E-2***, on which the red outer line illustrates the primary benefits area for most alternatives. Nine of the ten performance measures apply to the entire 63,195

acres. The other performance measure, 4.B, only applies to the northernmost one-mile wide by 10.7-mile long strip of land nearest Tamiami Trail, which totals 6,848 acres. In addition, Alternatives 5.3 and 5.4 impact a different area of benefit. Due to the proposed levee to the south of L-29, the flows into NESRS under these two Blue Shanty alternatives would only be affected between the L-67 extension and the proposed levee. This total area is 17,379 acres. Performance measure 2.B would likewise only be applied to an acreage of 1,694 for Alternatives 5.3 and 5.4. However, it should be clear that the spreadsheet model could not adequately simulate Alternatives 5.3 and 5.4; therefore, it is possible that the benefit area for these alternatives is underestimated.

The team prepared a simple description of the changes in ecosystem conditions through time in response to the alternatives. The performance measures values and scores represent the ultimate, or end-point, of changes due to the alternatives, and the team recognized that the enhancement of the entire area would not occur immediately after construction is complete. For the alternatives, the USACE estimated that a varying rate of change per alternative would be achieved within two and a half years. The reasoning is that more extreme changes would affect vegetation more quickly than subtle changes over time. Therefore, the "one-in-ten year maximum discharge" performance measure value was also used as the value for the percent of benefit achieved in two and a half years. Most of this represents the hydrological changes such as depth, velocity, and hydroperiod. The team further estimated an additional two and a half years, for a total of five years, for the full extent of changes to occur. The herbaceous vegetation may take this long to fully respond to the hydrological changes. Fish and wildlife populations may require a few seasons to respond to the changed hydrology and vegetation. Although not fully predictable, there is a good likelihood that a wet or dry year would occur during this period, further emphasizing the importance of incorporating events such as scouring some of the sediments and vegetation that have accumulated in the sloughs during high water events or connecting deep sloughs to the L-29 Canal to maintain water during the lowest flow periods. The without project condition, also the National Environmental Policy Act (NEPA) 'no action' alternative, is proposed to remain the same throughout the period of analysis, the same as existing conditions. The period of analysis is 50 years, from 2010 to 2060.

The different metrics made it necessary to normalize the different performance measures into a 0-100% index. The normalization method used was "percent of maximum", in which the maximum output achieved in each category by any of the alternatives was assigned a "100%", and the output values for other alternatives for that same resource category were scaled as a percentage of that maximum (between 0 and 100%). The 10.7 mile bridge (Alternative 4.2.4) scored 100% for each of the performance measures and was therefore the alternative to which all other performance measures were normalized. An index value of 100%

would thus be assigned to an alternative that provides the maximum output value for the habitat unit categories, while a value of 50% would equate to the output value for an alternative that only provides half of the maximum output provided by the "largest" alternative (a hypothetical "largest" alternative in terms of delivering the maximum output of every habitat type). While other normalization techniques exist (e.g., percent of range, percent of total, unit vector), the percent of maximum is the most widely used technique and is usually the default method. Thus, a combined, normalized metric was calculated to perform CE/ICA on all outputs provided by the Tamiami Trail alternatives.

It is important to understand the implications of normalizing in this manner. Although the 10.7 mile bridge is shown as achieving 100% of potential benefits, the team is not implying in any way that this project can provide 100 percent restoration to this area. For the purposes of comparison, these habitat units are calculated as potential benefits of this project only (TTM). It is widely recognized and agreed that additional benefits would be gained in this area due to potentially increased storages and flows under the Comprehensive Everglades Restoration Plan (CERP), as projects in CERP are authorized, constructed and in operation. However, for comparison purposes, these alternatives were normalized to the 10.7 mile bridge and therefore that bridge would reflect maximum achievable benefit for this project.

As stated in LRR Section 1, all the alternatives were evaluated for their forward compatibility with CERP projects, and specifically with the "Decompartmentalization of WCA-3" Project, which would presumably be operating under the "CERP 1" flow volumes. The general assumption is that the LRR initial alternatives capable of passing higher volumes are more compatible with CERP objectives than alternatives passing lower peak and average volumes. Decompartmentalization, as described in the 1999 *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement*, a product of the *Central and Southern Florida Project Comprehensive Review Study* (also known as the *Restudy*), visualized degradation of the L-29 levees and fill of the L-29 Canal. Furthermore, all alternatives that include degradation of part of the roadway and emplacement of a bridge are assumed more compatible with future CERP modifications than alternatives that include only reinforcing the road.

Table E-3 contains the raw value for each performance measure and alternative while ***Table E-4*** includes the normalized value for each performance measure and alternative.

Habitat units were calculated by multiplying habitat indices by the appropriate acreages that were impacted by the performance measures (Performance

Measure 2.B affected 6,848 acres, while the rest of the performance measures affected the full 63,195 acres, except for Alternatives 5.3 and 5.4 which affected 1,694 acres for Performance Measure 2.B and 17,379 acres for the rest of the performance measures).

To find the total habitat units for each alternative for the entire study area, it was first necessary to find the total habitat units of the upper eastern and western sections of the study area, and then the total habitat units of the lower eastern and western sections of the study area, and add these together to determine the total (HU) lift for the entire study area. This was necessary because one performance measure only affected the upper 6,848 acres (or 1,694 acres for Alternatives 5.3 and 5.4) of the study area, while the rest of the performance measures affected the entire study area and because two alternatives only affect the western section. This procedure ensured that no performance measure was double counted and the performance measures that only affected the upper section of the study area were adjusted to reflect the lesser impact.

In developing habitat indices, each of the performance measures were determined to be of equal importance, and were therefore all given a weight of 1". Since all of the habitat units occupied the same geographic area, an average of all the performance measures was warranted. Indices were calculated separately for the upper and lower sections described above. Each index was multiplied by its matching acreage to produce total habitat units. ***Table E-5*** shows the habitat indices of the upper (northern) and lower (southern) sections, the acreages for upper and lower sections, and the combined total habitat units for each alternative.

The calculation of average annual lift (benefit) takes into account that achievement of full performance is estimated to take five years because the plant and animal resources only gradually respond to the physical changes generated by the alternatives. The average annual lift for each alternative also incorporates subtracting the average annual habitat units for the no action plan from the average annual habitat units for each alternative. ***Table E-5*** displays average annual habitat unit lift for each alternative.

Table E-3 Performance Measure Values for each Alternative

	ALTERNATIVES	% achieved in 2-3 years	% achieved in 5 years	L-29 DESIGN STAGE (FEET)	1. Water Deliveries to ENP			2. Ridge and Slough Processes			3. Vegetation				4. Wildlife
					A. Average Annual Flow Volume (ac-ft)	B. Potential connectivity of WCA-3B Marsh and NESS, percent of total length	C. One in ten year maximum discharge (cfs)	A. Number of sloughs crossed by bridges	B. Ratio of average velocity in marsh and average velocity at road (%)	C. Flows into NESS provided via bridge (%)	A. Total # days of NESRS-1 and NESRS-2 with water depth >2 ft. during wet season peak	B. Total # days of NESRS-1 and NESRS-2 with water depth >3 ft. during wet season peak	C. Average water depth at NESRS-1 and NESRS-2 during wet season peak (ft.)	C. Reduction in wildlife mortality (# average annual deaths avoided)
	Benefit area (acres)				63185	63185	63185	63185	6484	63184	63185	63185	63185	63185
	Benefit area for blue shanty plane				17379	17379	17379	17379	17379	17379	17379	17379	17379	17379
1	No roadway reinforcing (note 2)													
1.1	no action (29 culvert sets)	33	100	7.5	176,004	0	1146	0	1.9	0	86	0	1.30	0
1.2	spreader swales (33ft x 1800ft - bottom elevations)	34	100	7.5	184,828	0	1166	0	2.0	0	74	0	1.32	0
1.3	add culvert sets (79 - 3x66 rise) with swales (note 3)	33	100	7.5	187,625	0	1144	0	3.0	0	79	0	1.33	0
1.4a	add 3-mile western bridge	35	100	7.5	203,451	9	1235	3	26	11	101	0	1.40	261
1.4b	add 1-mile western bridge	35	100	7.5	203,451	9	1235	3	26	22	101	0	1.40	261
1.5	reinforce western section of road to 12.75ft (crown) and add 1-mile western bridge	36	100	7.5	203,451	9	1235	3	26	22	101	0	1.44	261
2	Roadway Improvements - Crown 11.25ft (note 4)													
2.1	reinforce road (no plants only)	41	100	8.0	228,092	0	1410	0	1.8	0	330	0	1.53	0
2.2.1	reinforce low points, add culvert sets with swales	41	100	8.0	251,080	0	1410	0	1.8	0	711	0	1.58	0
2.2.2a	reinforce road, add 1-mile western bridge	41	100	8.0	272,505	9	1416	3	26	11	1438	3	1.66	261
2.2.2b	reinforce road, add 1-mile western bridge	41	100	8.0	272,505	9	1416	2	26	22	1438	3	1.66	261
2.2.3	reinforce low points, add 3-mile + 1-mile bridges	43	100	8.0	282,880	28	1459	4	45	42.8	1901	3	1.73	783
3	Roadway Improvements - Crown 11.25ft (note 5)													
3.1	reinforce road	43	100	8.5	303,085	0	1474	0	1.8	0	2343	4	1.75	0
3.2.1	reinforce road, add culvert sets with swales	43	100	8.5	316,932	0	1364	0	1.8	0	2527	5	1.80	0
3.2.2a	reinforce road, add 1-mile western bridge	47	100	8.5	338,705	9	1642	2	26	11	2578	7	1.86	261
3.2.2b	reinforce road, add 1-mile western bridge	47	100	8.5	338,705	9	1642	2	26	22	2578	7	1.86	261
3.2.3	reinforce road, add 3-mile + 1-mile bridges	47	100	8.5	350,115	28	1648	4	45	42.8	2578	10	1.93	783
4	Roadway Improvements - Crown 12.75ft (note 6)													
4.1	reinforce road	56	100	9.70	406,139	0	1630	0	1.8	0	2581	808	2.11	0
4.2.1	reinforce road, add culvert sets with swales	57	100	9.70	419,773	0	1682	0	1.8	0	2581	811	2.16	0
4.2.2a	reinforce road, add 1-mile western bridge (NOW)	57	100	9.70	430,363	9	1864	2	26	11	2581	1068	2.16	261
4.2.2b	reinforce road, add 1-mile western bridge (NOW)	57	100	9.70	430,363	9	1864	2	26	22	2581	1068	2.16	261
4.2.3	reinforce road, add 3-mile + 1-mile bridges (NOW)	59	100	9.70	435,472	28	1888	4	45	42.8	2581	1068	2.16	783
4.2.4	16.7-mile bridge (NOW)	100	100	9.70	471,567	100	2468	21	100	100	5004	1068	2.26	2755
5	Structural alternatives and/or road realignment (note 6)													
5.1	northern alignment of alt 1a	59	100	9.70	435,972	28	2050	4	45	42.8	2581	1068	2.16	783
5.2	northern alignment with 3-mile bridge	57	100	9.70	430,363	9	1864	2	26	22	2581	1068	2.17	261
5.3	northern alignment with 7-mile bridge and relocation of L-67 levee - Crown 12.75ft	100	100	9.70	471,942	9	2468	2	13	61	1135	321	1.70	261
5.4	current alignment with 7-mile bridge and relocation of L-67 levee - Crown 12.75ft	100	100	9.70	471,942	9	2468	2	13	61	1135	321	1.70	261
5.5	dump stations along L-29	100	100	-	[redacted]									

Notes:
1 Existing road has 19 culvert sets resulting in an average culvert set spacing of ~3000 feet
2 Reduces the average culvert set spacing to approximately 1320 feet
3 All road improvements require 3.5ft fill between road crest and L-29 design elevation

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Table E-4 Normalized Values of Performance Measures for Each Alternative

					1. Water Deliveries to ENP			2. Ridge and Slough Processes			3. Vegetation			4. Wildlife
Alt	ALTERNATIVES	% achieved in 2.5 years	% achieved in 5 years	L-29 DESIGN STAGE (FEET)	A. Average Annual Flow Volume (ac-ft)	B. Potential connectivity of WCA-3B Marsh and NE55, percent of total length.	C. One in ten year maximum discharge (cfs)	A. Number of droughts caused by bridges	B. Ratio of average velocity in marsh and average velocity at road (%)	C. Flows into NE98 provided via bridge (%)	A. # days at NESRS-2 that water depth >2 ft. during wet season peak	B. # days at NESRS-2 that water depth >3 ft. during wet season peak	C. Average water depth at NESRS-2 during wet season peak (ft.)	C. Reduction in wildlife mortality (# average annual deaths avoided)
	Benefit area (acres)	[redacted]	[redacted]	[redacted]	63165	63165	63165	63165	6484	63165	63165	63165	63165	63165
	Benefit area for blue shanty plains				17379	17379	17379	17379	17379	17379	17379	17379	17379	17379
1	**No roadway reinforcing (note 2)**													
1.1	no action (79 culvert sets)	33	100	7.5	0.37	0.00	0.33	0.00	0.02	0.00	0.03	0.00	0.08	0.00
1.2	spreader swales (30ft x 10000 - bottom dimensions)	34	100	7.5	0.38	0.00	0.34	0.00	0.03	0.00	0.07	0.00	0.08	0.00
1.3	add culvert sets (19 - 3x56 tha) with weirs (note 5)	33	100	7.5	0.40	0.00	0.33	0.00	0.03	0.00	0.03	0.00	0.09	0.00
1.4a	add 1-mile western bridge	36	100	7.5	0.43	0.03	0.36	0.10	0.26	0.11	0.03	0.00	0.62	0.09
1.4b	add 1-mile western bridge	36	100	7.5	0.43	0.03	0.36	0.10	0.26	0.20	0.03	0.00	0.62	0.09
1.5	reinforce western section of road to 12.75# (crown) and add 1-mile western bridge	36	100	7.5	0.43	0.03	0.36	0.10	0.26	0.20	0.03	0.00	0.62	0.09
2	**Roadway beginning/ends - Crown 11.83ft (note 4)**													
2.1	reinforce road (fine points only)	41	100	8.0	0.51	0.03	0.41	0.20	0.02	0.00	0.11	0.02	0.68	0.09
2.2.1	reinforce low points, add culvert sets with swales	41	100	8.0	0.53	0.03	0.41	0.20	0.02	0.00	0.23	0.00	0.70	0.09
2.2.2a	reinforce road, add 1-mile western bridge	41	100	8.0	0.58	0.05	0.41	0.10	0.26	0.11	0.47	0.00	0.73	0.09
2.2.2b	reinforce road, add 1-mile western bridge	41	100	8.0	0.58	0.09	0.41	0.10	0.26	0.20	0.47	0.00	0.73	0.09
2.2.3	reinforce low points, add 2-mile + 1-mile bridges	43	100	8.0	0.62	0.28	0.42	0.10	0.65	0.43	0.82	0.00	0.77	0.25
3	**Roadway beginning/ends - Crown 11.50ft (note 4)**													
3.1	reinforce road	43	100	8.5	0.64	0.09	0.43	0.50	0.02	0.00	0.77	0.00	0.77	0.00
3.2.1	reinforce road, add culvert sets with swales	43	100	8.5	0.67	0.09	0.43	0.50	0.02	0.00	0.80	0.00	0.80	0.00
3.2.2a	reinforce road, add 1-mile western bridge	47	100	8.5	0.72	0.09	0.47	0.10	0.26	0.11	0.84	0.01	0.83	0.09
3.2.2b	reinforce road, add 1-mile western bridge	47	100	8.5	0.72	0.09	0.47	0.10	0.26	0.20	0.84	0.01	0.83	0.09
3.2.3	reinforce road, add 2-mile + 1-mile bridges	47	100	8.5	0.75	0.28	0.47	0.10	0.65	0.43	0.84	0.01	0.85	0.25
4	**Roadway beginning/ends - Crown 12.75ft (note 4)**													
4.1	reinforce road	53	100	9.75	0.87	0.03	0.53	0.00	0.02	0.00	0.84	0.75	0.93	0.00
4.2.1	reinforce road, add culvert sets with swales	57	100	9.75	0.88	0.03	0.57	0.00	0.02	0.00	0.84	0.93	0.94	0.00
4.2.2a	reinforce road, add 1-mile western bridge (RGRM)	57	100	9.75	0.91	0.09	0.57	0.10	0.26	0.11	0.84	1.00	0.95	0.09
4.2.2b	reinforce road, add 1-mile western bridge (RGRM)	57	100	9.75	0.91	0.09	0.57	0.10	0.26	0.20	0.84	1.00	0.95	0.09
4.2.3	reinforce road, add 2-mile + 1-mile bridges (RGRM)	59	100	9.75	0.92	0.28	0.59	0.10	0.65	0.43	0.84	1.00	0.96	0.25
4.2.4	10.7-mile bridge (RGRM)	100	100	9.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5	**Structural alternatives and/or road realignment (note 4)**													
5.1	northern alignment of Alt 1a	56	100	9.75	0.82	0.28	0.59	0.10	0.65	0.43	0.84	1.00	0.96	0.25
5.2	northern alignment with 1-mile bridge	57	100	9.75	0.91	0.09	0.57	0.10	0.26	0.20	0.84	1.00	0.96	0.09
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.50ft	100	100	9.75	1.00	0.09	1.00	0.10	0.13	0.20	0.37	0.00	0.75	0.09
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 12.00ft	100	100	9.75	1.00	0.09	1.00	0.10	0.13	0.20	0.37	0.00	0.75	0.09
6.5	pump stations along L-29	-	-	-	[redacted]									

Notes:
2 Existing road has 79 culvert sets resulting in an average culvert set spacing of ~3000 feet.
3 Reduces the average culvert set spacing to approximately 1000 feet.
4 All road improvements require 3.00 foot between road crest and L-29 design elevation.

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Table E-5 Habitat Indices, Acreages, Total Habitat Units and Habitat Unit Lift for Each Alternative

	ALTERNATIVES	HABITAT UNIT INDICES (SOUTHERN SECTION)	HABITAT UNIT INDICES (NORTHERN SECTION)	TOTAL HABITAT UNITS	% achieved in 2.5 years	% achieved in 5 years	AVERAGE ANNUAL HABITAT UNITS	AVERAGE ANNUAL HABITAT UNIT LIFT (note)
	Benefit area (acres)	**56711**	**6484**					
	Benefit area (acres) for Alternatives 5.3 and 5.4	**15685**	**1694**					
1	**No roadway reinforcing**							
1.1	no action (19 culvert sets)	0.15	0.13	9103	33	100	9103	N/A
1.2	spreader swales (30ft x 1000ft - bottom dimensions)	0.15	0.14	9301	34	100	9290	187
1.3	add culvert sets (19 - 2x5ft dia) with swales	0.15	0.14	9354	33	100	9341	238
1.4a	add 1-mile eastern bridge	0.20	0.21	12918	36	100	12719	3616
1.4b	add 1-mile western bridge	0.21	0.22	13543	36	100	13312	4209
1.5	reinforce western section of road to 12.75ft (crown) and add 1-mile western bridge	0.21	0.22	13543	36	100	13312	4209
2	**Roadway improvements - Crown 11.05ft**							
2.1	reinforce road (low points only)	0.19	0.17	11833	41	100	11697	2594
2.2.1	reinforce low points, add culvert sets with swales	0.21	0.19	13012	41	100	12818	3715
2.2.2a	reinforce road, add 1-mile eastern bridge	0.29	0.28	18108	41	100	17662	8559
2.2.2b	reinforce road, add 1-mile western bridge	0.30	0.29	18733	41	100	18257	9154
2.2.3	reinforce low points, add 2-mile + 1-mile bridges	0.40	0.43	25583	43	100	24784	15681
3	**Roadway improvements - Crown 11.55ft**							
3.1	reinforce road	0.29	0.26	18163	43	100	17724	8621
3.2.1	reinforce road, add culvert sets with swales	0.30	0.27	18995	43	100	18515	9412
3.2.2a	reinforce road, add 1-mile eastern bridge	0.36	0.35	22851	47	100	22212	13109
3.2.2b	reinforce road, add 1-mile western bridge	0.37	0.36	23477	47	100	22808	13705
3.2.3	reinforce road, add 2-mile + 1-mile bridges	0.46	0.48	29000	47	100	28075	18972
4	**Roadway improvements - Crown 12.75ft**							
4.1	reinforce road	0.44	0.40	27424	55	100	26757	17654
4.2.1	reinforce road, add culvert sets with swales	0.46	0.42	28795	57	100	27977	18874
4.2.2a	reinforce road, add 1-mile eastern bridge (RGRR)	0.52	0.49	32666	57	100	31688	22585
4.2.2b	reinforce road, add 1-mile western bridge (RGRR)	0.53	0.50	33291	57	100	32287	23184
4.2.3	reinforce road, add 2-mile + 1-mile bridges (RGRR)	0.61	0.62	38661	59	100	37464	28361
4.2.4	10.7-mile bridge (RGRR)	1.00	1.00	63195	100	100	62113	53010
5	**Structural alternatives and/or road realignment**							
5.1	northern alignment of Alt 14	0.61	0.62	38661	59	100	37464	28361
5.2	northern alignment with 1-mile bridge	0.53	0.50	33337	57	100	32331	23228
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	0.43	0.40	7475	100	100	13974	4871
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.00ft	0.43	0.40	7475	100	100	13974	4871
	NO ACTION FOR ALT 5.3 AND 5.4	0.15	0.13	2505				

Performance Comparisons

Hydrologic Performance

PM-1A Flow Improvement

Figure E-4, above, compares relative low volume performance of all alternatives. Alternatives in Group 1, the culvert-only alternatives (no increase in stage constraint) provided insignificant (i.e., greater than 20 percent) increase in flow volumes across Tamiami Trail. Alternatives in Group 2 (raise stage constraint to 8 feet) provided increased benefits, and Group 2 alternatives that included bridges (2.2.2a and b, 2.2.3) improved flow by nearly 50 percent over no-action. Group 3 alternatives provided additional flow volume improvements, with Alternative 3.1 (raise stage to 8.5 only) showing flow volume benefits higher than those of the bridge alternatives at 8.0 feet; however, Alternatives 3.1 and 3.2 did not provide comparable improvements in 'ridge and slough processes', and Alternatives 3.2.2a and b were above the initial cost constraints of the MWD authorization. Alternatives in Groups 4 and 5 provided even greater flow volume increases but were too costly.

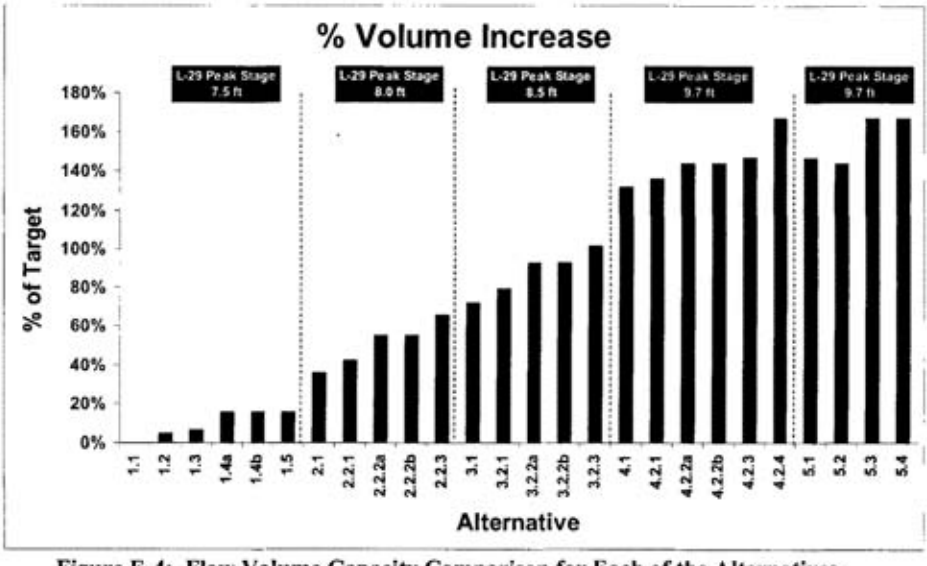

Figure E-4: Flow Volume Capacity Comparison for Each of the Alternatives

Ridge and Slough Processes

Figure E-5 shows comparative performance of the alternatives for those hydrologic performance measures that respond to velocity changes into the ENP marshes. For this performance measure, performance is tied directly to the length of the bridges, with all alternatives in the "no-bridge" category showing no significant improvement, and "bridge" alternatives showing improvement in direct relation to bridge length. For this set of performance measures, the stage constraint makes no difference (in other words, bridges can pass water at all stage constraints up to 9.7 feet). This demonstrates that bridges are an important project feature to avoid unnaturally high velocities. In contrast to the output shown for water volume improvement, including a bridge feature makes a significant difference in overall performance, as well as providing forward compatibility with CERP flows.

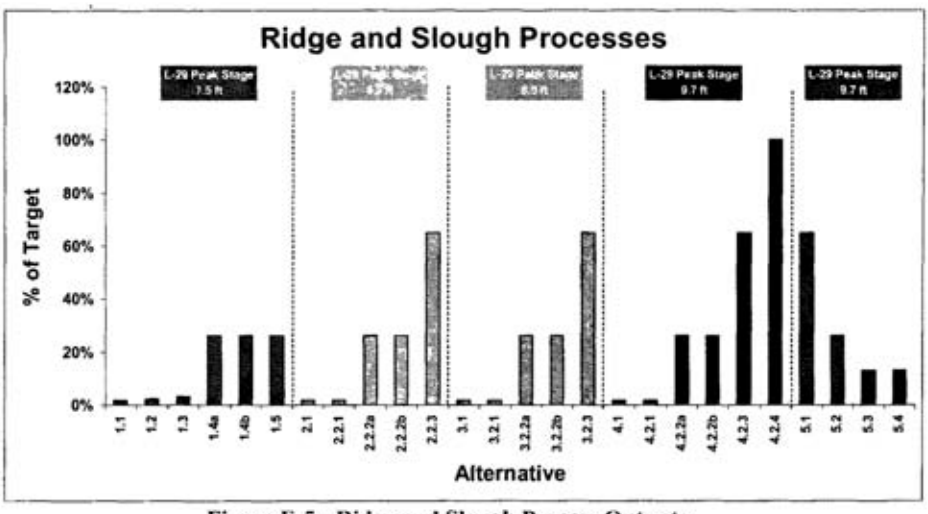

Figure E-5: Ridge and Slough Process Outputs

The one-bridge alternatives show lower output (more scour and sedimentation) than the two-bridge or full bridging alternatives.

Ecologic Performance

Figure E-6 shows performance of the alternatives for maintenance of sloughs with white water lily (duration of depths greater than two feet during the wet season). For this performance measure, the first alternatives to show an improvement of 25 percent or more (over no action) were the bridge alternatives at stage constraint equaling 8.0 feet. All alternatives in Group 3 (stage = 8.5

feet) Groups 4 and 5 (stage = 9.7 feet) met more than 80 percent of the target. Again, all of the "3" (Stage 8.5 feet) alternatives showed better performance than all Group 2 (stage 8.0 feet) alternatives (including the 2+1 bridge alternative in Group 2); however, note that Alternatives 3.1 and 3.2.1 "failed" the velocity-change performance measure in "ridge and slough processes" (***Figure E-5*** above). Alternative 3.2.2a appeared to offer the best mix of performance (volume + ridge-and-slough + vegetation suitability).

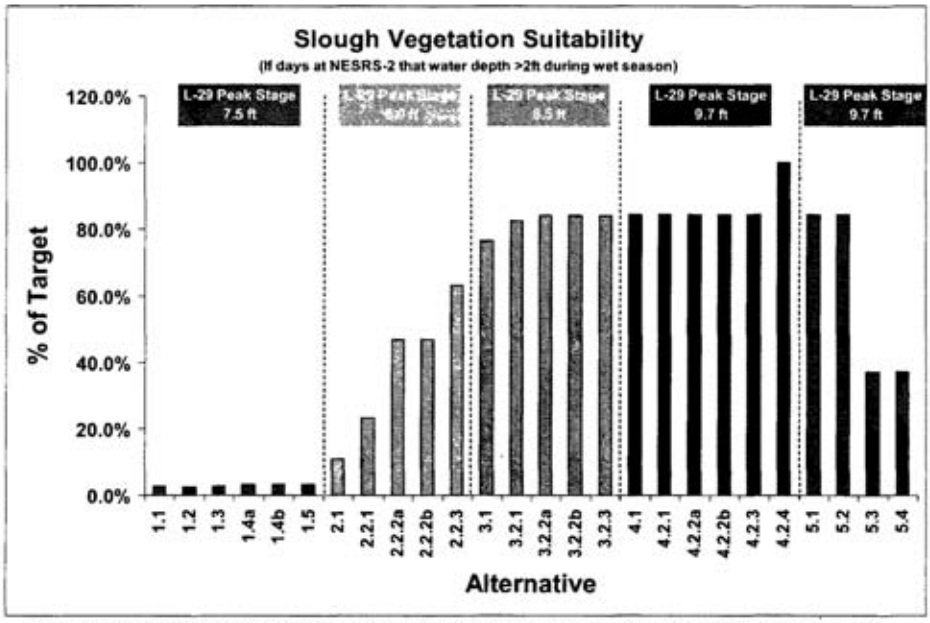

Figure E-6: Slough Vegetation Performance Measure, Days with Water Depth >2 ft During Wet Season

Slough Vegetation Suitability, Wet Season Stage Greater Than Three Feet

This performance measure, indicative of very long hydroperiod deep marsh, was chosen to indicate the likelihood of reaching marsh conditions that would favor conversion from mixed marsh to open slough habitat (re-conversion from marsh to slough). As ***Figure E-7*** shows below, the only alternative groups that showed significant improvement over existing conditions (no action) were alternatives in Groups 4 and 5 (stages in L-29 with a 9.7 foot or higher constraint). The cost estimates for these alternatives were all above established project limits, except

for Alternative 4.1 (reinforce road only), and this alternative did not perform in the ridge-and-slough category as shown above.

From this second, deep water evaluation of slough vegetation suitability it can be concluded that none of the MWD alternatives within a feasible cost limit can deliver full restoration to Everglades sloughs.

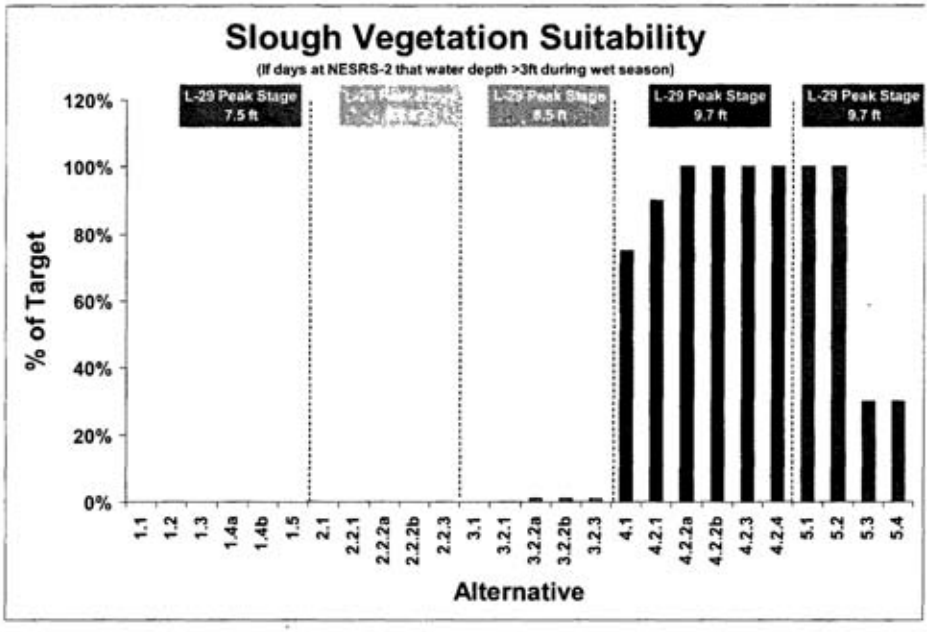

Figure E-7: Slough Vegetation Performance Measure, Days with Water Depth >3 ft During Wet Season

Overall Performance Summary: Average Annual Lift

Figure E-8 summarizes "lift" in average annual habitat units (benefit increase multiplied by acres benefitted) for all alternatives. The preferred plan or Recommended Plan would provide 8,559 average annual habitat units (AAHU). In comparison, higher performing plans , incorporating a greater bridge length or higher stage constraint, provide greater habitat benefits (up to over 53,000 AAHU for the 10.7 mile bridge, with a 9.7 foot stage constraint) but at higher costs.

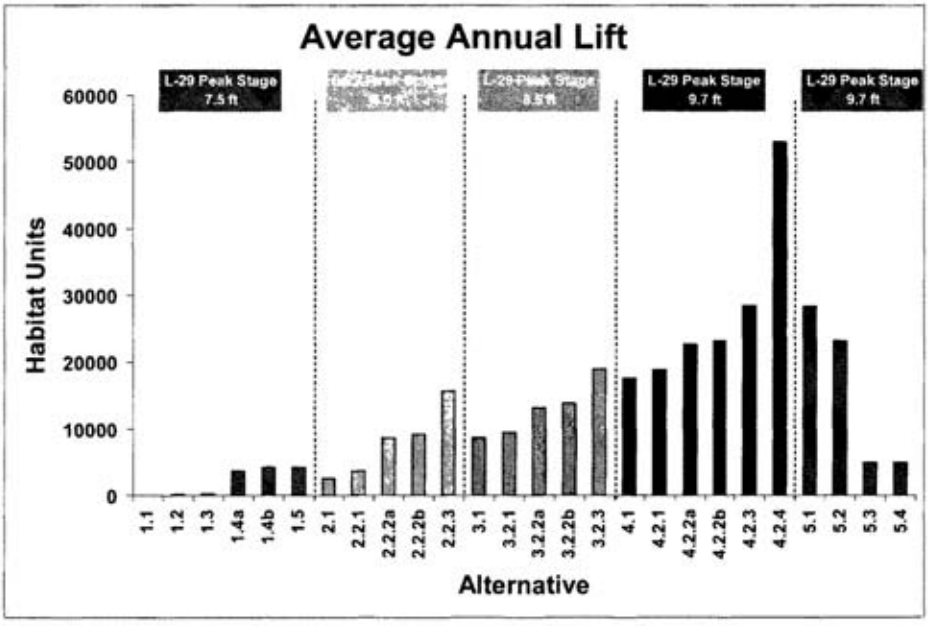

Figure E-8. Comparison of All Alternative Plans by AAHU Produced

Alternative 3.2.2a is the Recommended Plan because it gives the most ecological benefit within the cost constraint and stages anticipated now and in the immediate future. Within the Group 2 and 3 alternatives, those alternatives that incorporate a bridge segment are forward compatible with future CERP flows to a greater degree than non-bridge alternatives. Bridge segments are not stage constrained; they can pass stages up to and including 9.7 feet. Therefore, changes required in the future could include road reinforcement only. As stated above, increasing "lift" above about 14,000 AAHU is expected to be too costly for the MWD project budget.

Monitoring Plan Framework

This section provides an overview of the environmental monitoring that will be conducted to measure ecological response both upstream and downstream of the Tamiami Trail modifications. The intent of this overview is not to provide a project level monitoring plan, but rather to briefly describe other monitoring initiatives that will be relied upon to assess project performance. While this Limited Reevaluation Report (LRR) authorizes only hydrologic monitoring to assess whether actual improvement in water deliveries is occurring south of Tamiami Trail, a number of ongoing and/or proposed monitoring programs

conducted under other authorities will be utilized to measure ecological response. Additionally, the proposed monitoring programs will also be targeting assessment of reduced water flows to Northwest Shark River Slough resulting from implementation of the proposed modifications. Results of the monitoring and assessment activities will be summarized every two years in the Restoration, Coordination and Verification (RECOVER) biennial System Status Report (SSR), primarily written to document the cumulative performance of CERP projects.

There are two general categories of monitoring that will be used to assess the ecological effects of the Tamiami Trail modifications; system-wide (or landscape level) monitoring and project level monitoring programs. System-wide monitoring is primarily coordinated through the RECOVER Monitoring and Assessment Plan (MAP) which includes components conducted by U.S. Army Corps of Engineers (USACE), USGS, Everglades National Park (ENP), and through the Everglades Division of the South Florida Water Management District (SFWMD). The National Science Foundation (NSF) funded Long Term Ecological Research program (LTER) conducts monitoring in the Taylor and Shark slough/river/estuary transition zones primarily through Florida International University. Together, results from these monitoring programs will allow the USACE to develop a comprehensive, information-based view of the ecological effects of projects like the Tamiami Trail LRR that are expected to have a significant impact on the ecological function and pattern of the landscape. Summary analyses presented in the SSR are based on the combined sampling funded by the various authorities listed above.

The system-wide programs that will collect information in WCA-3B and Northeastern Shark River Slough in order to detect change in ecological conditions due to the Tamiami Trail modifications include:

1) Hydrologic monitoring network–More than one hundred permanent water stage monitoring stations are distributed across the Everglades Restoration Area that deliver hourly measurements of the water surface. The Everglades Depth Estimation Network (EDEN-USGS) consolidates the hydrologic information and interpolates a water surface for the entire area each day.
2) Soil nutrient mapping–Soil cores from across the everglades restoration area are collected in order to produce an accurate map of soil nutrient conditions. This program detects water quality impacts throughout the ecosystem at decadal intervals.
3) Vegetation mapping program–Every five years the entire Everglades ecosystem is systematically photographed and each image is classified by vegetation type. This program allows for the detection of vegetation community changes that occur at the scale of acres to square miles.
4) Marl prairie/slough gradients monitoring project–Every two years a comprehensive set of transects that cross the Shark River slough/Marl prairie

ecotone are monitored in order to detect fine scale shifts in vegetation species compositions. These shifts are closely correlated with the quantity of water passing through the Shark River Slough.

5) Ridge and slough flow pattern monitoring–Biennial surveys of plant species composition are related to water depth patterns along the historically predominate direction of flow through WCA-3A and 3B. These transects should capture the return to normal ridge and slough pattern that is expected to occur when these areas begin to experience a more natural pattern of water flow as barriers to flow are removed.
6) Regional Environmental Monitoring and Assessment Program (REMAP)-Fine scale vegetation monitoring, change analysis, micronutrient levels (Phosphorus, Nitrogen, and Sulfur). This U.S. Environmental Protection Agency program fills gaps in fine scale vegetation and micronutrient monitoring that is not conducted by other projects.
7) Periphyton mat cover structure, composition and aquatic fauna regional population–Quarterly samples of these rapidly changing microbial and animal communities are broadly indicative of seasonal patterns. Continuous monitoring of highly variable communities allows us to tease apart the relative importance of hydrologic events such as drydowns in determining ecological health, and to differentiate threshold levels where the frequency of extremely intense events indicate foundational shifts in the functioning of the ecosystem.
8) Crayfish abundance in relationship to hydrologic pattern–Crayfish abundance patterns are monitored quarterly much like the periphyton and aquatic fauna program. The analysis of these patterns is similar to the periphyton and aquatic fauna program.
9) Wading bird colony location, size and timing–Continuous surveys of wading bird colonies are conducted with small aircraft throughout the ecosystem. Changes in the location, timing, and size of wading bird colonies are expected to be broadly indicative of recovery of the historical ecosystem patterns that are expected to occur as the ecosystem progresses.
10) LTER monitoring–The LTER program is focused on freshwater marsh to estuarine transition zones along the major water flow paths of the Southern Everglades ecosystem. Water volume, water stage, micronutrient levels, plant productivity patterns, and basal food web features (invertebrates and fishes) are sampled at relatively fine scales of resolution. These samples are used to develop predictive models that shape expectations for positive system response and/or deterioration of the ecosystem.

Project level monitoring may be required by three CERP projects that are focused on the WCA 3B to Tamiami Trail to NE Shark River Slough transition area; Comprehensive System Operation Plan (CSOP), Decompartmentalization (DECOMP) and ENP Seepage Management. These three projects will have regulatory requirements for monitoring endangered species and other permit

specific criteria, and may produce more detailed monitoring plans based on the deliberations of the CERP Project Delivery Teams. Potential for overlap/redundancy between project-level and system-wide monitoring is recognized, and RECOVER has initiated a process to coordinate the various monitoring projects in order to facilitate change analysis, eliminate redundancy and optimize monitoring efforts.

The aggregation of information provided by these monitoring programs should yield a precise and revealing characterization of the changes that occur to a cross-section of organisms across a spatially integrated landscape as a consequence of the modifications made to Tamiami Trail. These organisms should cumulatively represent the effects of changes on the ecosystem, and should also provide the USACE the ability to detect and remedy any problematic shifts to the ecosystem that arise in a rapid and cost-effective manner.

In addition to the physical monitoring programs, predictive models for ridge and slough development/recovery based on shifts in hydropattern are being developed to frame the assessment data with the expectations of change that we have for the area of project influence. Modeling tools are essential for teasing apart the changes in vegetation pattern that we would expect to see as a part of normal fluctuations in climate versus the changes in vegetation that are caused by the project-related alterations in the landscape. The ridge and slough recovery model is primarily being developed by the Everglades division of the SFWMD. Since changes to the Tamiami Trail will profoundly alter the spatial distribution of water delivered to Florida Bay, we expect that the monitoring of the freshwater marsh to estuarine transition to demonstrate direct effects of the project. The set of predictive models will be used to specifically characterize the differences in conditions in the ecosystem that were caused by the alterations made to the Tamiami Trail and/or other CERP related projects.

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APPENDIX F

REAL ESTATE PLAN

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1.0 STATEMENT OF PURPOSE

This Real Estate Plan is tentative in nature for planning purposes only and both the final real property acquisition lines and the real estate cost estimates provided are subject to change even after approval of this supplement.

A Real Estate Design Memorandum (REDM) was approved in April 1995 for the Modified Water Deliveries to Everglades National Park General Design Memorandum (GDM); however, both the REDM and GDM only addressed a portion of Tamiami Trail.

A Real Estate Supplement (RES) was prepared in 2006, reviewed, revised and resubmitted in April 2007 was conditionally approved regarding certain properties and approval withheld for all other properties pending production of more detailed information regarding each parcel and notification that approval by higher authority will only be granted on a tract by tract basis. The RES addresses the real estate requirements to support the Revised General Re-evaluation Report (RGRR) discussed in the main portion of this report.

2.0 AUTHORIZATION

The Everglades National Park Protection and Expansion Act (PL 101-229, Section 104, 16 U.S.C. Part 410r-5 et seq.) (Act), December 1989, authorized the Secretary of the Army to undertake certain actions to improve water deliveries to Everglades National Park (ENP) to the extent practicable to restore natural hydrologic conditions. This Act provides the underlying authority for this project. The Act directed the U.S. Army Corps of Engineers (USACE) to address restoration of water deliveries and natural hydrological conditions.

The 1992 GDM and its associated Final Environmental Impact Statement (FEIS) called for in the Act was completed in June 1992. The 1992 GDM/FEIS is the authorizing document for structural modifications and additions to deliver water for ecosystem restoration in ENP.

3.0 PROJECT DESCRIPTION

Under the Modified Waters Deliveries to Everglades National Park Project, authorized by the Act, water deliveries to the ENP will be improved as a step to restore natural hydrologic conditions and increased flows to the ENP. Water from Water Conservation Area (WCA) 3B will enter the L-29 Canal, pass under Tamiami Trail and enter the ENP.

The project area is located in the west central portion of Miami-Dade County, Florida. The areas subject to direct impacts from the project are on either side of U.S. Highway 41, Tamiami Trail. The Tamiami Trail, the L-29 Canal and the

L-29 Levee on the north side of the canal form the southern boundary of WCA 3B. The south side of the Tamiami Trail is bounded primarily by ENP.

The limits of the project begin at S-334 slightly more than one mile west of the intersection of Krome Avenue (State Road 997) and the Tamiami Trail and extend westward along the highway approximately 10.7 miles to S-333. The L-29 Canal (Tamiami Canal) runs along the north side of the Tamiami Trail through this area.

The plan is described as raising the stage constraint in the L-29 Canal to 8.5 feet, construction of a one-mile eastern bridge and modification to the existing roadway to mitigate for the effects of higher water elevations.

4.0 REAL ESTATE REQUIREMENTS

There are six privately owned parcels located along the Tamiami Trail that are authorized for acquisition by Department of Interior (DOI) as part of the Act. Current owners of these parcels are identified as: Florida Power and Light, Radio One, Jesse E. and Sally L. Kennon (Coopertown), Stan Carlin and M. A. Carlin (Gator Park), Helen V. Farace (Everglades Safari) and Lincoln Financial Media, formerly Jefferson Pilot Communications. The DOI, National Park Service (NPS), is evaluating through a General Management Plan (GMP), the appropriate use and disposition of the airboat businesses. Specifically, Section 103 (d) of the Act authorizes DOI to "negotiate and enter into concession contracts with the owners of commercial airboat and tour facilities in existence on or before January 1, 1989." DOI and the landowners may enter into such agreements. The GMP is addressing this issue.

The Airboat Association of Florida was specifically excluded from the boundary of the ENP map at the time Public Law 101-229 was enacted. However, it has been determined that real estate interests are required for the construction, operation and maintenance of the project.

Lands owned by Department of the Interior (ENP), Florida Department of Transportation (FDOT) and South Florida Water Management District (SFWMD) are also required for this project.

The real estate requirements for each project feature are discussed in the following paragraphs.

4.1 Bridge Construction

a. Florida Power and Light-A very small portion of this 324 acre tract is required for construction of the project. The required acreage consists of

0.88acre. A perpetual road easement and a channel easement are required for approximately 0.44 acre and a temporary work area easement is required for approximately 0.44 acre for a period of 60 months. The total estimated value for these rights is $1,000.

b. Department of the Interior (DOI)-By the authority granted in the NPS Director's Order Number 87D and Title 23, United Stated Code, Sections 317 and 107(d), the DOI will consent to the Federal Highway Administration (FHWA) conveyance of a Highway Easement Deed (HED) for the ENP lands required for construction, operation and maintenance of the project to the FDOT. The HED is currently being negotiated by DOI, FHWA, FDOT, SFWMD and USACE. After this easement has been conveyed to FDOT, the USACE will have the right to construct on these lands and the right to flow water under Tamiami Trail by rights granted via a relocation agreement with FDOT.

c. Florida Department of Transportation-Under the Highway Easement Deed from DOI/NPS/FHWA, FDOT will obtain an easement for use of certain park lands as a highway. This easement, in conjunction with State owned lands that currently make up the existing Tamiami Trail, will comprise the full width of the new Tamiami Trail. Upon conveyance to FDOT of the HED, USACE will request a temporary construction easement from FDOT which may be granted by means of the relocation agreement.

FDOT usually does not grant a temporary easement for project construction. Common practice is to grant a permit for the work to be performed on or alongside a road. A permit is not considered to be an interest in real estate. In the past, FDOT has been very cooperative in modifying permit language to accommodate USACE regulations and legal requirements. The FDOT permit is comparable to a Right of Entry for Construction and is considered adequate to allow for project construction.

d. South Florida Water Management District-Disposal and borrow areas required for the project are currently owned, or will be owned, and will be provided by SFWMD.

The proposed primary disposal area for this project consists of approximately 15 acres and is located south of Richmond Drive in the Rocky Glades area on lands authorized as part of the Central & Southern Florida (C&SF) C-111 Project. No costs are included in this project for these lands since SFWMD will certify and receive credit as part of the C&SF C-111 Project. SFWMD will be asked to certify these lands prior to advertisement of the construction contract along with any other lands

they may own within the construction footprint. Placement of material on this property is compatible with the operations of the C-111 Project. During design, it may be determined that disposal material is suitable to be placed within the project area and additional sites may be identified.

The borrow area consists of approximately 2.0 acres and is located along L-31 North. No costs are included in this report for these lands since SFWMD certified and received credit as part of the C&SF Project in the past. If the material in this area is insufficient or unsuitable, commercial sources will be used to obtain the necessary material.

e. Work Areas-The proposed staging/work areas will be located within the existing FDOT right of way, SFWMD lands or on government-owned lands. No land costs are included in this report, only administrative.

4.2 Modifications to Existing Roadway

Modifications to the existing roadway may be required to mitigate for increased water levels. The executed relocation contract will provide the USACE those lands necessary to perform all construction. Temporary work area easements to access the owner's land will be required if modification of the roadway requires a ramp to the owner's property for safe ingress and egress from the roadway. This modification will be conducted as part of the construction contract. Details are discussed in the paragraphs that follow. No land costs are included in this report, only administrative.

a. Radio One-Access from Tamiami Trail to this property is an unimproved road on lands owned in fee by DOI. The landowner has a non-restrictive road easement. The HED will convey the temporary work area easement for approximately 0.08 acre needed to provide access from the raised road down to the existing drive. Consent to easement may be required from the landowner prior to construction.

b. Coopertown-A temporary work area easement for 36 months consisting of approximately 0.07 acre will be required to provide access from the raised road down to the existing drive. No real estate value is included in this report as this work will be accomplished as part of the construction contract and compensation for the easement right is considered to be the cost to cure.

c. Gator Park-A temporary work area easement for 36 months consisting of approximately 0.08 acre will be required to provide access from the raised road down to the existing drive. No real estate value is included in this report as this work will be accomplished as part of the construction

contract and compensation for the easement right is considered to be the cost to cure.

d. Airboat Association of Florida-During construction, a temporary work area easement for 36 months consisting of approximately 0.16 acre will be required to provide access from the raised road down to the existing drive. No real estate value is included in this report as this work will be accomplished as part of the construction contract and compensation for the easement right is considered the cost to cure.

For operations, a flowage easement (perpetual and occasional) is the recommended estate due to the impacts of the with-project conditions. A perpetual flowage easement up to elevation 8.5 feet and occasional flowage easement up to elevation 9.5 feet is required over the ten acres due to an increase in water levels. The existing structures on the property appear to be above elevation 8 feet National Geodetic Vertical Datum (NGVD) 29. The estimated value of the required real estate interests is $1,625,000.

The REDM for the Modified Water Deliveries to Everglades National Park GDM was approved in April 1995. The REDM approved a flowage easement (permanent and occasional) for the Airboat Association of Florida property. The USACE, Jacksonville District has been negotiating with the landowner for several years and has made commitments to acquire a flowage easement, not fee. During preparation of the Real Estate Supplement, USACE, Jacksonville District, and South Atlantic Division (SAD) staff worked very closely to prepare estate language that meets the needs of the landowner and the project. The estate is included in this report under Paragraph 6.B., Non Standard Estates.

e. Everglades Safari-A temporary work area easement for 36 months consisting of approximately .08 acre will be required to provide access from the raised road down to the existing drive. No real estate value is included in this report as this work will be accomplished as part of the construction contract and compensation for the easement right is considered to be the cost to cure.

f. Lincoln Financial Media-A temporary work area easement for 36 months consisting of approximately .08 acre will be required to provide access from the raised road down to the existing drive. No real estate value is included in this report as this work will be accomplished as part of the construction contract and compensation for the easement right is considered to be the cost to cure.

g. Work Areas-The proposed staging/work areas will be located within the existing FDOT right of way, SFWMD lands or on government-owned lands. No costs are included in this report.

4.3 Operations

DOI has the responsibility to acquire any lands within the ENP boundary. The operation of the project can not be implemented until the necessary real estate interests have been acquired.

An analysis was performed by the USACE on each effected tract. It has been determined that project implementation will cause an increase in elevation and duration in the water on lands south of Tamiami Trail, located in the Everglades National Park Expansion Area and on lands owned by the Airboat Association of Florida. The Airboat Association of Florida is discussed earlier in this section.

The conclusion of the analysis is at a minimum perpetual flowage easements up to 8.5 feet NGVD and occasional flowage easements up to 9.5 feet NGVD are required for each property. A cost estimate to acquire the necessary real estate interests is included in this report but is not included in the Real Estate MCACES for this project. The properties included in the estimate are: Florida Power and Light; Radio One, Incorporated; Coopertown; Gator Park; Everglades Safari and Lincoln Financial. The necessary interests in Airboat Association of Florida will be acquired by USACE and is included in total project costs.

To make comparisons between the existing and with-project conditions, a period of record model was run based on simulating observed rainfall data from the years 1965 to 2000. The rainfall data in conjunction with the operating criteria for each alternative produces a distinct stage hydrograph that can be compared. Daily stage duration curves were produced for both model runs (RGRR/SEIS–Appendix D, Annex A, Figure 4). From this analysis 50 percent of the time (or approximately one half of 36 years) the stage for the existing conditions was above 7.2 feet (or below) and for the with-project was 8.0 feet. This does not mean that the stage was this value for 50 percent of the time but rather the stage was either higher or lower than this value. A frequency analysis was also performed with the model output, and based on this analysis, the 100-year daily peak stage for the existing and with project conditions would approximate 8.4 and 9.5 feet, respectively. Anything above elevation 9.5 feet would result in short-term inundation of the majority of the property. Buildings along the south side of Tamiami Trail could remain, but there would be a significant short-term inundation during the 100-year event of the parking lot unless there were major modifications made to the property.

4.3.1 Impacts Due To Operations

Spot elevation survey data was gathered from many sources and used to plot contour maps of Coopertown, Gator Park and Everglades Safari. Preliminary determinations on post-project impacts to the properties were made using many assumptions. The assumptions include: a) any increase in water levels will have impacts to septic systems and wells; 2) landowner would be able to secure permits for any necessary modifications to their existing property including wells and septic systems; permits for fill material to provide access 3) any water elevation over 8.0 feet will require modifications. If the permits could not be obtained to make necessary modifications to the property, fee would be the recommended estate.

New appraisals and better topographic information will be required to verify the appropriate estate prior to acquisition.

a. Lincoln Financial Media (formerly known as Jefferson Pilot Communications Company of Miami, Inc.)–There is insufficient data to prepare a contour map so the determination is based on spot elevation data. The towers appear to be above flooding levels and therefore a perpetual flowage easement is the recommended estate. Assumption is made that modifications will be required at any elevation above 8.0 feet to existing structures including access roads and possibly to the communication towers and buildings. New appraisals are necessary and could produce significantly diverse values when taking into consideration the larger parcel and/or the cost to cure in the with-project condition.

b. Everglades Safari–Perpetual flowage easement is the recommended estate due to the with-project water levels. At elevation 8.0 feet, it appears minimal modifications will be required to the property. At elevation 8.5 feet, access to a substantial portion of the parcel is severed. It may be possible to fill some portions to allow access; however, it appears unlikely that the business owner would be able to operate all aspects of the business. Anything above elevation 9.5 feet would result in short-term inundation of the majority of the property. Buildings along the south side of Tamiami Trail could remain but there would be a significant loss of parking without major modifications.

c. Gator Park–Perpetual flowage easement is the recommended estate due to the impacts of the project. At elevation 8.0 feet, it appears there are minimal impacts to the upland portions of the property. However, there may be impacts to docks along the boundaries of the parcel. At elevation 8.5 feet, impacts to the RV sites located along the western boundary of the property appear to be substantial. At this time, it is unknown if modifications would allow continued use for the RVs. Additional areas on the eastern portion of the property that will be impacted are holding pens,

gas tanks, storage areas and additional docks. Parking areas and the main structure do not appear to be impacted. At elevation 9.0 feet access to a substantial portion of the parcel is severed. The RV sites and all docks are underwater. The main structure and parking lot adjacent to Tamiami Trail would remain intact. There could be an infrequent short-term interruption of access during wet season which is low-season for the business.

d. Coopertown-Perpetual flowage easement is the recommended estate due to the with-project water levels. At elevation 8.0 feet, it appears minimal modifications would be required to the facility; however, there would be periodic flooding. Parking and all major improvement appear to remain intact. At elevation 8.5 feet, everything south of the main building may experience minimal flooding. Parking and buildings immediately adjacent to Tamiami Trail will remain intact. At elevation 9.0 feet water levels would be in close proximity to the major buildings.

e. Radio One Communications-There is insufficient data to prepare a contour map so the determination is based on spot elevation data. At this time, perpetual flowage easement is the recommended minimum estate. New appraisals and better topographic information will be required to verify the appropriate estate. Assumption is made that modifications will be required to the existing structures at any elevation above 8.0 feet including access roads and possibly to the communication towers and buildings. New appraisals are necessary and could produce significantly diverse values when taking into consideration the larger parcel and/or the cost to cure in the with-project condition.

f. Florida Power and Light (FP&L)–At a minimum, a perpetual flowage easement is the recommended estates over the FP&L property from Tamiami Trail to the 8.5 Square Mile Area. As an alternative to acquiring a perpetual flowage easement, DOI is seeking specific legislation to exchange the FP&L lands for lands adjacent to L-31 North.

4.3.2 Costs for Operations

The estimated real estate costs for fee simple interests during operations of the project are shown below.

Lands and Damages		
	Total Lands and Damages	$16,900,000
	Acquisition/Administrative Costs	
	Federal Administrative	$300,000
	Public Law 91-646 Payments	$1,800,000
	Contingencies (25%)	$508,000
	Sub Total	$2,538,000
Total Estimates Real Estate Costs		**$19,438,000**

For operations of the project, there are five businesses, two potential owner occupied residential structures and approximately 12 tenants located within the project area that appear to be eligible for relocation assistance benefits. Estimates of costs to comply with Public Law 91-646 total $1,800,000. This estimate includes costs for moving and re-establishment expenses for the affected businesses, and moving and other costs for providing the displaced families with comparable decent, safe and sanitary replacement housing.

The land cost included for two radio tower sites, Lincoln Financial and Radio One, Incorporated, is for land and structures on the existing site. It does not include any relocation assistance payments or the larger parcel. The larger parcel is defined as radio stations or towers that receive transmission from either of these sites. The costs could increase anywhere from $5,000,000 to $25,000,000 if these towers are altered in any way.

This estimate is not included in the real estate estimates or total project costs for this report.

4.4 Operation and Maintenance Requirements

Neither the USACE nor the SFWMD currently has any rights to flow water through the 19 culvert sets currently existing under Tamiami Trail. These culverts were installed by the FDOT to discharge waters from the L-29 Canal to the lands now being acquired for the ENP Expansion area and to prevent erosion of the roadbed of Tamiami Trail. These culverts were in place at the time when the L-29 Canal was constructed back in the 1960s.

The construction and replacement of the effected portion of Tamiami Trail will be conducted by means of facility relocation and will require a relocation contract between the FDOT and the USACE. Prior to the execution of this document, FDOT will obtain a HED that will also contain a channel easement and a flowage easement from the Park for those lands that the Park owns in fee within the project area. The latter two easements will be perpetual and assignable easements cited in this supplement. Thereafter, FDOT, as part of the

relocation contract, will grant to the USACE the right to replace the existing facility and will assign their channel and flowage easements to the USACE for our water resources development objective, that being the conveyance of water underneath the roadway and bridges during construction. The USACE will further assign those easements to the SFWMD upon completion of the project construction for the execution of the operation and maintenance phase of the project.

In accordance with the Project Cooperation Agreement, SFWMD has the responsibility to operate and maintain the conveyance features of this project. A vegetation plan has been drafted and DOI and SFWMD are currently negotiating a Land Management Plan that will define the operation and maintenance requirements.

Real estate interests acquired by the USACE on the Airboat Association of Florida property will be transferred to SFWMD since this land was specifically excluded from the boundary of the Park in the Act, hence the Park would not possess the authority to accept those interests.

4.5 Sponsor Owned Lands

4.5.1 Federal

The DOI, through NPS, owns lands south of Tamiami Trail known as ENP.

4.6 Non-Federal

Lands immediately north of the project are owned in fee or controlled by SFWMD. SFWMD also owns the proposed borrow and disposal sites. FDOT owns or controls sufficient interest in the land within the existing roadway.

4.7 Estates

4.7.1 Standard Estates

Fee

The fee simple title to (the land described in Schedule A) subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Temporary Work Area Easement

A temporary easement and right-of-way in, on, over and across (land described in Schedule A), for a period not to exceed (60 months)*, beginning with date

possession of the land is granted to the United States, its representatives, agents and contractors as a work area, including the right to move, store and remove equipment and supplies and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction, together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

*Note: Timeframe may be adjusted as appropriate to meet project requirements.

Perpetual Borrow/Disposal Area Easement

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule A as a borrow/disposal area, including the right to borrow and/or deposit fill and waste material thereon, move, store and remove equipment and supplies and erect and remove structures on the land and to perform any other work necessary and incident to construction, together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Perpetual Road Easement

A perpetual and assignable easement and right-of-way in, on, over and across the land described in Schedule A, for the location, construction, operation, maintenance, alteration, replacement of a road and appurtenances thereto; together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions and other vegetation, structures, or obstacles within the limits of the right-of-way; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

4.7.2 Non-Standard Estates

Perpetual Channel Easement

A perpetual and assignable right and easement to create, construct, operate and maintain a channel and associated works on, over and across (The land

described in Schedule A) including the right to clear, cut, fell, remove and dispose of any and all timber, trees, underbrush, buildings, improvements and/or other obstructions there from; to excavate, dredge, cut away, and remove any and all of said land and to place thereon dredge or spoil material; and for such other purposes as may be required in connection with said works; reserving, however, to the owners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easements hereby acquired.

Note: "subject to" language was deleted to ensure the Government's rights are paramount.

Flowage Easement (Permanent and Occasional Flooding)

The perpetual right, power, privilege and easement in, upon, over and across (the land described in Schedule "A") (Tracts Nos. ____ and ____) for the purposes set forth below:

a. Permanently to overflow, flood and submerge the land lying below elevation 8.50 feet NGVD 29 in connection with the operation and maintenance of the Modified Water Deliveries to Everglades National Park project for the purposes as authorized by the Act of Congress approved December 13, 1989.

b. Occasionally to overflow, flood and submerge the land lying above elevation 8.50 feet NGVD 29 and below 9.50 feet NGVD 29 in connection with the operation and maintenance of said project.

Together with all right, title and interest in and to the structures and improvements now situate on the land below elevation 8.5 feet NGVD 29. The above estate is taken subject to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used and enjoyed without interfering with the use of the project for the purposes authorized by Congress or abridging the rights and easement hereby acquired; provided further that any use of the land shall be subject to federal, state and local laws and regulations governing use of said land.

Flowage Easement (Permanent Flooding)

The perpetual and assignable right, power, privilege and easement permanently to overflow, flood and submerge Tract No. _____ in connection with the operation and maintenance of the federal project as authorized; provided that no structures for human habitation shall be constructed or maintained on the land below 9.50 feet NGVD 29; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used and enjoyed without

interfering with the use of the project for the purposes authorized by Congress or abridging the rights and easement hereby acquired.

4.8 NAVIGATION SERVITUDE

During the preparation of the 1992 GDM/EIS for the Modified Water Deliveries to ENP, the title to the lands within the WCAs (lands north of Tamiami Trail), the L-29 Levee and borrow canal, underlying Tamiami Trail were all investigated. Title to all these lands were derived from the patents issued by the United States of America to the State of Florida pursuant to the Swamp and Overflowed Lands Act of 1850 (codified in Title 43 U.S.C. 981 et seq.). Section 983 of Title 43 put a duty on the Secretary of Interior to make accurate lists and plats of all such lands *(Swamp and Overflowed Lands),* to transmit the lists and plats to the governor of the State and then at the request of the governor to issue patents to the state to convey the land in fee to the state. Under Florida law, Swamp and Overflowed lands were not considered sovereign lands and could be sold to private parties. Most of the lands south of Lake Okeechobee fit into the lands designated by the United States as Swamp and Overflowed lands conveyed to the State and then sold by the state to private developers or private parties.

It was determined that the Secretary of Interior had designated all the lands as Swamp and Overflowed lands.

Based on these laws and the determination of the Secretary of Interior, no land in the project area is subject to the navigation servitude.

4.9 Project Map

Real Estate Planning maps are located at the end of this report along with Miami-Dade County tax maps for each property and elevation survey maps for the privately owned properties.

4.10 Induced Flooding

It has been determined that project implementation will cause an increase in elevation and duration of water on lands south of Tamiami Trail, located in the Everglades National Park Expansion Area and on lands owned by the Airboat Association of Florida.

To make comparisons between the existing and with-project conditions, a period of record model was run based on simulating observed rainfall data from the years 1965 to 2000. The rainfall data in conjunction with the operating criteria for each alternative produces a distinct stage hydrograph that can be compared, in this manner both alternatives (plans) can be compared equally. Daily stage duration curves were produced for both model runs (RGRR/SEIS–Appendix D,

Annex A, Figure 4). From this analysis 50 percent of the time (or approximately ½ of 36 years) the stage for the existing conditions was above 7.2 feet (or below) and for the with-project was 8.0 feet. This does not mean that the stage was this value for 50 percent of the time but rather the stage was either higher or lower than this value. A frequency analysis was also performed with the model output, and based on this analysis, the 100-year daily peak stage for the existing and with project conditions would be approximately 8.4 and 9.5 feet, respectively. Since 1963, the highest water level ever recorded was in 1999 with Hurricane Irene where the water levels reached 8.6 feet, the 100 year event pre-project.

Lands subjected to induced flooding have been analyzed to determine if structural solutions consistent with restoration would be more cost effective than real estate acquisition. In any case, the cost of the structural solutions cannot exceed the current fair market value of the property. If the cost exceeds the fair market value, it is in the best interest of the government to acquire the property in fee. Impacts to each parcel are discussed in detail under Paragraph 4, "Real Estate Requirements".

If the government determines after the appraisal and the final costs to cure estimates are received that fee is not the required estate for any of the above cited properties, the government will, contemporaneously with the perpetual flowage easement negotiations, seek a sufficient real estate interest, including but not limited to fee and a temporary work area easement for the road construction, from the owner to allow for the construction of the project.

4.11 Real Estate Baseline Cost Estimate

Real Estate costs include administrative and acquisition costs associated with the construction of Tamiami Trail Modifications. Estimates are included to cover the costs associated with negotiating an agreement with FDOT, costs associated with acquisition of the Airboat Association and the other private lands within the Everglades National Park Expansion Area.

4.11.1 Construction

Lands and Damages:	
Total Lands and Damages:	$1,626,000
Acquisition/Administrative Costs	
Federal	$3,084,000
Public Law 91-646 Payments	$ 0
Contingencies (25%)	$1,178,000
Total Estimates Real Estate Costs	**$ 5,888,000**

Real estate costs for operations are the responsibility of the DOI. The costs identified below are not included in the total project costs for the LRR. These costs are to be used for reference only.

4.12 Relocation Assistance Benefits

There are no relocations required for construction of the proposed project.

4.13 Minerals

No known minerals exist in the project area.

4.14 Non-Federal Sponsor's Authority To Participate

The SFWMD is the non-federal sponsor for this project. The SFWMD was created by virtue of Florida Statutes, Chapter 373, Section 069. The SFWMD was created to further the State policy of flood damage prevention, preserve natural resources of the State including fish and wildlife and to assist in maintaining the navigability of rivers and harbors. (There are other enumerated purposes but they are not directly applicable to this project.) The SFWMD is specifically empowered to

> *Cooperate with the United States in the manner provided by Congress for flood control, reclamation, conservation, and allied purposes in protecting the inhabitants, the land, and other property within the district from the effects of a surplus or a deficiency of water when the same may be beneficial to the public health, welfare, safety, and utility. (FL Statutes Section 373.103(2))*

To carry out the above purposes, the SFWMD is empowered to

> *...hold, control, and acquire by donation, lease, or purchase, or to condemn any land, public or private, needed for rights-of-way or other purposes, and may remove any building or other obstruction necessary for the construction, maintenance, and operation of the works; and to hold and have full control over the works and rights-of-way of the district.*

The term *works of the district* is defined by Section 373.019 to be

> *...those projects and works, including, but not limited to, structures, impoundments, wells, and other water courses, together with the appurtenant facilities and accompanying lands, which have been officially adopted by the governing board of the district as works of the district.*

Section 373.139 specifically empowers the SFWMD

> *... to acquire in fee or less than fee title to real property, easements and other interests or rights therein, by purchase, gift, devise, lease, eminent domain, or otherwise for flood control, water storage, water management, conservation and protection of water resources, aquifer recharge, water resource and water supply development, and preservation of wetlands, streams, and lakes. Eminent domain powers may be used only for acquiring real property for flood control and water storage....*

4.15 Real Estate Milestones

All lands required construction of the project are needed by October 2008. Lands required for operations are needed prior to initiating operations.

4.16 Relocations of Roads, Bridges, Utilities, Towns and Cemeteries

4.16.1 Roads

A portion of U.S. Highway 41 (Tamiami Trail) will be removed and a one mile bridge will be constructed between Structures S-334 on the east and S-355B on the west. Modification to the existing roadway will be required to mitigate for the effects of higher water elevations. The purpose is to provide increased conveyance of water from WCA 3B and the L-29 Canal to Northeast Shark River Slough.

An Attorneys Opinion of Compensability was prepared and a determination was made that FDOT has compensable interest in the road.

Based on evidence submitted by the FDOT and independent investigation, the FDOT owns fee title to portions of this area, road easements to portions of the area and prescriptive rights to other portions of the area.

As the Modified Water Deliveries to Everglades National Park Project is a federal acquisition and construction program, the responsibility for securing the Relocation Contract will be on the Federal government. Prior to contract advertisement, a fully executed Relocation Contract must be in place.

4.16.2 Bridges

No bridges to be relocated.

4.16.3 Utilities

There are a number of utility companies that have their facilities located in the State owned right of way for U.S. Highway 41 (SR90, Tamiami Trail). These consist of electric, telephone and fiber optic cables, all being located on the south side of Tamiami Trail.

The work on the Tamiami Trail will involve raising the roadbed and the construction of a bridge. The work will impact all the utility facilities in the southern highway right of way necessitating their relocation.

The FDOT has issued permits to the various utilities to allow placement of their facilities within the right-of-way.

Special Use Permits granted by FDOT to these utilities, state, "It is expressly stipulated that this permit is a license for permissive use only and that the placing of facilities upon public property pursuant to this permit shall not operate to create a property right." The permit further provides: "Whenever it is necessary for the construction, repair, improvement, maintenance, safe and efficient operation, alteration or relocation of all, or any portion of said highway as determined by the Director, Division of Maintenance, any or all of said poles, wires, pipes, cables or other facilities and appurtenances authorized hereunder, shall be immediately removed from said highway or reset or relocated thereon as required by the Director, Division of Maintenance, and at the expense of the permittee unless reimbursement is authorized."

The USACE will enter into a relocation agreement with the FDOT; however, FDOT has indicated that since the project is a Federal project and not one paid for or constructed by the State, the cost for relocation of these utilities should be borne by the Federal government, not the utility companies. Therefore, at this time, FDOT does not anticipate that they will revoke the utility permits for this project. The permits themselves specifically state that the utility companies do not possess any interest in real estate and that the lines/pipelines/facilities must be removed by the utility companies, at their own cost, upon the revocation by FDOT; however, that would only apply in the case of a State highway project. The permit does not indicate that the utility companies would receive reimbursement on a Federal project, or for that matter, any other State project other than a State highway project.

Even though the utility companies do not have a real estate interest as indicated by the language of the permit itself, the utility companies' lines/pipelines/facilities currently lie within the project right-of-way. As such, the USACE will be forced to relocate the lines at the government's cost.

Based on guidance provided in EC 405-1-17, Chapter IX, the USACE is requesting authority, through approval of this report by the Chief of Engineers, to pay for the necessary relocations required to construct this project.

The USACE will enter into relocation agreements with AT&T/Bell South for relocation of three existing lines and Florida Power and Light lines extending from the levee to the existing privately owned parcels. It is anticipated that the costs of the relocations will be approximately $5,000,000.

Florida Power and Light as well as Quest Communications have existing utility lines on Levee 29 (L-29). Those lines are outside of the current project footprint, hence they will not be relocated as part of the modification of the road but they may have to be relocated as part of future CERP projects should the removal of L-29 become necessary.

Construction sequencing will allow adequate time for the utility companies to construct replacement utilities.

4.16.4 Towns or Cemeteries

No towns or cemeteries will be relocated as a result of this project.

4.17 Presence of Contaminants (Hazardous, Toxic and Radioactive Wastes)

A Phase I Hazardous Toxic and Radioactive Waste (HTRW) site assessment of the project area was conducted in late 2006. The assessment area extended the length of the project (between S-333 and S-334/S-356) and from the L-29 Canal to 200 feet south of the centerline of the Tamiami Trail. The area assessed included properties owned by Lincoln Financial Media, Everglades Safari Park, the Airboat Association of Florida, Gator Park, Coopertown Airboat Rides and Restaurant (two adjacent tracts), Radio One Communications, and FP&L.

The site assessments identified four potential contamination sites, all of which are located on private property outside of the construction footprint required for the proposed project. It is anticipated that the federal government will acquire an interest in real estate from the subject private owners since these lands will be impacted not from the project's construction but rather the operation of the project. In a federal acquisition, the cost of remediation of the subject properties would be assessed against the property owner. Prior to a real estate closing, the landowner would be given a choice of conducting the remedial work at his own cost, or the federal government could withhold a sufficient amount of funds necessary for the remediation from the acquisition funds to ensure compliance.

4.18 Attitude of Landowners

The lands impacted by this project are owned by the SFWMD, FDOT and ENP who strongly support the project. Other landowners in the area support the project but are concerned about the impacts to their businesses. There are also some landowners in the area who oppose the project.

4.19 Osceola Camp

Necessary modifications to the existing camp are required to allow for continued use by the Osceola's post-project. DOI has the responsibility to complete this action. Costs associated with this work are covered under the Act. As of March 2008, DOI is negotiating an agreement with the Tribe that will define design requirements mutually agreeable to all parties. After the agreement is fully executed, the USACE, at the request of DOI, will assist with design and construction.

4.20 M-CACES for Construction Only

REAL ESTATE CHART OF ACCOUNTS
ESTIMATED PROJECT REAL ESTATE COSTS
PROJECT: MWD Tamiami Trail LRR
DATE: 03/24/2008

01	Lands and Damages		
01AA	Project Planning	$20,000	
01B--	Acquisitions		
01B20	Title Contract	$5,000	
01B40	Acq By Govt	$17,000	
	Relo Contracts	$3,000,000	
01C--	Condemnations		
01C20	By Ls	$0	
01C40	By Govt	$25,000	
01E--	Appraisals		
01E30	Contract	$6,000	
01E50	By Govt		
01F--	PI 91-646 Assistance		
01F20	By Ls	$0	
01F40	By Govt	$	
01G--	Temporary Permits/Licences/Rights-Of-Entry		
01G20	By Ls	$5,000	
01G40	By Govt	$4,000	
01G60	Damage Claims	$0	
01M00	Projected Related Admin		
	Real Estate Review Of PCA	$2,000	
01R--	Real Estate Payments		
01R1	Land Payments		
01R1B	By Govt	$1,626,000	
01R2	PI 91-646 Assistance Payments		
01R2B	By Govt	$0	
Total Real Estate Cost Excluding Contingency			**$ 4,710,000**
Real Estate Contingency (25%) Cost		**$1,178,000**	
TOTAL PROJECT REAL ESTATE COST			**$5,888,000**

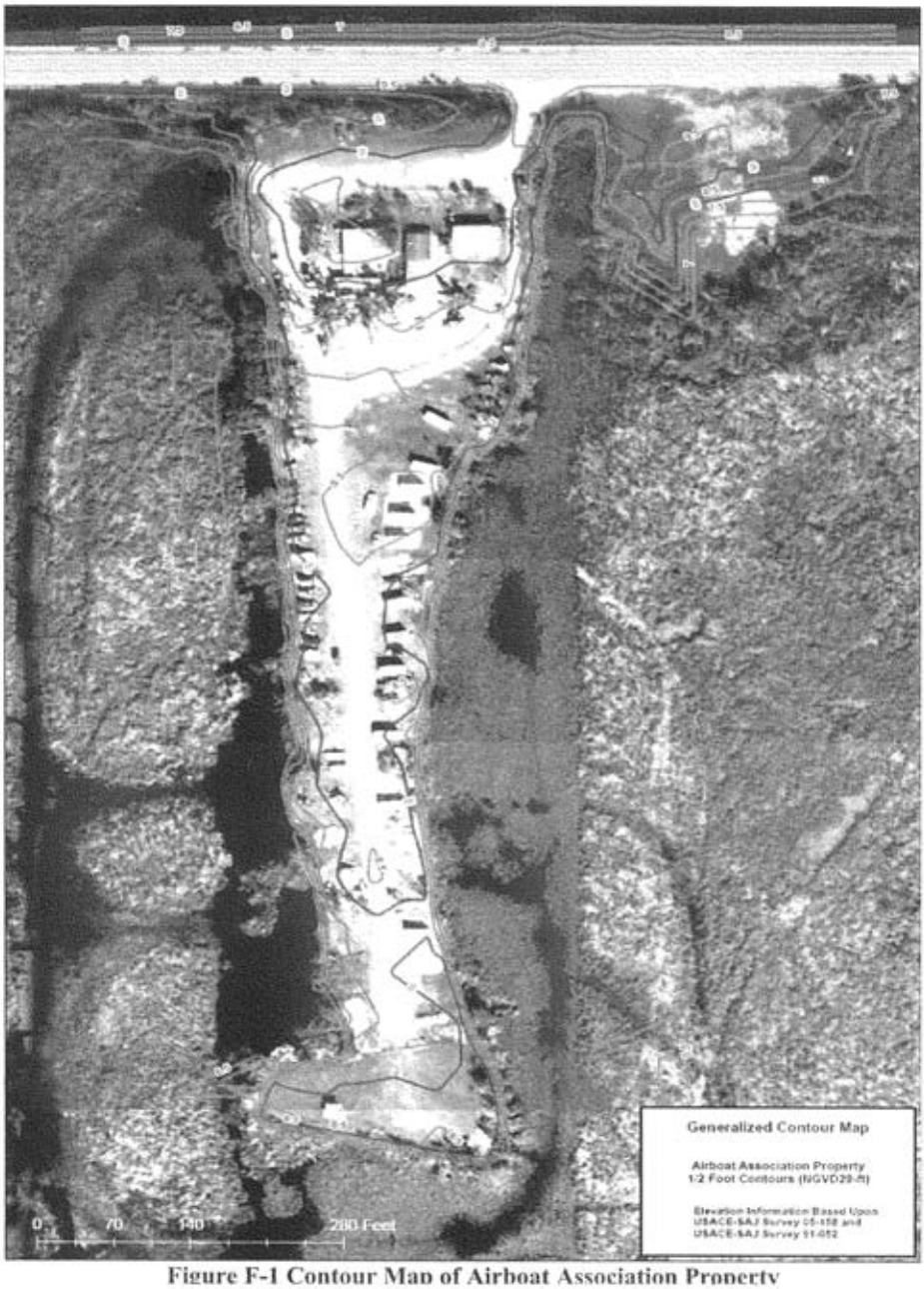

Figure F-1 Contour Map of Airboat Association Property

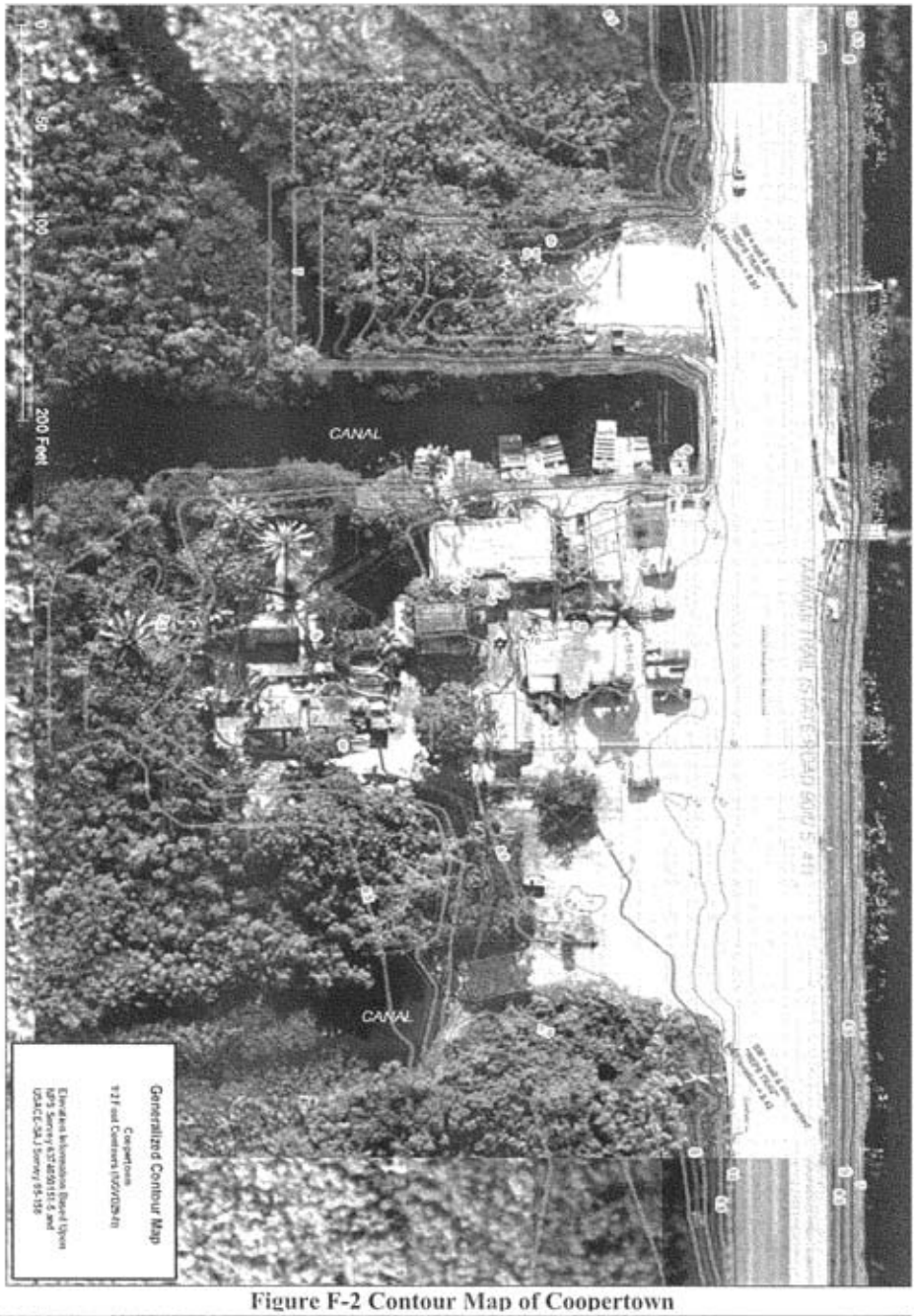

Figure F-2 Contour Map of Coopertown

Figure F-3 Contour Map of Everglades Safari Parcel

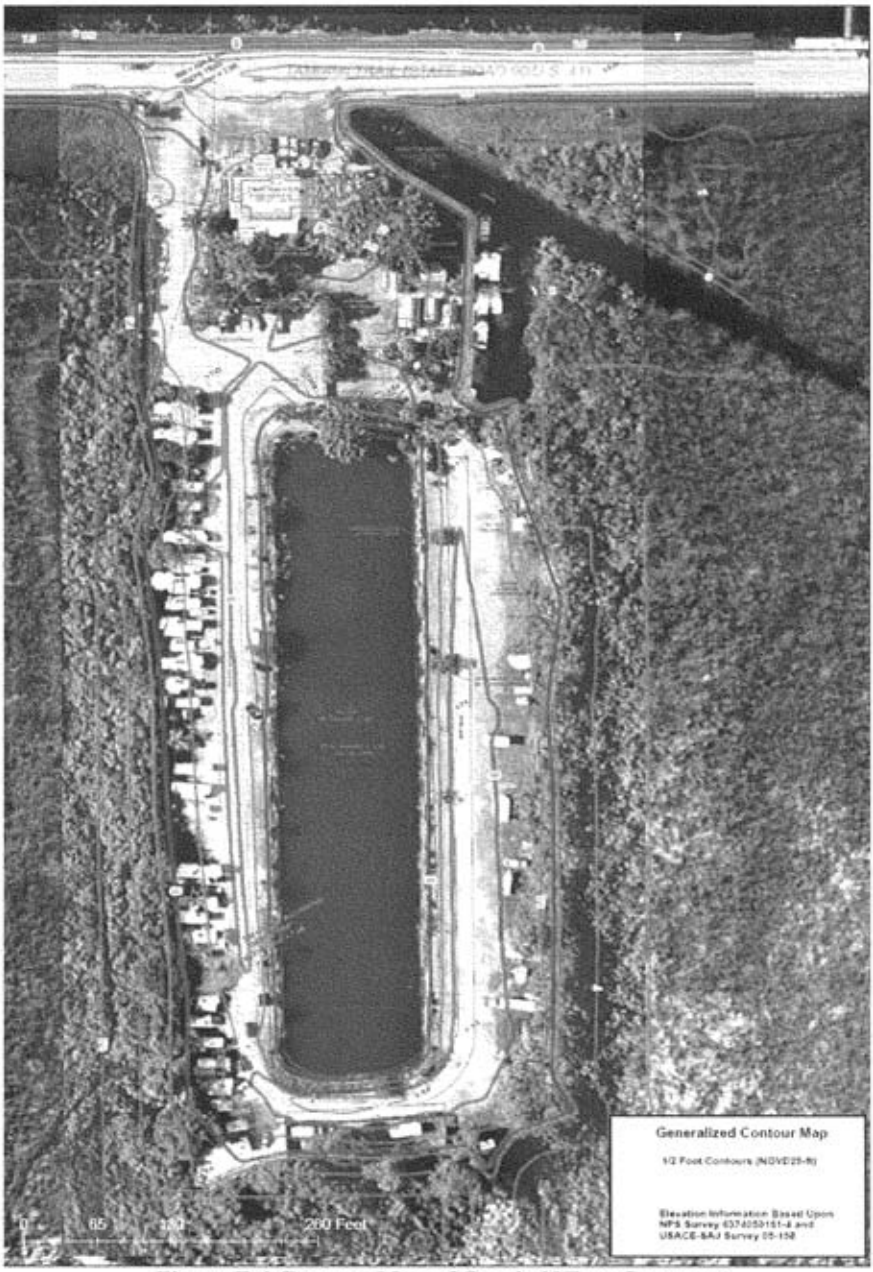

Figure F-4 Contour Map of One-half Foot Contours

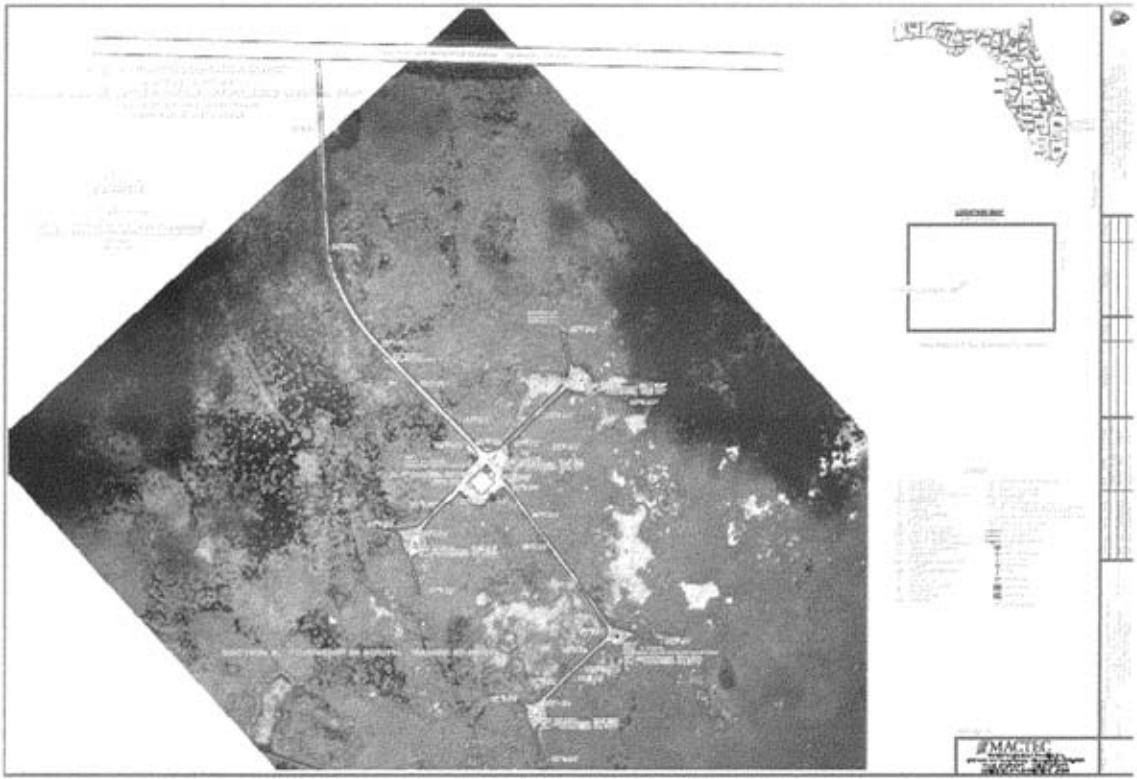

Figure F-5 Lincoln Financial

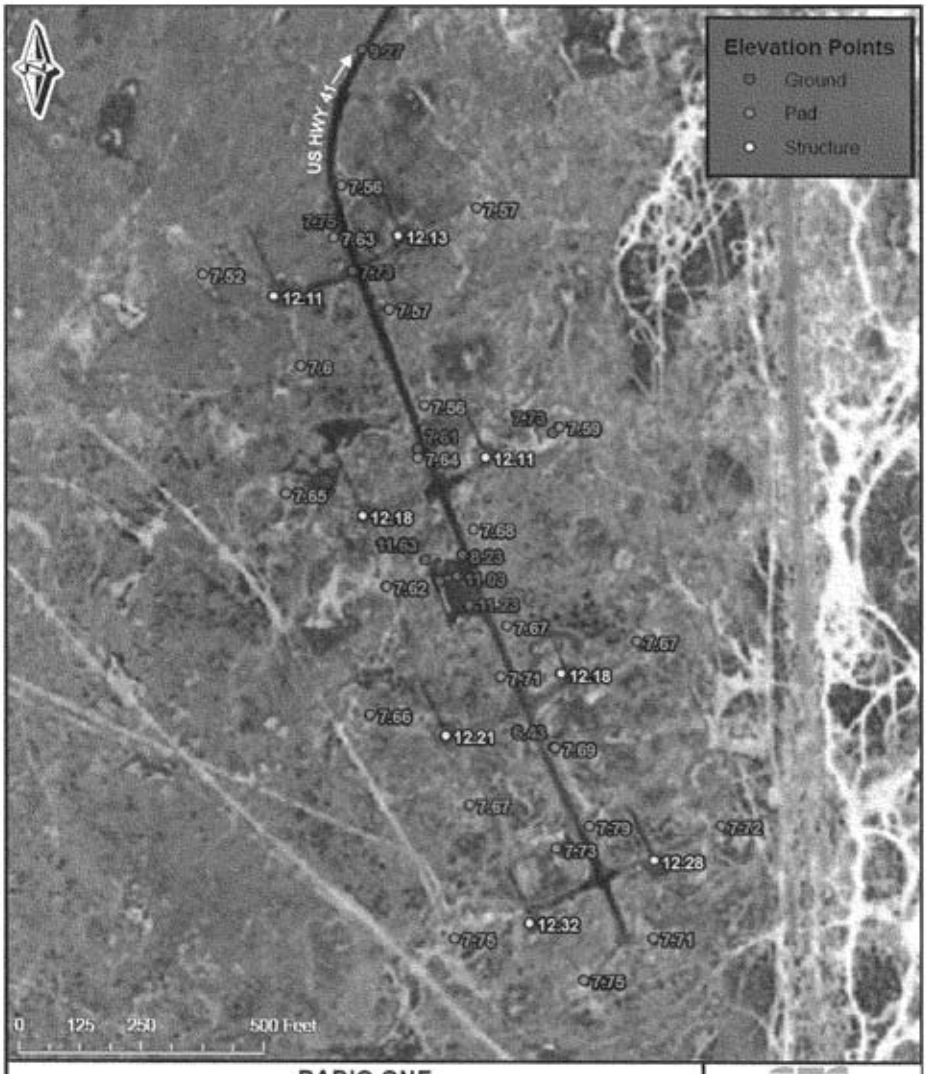

Figure F-6 Radio One Structure, Pad and Ground Elevations

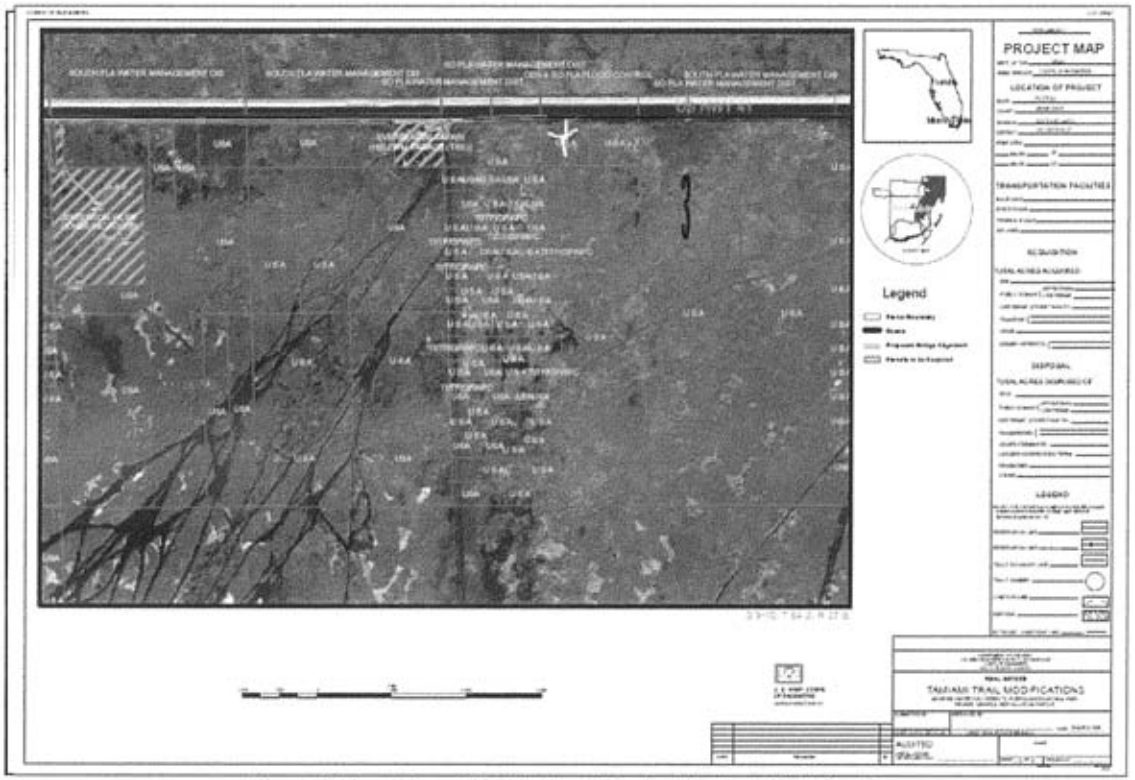

Figure F-7 Land Ownership-North and South of Tamiami Trail-Sheet 1

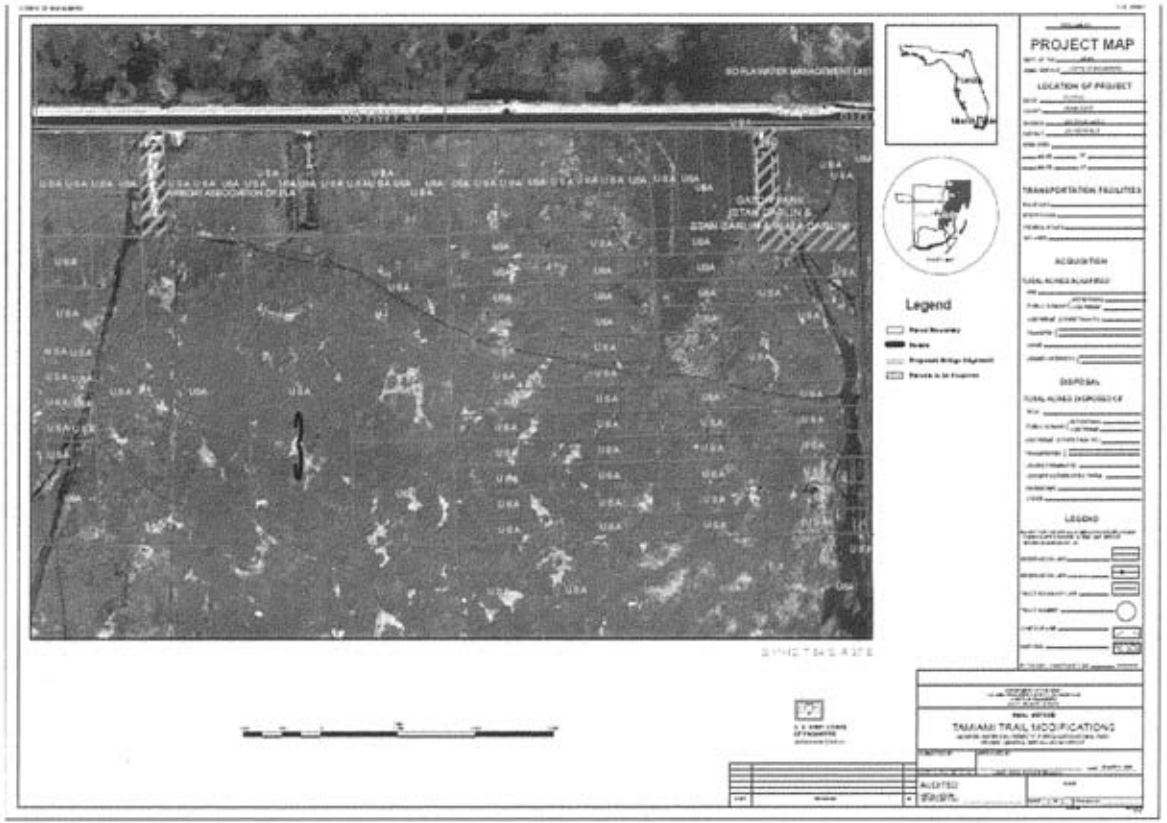

Figure F-8 Land Ownership-North and South of Tamiami Trail-Sheet 2

Figure F-9 Land Ownership-North and South of Tamiami Trail-Sheet 3

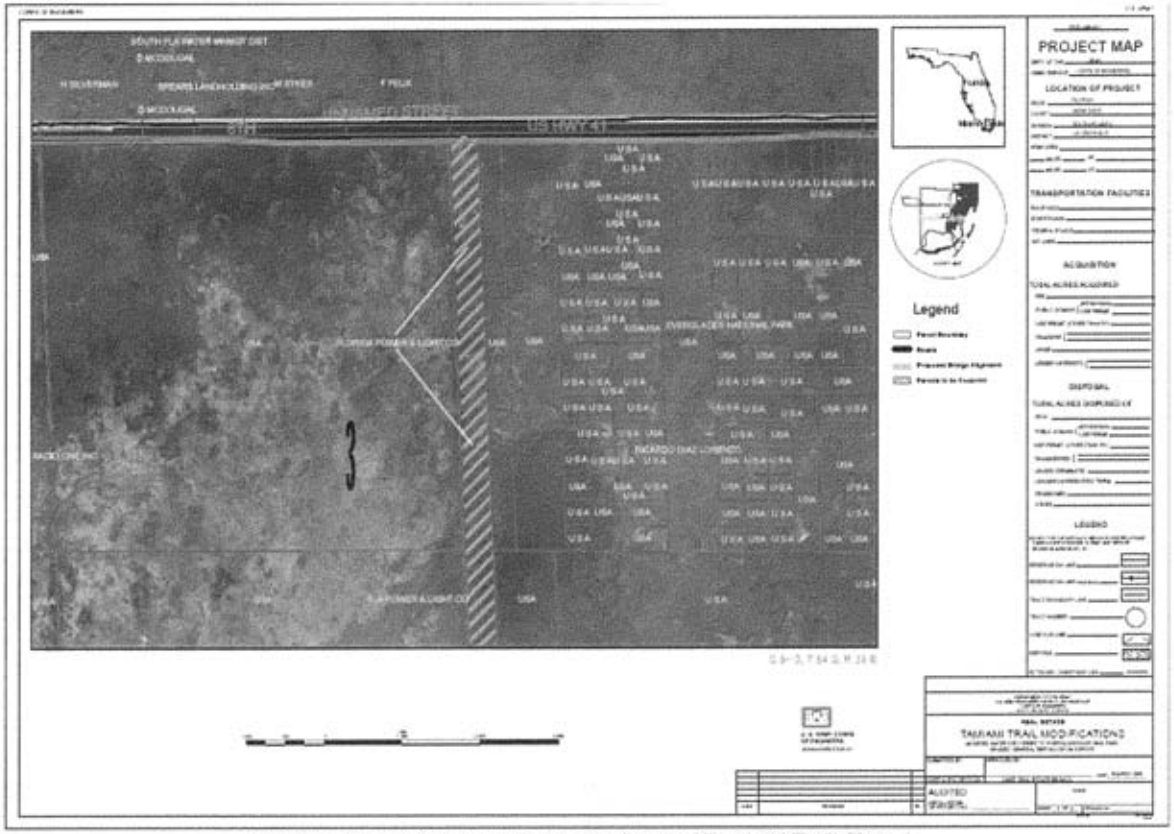

Figure F-10 Land Ownership-North and South of Tamiami Trail-Sheet 4

APPENDIX G:
SCOPING COMMENTS

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List of Commentors

Melanie Crim
William P. VanderWyden
Stan Carlin
Miami Dade County, Department of Environmental Resource Management
Sierra Club, Miami Group
Catherine B.
US Department of Interior, National Park Service
South Florida Regional Planning Council
Florida Fish and Wildlife Conservation Commission, March 4, 2008
Florida Fish and Wildlife Conservation Commission, June 13, 2000
Florida Fish and Wildlife Conservation Commission, January 16, 2002
Florida Fish and Wildlife Conservation Commission, February 26, 2001
Florida Fish and Wildlife Conservation Commission, August 11, 2005
Florida Fish and Wildlife Conservation Commission, March 17, 2004
Florida Fish and Wildlife Conservation Commission, June 24, 2003
Sydney T, Bacchus, Ph, D, Hydroecologist March 5, 2008
Sydney T, Bacchus, Ph, D, Hydroecologist March 21, 2004
Radio One via Todd Fracassi, Pepper Hamilton LLP, March 6, 2008
Radio One via Todd Fracassi, Pepper Hamilton LLP, July 20, 2006
Radio One via Thomas P. Wilczak, Pepper Hamilton LLP, February 4, 2002
Radio One via Thomas P. Wilczak, Pepper Hamilton LLP, October 11, 2005
Florida Department of Transportation
Florida Department of Environmental Protection
Florida State Clearing House
Florida Department of Environmental Protection, John Outland, Inger Hansen, Annet Forkink, March 5, 2008
Modified Water Deliveries, Tamiami Trail Water Quality Certification, Pre-Application Meeting, 25 January 2008 10:00
Florida Department of Environmental Protection, John Outland, Inger Hansen, April 17, 2007
Florida Department of Environmental Protection, Inger Hansen, Temperince Morgan, and John Outland, December 29, 2005
Florida Department of Environmental Protection, Inger Hansen, Temperince Morgan, and John Outland, September 19, 2005
Tim Towles

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Summary of Scoping Comments	
Commenter	**Comment**
FEDERAL	
US Department of Interior, National Park Service	ENP concurs with the Tentatively Selected Plan (TSP). We offer comments, both general and specific (see attached), that focus on (1) LRR content; (2) the TSP; and (3) the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). Some portions of the text would benefit from a close collaborative effort between ENP and USACE staff to improve the accuracy and technical quality of the document and to assure that the document adequately covers actions to be taken by the park in association with your actions on the Tamiami Trail component of the MWD.
STATE	
Florida Fish and Wildlife Conservation Commission	We note that the current planning process is leaning strongly towards an alternative plan that would improve conveyance near the eastern end of the Tamiami Trail with the addition of a one-mile bridge there, but no conveyance improvements are planned elsewhere along the 1O.7-mile stretch of roadway. We would like the COE to give serious consideration to improving conveyance along other portions of the Trail as well. Based on discussions with South Florida Water Management District staff we believe that the strategic placement of box culverts at historic sloughs and/or aligned with the S355 and other existing or planned water conveyance structures in the L-29 Levee in conjunction with downstream spreader swales, would greatly augment hydraulic and ecological connectivity. Although some scientific uncertainties remain, we are encouraged by the COE's most recent modeling results, which predict that the addition of spreader swales below each set of Tamiami Trail culverts would result in an increase in the conveyance capacity of these culverts by approximately 12 percent at an L-29 canal stage of 8.0 feet NGVD. Although we recognize the current funding constraints for not raising the road to a height capable of withstanding an L-29 canal stage design of at least 8.5 feet NGVD, we do encourage further examination of that option in the future, as the Comprehensive Everglades Restoration Program progresses. We fully support the ecological benefits expected from this project, and will continue to work closely with the COE through the project's implementation. We furthermore ask that the COE address our concerns and recommendations contained in this letter (see App. G) as well as prior ones that have been conveyed to them over the course of the last eight years to ensure that any unintentional adverse impacts to the area's natural resources. Particularly to state-listed wildlife species, are either averted or minimized
Florida Department of Transportation	•The proposed document should state that the Corps will design, permit and construct all modifications to Tamiami Trail necessary to accommodate the selected water elevation in the L29 canal. • The NEPA document should cover both the impacts of the proposed bridge and the necessary work on the roadway to accommodate the selected water elevation in the L29 canal.

	• Since there will likely be one-way traffic during construction, traffic impacts should be addressed. • Since the Tamiami Trail is a National Register of Historic Places eligible resource, impacts to the roadway in that capacity should be addressed.
Florida Department of Environmental Protection	The Florida Department of Environmental Protection (DEP) supported the U.S. Army Corps of Engineers (USACE) Tentatively Selected Plan (Alternative 14) presented in the 2005 General Reevaluation Report (GRR) and has also been supportive in moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project. DEP staff suggests that the USACE consider including the pilot swale project within the TTM LRR, rather than evaluating the project under a separate NEPA document. Any differences between the eastern bridge that may be proposed in the LRR and the eastern bridge in Alternative 14 from the 2005 GRR should be clearly outlined in the draft Environmental Assessment. Staff also requests that the following items be included in both the draft Environmental Assessment and permit application: * A summary of project benefits versus impacts. * Discussion of potential impacts to water quality and water management during and following construction. * Discussion of any proposed water quality or ecological monitoring. * Discussion of any potential impacts to fish and wildlife resources in the water conservation areas or Everglades National Park, particularly listed species. Based on the information contained in the scoping notice and the enclosed state agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP).
LOCAL	
Miami Dade County, Department of Environmental Resource Management	DERM recognizes that improvements to the Tamiami Trail are part of a critical step in achieving more natural flow of water from the Water Conservation Areas (WCA) to Northeast Shark River Slough and Everglades National Park (ENP). However, increased stages in eastern portions of the WCA and ENP and in certain canals may affect seepage and flood protection level of service to the east.
South Florida Regional Planning Council	The project should be consistent with the goals and policies of Miami-Dade County's comprehensive plan and their corresponding land development regulations. Staff recommends that, if this permit is granted, 1) impacts to the natural systems be minimized to the greatest extent feasible and 2) the permit grantor determine the extent of sensitive wildlife and vegetative communities in the vicinity of the project and require protection and or mitigation of disturbed habitat.
ORGANIZATIONS	
Sierra Club, Miami Group	Proposals that distribute the water more to the west seem to be the most workable. Getting large amounts of water to Shark River Slough solves a number of difficult issues simultaneously…Small increases in conveyance through the project area, by cleaning the culverts, can allow for small increases of water moved from WCA-3A to WCA-

	3B…WCA-3A can get relief from high water without flooding WCA-3B by adopting a portion of the "Blue Shanty Plan." Build a conveyance bridge just west of the Tamiami Trail project area.
Radio One via Pepper Hamilton LLP	Based on past correspondence with the Corps, it is our understanding that the Tamiami Trail Modification projects within the Everglades National Park may have an impact on the Radio One property, particularly due to flooding impacts. This could result in a significant impact to Radio One and we look forward to having further discussions with the Corps regarding any potential property impact. I have attached for your convenience Radio One's prior comments that it submitted on July 20, 2006.
GENERAL PUBLIC	
Stan Carlin	The canals were put in 60 years ago and there has been no maintenance. Clean out and maintain the culverts immediately.
Catherine B.	Whatever can be done now to improve the water supply, do it. Please clean the culverts, build the one mile bridge, then add the 3 mile bridge.
Sydney T, Bacchus, Ph, D, Hydroecologist	On March 21, 2004, I provided comments on the proposed elevation of the Tamiami Trail purportedly promoted as a form of Everglades restoration. A copy of those comments is attached and re-submitted…The proposed elevation of the Tamiami Trail is more problematic now than when my original comment letter was submitted, based on the adverse impacts of mining documented during the Sierra Club' s suit against your agency and the US Fish and Wildlife Service regarding permit issued to the 10 mining companies in Miami-Dade County, The report does not consider the direct, indirect and cumulative adverse impacts of the proposed project, any of which would result in more damage to, rather than restoration of, the Everglades.

From: Melanie Crim [melaniedances@hotmail.com]
Sent: Friday, November 02, 2007 10:12 PM
To: TTMComments SAJ
Cc: melaniedances@hotmail.com
Subject: Coopertown Airboat tours

To whom it may concern:

Hi!! How are you? I received this contact from Jesse Kennon, the Mayor of Coopertown Airboat tours. When I heard about his land and business being jeopardized by the road construction, I was immediately alarmed. Why? because he has done so much for me, my family, friends, colleagues--let alone the community and the education/preservation of the Everglades as well. Jesse Kennon always takes the time to tell the history of the Florida Everglades and educate the boat riders about the eco-system of the everglades, as well as be concerned about its preservation. It would be ludicrous for him to lose 'Coopertown' airboat rides. He and his family started the whole culture of 'the Airboat Tour' in the Florida Everglades; and that part of Florida History needs to be preserved by allowing him to keep 'Coopertown'. Humphrey Bogart in 'The African Queen' would not have won the Oscar for "Best Lead Male Actor" in the early 1950s, had that movie not been able to shoot in 'Coopertown's' airboat trails. Since then, lots of the Entertainment and Fashion worlds have used 'Coopertown' and that is how I came to know the very generous, caring, and genuine Jesse Kennon. I am an actress and model and met Jesse while working on a film that was shooting in Hollywood Beach, FL called 'Canvas' with Marcia Gay Harden and Joe Pantoliano -- Jesse Kennon has given so much to me, my family, and friends every time we have come to Coopertown for one of his unique, original, and never-to-be repeated, Florida Everglades 'airboat tours'. The Florida Everglades could not be what they are today without 'Coopertown'. Please consider the importance and sacredness of 'Coopertown.'
Thank you.
Kind Regards,
Melanie Crim

melaniedances@hotmail.com
917-304-3113

p.s. Please contact me further, if I can be of any more assistance.

Windows Live Hotmail and Microsoft Office Outlook - together at last. Get it now.
http://office.microsoft.com/en-us/outlook/HA102225181033.aspx?pid=CL100626971033

From: VanderWyden, William P. [wvander@law.miami.edu]
Sent: Wednesday, February 06, 2008 9:39 AM
To: webteam@ics.gov; ever_gmp@nps.gov; TTMComments SAJ
Subject: Coopertown--FL Everglades

To: the Secretary of the Interior

To: Everglades National Park

To: Department of the Army Corps of Engineers

It is my understanding that plans to widen Tamiami Trail (US 41) may call for the destruction of Coopertown, a Florida landmark in the Everglades for over 60 years. As a South Florida resident, I encourage you to find other alternatives. Our government should be in the business of protecting access to our environment for the benefit of the people, and traditions such as Coopertown should be encouraged so that all may enjoy the beauty of South Florida in its natural environment. Already, we have allowed enough cement to compromise our lands. Let us work to protect what we have.

William P. VanderWyden, Esq.

Associate Dean of Students

University of Miami School of Law, Suite 212

P.O. Box 248087

Coral Gables, Florida 33124

Telephone: 305-284-4551

Facsimile: 305-284-1793

wvander@law.miami.edu

TO: Ms BARBARA CINTRON
% U.S. ARMY CORPS ENG
P.O. BOX 4970
JACKSONVILLE FL 32232-0019

Stan Carlin
P.O. BOX 517
MELBOURNE, FL 32902-0517
321-729-8387 • 305-559-4136

RE: IMPROVING WATER FLOW TO ENP

DATE: 2/8/08

PER LETTER MARCH 27, 2007 (COPY ENC) THE CANALS WERE PUT IN OVER 60 yrs AGO AT the CULVERTS.

THERE HAS BEEN NO MAINTENANCE —

WITH PROPER MAINTENANCE WATER FLOW WOULD BE RESTORED — & COST EFFECTIVE.

Regards,
S Carlin

enclosed copy 3-27-07
& yours 1-28-08

Stan Carlin
P. O. Box 517
Melbourne Fl 32902-0517
321-729-8387 * 305-559-4136
Gator Park

March 26, 2007

U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Fl 32232-0019

Re: Modified Water Deliveries
Tamiami Trail – U.S. 41
Culvert and Canal Maintenance

Gentlemen:

In 1992 and 1993 White Construction repaved roadway and extended 8'to 10' south, and extended culverts one length south. White Construction said 80% or more of existing culverts were clogged with mud and trash. We asked if they were cleaning out the culverts so water could flow 100%. White Construction said "no" because it was not in their contract. There has also been no maintenance on the water distribution canals that run south of the culverts.

A clean out/maintenance contract should be issued now for all clogged culverts and canals so 100% of even water flow would be restored this year. This could be done rapidly and would be cost effective.

Sincerely,

Stan Carlin

CONTROL

MIAMI-DADE COUNTY
Carlos Alvarez, Mayor

Department of Environmental Resources Management
Office of the Director
701 NW 1st Court, 4th Floor
Miami, Florida 33136-3912
T 305-372-6754 F 305-372-6759

miamidade.gov

February 15, 2008

Ms. Marie G. Burns, Acting Chief, Planning Division
Department of the Army
P.O. Box 4970
Jacksonville, FL 32232

Dear Ms. Burns:

This letter is a response to your requests for comments on the Draft Environmental Assessment (EA) that is to be prepared in connection with the Tamiami Trail Modifications Limited Reevaluation Report.

Miami-Dade County Department of Environmental Resources Management (DERM) staff serve on a variety of technical teams involved in the implementation of the Modified Water Delivery Project and Comprehensive Everglades Restoration. DERM recognizes that improvements to the Tamiami Trail are part of a critical step in achieving more natural flow of water from the Water Conservation Areas (WCA) to northeast Shark River Slough and Everglades National Park (ENP). Miami-Dade County expects that improved flow will not only benefit hydrology and the ecosystem in ENP, but will also help to relieve unnaturally high water levels in portions of the WCAs, benefit fish and wildlife species (including listed species) in marshes and downstream areas, and enhance potential and water quality for water deliveries for human water supply. However, increased stages in eastern portions of the WCA and ENP and in certain canals may affect seepage and flood protection level of service to the east. The EA should include evaluation of ecological and hydrological benefits, including effects on fish, birds, and other wildlife in WCA3a and WCA3b, as well as ENP. It should also evaluate water quality and quantity effects on the natural system and regional wellfields. The EA should evaluate flood protection, including operational criteria for S-357 and other seepage features under various canal stages and high water conditions.

DERM coordinates surface and groundwater monitoring programs in Miami-Dade County, and has extensive experience in stormwater management master planning and wellfield protection. We may have water quality data, or surface and groundwater modeling information that would be of assistance in the development of your EA. Please contact our office should you require additional assistance.

Sincerely,

Carlos Espinosa, P.E.
Director

c: George M. Burgess, County Manager
Henri Sori, Executive Assistant to the County Manager

ADA Coordinator
Agenda Coordinator
Art in Public Places
Audit and Management Services
Aviation
Building Code Compliance
Building
Business Development
Capital Improvements
Citizens' Independent Transportation Trust
Communications
Community Action Agency
Community & Economic Development
Community Relations
Consumer Services
Corrections & Rehabilitation
Countywide Healthcare Planning
Cultural Affairs
Elections
Emergency Management
Employee Relations
Enterprise Technology Services
Environmental Resources Management
Equal Employment Practices
Finance
Fire Rescue
General Services Administration
Historic Preservation
Homeless Trust
Housing Agency
Housing Finance Authority
Human Services
Independent Review Panel
International Trade Consortium
Juvenile Assessment Center
Medical Examiner
Metropolitan Planning Organization
Park and Recreation
Planning and Zoning
Police
Procurement Management
Property Appraiser
Public Library System
Public Works
Safe Neighborhood Parks
Seaport
Solid Waste Management
Strategic Business Management
Team Metro
Transit
Unified Reporting System Task Force
Vizcaya Museum and Gardens
Water and Sewer

RECEIVED
FEB 2008

Mark Oncavage
Sierra Club, Miami Group
12200 SW 110th Avenue
Miami, Florida 33176

February 16, 2008

Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

attn. Planning Division
Environmental Branch
South Florida Section

Dear Marie Burns:

Admittedly, I am not familiar with all the legislation, statutes, memoranda, studies, promises, or court rulings related to the Tamiami Trail modifications. I don't think anyone has a good feeling about where this project has been or where it's going.

Tamiami Trail is an impediment to the flow of water. Water levels in Conservation Area 3A are too high and the tree islands are rotting and dying. At the same time, Everglades National Park has a water deficit of approximately 800,000 acre-feet. This deficit precipitates serious environmental damage to the Park's wetlands and to Florida Bay.

With the construction of the A-1 Reservoir, an additional problem for Tamiami Trail modifications is being created: the water has no place to go.

Large amounts of water need to move through Tamiami Trail, but many of the current proposals are illogical.

Questions

1. How can water be moved through the project area when WCA-3B is intentionally being starved of water?

2. How can WCA-3A get relief from too much water?

3. Where will the water from the A-1 Reservoir go?

4. How can urban and agricultural interests be protected?

Answers

Proposals that distribute the water more to the west seem to be the most workable. Getting large amounts of water to Shark River Slough solves a number of difficult issues simultaneously.

1. Small increases in conveyance through the project area, by cleaning the culverts, can allow for small increases of water moved from WCA-3A to WCA-3B. The proposed swales south of Tamiami Trail may not be needed if the water increases are small. The DECOMP PDT is currently working to study small breaches in the L-67 levees to start decompartmentalizing Water Conservation Areas 3A and 3B. By moving additional water through the project area, more tailwater will available for the C-111 projects to hydrate Taylor Slough and central Florida Bay. This new water, in deep South Dade, is desperately needed for Everglades Restoration.

2. WCA-3A can get relief from high water without flooding WCA-3B by adopting a portion of the "Blue Shanty Plan." Build a conveyance bridge just west of the Tamiami Trail project area. Also, the DECOMP PDT experimental breaches in the L-67 levees can provide some flooding relief for WCA-3A.

3. The Governing Board of the SFWMD has agreed that 80% of the A-1 Reservoir water will be used for Everglades Restoration. A-1 Reservoir water still needs to be cleansed to appropriate standards for restoration purposes. This water will go, eventually, through the proposed "Blue Shanty" conveyance bridge west of the project area. This bridge will relieve the A-1, relieve WCA-3A of flooding, partially rehydrate ENP, partially rehydrate western Florida Bay, and hopefully end the ModWaters conundrum.

4. Since the "Blue Shanty" bridge is significantly west of the urban and agricultural areas and the 8 & 1/2 Square Mile Area flood mitigation project is nearly complete, it is likely that additional flood control structures will not be needed. The C-111 projects can also help provide some flood control for the agricultural areas south of 8 & 1/2 SMA and provide additional water for Everglades Restoration purposes.

Mark Oncavage
Conservation Chair
Sierra Club, Miami Group

Feb 21, 2005.

Dear Marie Burns:

I am Catherina Bernabé, a Sierra Club outingsleader in Amicmi. At the last meeting I spoke with Mark Oncavage and he encouraged me to write to you as I love all things natural and beautiful.
He has some good suggestions. Whatever that can be done now to improve the water supply - (that is clean water, low in phosphorous -) do it!! Please, Corps of Engineers, do it. The cattails are encroaching, overtaking the river of grass! the Everglades are dying! too much water on one side, not enough on the other side A one-mile bridge will help, start with that!
I am also a teacher of special needs students and they love the Everglades, every small thing about it, flowers, spiders, birds ...
So do my family and friends from Belgium

2.

The Everglades belong to them to, to the world to future generations to come.
Please clean the culverts., build the one-mile bridge. then add the 3-mile bridge.
Do something! I become a citizen of USA in 2000, because I've become fond of this country, and want to vote, make a difference. That's why I'm writing to you. We need to show the world how America can clean up it's mess it made to nature. I lived in Africa for 10 years (Congo - Rwanda) and what a mess it is now for it's parks and wildlife!!

Respectfully yours.
Catherine R Bernabei
Kcatje bernabei @ bellsouth.net.

PS Whatever Mark Oncavage suggests for steps to take to begin repairing ENP, I back up.

United States Department of the Interior
NATIONAL PARK SERVICE

Everglades and Dry Tortugas National Parks
40001 State Road 9336
Homestead, Florida 33034

In Reply Refer to:
L54

VIA ELECTRONIC MAIL
NO HARDCOPY TO FOLLOW

March 2, 2008

Colonel Paul L. Grosskruger
Commander
United States Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel Grosskruger:

The purpose of this letter is to communicate to the Jacksonville District, Corps of Engineers (USACE) the comments of Everglades National Park (ENP) on the most recent draft of the Limited Reevaluation Report (LRR) for the Tamiami Trail component of the Modified Water Deliveries (MWD) Project. These comments are based on the documents provided by USACE staff on February 13, 2008, and represent a compilation of comments from multiple divisions and branches within the park, including the South Florida Natural Resources Center.

First, I wish to commend you and USACE staff for working with park staff in a highly professional and collaborative fashion to prepare the LRR in a timely manner and to conduct technical analyses of alternatives considered in the LRR. This was a challenging assignment with a tight schedule, and I know you share my pride in our staffs' accomplishments.

ENP concurs with the Tentatively Selected Plan (TSP). We offer comments, both general and specific (see attached), that focus on (1) LRR content; (2) the TSP; and (3) the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). Our general comments, coupled with the specific comments, are offered to improve the document and supporting analyses.

Some portions of the text would benefit from a close collaborative effort between ENP and USACE staff to improve the accuracy and technical quality of the document and to assure that the document adequately covers actions to be taken by the park in association with your actions on the Tamiami Trail component of the MWD. Please contact me to make arrangements for this joint effort.

Please contact Mr. Mark Wolff (904-232-1125) if you require specific information related to our comments.

We look forward to our continued collaboration in the implementation of this extremely important component of the MWD project.

Sincerely,

Dan B. Kimball
Superintendent

Attachment (General/Specific Comments)

cc (w/ attachment):
DOI: Rock Salt, Dennis Duke, Don Jodrey
USACE: Stu Appelbaum, Marie Burns, Steve Kopecky, Pauline Smith, Brad Foster, Gwen Nelson, Trent Ferguson
NPS Southeast Regional Office: Paul Anderson,
ENP: Bob Johnson, Carol Mitchell, Dave Sikkema, Dave Hallac, Mark Wolff, Brien Culhane, Fred Herling, Linda Irey

DD-ES Cintron

RECEIVED

MAR [illegible]

South Florida Regional Planning Council

March 3, 2008

Ms. Lauren P. Milligan
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Blvd, Mail Station 47
Tallahassee, Florida 32399-3000

RE: SFRPC#08-0202, SAI# FL200802053982C, Department of the Army, Jacksonville District Corps of Engineers, Scoping Notice Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report, water deliveries to Everglades National Park, Miami-Dade County, Florida.

Dear Ms. Milligan,

We have reviewed the above-referenced notice and have the following comments:

- The project should be consistent with the goals and policies of Miami-Dade County's comprehensive plan and their corresponding land development regulations. It is important for the applicant to coordinate permits with all governments of jurisdiction.
- Staff recommends that, if this permit is granted, 1) impacts to the natural systems be minimized to the greatest extent feasible and 2) the permit grantor determine the extent of sensitive wildlife and vegetative communities in the vicinity of the project and require protection and or mitigation of disturbed habitat. This will assist in reducing the cumulative impacts to native plants and animals, wetlands and deep-water habitat and fisheries that the goals and policies of the *Strategic Regional Policy Plan for South Florida (SRPP)* seek to protect.
- The project is located over the Biscayne Aquifer, a natural resource of regional significance designated in the [illegible]. The goals and policies of the SRPP, in particular those indicated below, should be observed when making decisions regarding this project.

GOAL 7	**Protect, conserve, and enhance the Region's water resources.**
Policy 7.1	Develop a more balanced, efficient, and ecologically sustainable allocation and reservation of the water resources of the Region
Policy 7.11	Encourage the implementation and further development of water conservation measures
GOAL 14	**Preserve, protect, and restore Natural Resources of Regional Significance.**
Policy 14.1	Address environmental issues, including the health of our air, water, habitats, and other natural resources, that affect quality of life and sustainability of our Region.
Policy 14.3	Protect native habitat by first avoiding impacts to wetlands before minimizing or mitigating those impacts. Development proposals should demonstrate how wetland impacts are being avoided and what alternative plans have been considered to achieve that objective

Thank you for the opportunity to comment. If you require further information, please contact me at 954-985-4416.

Sincerely,

Rachel M Kalin

Rachel M. Kalin
Planning Technician

RMK: [illegible]

cc: Marie Burns, Acting Chief, DOA

3440 Hollywood Boulevard, Suite 140, Hollywood, Florida 33021
Broward (954) 985-4416, State (800) 985-4416
SunCom 473-4416, FAX (954) 985-4417 Sun Com FAX 473-4417
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March 4, 2008

Ms. Lauren Milligan
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000

Re: SAI #FL20080205398C, U.S. Army Corps of Engineers (COE), Scoping Notice, Draft Environmental Assessment (EA) for the Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR), Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Ms. Milligan:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated agency review of the scoping notice for the referenced project, and reiterates the following concerns that we would like to see addressed during the development of a Draft Limited Reevaluation Report and Environmental Assessment.

Project Description

The Tamiami Trail is one of the four major components of the 1992 General Design Memorandum of the Modified Water Deliveries to Everglades National Park project. The purpose of this project is to increase flows to Northeast Shark River Slough and to help restore the ecosystem of the park. This EA addresses a modification to the features authorized for Tamiami Trail by the 1992 General Design Memorandum and the 2005 Revised General Reevaluation Report/Supplemental Environmental Impact Statement. A total of 27 alternatives have been developed to examine the effects of variations of water stages in the L-29 canal together with several options for conveyance of water through the road from the L-29 canal into Northeast Shark River Slough. Conveyance options include spreader swales, additional culverts, pump stations, and various configurations of bridges. Project delays and funding constraints have led to the development of additional cost-saving alternatives that would limit road raising to low areas of the Tamiami Trail and further reduce the length of the roadway that would be bridged to no more than one mile.

Concerns and Recommendations

Our original concerns on raising the Tamiami Trail were conveyed previously to the COE in a letter (enclosed) dated June 13, 2000, to James C. Duck, and these concerns remain relevant. Subsequently, we have relayed additional detailed comments, concerns, and recommendations on the various Tamiami Trail features directly to the COE through several Fish and Wildlife Coordination Act Report (FWCAR) documents as well as through the Florida State Clearinghouse. This correspondence includes a preliminary supplemental FWCAR (enclosed) dated August 11, 2005; a letter (enclosed) dated March 17, 2004, to James C. Duck; a preliminary FWCAR (enclosed) dated June 24, 2003, on the preliminary draft GRR/SEIS; a Planning Aid Letter (PAL; enclosed) dated February 26, 2001; and a letter (enclosed) via the Florida State Clearinghouse dated January 16, 2002, to Ms. Jasmine Raffington.

We note that the current planning process is leaning strongly towards an alternative plan that would improve conveyance near the eastern end of the Tamiami Trail with the addition of a one-mile bridge there, but no conveyance improvements are planned elsewhere along the 10.7-mile stretch of roadway. We would like the COE to give serious consideration to improving conveyance along other portions of the Trail as well. Based on discussions with South Florida Water Management District staff, we believe that the strategic placement of box culverts at historic sloughs and/or aligned with the S-355 and other existing or planned water conveyance structures in the L-29 Levee, in conjunction with downstream spreader swales, would greatly augment hydraulic and ecological connectivity. Although some scientific uncertainties remain, we are encouraged by the COE's most recent modeling results, which predict that the addition of spreader swales below each set of Tamiami Trail culverts would result in an increase in the conveyance capacity of these culverts by approximately 12 percent at an L-29 canal stage of 8.0 feet NGVD. Although we recognize the current funding constraints for not raising the road to a height capable of withstanding an L-29 canal stage design of at least 8.5 feet NGVD, we do encourage further examination of that option in the future, as the Comprehensive Everglades Restoration Program progresses. This and other similar additional measures that would significantly increase depths and hydroperiods over thousands of acres in Northeast Shark River Slough would help enhance and restore the ecological functions of Everglades National Park as envisioned by the Everglades National Park Protection and Expansion Act of 1989."

Summary

We fully support the ecological benefits expected from this project, and will continue to work closely with the COE through the project's implementation. We furthermore ask that the COE address our concerns and recommendations contained in this letter as well as prior ones that have been conveyed to them over the course of the last eight years to ensure that any unintentional adverse impacts to the area's natural resources, particularly to state-listed wildlife species, are either averted or minimized.

If you or your staff would like to coordinate further on the recommendations contained in this report, please contact me at (850) 410-5272 or email me at maryann.poole@MyFWC.com, and I will be glad to help make the necessary arrangements. If you or your staff has any specific questions regarding our comments, I encourage them to contact Tim Towles at (772) 778-6354; email tim.towles@myFWC.com.

Sincerely,

Mary Ann Poole

Mary Ann Poole, Director
Office of Policy and Stakeholder Coordination

map/dtt/cc
ENV 1-3-2
Tamiami Trail 1269

Enclosures

cc: Pauline Smith, COE, Jacksonville
Marie Burns, COE, Jacksonville
Greg Knecht, DEP, Tallahassee
Inger Hansen, DEP, West Palm Beach
Paul Linton, SFWMD, West Palm Beach
Paul Souza, FWS, Vero Beach
Kevin Palmer, FWS, Vero Beach
Dan Kimball, ENP, Homestead
Chuck Collins, FWC, West Palm Beach

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VICTOR J. HELLER, Assistant Executive Director

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DIRECTOR
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

June 13, 2000

Mr. James C. Duck
Chief, Planning Division
ATTN. Mr. Elmar Kurzbach
U.S. Army Corps of Engineers
P.O. Box 4790
Jacksonville, Florida 32232-0019

Re: Scoping Notice for Modified Water Deliveries to Everglades National Park; Raising Tamiami Trail, Broward and Miami Dade Counties

Dear Mr. Duck:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has received the scoping notice for the referenced project, and offers the following concerns that we would like to see addressed during the development of a General Reevaluation Report (GRR) and Supplemental Environmental Impact Statement (SEIS)

The reason that a GRR and SEIS are being developed is that new information acquired since the project was approved in 1992 indicates that the original design would be insufficient to pass the volume of water that would need to be conveyed under the Tamiami Trail via the program of Modified Water Deliveries to Everglades National Park. Four options are being considered: (1) construct four bridges and institute a maintenance program for the remaining roadway, (2) construct four bridges and raise the remaining roadbed one to two feet; (3) construct a new roadway north of the existing alignment, and (4) construct a new roadway south of the existing alignment. The portion of Tamiami Trail that would be affected by this project is limited to that stretch which lies between Water Conservation Area 3B and Everglades National Park; however, the extent to which construction might alter the highway immediately west and east of this stretch is not clear.

We have three major areas of concern with regard to the potential impacts of this project.

1. Maintenance or enhancement of existing recreational access points. Depending on the extent of construction, as many as five access areas to Water Conservation Area 3B and the eastern corner of Water Conservation Area 3A could be affected by the redesign and construction. We request that we be consulted early in the planning stages so that we

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may work with the U.S. Army Corps of Engineers and the Florida Department of Transportation to maintain or, if feasible, improve these access points and reduce impacts during construction.

2. Potential loss of Everglades marsh. The third option would likely eliminate portions of Water Conservation Area 3B, particularly as the road would need to circumvent the Tigertail Camp, which lies along the L-29 levee. The fourth option would similarly affect Everglades National Park, particularly as the road would need to circumvent the Osceola Camp. Given the loss of native habitat that has already occurred in the Everglades, we would find it difficult to support any alternative that would result in further loss of native Everglades marsh.

3. Protection of nearby active rookeries. Two active rookeries occur very near this portion of Tamiami Trail. One of these, "Tamiami West," has had a recent history of nesting activity by wood storks (endangered) and tricolored herons, little blue herons, snowy egrets, and white ibis (all species of special concern). This past year, an estimated 1,200 to 1,300 wood stork nests were observed at this colony (T. Towles, FWC, pers. comm.). While the recent blasting for the S-355 structures did not appear to cause any disruption in nesting that was already underway at the time, we are concerned that prolonged construction that starts during the nesting season might prove to be more damaging; therefore, we would recommend that any construction near the rookery be started outside of the nesting season. Our staff would be happy to work with yours during the planning process to determine the appropriate distance to satisfy this particular concern.

Because our concerns with regard to recreational access are likely to be unique to the Florida Fish and Wildlife Conservation Commission, we intend to submit to you Planning Aid Letters and a Fish and Wildlife Coordination Act report independent of those submitted by the U.S. Department of the Interior. If you have any further questions, please feel free to contact Mr. Timothy Towles (561-778-5094) in our office in Vero Beach.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/MAP
ENV 2-16/2/5
a:\tamiami.let.wpd

cc: Ms. Marjorie Bixby, FDOT, Miami
Mr. Stephen Forsythe, FWS, Vero Beach
Superintendent Richard Ring, ENP, Homestead

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ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

BRADLEY J. HARTMAN, DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

January 16, 2002

Ms. Jasmin Raffington
Florida State Clearinghouse
Florida Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

Re: SAI #FL200112061274C, Tamiami Trail Feature- Draft General Reevaluation Report/Supplement to the 1992 Final Environmental Impact Statement (GRR/SEIS) on Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Ms. Raffington:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the referenced Draft General Reevaluation Report/Supplement to the 1992 Final Environmental Impact Statement (GRR/SEIS), and provides the following comments.

This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5 square mile area residential development along the eastern side of Northeast Shark River Slough (NESRS), conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B and NESRS, and an overall operational plan for the newly constructed water control structures. Many of our comments and concerns on the Tamiami Trail Feature have previously been conveyed directly to the Army Corps of Engineers (COE) in a review of a preliminary draft GRR/SEIS via a preliminary Coordination Act Report (CAR) (attached) dated September 14, 2001, and through a Planning Aid Letter (PAL) on the project dated February 23, 2001. Our comments in this letter will thus focus on the COE's responses to some of our previous recommendations in the preliminary CAR, as well as providing specific comments on the text of the GRR/SEIS.

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First of all, we are pleased that the COE is actively seeking a real estate agreement with the Florida Department of Transportation (FDOT) on the potential maintenance of the Tamiami Trail in lieu of raising the entire road profile. Furthermore, we believe it is important that an agreement be formalized before the release of the Final GRR/SEIS, and that the appropriate changes be incorporated into the description of the preferred alternative for public review.

We are also encouraged that the COE has concurred with us on the placement of the 3,000-foot bridge immediately east of the Blue Shanty Canal. However, the location appears much less certain in many sections of the document. Its location is variously listed as occurring somewhere between the Blue Shanty Canal and Coopertown, to a site one mile east of the S-333 structure. These discrepancies should be rectified before the release of the Final GRR/SEIS. Furthermore, we believe that the installation of a wildlife shelf on the western bridge abutment should be investigated further since such a feature may help reduce road mortality of the threatened Everglades mink. The proposed 10 to 15-foot width of the shelf could be reduced in size to accommodate only the mink and other small mammals, and incorporated into the design plans of the bridge structure to lessen costs, if needed.

Concerning the COE's response to our request that annual surveys be conducted for state or federally protected bird species, there was a general failure in the restating of our recommendation in that those species with protective designations other than endangered were omitted. Since the COE is currently supporting monitoring of wading bird colonies and snail kite nesting in the Water Conservation Areas, a continuation of this commitment with a slightly expanded scope could easily satisfy the bird nest monitoring part of our request. However, since the intent of this project is environmental restoration, we still recommend that a survey be supported at construction sites to determine the risk of impacts to the threatened Everglades mink.

In response to our concerns about impacts to recreational access, the COE stated that no adverse effects on recreational access were anticipated. However, section 5.8.8 of the document states that there would be temporary impacts during the 24-month construction period under alternative 7a. Furthermore, a 3,000-foot bridge on the Blue Shanty Canal alignment would likely eliminate fishing access to at least one culvert being replaced by the bridge, and at least a 3,000-foot length of the south bank of the L-29 Canal. A bridge alignment west of the Airboat Association would displace two culvert outfalls and a similar length of access along the L-29 Canal. Since one of the planning objectives was to minimize impacts to recreation facilities, the metrics developed for measuring impacts (page 79) should be dutifully employed.

In conclusion, we support the preliminarily preferred alternative (7a) with the understanding that 1) a real estate agreement between the COE and FDOT will be formalized and included in the Final GRR/SEIS to avoid costly retrofitting during implementation of the

Comprehensive Everglades Restoration Plan, 2) the specific location of the 3,000-foot bridge is rectified within the document, and 3) all potential recreational access impacts are fully addressed.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/DTT
ENV 2-16/4
TomTran_ENSAS-Jan02.wpd
Enclosure
cc. Colonel James G. May, COE, Jacksonville
Environmental Branch, COE, Jacksonville
Mr. Jay Slack, USFWS, Vero Beach
Superintendent Maureen Finnerty, ENP, Homestead

Specific Comments on the GRR/SEIS Text

The pages referred to in this attachment are those in the draft GRR/SEIS document dated November 2001. Comments are presented in the order in which they occur in the text.

p. ES-1, last paragraph: The real estate interests describe a 3000-foot conveyance channel/easement to be located between the Blue Shanty Canal and Coopertown. The siting of this easement should be more narrowly defined as between the Blue Shanty Canal and the Airboat Association of Florida.

p. ES-3, 3rd paragraph: Will the existing Tamiami Trail embankment profile between the Blue Shanty Canal and Coopertown still need to be modified if a road maintenance real estate agreement is formulated between the COE and FDOT? A better explanation should be provided as to why the modifications are being proposed for only this specific portion of the roadway.

p. 7, section 1.3.2, 1st line: It is stated that the limits of the project "extend approximately 10.7 miles to the west to Water Control Structure S-334." The S-334 should be replaced with S-333.

p. 32, section 2.5.3: It would be more appropriate to state that the FWC manages WCA-3B as a wildlife management area called the Francis S. Taylor Wildlife Management Area. The area is managed primarily to maintain the inherent ecological values unique to the Everglades while also allowing compatible public recreational uses. Although the area may be dominated by sawgrass, reference should be made to the generally unimpacted tree island communities that, although rare, are extremely important habitats for a wide array of both terrestrial and semi-aquatic species of Everglades wildlife. In addition to snail kites, WCA-3B also provides foraging habitat for federally endangered wood storks as well as for snowy egrets, tricolored herons, little blue herons, white ibis, and limpkins (all listed by the FWC as species of special concern).

p. 41, section 2.5.5, last sentence: Copies of the USFWS and FWC CARs are not included in appendices A and B as stated here, but rather are located in appendices I and J, respectively.

p. 67, section 5.3.3, 3rd paragraph: It is incorrectly stated that the Reasonable and Prudent Alternative of the FWS Final Biological Opinion on the Cape Sable Seaside Sparrow requires that water discharges be passed *through WCA-3B* and into Northeast Shark River Slough (NESRS) Rather, the Opinion only requires that the set percentage (60% beginning in March 2002) of regulatory water discharges enter into NESRS east of the L-67 Extension levee. This can easily be accomplished by releasing water from WCA-3A via the S-333 structure into the L-29 Canal, and then passing the flows through the Tamiami Trail culverts into NESRS, in conjunction with the use of the South Dade Conveyance System and its associated structures.

p. 75, section 5.4, 1st line: As described in our preliminary CAR, the L-29 Canal also serves as a recreatoinal fishery which is likely to improve upon the completion of the Mod Waters project.

p. 202-204, section 5.11: This is a new section in which the COE performed an incremental analysis to determine the optimal bridge opening needed to pass the required flows and achieve

an acceptable water distribution south of the Tamiami Trail. The graphics portrayed on these pages are difficult for the reader to interpret since the contour scales vary between the illustrations and the colors used for the legend are difficult to differentiate. Additional clarification of how alternative 7 better meets the flow requirements would also be helpful.

Appendix I. The COE's responses to our draft CAR would probably be easier for the reader to locate if they were moved from the beginning of the USFWS CAR in appendix I to the beginning of our own CAR in appendix J.

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

BARBARA C. BARSH
Jacksonville

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ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DIRECTOR
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

February 26, 2001

Colonel James G. May
District Engineer
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: General Reevaluation Report/
Supplemental Environmental Impact
Statement, Tamiami Trail
Modifications Project, Modified
Water Deliveries to Everglades
National Park, Miami-Dade County

Dear Colonel May:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the draft Supplement to the 1992 General Design Memorandum and Final Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park ("Mod Waters"), dated December 22, 2000. This planning aid letter is submitted under the authority of the Fish and Wildlife Coordination Act of 1973.

Description of Alternatives

The reason that a GRR/SEIS is being developed is that new information acquired since the project was approved in 1992 indicates that the original design would be insufficient to pass the volume of water that would need to be conveyed under the Tamiami Trail via Mod Waters. Nine basic alternatives, four of which contain from one to six different water quality treatment options, are being considered. After the GRR/SEIS was distributed, the Department of Interior submitted an additional alternative, referred to here as alternative six. In addition, we have been told that another alternative utilizing box culverts has been evaluated by your staff in house, but has not yet been distributed for wider review. For a short description of these alternatives, please refer to Table 1. We have three major areas of concern with regard to the potential impacts of this project: (1) impacts to existing recreational facilities and access points, (2) impacts to fish and wildlife resources, and (3) potential loss of Everglades marsh.

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Impacts to Existing Recreational Facilities and Access Points

Consideration of impacts to recreation facilities developed by the Florida Game and Fresh Water Fish Commission under the authority of the Land and Water Conservation Fund Act (P.L. 88-578) and the Federal Water Project Recreation Act (P.L. 89-72) should be carefully examined. Within the project area, there exist at least six developed marsh or canal access points, of which at least four contain an FWC-maintained boat ramp permitted by the South Florida Water Management District, and all sites possess a limited amount of primitive parking space. Three of these boat ramp facilities provide access to the Francis S. Taylor Wildlife Management Area (Water Conservation Area [WCA]-3B), one (#153) is located approximately 3 miles west of the S-334 structure and provides access to the northern bank of the L-29 canal, while the other two, located at opposite ends of the project area, provide airboat access to the marsh. The boat ramp immediately north of the S-333 structure provides access to the popular L-67A canal, while another ramp at the juncture of the L-67A and L-67C levees provides access to the L-67C canal and to "the pocket" of WCA-3B. The last facility, located immediately west of the S-12D structure, provides access to the L-29 canal and adjacent marshes of WCA-3A, both portions of the Everglades Wildlife Management Area. Of the four established recreation sites, three are still present. Recreation site No. 1 is located on the L-29 levee immediately east of the S-334 structure. Recreation site No. 2 is located about 3 miles west of Site No. 1 and includes the only FWC boat ramp for access to this 11-mile stretch of the L-29 canal. Recreation site No. 4, located adjacent to the S-333 structure, harbors three boat ramps and is the most important access point on the Tamiami Trail for boaters.

It is probable that the enhanced connectivity created by the Seepage and Conveyance portion of the Mod Waters through employment of the two S-355 structures and the three weirs across the L-29 levee, combined with the accompanying greater water depths, will lead to an improved fishery along this eleven-mile stretch of the L-29 canal and at associated structures. Such an enhanced fishery would result a greater amount of use by the fishing public, and may warrant improved recreational access to the L-29 canal and its associated conveyance structures, particularly given the proximity of this area to greater Miami. Consequently, those aspects of the various alternatives that further enhance connectivity between the L-29 canal and the adjacent marsh habitats would have a positive effect on the L-29 canal fishery as well as improve compatibility with the Decompartmentalization Phase 1 Project of the Comprehensive Everglades Restoration Plan (CERP). Of course, all of the potential benefits that could be realized through increased connectivity between the L-29 canal and adjacent marshes are contingent on the maintenance of some deeper water habitat in the L-29 canal. The potential impacts associated with each group of alternatives are listed as follows.

1. Alternatives 1, 2a, 2b to 2b6, 4a, and 4b to 4b6. Each of these alternatives physically connect the L-29 canal to the marsh in Everglades National Park for only 2.5% of the entire project corridor length (i.e., create a 2.5% marsh-canal interface) by means of the four new bridges; however, creative water quality treatment options b1 to b3 of alternatives 2, 4, and 6 would encroach into the L-29 canal. We understand from

statements made by your staff that it will be necessary to maintain the water supply conveyance capacity of the L-29 canal for some undefined period of time, which would necessitate maintaining deeper water conditions in this section of the canal. Nevertheless, the above-mentioned water quality treatment options would encroach into the south portion of the L-29 canal, with a concomitant widening of the canal to the north. This option would essentially eliminate any existing littoral zone on the south bank of the canal and would result in the loss of the boat ramp located on the north bank of the L-29 canal.

2. Alternatives 3a and 3b. Each of these alternatives would provide a 10% marsh-canal interface along the project corridor through the addition of eight new bridges; however, a reduction in available parking space on the north side of the L-29 canal for recreational users in alternatives 3a and 3b would negatively impact recreational access. Recreation site No. 2 would also probably be negatively affected by this northerly road alignment

3 Alternatives 5a and 5b. The ultimate increase in connectivity would be realized with alternative 5A, which would provide a 98% opening of the corridor, with alternative 5b providing a very beneficial 75% opening. Although access to the north bank of the L-29 canal would be reduced for bank anglers, fishing opportunities may still exist if fishing access is available to anglers from the elevated bridge span.

4. Alternatives 6a and 6b. This alternative is estimated to result in about a 35% opening of the entire length of the Tamiami Trail corridor. Although approximately 4 miles of the northern bank of the L-29 canal would be unavailable to bank anglers, the remaining 6 miles should still be accessible. As in alternative 5, less opportunity would be lost if fishing access is possible from the bridge span.

Impacts to Fish and Wildlife Resources

Of particular concern are the potential impacts that an alternative could have on state-listed species of wildlife or important habitat components. There are three historic wading bird rookeries containing species listed by the state as endangered or species of special concern, recent records of endangered snail kite nests in southern WCA-3B, a number of records of the threatened Everglades mink along the highway corridor, and the occasional occurrence of the endangered West Indian manatee in the L-29 canal. In addition, other listed species such as the limpkin and roseate spoonbill (both listed as species of special concern) utilize marsh areas, and the least tern (threatened) forages in canal habitats that could be impacted under certain alternatives. The potential impacts that could occur are listed by alternative groups as follows.

1 Alternatives 1 and 2a. The temporary road for detouring traffic while proposed bridge #3 is under construction would encroach into the pond apple forest at the Tamiami West colony, on the south side of the Tamiami Trail, that provides nesting substrate for white

ibis, tricolored herons, little blue herons, snowy egrets, and wood storks. Consequently, this forested area would be eliminated as a nesting substrate for an unknown number of years. Any heavy construction activity, including construction of the temporary road, should be conducted outside of the wading bird nesting season, which normally extends from early February to the onset of the rainy season.

2. Alternative 2b. This alternative encroaches to a greater extent (average of 51 feet) into the marsh south of the existing Tamiami Trail with incursions of 5 to 6 additional feet at bridge approaches. Consequently, this alternative would have a greater permanent impact on the Tamiami East and Tamiami West wading bird colonies due to a greater permanent loss of nesting substrate as well as a decrease in the amount of buffer capacity available. The Everglades mink has been documented to use both natural and artificial upland areas for denning purposes; therefore, this alternative could potentially impact mink denning areas that may occur in either native upland areas or at the artificially created upland areas where the airboat concession sites are located Option 2b1, which shifts the alignment to the north, is only a slight improvement over alternative 2b

The 2b creative water quality treatment options of 2b2 to 2b6 (Table 1) result in much more modest incursions into the two Tamiami wading bird colonies; however options 2b2 and 2b3 would eliminate littoral zone elements on the south shore of the L-29 canal, eliminate reptile oviposition and basking sites on the south shore of the canal, and could result in the entrapment of terrestrial animals attempting to cross the canal.

3. Alternatives 3a and 3b Both of these alternatives and the various 3b options presented would result in the loss of a significant amount of high quality wildlife. The Frog City wading bird colony, which has been documented to contain nesting tricolored herons and great egrets, would be either eliminated or severely impacted by the road alignment, which encroaches further into the marsh at this point in order to avoid the Tigertail Camp. There could potentially be dens of the Everglades mink in the L-29 levee, as well.

4. Alternatives 4a and 4b Both of these alternatives would produce significant incursions into the Tamiami West and Tamiami East wading bird rookeries, as well as eliminate important swamp forest habitat along the remainder of the corridor. Although options 4b1-4b6 would reduce the amount of encroachment from alternative 4b, they are only slightly better than alternative 2b. The Everglades mink has been documented to use some of the man-made upland sites along this alignment for denning purposes, and could potentially be impacted by construction activity.

5 Alternatives 5a and 5b. These alternatives are believed to be the most beneficial to wildlife, with no known impacts. These alternatives would leave important rookery vegetation intact on both sides of the Tamiami Trail and minimize potential impacts to mink denning areas. Road-related mortality of the Everglades mink, with at least 14

documented occurrences, would essentially be eliminated. Other mammals, reptiles, and amphibians would similarly benefit.

6. Alternatives 6a and 6b. Alternative 6a would produce impacts to the two Tamiami rookeries as described for alternatives 1 and 2a, above. Alternative 6b and its various options would result in impacts to these rookeries and to the L-29 canal identical to those described under alternative 2b, above. Road-related mortality of the Everglades mink and other wildlife would be eliminated at the four-mile bridge, and mink survival could be further enhanced by providing elevated wildlife crossing shelves under the east and west ends of the extended bridge. Mink denning areas could also be protected by avoiding the need to encroach upon the upland sites south of the existing road. Mink habitat could actually be improved by the planting of these upland sites to resemble native Everglades tree island communities.

Potential Loss of Everglades Marsh

In order to ascertain the potential impacts that each alternative iteration would pose to the functionality of wetlands, a multi-agency team was assembled and the Wetland Rapid Assessment Procedure (WRAP) applied to the various wetland plant communities in the Tamiami Trail corridor. The results of this assessment revealed that the functional value of wetland communities immediately north of the L-29 levee in WCA-3B were of somewhat higher quality (average score of 0.74) than similar wetlands situated immediately south of the Tamiami Trail in the Everglades Expansion Area of Everglades National Park (average score of 0.62). The seven water quality treatment options of 3b through 3b6 presented for alternative 3 were predicted to result in the loss of from 16 to 30 wetland functional units in WCA-3B, whereas alternative 3a (without water quality treatment) was predicted to result in the loss of 19 functional units (Table 1). Likewise, the nine water quality treatment options of 4b through 4b6, 2b, and 2b1 were predicted to result in the loss of from 34 to 65 wetland functional units in Everglades National Park, whereas alternative 4a (without water quality treatment) was predicted to result in the loss of 40 wetland functional units (Table 1). We believe that the amount of wetland function that would be lost under any of the above alternatives is unacceptable given the loss of native habitat that has already occurred in the Everglades. However, we would wholeheartedly support alternative 5 and its variations which actually results in gains of from 30 to 45 wetland functional units. The new four-mile bridge alternative (referred to in this document as alternative six) that has only recently been proposed to the Army Corps of Engineers by the U S Fish and Wildlife Service and Everglades National Park, with our support, would result in a minimal loss of wetland function. Alternatives 6b2 through 6b6 are predicted to result in the loss of only 3.3 wetland functional units. Alternatives 2b2 through 2b6, although not as desirable as alternative 5 or alternatives 6b2 through 6b6, would have relatively low impacts on wetlands, with only about 8 functional units lost (Table 1).

Summary and Recommendations

We are concerned about the potential loss of public recreational fishing and boating opportunities that could occur with this project, since such opportunities are anticipated to decline as a result of restoration activities associated with both the Conveyance and Seepage component of Mod Waters and the Decompartmentalization Project of CERP. Other upcoming components of CERP such as the Water Preserve Areas Feasibility Study are, as designed at this point, anticipated to offer little in terms of compensating for the recreational fishing opportunities that will be lost with the filling of internal canals in the Everglades and Francis S. Taylor Wildlife Management Areas. Consequently, in light of these anticipated losses, whenever an opportunity exists to maintain important recreational facilities and recreational opportunities that do not significantly impinge on the restoration of the greater Everglades ecosystem, we believe that the recreational value of such features to the local public should receive strong consideration in the decision-making process. In short, a program for the development of the recreational potential, adequate to meet anticipated public-use requirements, should be incorporated into project plans.

In terms of potential impacts to fish and wildlife, alternatives 5a and 5b appear to be the most desirable, since they would result in an increase in wetland function, avoid permanent impacts to wading bird rookeries, provide maximum connectivity across the Tamiami Trail, minimize wildlife road-related mortality, and could continue to provide recreational fishing and boating opportunities, provided that bank fishermen could access the L-29 canal from the bridge and boating access to the L-29 canal remains via public boat ramps. On the other hand, alternatives 2b, 3a, 3b, 4a, and 4b produce an unacceptable amount of wetland functional loss, result in permanent impacts to wading bird rookeries, and have the potential to impact the threatened Everglades mink population; therefore, we recommend that they be removed from further consideration as ecologically viable alternatives.

Sincerely,

Bradley J. Hartman

Bradley J. Hartman, Director
Office of Environmental Services

BJH/DTT
ENV 2-16/4
Tamiyal FWCA.ltr
Enclosure
cc: Mr. Stephen Forsythe, FWS, Vero Beach
Ms. Maureen Finnerty, ENP, Homestead
Ms. Doris Marlin, COE, Jacksonville
Dr. Hanley "Bo" Smith, COE, Jacksonville

Table 1. Description of Alternatives being considered for the Tamiami Trail Project and their effects on wetland extent and function as determined by the Wetland Rapid Assessment Procedure.

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
1	Existing alignment and profile with 4 new bridges without water quality treatment	-1.6	-2.9
2a	Existing alignment with raised profile and 4 new bridges without water quality treatment	-1.6	-11.1
2b	Existing alignment with raised profile, 4 new bridges, with standard dry detention water quality treatment	-50.3	-37.5
2b Options	"Creative" water quality treatment options		
2b 1	Shift alignment to north and compress swale with wall elements/south side	-44.6	-33.6
2b 2	Shift alignment to north and compress swale with wall elements/north side	-8.0	-8.4
2b 3	Shift typical section north encroaching approximately 50ft. into L-29 Canal	-8.0	-8.4
2b 4	Grass strips	-8.0	8.4
2b 5	Exfiltration trenches with curb and gutter	-8.0	8.4
2b 6	Exfiltration trenches with shoulder gutter	-7.9	-8.3
3a	New north alignment in WCA-3B with raised profile and 8 new bridges without water quality treatment	-14.3	-18-8
3b	New north alignment in WCA-3B with raised profile, 8 new bridges, and standard dry detention water quality treatment	-28.9	-30.2
3b Options	"Creative" water quality treatment options		
3b 1	Modified 2b 1 Option	-22.8	-25.4
3b 2	Modified 2b 2 Option	-10.6	-16.0
3b 3	Modified 2b 3 Option	-13.5	-18.2
3b 4	Grass strips	-9.6	-15.2
3b 5	Same as 2b 5	-10.3	-15.8
3b 6	Same as 2b 6	-10.4	-15.9

Table 1 continued

Alternative	Description	Acres Lost	Functional Units Lost (-) / Gained
4a	New south alignment with raised profile and 4 new bridges without water quality treatment	-68.4	-40.4
4b	New south alignment with raised profile, 4 new bridges, and standard dry detention water quality treatment	-103.9	-64.6
4b Options	"Creative" water quality treatment options		
4b 1	Modified 2b 1 Option	-62.6	-36 5
4b 3	Modified 2b 3 Option	-62.5	-36.5
4b 4	Grass strips	-61.3	-35.6
4b 5	Same as 2b 5	-62.6	-36.5
4b 6	Same as 2b 6	-62.5	-36.5
5a	New alignment with an elevated bridge structure without water quality treatment	57.3	39.3
5b	New alignment with an elevated bridge span with water quality treatment	43.0	29.5
5c	New alignment with an elevated bridge span without water quality treatment and with L-29 levee removed	65.9	45 3
5d	New alignment with an elevated bridge span with water quality treatment and with L-29 levee removed	49.4	33.9
"6a"	New proposed FWS/ENP/FWC alternative on existing alignment with a 4-mile bridge between Cooper Town and the Blue Shanty Canal, and additional box culverts	N/A	-6.60
"6b"	Same as alternative 6a with standard dry detention water quality treatment	N/A	-22.8
6b Options	"Creative" water quality treatment options		
"6b 1"	Same as Option 2b 1 applied to remaining roadway	N/A	-20.9
"6b 2-6b 6	Same as Option 2b 2 - 2b 6 applied to remaining roadway	N/A	-3.3

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Tallahassee

KENNETH D. HADDAD, Executive Director
VICTOR J. HELLER, Assistant Executive Director

MARY ANN POOLE, DIRECTOR
OFFICE OF POLICY AND STAKEHOLDER COORDINATION
(850)488-6661 TDD (850)488-3542
FAX (850)922-5679

August 11, 2005

Colonel Robert M. Carpenter
District Engineer
U.S. Army Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Re: Supporting documents for the Draft Revised General Reevaluation Report/Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail, Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Colonel Carpenter:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated agency review of the supporting documents being used to craft the Draft Revised General Reevaluation Report/Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park (MWD). These documents include the MWD Tamiami Trail Modifications Benefits Analysis, results from RMA-2 modeling of bridge lengths in Tamiami Trail, an Alternative Optimization Report prepared by Everglades National Park (ENP Report), and a Tamiami Trail Road-kill Survey report prepared by the U.S. Fish and Wildlife Service (FWS). Our comments and concerns on the Tamiami Trail Project are included in the following preliminary supplemental Fish and Wildlife Coordination Act Report (FWCAR), which is being submitted under the authority of the Fish and Wildlife Coordination Act of 1958.

Background

This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5 Square Mile Area residential development along the eastern side of Northeast Shark River Slough (NESRS); conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B, and NESRS; and an overall operational plan for the newly constructed water control structures.

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Project Description

The reason that the 2003 GRR/SEIS is being revised is that new information regarding probable damage to the Tamiami Trail was raised during and subsequent to the public and agency review of the final report, leading to a determination by the U.S. Army Corps of Engineers (COE) that the recommended plan did not contain all of the features necessary for implementation. Recent modeling indicates that an increase in the design high-water stage for the L-29 canal from 9.3 ft to 9.7 ft would be necessary, accompanied by the need for a different, and potentially more costly, method such as raising the road to mitigate effects to the Tamiami Trail. Compounding this added expense, worldwide cost of construction materials increased greatly, resulting in substantial increases in cost estimates for the alternatives. Due to these cumulative increases in costs, the tradeoffs between benefits and costs were reanalyzed for the purpose of determining whether a different alternative might make better use of limited funds.

Of the nine basic alternatives previously addressed by our FWCAR dated June 24, 2003, three have been retained for re-evaluation, and a new alignment has been proposed for one of these. Those retained for further evaluation include: Alternative 9, the 3,000-foot bridge located east of the Blue Shanty Canal (the previous Tentatively Selected Plan) with a higher roadway elevation; Alternative 10, a centrally located 4-mile bridge with a higher roadway elevation ("central 4-mile bridge"); Alternative 11, an eastern 4-mile bridge with a higher roadway elevation ("east 4-mile bridge"); and Alternative 17, a 10-mile bridge. The central 4-mile bridge is a slight realignment of Alternative 6a from the 2003 GRR/SEIS, and had been considered by Everglades National Park (ENP) and the COE as a strong contender for the new tentatively selected plan. However, further increases in construction cost estimates led the COE once again into alternative formulation to take into consideration shorter bridge lengths at various locations. Six additional alternatives were identified and are as follows: Alternative 12, a centrally located 3-mile bridge ("central 3-mile bridge"); Alternative 13, a centrally located 2-mile bridge ("central 2-mile bridge"); Alternative 14, a 2-mile bridge on the west end of the project area and a 1-mile bridge on the east end ("2-mile west/1-mile east bridges"); Alternative 15, a 1.3-mile bridge on the west end of the project area and a 0.7-mile bridge on the east end ("1.3-mile west/0.7-mile east bridges") ; and Alternative 16, three 3,000-foot bridges in the central portion of NESRS (Figure 1). We understand that the COE is now proposing the 2-mile west/1-mile east bridge (Alternative14) as the new Tentatively Selected Plan. The western 2-mile bridge would begin approximately 1.5 miles west of the L-67 Levee and extend to the east of the Blue Shanty Canal, requiring one access ramp to the Everglades Safari airboat concession located on the Blue Shanty Canal. The eastern 1-mile bridge would begin approximately 1.5 miles west of the L-31 N levee and extend to the west for 1 mile, capturing an old north-south agricultural canal. This bridge would lie between, and equidistant from, the two wading bird rookeries located immediately south of the Tamiami Trail. For our comments concerning Alternative 17, the 10-mile bridge (previously known as Alternative 5), please refer to our previous FWCAR dated June 24, 2003.

Our three major areas of concern with regard to the potential impacts of this project remain as follows: (1) impacts to existing recreational facilities and access points of the Francis S. Taylor Wildlife Management Area (WCA-3B), (2) impacts to fish and wildlife resources, and (3) potential loss or degradation of Everglades marsh. Many of our comments and concerns on the

Tamiami Trail feature have been conveyed previously to the COE in a letter dated March 17, 2004 (attached), to James C. Duck; in a review of a preliminary draft GRR/SEIS via a preliminary FWCAR (attached) dated June 24, 2003; through a Planning Aid Letter (PAL) dated February 26, 2001; and via the Florida State Clearinghouse in a letter dated January 16, 2002, to Ms. Jasmin Raffington. Our comments in this current letter focus on Alternatives 10 through 16, as well as the ecological benefits to be expected from each. We have already reviewed the design for the 10-mile bridge in our FWCAR dated June 24, 2003

ENP Report and Benefits Analysis Procedures

The MWD Tamiami Trail Modifications Benefits Analysis was constructed largely from the ENP Report through two collaborative interagency workshops held by the COE in May and July, 2005. Although the ENP report integrated a great deal of historical and ecological information, its direct applicability to the Tamiami Trail RGRR is limited by a number of its assumptions. A screening process was therefore conducted by the interagency team whereby the number of performance measures (PMs) in the ENP Report was reduced from 33 to 12 PMs. The remaining 12 PMs address four important characteristics of ENP: hydrology, ridge and slough processes, vegetation, and fish and wildlife resources. An additional hydrologic PM for restoring water deliveries to ENP was added during the July workshop, resulting in a total of 13 PMs. The quantitative and qualitative values for the PMs were converted into scores (0 to 7) for each of the PMs. These scores were added together to produce an index of the quality of restoration for each alternative. Average annual habitat unit benefits were then calculated for each of the alternatives for relative comparison. The details of the above processes are explained in the COE document entitled "MWD Tamiami Trail Modification Benefits Analysis Procedures August 2005."

Although we support the overall objectives upon which the 13 performance measures for calculating benefits are based, we do not necessarily agree with all the hypotheses that the ENP Report used to justify the selected PMs. For example, we agree that the restoration of ridge and slough processes is an appropriate objective, and that the performance measure to reverse filling in of sloughs is appropriate. However, we do not believe that there is sufficient scientific evidence to support the higher water depths that the report suggests would be necessary to re-create ridge and slough habitat. The report states that the 100% restoration goal for the area downstream of the 4-mile centrally located bridge would require water depths greater than 2 feet for 80 - 100% of the time in the sloughs. On the contrary, we have supporting evidence from the current Everglades system that extreme high water depths of relatively long duration lead to a deterioration of ridge and slough landscape features and to declines in their associated wildlife populations. Southern WCA-3A has experienced severe degradation of its ridge components (sawgrass ridges and tree islands) due to excessive depths and durations during the past 40 years (Heisler et al. 2002, McPherson 1973, Patterson and Finck 1999). The Heisler et al. study found that marsh water levels exceeding 2.0 feet led to tree island flooding impacts demonstrated by a statistically significant ($P < 0.0001$) reduction in tree and shrub species richness. If we agree that tree islands, ridges, and sloughs are all defining components of a restored Everglades, then clearly more work needs to be done to reconcile the recommendation for a hydroperiod that promotes ridge and slough maintenance while also supporting tree islands.

The other objectives being used to calculate habitat units for alternative comparisons include restoring water deliveries to ENP, restoring vegetative communities, and restoring fish and wildlife resources. There appear to be credible sources of both historical and ecological information presented in the ENP Report that could be used to help evaluate the ecological benefits of the five remaining alternatives for conveying flows through the Tamiami Trail. These include hydrologic connectivity, velocity distributions downstream of the bridges, ground elevation, historic flow information, and historic slough locations based on an unpublished 1917 survey by J. W. King.

Comparison of the 4-Mile Bridge Alternatives (Alternatives 10 and 11) to a 3,000-Foot Bridge (Alternative 9)

The implementation of a 4-mile bridge alternative would provide for greater compatibility between MWD and the proposed Comprehensive Everglades Restoration Plan (CERP) Decompartmentalization ("Decomp") project by reducing the amount of retrofitting needed for the Tamiami Trail in that project. Information contained in the COE's Benefits Analysis determined that the central 4-mile bridge (Alternative 10) would produce 32,674 average annual habitat unit benefits and the east 4-mile bridge (Alternative 11) would produce 28,549 unit benefits. In contrast, the 3,000-foot bridge would only produce 12,453 average annual habitat unit benefits. Unfortunately, the COE has indicated that there are no longer sufficient funds to construct a 4-mile bridge.

The greater bridge lengths in Alternatives 10 and 11 would have augmented the hydrologic connectivity between the L-29 canal and ENP marshes to the south, facilitating the movement of aquatic biota between these two areas. As stated in the ENP Report, this enhanced connectivity may lead to improvements in micro-topography in the ridge and slough system in the long term by creating a larger area with open water or sparse vegetation. When water depths are shallow, such habitats are known to harbor greater fish densities and to be more productive foraging sites for wading birds (J.A. Surdick 1998). Improved foraging habitat should benefit the wading bird rookeries located in the vicinity of the Tamiami Trail. For additional comments on connectivity effects, please refer to our previous letter dated June 24, 2003.

The Tamiami Trail road-kill survey conducted by the FWS in 2002-03 documented 991 road-killed vertebrates along two miles of selected transects over 13 monthly sampling periods. Reptiles including turtles, snakes, and alligators were the most commonly found carcasses, constituting 84% of the total, while mammals, birds, and amphibians comprised the remaining 14% of the road-killed animals. Based on the two miles of transects surveyed in the FWS Tamiami Trail road-kill survey, there was an average of 262 road-kills/mile/year. An extrapolation of this data to a 4-mile bridge alternative may reduce the risk of wildlife mortality by seven-fold, resulting in 900 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. Both the central and the east 4-mile bridge alternatives would result in a reduction of present road-related wildlife mortality by approximately 37% compared to only 5% reduction by the 3,000-foot alternative. If additional box culverts in these alternatives are strategically placed, further reductions in wildlife mortality could be realized. The FWS survey also reinforces the need for placement of a wildlife crossing at the juncture of

the L-30 and L-31 levees. For more details of our suggestions for reducing road-related mortality, please refer to our previous letter dated June 24, 2003.

Analysis by the COE using the RMA-2 hydrologic model was conducted to evaluate the velocity distribution of flows south of the Tamiami Trail for the different bridge configurations. The COE estimated that velocities in excess of 0.1 feet/second (ft/sec) would be excessive and destructive to the maintenance of the ridge and slough habitat. The RMA-2 modeling results predicted that 411 acres of marsh would be negatively affected by the 3,000-foot bridge, compared to only 98 acres by the central 4-mile bridge and 105 acres by the east 4-mile bridge. The ENP Report identified a lower velocity threshold of 0.045 ft/sec to evaluate differences between alternatives. Using this criterion, velocities greater than 0.045 ft/sec were estimated to negatively affect 1,649 acres under the east 4-mile bridge alternative and 438 acres under the central 4-mile bridge alternative. Although it is assumed that more natural flow velocities would provide greater benefits to aquatic biota, the appropriate target flow velocities, as well as the extent of benefits and their relative importance to wildlife populations is difficult to ascertain.

Another potential issue concerning the greater bridge lengths under Alternatives 10 and 11 is the longer construction time required. Under Alternative 7a (the 3,000-foot bridge) in the 2003 GRR, the construction period was estimated to last 24 months, whereas the length of time for completing construction of any one of the new alternatives is estimated to take 36 months. We hope that any additional time needed to complete the Tamiami Trail modifications does not delay the COE's ability to implement the portion of MWD that will be addressed under the Combined Structural and Operational Plan.

Comparison of central 4-mile (Alternatives 10) and east 4-mile bridge (Alternative 11)

Future plans under Decomp would remove the southern portion of the L-67A levee and the L-29 levee, facilitating sheetflow through the western portion of WCA-3B into NESRS. Alternative 10, with its more centrally located bridge, would provide the most direct routing for these future flows, and, we are hopeful, would reduce potential flooding impacts to WCA-3B.

According to the ENP Report, the average ground elevation at the central 4-mile bridge location is somewhat lower than it is at the east 4-mile bridge location. Culvert flow data during the peak of the 1947 flood were used to demonstrate that 51% of the flows across the Tamiami Trail occurred at the central location, while only 37% of the flows occurred at the eastern location. Information compiled by the COE using recent USGS survey data for ground surface elevations in NESRS 1,000 feet south of the Tamiami Trail confirms the more general ground elevation information contained in the ENP Report. A graphical presentation of this survey data depicts two "deep" sloughs at ground surface elevations less than 6.0 feet NGVD at both the east 4-mile bridge location and the west 4-mile bridge location (Figure 1). The ENP Report likewise analyzes historic photographs from 1917 in the project area and determines that a greater number of "deep" sloughs historically occurred at the central location than at the eastern location. We believe that further benefits could be accrued by placing additional box culverts at historic slough locations, particularly in the deep centrally located slough at Frog City.

The east 4-mile bridge could lead to greater impacts to the Tamiami East and Tamiami West rookery sites located immediately south of the roadway. Several listed species of wading birds, including the white ibis (*Eudocimus albus*), tricolored heron (*Egretta tricolor*), little blue heron (*Egretta caerulea*), and snowy egret (*Egretta thula*) (all state-listed as species of special concern), and the wood stork (*Mycteria americana*) (state- and federally listed as endangered) are known to nest in these colonies (T. Towles, FWC, personal observation, 1997). The FWS roadkill survey documented the mortality of wood storks and snowy egrets along the current roadway. An elevated bridge could lead to an increased risk of wading bird strikes by passing traffic, and reduce productivity through the visual disturbance created by traffic passing within the sight of canopy-nesting wading birds.

The Everglades mink (*Mustela vison evergladensis*) is listed as threatened by the FWC, and approaches the eastern limits of its distribution in the project area. The greatest number of historic Everglades mink roadkills documented for this portion of the Tamiami Trail was in the western portion of the project area, and specifically centered at the Blue Shanty Canal (Smith 1980). Consequently, the central location of Alternative 10, spanning the Blue Shanty Canal, may reduce the risk of Everglades mink road-related mortality to a greater extent than would the more easterly alignment of Alternative 11.

According to the RMA-2 analysis conducted by the COE, the central 4-mile bridge would result in fewer acres being negatively affected by relatively high flow velocities than would occur with the east 4-mile bridge. Using the COE's criterion of 0.1 ft/sec, an additional 187 acres of marsh would be affected by higher velocities in the central bridge alignment than in the eastern bridge alignment. No velocity estimates were calculated for Alternative 11 in the ENP Report.

Comparison of 2-mile west/1-mile east bridges (Alternative 14), a 3-mile central bridge (Alternatives 12), a 2-mile central bridge (Alternative 13), and a 3,000-foot bridge (Alternative 9)

Results of the Benefits Analysis demonstrated that the combined hydrologic and ecologic average annual lift of the 2-mile west/1-mile east alternative (28,371 habitat units [hu]) was slightly greater than the 3-mile central bridge alternative (27,973 hu), but the 2-mile central bridge alternative also demonstrated a considerable amount of lift (22,422 hu). All of these alternatives exceeded the performance of the 3,000-foot bridge (12,453 hu) by quite a margin. The 2-mile west/1-mile bridge design was shown to provide slightly greater hydrologic average lift (24,522 hu) than a single 3-mile bridge (23,998 hu). Improvements in hydrologic connectivity between the L-29 Canal and NESRS and in the distribution of flows from west to east along the Tamiami Trail in the 2-mile west/1-mile east bridges alternative were the primary contributors to this lift. The 2-mile west/1-mile east bridges alternative, with a connectivity value of 34%, offers greater connectivity than does a single central 3-mile bridge, with a value of 30%. As stated in the ENP Report, such enhanced connectivity may lead to improvements in micro-topography in the ridge and slough system in the long term by creating a larger area with open water or sparse vegetation. When water depths are shallow, such habitats are known to harbor greater fish densities and to be more productive foraging sites for wading birds (J.A. Surdick 1998). The creation of such habitat improvements at the eastern bridge location of

Alternative 14 may be of particular benefit to wading birds due to the two rookeries that would be situated at both the east and west ends of this bridge. The 2-mile west/1-mile east bridge alternative was also more effective in re-creating the normal east to west distribution of flows that would occur if the Tamiami Trail did not exist. This alternative matched 59% of the natural east to west distribution, whereas both the 3,000-foot bridge and the central 3-mile bridge matched 57% of the east to west distribution, and the single 2-mile bridge matched only 51% of this distribution. The redistribution of flows is important since it is a primary overarching objective of the MWD project.

We also learned from engineering staff of the South Florida Water Management District (SFWMD) that additional bridge capacity along the eastern reach of the L-29 canal may facilitate the transfer of greater quantities of water from WCA-3B into the L-29 canal and NESRS, which may help reduce the severity of extreme high water predicted to occur in eastern WCA-3B under the Combined Structural and Operational Plan. Flows from the L-29 canal under a 1-mile bridge into the three relatively deep sloughs in the east during dry conditions would also provide for a more uniform and gradual recession rate and reduce unnatural dry downs, possibly enhancing wading bird nesting success. There may also be a greater capacity in the eastern than in the western portion of NESRS for receiving flows due to the greater amount of subsidence that has occurred in the east since 1946 (from 2 to 3 feet) than in the west (none to 2 feet) (Scheidt et al. 2000). Such physical and hydrological characteristics that act to increase the conveyance of flows from the L-29 canal to the south, and augment the capacity of the L-29 canal to receive flows from WCA-3, would be considered as beneficial to Everglades habitat in both WCA-3 and in NESRS.

Both the 2-mile west/1-mile east bridge and the central 3-mile bridge alternatives would result in a reduction of present road-related wildlife mortality by approximately 29% compared to 19% for the central 2-mile bridge, and only 5% reduction by the 3,000-foot alternative. If additional box culverts in these alternatives are strategically placed, further reductions in wildlife mortality could be realized. Based on the two miles of transects on the Tamiami Trail roadway surveyed in the FWS Tamiami Trail road-kill survey, there was an average of 262 road-kills/mile/year. An extrapolation of this data to a three-mile bridge alternative may reduce the risk of wildlife related mortality by more than five-fold, resulting in 635 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. The 2-mile bridge alternative may reduce the risk of wildlife related mortality by more than three-fold, resulting in 374 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. For more details of our suggestions for reducing road-related mortality, please refer to our previous letter dated June 24, 2003.

The 2-mile west/1-mile east bridges, central 3-mile bridge, and central 2-mile bridge alternatives would not be expected to have any adverse effects on the two Tamiami Trail wading bird rookeries. The 2-mile west/1-mile east bridge alternative avoids potential impacts by locating the eastern 1-mile bridge in between the two wading bird rookeries. The increased flows and hydroperiods to be expected by this bridge alignment may improve foraging habitat for wading birds nesting in these colonies.

The greatest number of historic Everglades mink road-kills documented for the eastern portion of the Tamiami Trail was centered at the Blue Shanty Canal (Smith 1980) Since the western 2-mile bridge of Alternative 14 spans the Blue Shanty Canal, the risk of Everglades mink road-related mortality may be reduced. The reconnection of the linear and natural "upland" and aquatic features associated with the Blue Shanty may also facilitate safe passage for other terrestrial and aquatic wildlife that utilize the Blue Shanty as a travel corridor.

Information contained in the COE's Benefits Analysis determined that the RMA-2 modeling results predicted that 295 acres of marsh would be negatively affected by velocities > 0.1 ft/s under the 2-mile west/1-mile east alternative, compared to 411 acres affected by the 3,000-foot bridge alternative. The 3-mile and 2-mile bridge alternatives would affect somewhat fewer acres than the 2-mile west/1-mile east bridge. Since the ecological significance of these higher velocities is difficult to define and the acreage affected is relatively minor considering the larger benefits to be derived through lengthening inundation periods over much of NESRS, these relatively minor effects would be acceptable for any of the alternatives presently being considered.

Although the implementation of a 2-mile west/1-mile east bridge alternative would not provide as many benefits as a 4-mile bridge, it is believed to offer a sufficient amount of compatibility between MWD and future restoration under the Decomp project, and would reduce the amount of retrofitting needed for the Tamiami Trail under Decomp. We also understand that the central 3-mile bridge and 2-mile west/1-mile east bridge alternatives, as it now stands, both exceed the cost limitations for the project. In the event that construction costs further limit the length of bridge than can be built, we believe that the results obtained from the Benefits Analysis would support as a minimum either the 1.3-mile west/ 0.7-mile east bridge alternative or the 2-mile central bridge alternative as being adequate to convey and distribute MWD flows to ENP. We furthermore believe that the additional benefits identified in the split bridge alternatives warrant maintaining this design and that at least one-third of the total bridge length should be apportioned to the east portion of NESRS. This ratio would improve the redistribution of flows to the full breadth of NESRS, and would improve connectivity between the L-29 canal and ENP to a greater extent than would be afforded by a single bridge span.

Recreation concerns

Those concerns that were previously addressed pertaining to potential impacts to FWC recreational facilities and access points under Alternatives 1 through 8 (see attached June 24, 2003 preliminary FWCAR) remain. The only public recreational access that is anticipated to be lost under either Alternatives 12 or 14 would be the permanent loss of access to three miles of the south side of the L-29 canal and to culvert outfall sites on the south side of the Tamiami Trail for bank anglers. It is assumed that there would also be a temporary loss of access to the south bank of the remaining seven miles of the roadway during the construction period. Perhaps the reduced access to the south bank of the L-29 canal could be compensated for by providing scenic view pull-offs on the two bridges that could also serve as fishing platforms. The increase in connectivity between the L-29 canal and ENP marshes under either three-mile bridge alternative may enhance the recreational fishery value of the L-29 canal to a greater extent than would the

connectivity created by a 3,000-foot bridge. We further understand that Alternatives 12 and 14 would not affect vehicular access to the L-29 Levee or boat access to the L-29 canal.

Other related issues

We understand that water quality treatment for the roadway will probably not be required at this time since the impervious surface of the highway is not expected to significantly increase. On the other hand, we understand that an expensive water quality treatment system is being incorporated into the construction design for the bridge spans. We would support best management practices, such as using stormceptors or similar technologies for improving water quality of stormwater being discharged while minimizing wetland impacts. We encourage further investigation into cost effective treatment technologies for reducing bridge stormwater runoff, so that the bridge lengths and associated ecological benefits can be maximized.

We recognize that some private property issues related to increasing flood stages and possibly to rights of ways south of the Tamiami Trail are under resolution at the present time. We hope that these issues can be satisfactorily resolved such that the ecological benefits of project implementation can be realized in a timely manner.

Concerns and Recommendations

The stated authority limitations of the COE and the financial limitations of ENP will likely preclude them from implementing the more ecologically preferred alternatives, such as Alternatives 10 or 17 for the Tamiami Trail portion of the MWD project. Therefore, Alternative 14, or a derivative thereof, would appear to be the most reasonable interim alternative to implement prior to the approval of a more permanent solution under CERP. In our preliminary FWCAR for the GRR, dated June 24, 2003, we had previously agreed that a 3,000-foot bridge length would suffice due to fiscal constraints at that time. Should budget shortfalls for this project occur, we would continue to support the construction of one or more bridges intermediate in combined length between two and three miles, in order to avoid any further delays in completing the Tamiami Trail, and ultimately the MWD project. In summary, we offer the following recommendations concerning the alternatives under consideration.

1. We continue to support the idea of selecting an alternative that would be as compatible as possible with the upcoming CERP Decomp project, and reduce costly retrofitting of the Tamiami Trail in the future. Contingent on funding commitments from the Department of the Interior, we believe that Alternative 14 best addresses this compatibility.

2. Of the two most promising alternatives now being considered for this project, Alternative 14 would appear to offer the most benefits for fish and wildlife resources while avoiding potential impacts. This alternative would reduce the risk of wildlife mortality at the Blue Shanty Canal, particularly that of the threatened Everglades mink, since this canal would

bridge. This alternative would also avoid possible impacts to two important wading bird bridge between them.

3. Although Alternative 14 is expected to eliminate three miles of bank access along the south bank of the L-29 canal and cause a temporary loss of access to the remainder of the south bank during construction, we consider these impacts to be minimal when compared to some other alternatives. However, special attention will need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4, the boat ramp and parking facility at Recreation Site No. 1, or to the boat ramp facility located west of the S-12D structure.

4. Wading bird and snail kite nesting patterns, as well as Everglades mink territories, may vary with the prevailing hydrological conditions, during the multiple years that construction will likely be occurring. Therefore, surveys should be conducted by qualified biologists on an annual basis over the period of active construction to determine whether any mink territories or nesting efforts of state- and federally protected bird species would potentially be affected.

If you or your staff would like to coordinate further on the recommendations contained in this report, please contact me at 850-488-6661, or email me at maryann.poole@MyFWC.com, and I will be glad to help make the necessary arrangements. If your staff has any specific questions regarding our comments, I encourage them to contact Dr. Joseph Walsh at our office in Vero Beach (772-778-5094; email joe.walsh@MyFWC.com).

Sincerely,

Mary Ann Poole

Mary Ann Poole, Director
Office of Policy and Stakeholder Coord.

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ENV 1-3-2
Enclosures (2)
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CC: Mr. Jay Slack, USFWS, Vero Beach
Mr. Dan Kimball, ENP, Homestead
Ms Tambour Eller, COE, Jacksonville
Mr. Chuck Collins, FWC, West Palm Beach
Mr Larry Gerry, SFWMD, West Palm Beach

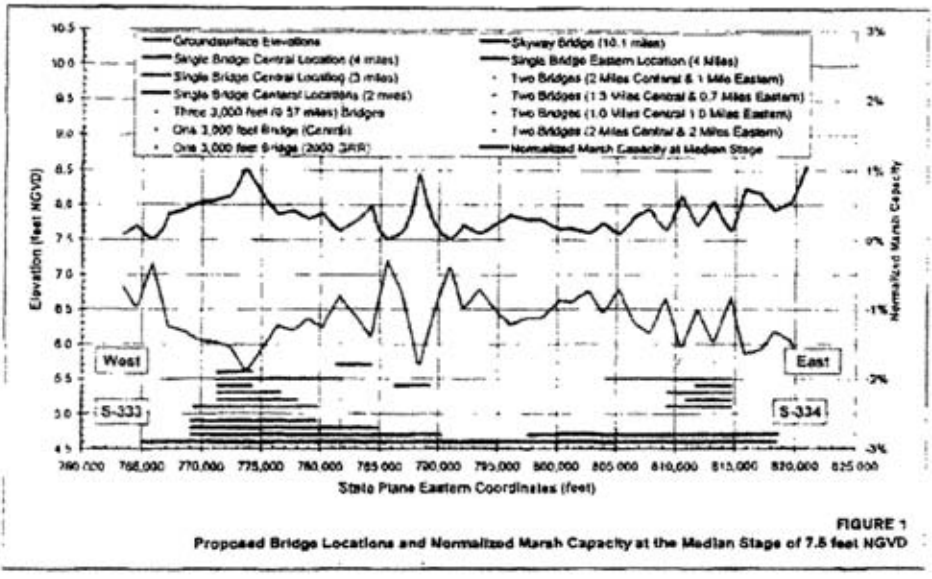

FIGURE 1
Proposed Bridge Locations and Normalized Marsh Capacity at the Median Stage of 7.5 feet NGVD

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FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

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KENNETH D. HADDAD, Executive Director
VICTOR J. HELLER, Assistant Executive Director

BRIAN S. BARNETT, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(850) 488-6661 TDD (850) 488-9542
FAX (850) 922-5679

March 17, 2004

Mr. James C. Duck
Chief, Planning Division
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: Tamiami Trail Final General Reevaluation Report/Supplement to the 1992 Final Environmental Impact Statement (GRR/SEIS) on Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Mr. Duck:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the referenced document, and provides the following comments.

This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5-square-mile-area residential development along the eastern side of Northeast Shark River Slough (NESRS); conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B, and NESRS; and an overall operational plan for the newly constructed water control structures. Many of our comments and concerns on the Tamiami Trail Feature have previously been conveyed directly to the Army Corps of Engineers (COE) via a preliminary Coordination Act Report (attached) dated June 24, 2003, and through a Planning Aid Letter (attached) dated February 23, 2001, and through the Florida State Clearinghouse in a letter to Ms. Jasmin Raffington dated January 16, 2002 (attached). Our comments in this letter focus on the status of a real estate agreement between the COE and the Florida Department of Transportation (FDOT), timely integration with the Decompartmentalization and Sheetflow Enhancement project (Decomp), and proper sequencing of the various Mod Waters project components.

First of all, we understand that the COE is still seeking a real estate agreement with the FDOT on the potential maintenance of the Tamiami Trail in lieu of raising the entire road profile. In our letter to Ms. Jasmin Raffington dated January 16, 2002, we had previously requested that an agreement be formalized and made available for public review prior to the release of this final GRR/SEIS. It is stated in the GRR/SEIS that such an agreement will be finalized with FDOT during development of the construction Plans and Specifications for the final approved plan under Mod Waters, and that this timeframe should coincide with the final decision on a plan for Tamiami Trail under the Comprehensive Everglades Restoration Plan (CERP). To accommodate this integration, the Decomp project was split into two separate project implementation reports (PIR), one of which would focus solely on the necessary modifications to the Tamiami Trail in order to pass the additional CERP flows. According to the COE's current Master Program Implementation Schedule, it now appears that a separate PIR for the Tamiami

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Trail will not be developed. We also understand that delays in the development of the Decomp PIR are anticipated due to budget shortfalls. Consequently, we are concerned that these factors may result in a lack of integration of the two Tamiami Trail projects, and could result in costly retrofitting of the roadway under Decomp if the entire road profile were to be raised under Mod Waters.

Another area of concern is the sequencing of the Seepage and Conveyance, the 8.5-square-mile-area, and the Combined Structural Operational Plan (CSOP) components with the Tamiami Trail component of Mod Waters. The completion date for the Seepage and Conveyance component, which includes the construction of passive weir structures across the L-67 and L-29 levees, is now scheduled for June 2006. However, the Tamiami Trail component is not scheduled to be complete until 2007. We are concerned about the potential for ecological damage to WCA-3B and further delay in benefits to NESRS, if the Tamiami Trail is not capable of passing the augmented flows by the time these other conveyance features area in place.

We are encouraged that the COE has concurred with us on the placement of the 3,000-foot bridge immediately east of the Blue Shanty Canal. Please refer to our previous comments on the Draft GRR/SEIS in our letter to Ms. Jasmin Raffington, dated January 16, 2002, for a more detailed discussion of our concerns on wildlife passage beneath the bridge, the need for annual surveys of state-listed wildlife species prior to construction activities, and the need for an accurate accounting of impacts to recreational access along the Tamiami Trail.

In conclusion, we support the final recommended plan (7a) with the understanding that 1) a real estate agreement between the COE and FDOT will be formalized as soon as possible to avoid unnecessary delays in implementation of the CSOP and to avoid costly retrofitting during implementation of the Comprehensive Everglades Restoration Plan, 2) appropriate surveys will be conducted for state-listed wildlife species prior to construction, and 3) all potential recreational access impacts are fully addressed.

Sincerely,

Brian Barnett

Brian S. Barnett, Interim Director
Office of Environmental Services

bsb/dtt
ENV 2-16/4
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Enclosures
cc: Environmental Branch, COE, Jacksonville
Mr. Jay Slack, USFWS, Vero Beach
Mr. Dan Kimball, Acting Superintendent, ENP, Homestead
Regional Director, FWC, West Palm Beach

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

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Jacksonville

RICHARD A. CORBETT
Tampa

KENNETH D. HADDAD, Executive Director
VICTOR J. HELLER, Assistant Executive Director

BRIAN S. BARNETT, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

June 24, 2003

Colonel James G. May
District Engineer
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: General Reevaluation Report/ Supplemental Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail, Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Colonel May.

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the revised preliminary draft GRR/SEIS for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park ("Mod Waters"), dated June 2001. This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5-square-mile area residential development along the eastern side of Northeast Shark River Slough (NESRS); conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B, and NESRS; and an overall operational plan for the newly constructed water control structures. This report is being submitted following a hiatus in activity on the Tamiami Trail Project due to a legal challenge to the 8.5-square-mile flood protection project, which has since been satisfactorily resolved. Our comments and concerns on the Tamiami Trail Project component are included in the following preliminary Coordination Act Report (CAR), which is being submitted under the authority of the Fish and Wildlife Coordination Act of 1958.

Description of Alternatives

This GRR/SEIS is being developed because new information acquired since the project was approved in 1992 indicates that the original design would be insufficient to pass the volume of water that would need to be conveyed under the Tamiami Trail via Mod Waters. In addition to the six basic alternatives (nine, if water quality treatment options are considered separately) previously addressed in our Planning Aid Letter (P.A.L.), dated February 23, 2001, two completely

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new alternatives (seven and eight) have been developed, a modification of Alternative 5 (5C) has been added, and Alternative 6 has now been formally accepted. Also, a new bridge alternative, "Alternative 9 ", with a 2.7-mile span length, intermediate between that of Alternatives 6 and 7, is being floated by the Department of the Interior as a possible compromise. Since we have previously been informed by your staff that any alternatives with bridge expanses much longer than what is deemed necessary to convey Mod Water flows are considered to be outside of your authority for this project, we have opted not to discuss the tentative "9a" and "9b" alternative options any further. For a short description of these 18 alternatives and their associated options, please refer to Table 1. Our three major areas of concern with regard to the potential impacts of this project remain as follows: (1) impacts to existing recreational facilities and access points of the Francis S. Taylor Wildlife Management Area (WCA-3B), (2) impacts to fish and wildlife resources, and (3) potential loss of Everglades marsh.

Impacts to Existing Recreational Facilities and Access Points

Those concerns that were previously addressed pertaining to potential impacts to FWC recreational facilities and access points under Alternatives 1 through 5 remain (please refer to our previous PAL [attached] dated February 23, 2001 and to our Florida State Clearinghouse letter to Ms. Jasmin Raffington dated January 16, 2002), and also apply to the three new alternatives (Alternatives 6, 7, and 8) added in this document. Since the PAL, we have learned of an additional boat ramp, and also now provide supplementary information on the identification numbers of FWC boat ramps within or adjacent to the project area. We know of three boat ramps in the project area that provide access to the marsh of Francis S. Taylor Wildlife Management Area (FSTWMA). The westernmost ramp (#135) is located immediately east of the S-333 structure on the L-29 Levee and has unimproved parking capable of accommodating about ten vehicles. A popular marsh access ramp owned by the South Florida Water Management District is located on the L-29 Levee at Recreation Site No. 1, immediately south of the S-334 structure, and has unimproved parking. A third concrete boat ramp of unknown origin, previously unidentified, is located in a swale on the L-29 Levee opposite the Airboat Association of Florida. Of the three FWC maintained boat ramps that provide access to the canal system within the project area, two are located at Recreation Site No. 4. One of these (#96), immediately north of the S-333 structure, provides access to the popular L-67A canal, while the other boat ramp (#161), at the juncture of the L-67A and L-67C levees, provides access both to the L-67C canal and to the marsh in the "pocket" of WCA-3B. The remaining boat ramp (#153), located at Recreation Site No.2, is the sole access point for the eastern 11-mile stretch of the L-29 Canal.

A cursory look at the recreational fishing pressure along much of the 11-mile stretch of the L-29 Canal that is being examined under this project suggests that use may be relatively low, except near the S-334 and S-333 structures (FWC, unpublished data). However, changes that are soon anticipated to occur with implementation of the conveyance features of the Mod Waters Project, as well as certain features of the Comprehensive Everglades Restoration Plan (CERP),

are likely to improve hydrological connections between the L-29 Canal and the marsh interface, as well as prolong adjacent marsh hydroperiods both to the north and to the south of the L-29 Canal. Consequently, such predicted hydrological changes combined with the addition of new water management structures (bridges, culverts, weirs, etc.) are likely to lead to an increase in local sport fish populations, followed by an increase in recreational fishing demand and concomitant changes in angler distribution patterns along this eastern stretch of the Tamiami Trail. It should be noted that prior to the construction of the L-67 and L-29 levees, this section of the Tamiami Canal (precursor to the L-29 Canal) was one of the premiere fishing areas in the Everglades. Creel surveys conducted during a study in 1960 (Game and Fresh Water Fish Commission [GFC], unpublished report) revealed that the first four miles of the Tamiami Canal west of the L-30 canal received an exceptional amount of use, and that the 11-mile stretch west of the L-30 canal received considerably more fishing pressure than the 9 miles of the Tamiami Canal west of the present-day L-67 Canal. The imminent decline of this great fishery, effected through a separation of the Tamiami Canal from the marsh with the completion of the L-29 Levee, was predicted in the aforementioned GFC report.

Besides recreational access for sport fishing purposes, the airboat ramps provide access to the natural resources of the Everglades marsh contained within the Francis S. Taylor Wildlife Management Area. Recreational frogging, airboating, and seasonal hunting are the primary activities pursued here. Recreational use of these access points may be relatively high during short hunting seasons, particularly when game population levels allow a liberal harvest. For instance, there were 140 airboat permits issued for an approximately 3-week deer season in the FSTWMA in 1984, and 156 permits issued the following year. Although deer population levels in WCA-3B are anticipated to decline under the projected deeper water regime that will occur with the implementation of Mod Waters and CERP, overall recreational use of the area for frogging, general airboating, duck hunting, and fishing is expected to increase. The potential impacts associated with each group of alternatives are listed as follows.

Alternatives 2a, 2b to 2b6, 4a, and 4b to 4b6. This document describes creative water quality treatment options b1 to b3 of Alternatives 2 and 4 as encroaching into the L-29 Canal. We understand from statements made by your staff that it will be necessary to maintain the water supply conveyance capacity of the L-29 Canal for some undefined period of time, which would necessitate maintaining deeper water conditions in this section of the canal. Nevertheless, the above-mentioned water quality treatment options would encroach into the south portion of the L-29 Canal and require widening of the canal to the north. This option would essentially eliminate any existing littoral zone on the south bank of the canal and would result in the loss of boat ramp #153 and impact Recreation Site No. 2 located on the north bank of the L-29 Canal. In the event that a boat ramp is impacted, the Army Corps of Engineers (COE) would be responsible for building a replacement ramp at a new location to be selected by the FWC.

Alternatives 3a and 3b. A reduction in available parking space for recreational users on the north side of the L-29 Canal would negatively impact recreational access to the canal.

Recreation Site No. 2 would probably be negatively affected or eliminated by this northerly road alignment.

Alternatives 5a, 5b, and 5c. The effects of the new subalternative 5c are essentially the same as for Alternatives 5a and 5b, in that recreational access to all sites on the north bank of the L-29 Canal will not be affected. However, the entire south bank of the L-29 Canal would be inaccessible during the 4-year construction period. Following completion of the bridge, only culvert outfalls located within the first mile on the east end and within the last one-half mile on the west end of the project would potentially be available for angler use. This loss of access to the south bank of the L-29 Canal from the Tamiami Trail could possibly be ameliorated by the provision of some degree of fishing access from the elevated bridge span.

Alternatives 6a and 6b. Although approximately 4 miles of the southern bank of the L-29 Canal would be unavailable to bank anglers, the remaining 6 miles should still be accessible, as well as the entire northern canal bank. However, the employment of creative water quality treatment options 6b1 to 6b3 could potentially impact the L-29 Canal, as described previously under Alternatives 2 and 4. As in Alternative 5, less opportunity would be lost if fishing access were possible from the bridge span. The feasibility of providing limited fishing access from designated portions of such extensive bridge spans should be explored as a means of reducing public fishing access losses. All existing boat ramps would remain accessible under this alternative. Culvert outfalls south of the roadway would not be accessible during highway construction (18-24 months) in Alternative 6a, and would be plugged under Alternative 6b. The addition of eight box culverts at designated low points in Alternatives 6a and 6b may provide additional angler opportunities.

Alternatives 7a and 7b. Recreational access to all boat ramps and the north bank of the L-29 Canal would remain intact, while fishing access to the south bank of the canal would be blocked during the 2-year construction period. Most of the culvert outfall structures would be accessible during and after construction in Alternative 7a, but all would be filled and eliminated in Alternative 7b. Although the preliminarily selected preferred alternative is Alternative 7a, the decision as to whether additional water quality treatment will be required has not yet been officially decided. Should Alternative 7b be selected, it is not known how the channeling of all water outflows through the single 3,000-foot gap will affect the L-29 Canal fishery. Also, special attention would need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4 that provides access to the L-67 canals and FSTWMA, or to the boat ramp facility (#90) located 200 yards west of the S-12D structure.

Alternatives 8a and 8b. Alternative 8a should not impact existing recreation access sites, and could provide new fishing opportunities at the 24 additional box culverts, particularly

if the culvert outfalls are scalloped out to improve the passage of water into northeast Shark River Slough. Alternative 8b would require filling the existing culverts, and could result in a loss of fishing opportunities unless the 40 new box culverts are constructed in a way that creates shallow collection basins at the outfalls.

Impacts to Fish and Wildlife Resources

Of particular concern are the impacts that an alternative could have on state-listed species of wildlife or important habitat components. There are three historic wading bird rookeries containing species listed by the state as endangered or species of special concern, recent records of endangered snail kite nests in southern WCA-3B, a number of records of the threatened Everglades mink along the highway corridor, and a single documented occurrence of the endangered West Indian manatee in the L-29 Canal. In addition, other listed species such as the limpkin and roseate spoonbill (both listed as species of special concern) utilize marsh areas, and the least tern (threatened) forages in canal habitats that could be impacted under certain alternatives. The potential impacts that could occur are listed by alternative groups as follows.

Alternatives 1 and 2a. The temporary road for detouring traffic while proposed bridge #3 is under construction would encroach into the pond apple forest at the Tamiami West wading bird colony, on the south side of the Tamiami Trail, that provides nesting substrate for white ibis, tricolored herons, little blue herons, snowy egrets, and wood storks. Consequently, a portion of this forested area would be eliminated as a nesting substrate for an unknown number of years. Any heavy construction activity that would be expected to occur within 600 meters of a known rookery location, including construction of the temporary road, should be conducted outside of the wading bird nesting season, which normally extends from early February to the onset of the rainy season.

Alternative 2b. This alternative encroaches to a greater extent (average of 51 feet) into the marsh south of the existing Tamiami Trail, with incursions of 5 to 6 additional feet at bridge approaches. Consequently, this alternative would have a greater permanent impact on the Tamiami East and Tamiami West wading bird colonies due to a greater permanent loss of nesting substrate as well as a decrease in the amount of buffer capacity available. The Everglades mink has been documented to use both natural and artificial upland areas for denning purposes; therefore, this alternative could potentially impact mink denning areas that may occur in either native upland areas or at the artificially created upland areas where the airboat concession and radio tower sites are located. Option 2b1, which shifts the alignment to the north, is only a slight improvement over Alternative 2b.

The 2b creative water quality treatment options of 2b2 to 2b6 (Table 1) result in much more modest incursions into the two Tamiami wading bird colonies; however options 2b2 and 2b3 would eliminate littoral zone elements on the south shore of the L-29 Canal, eliminate reptile oviposition and basking sites on the south shore of the canal, and could result in the entrapment of terrestrial animals attempting to cross the canal.

Alternatives 3a and 3b. Both of these alternatives and the various 3b options presented would result in the loss of a significant amount of high quality wildlife habitat. The woody vegetation supporting the Frog City wading bird colony, which has been documented to contain nesting tricolored and little blue herons (both species of special concern), would be either eliminated or severely impacted by the road alignment, which would encroach further into the marsh at this point in order to avoid the Tigertail Camp. This northerly diversion of the road around the Tigertail Camp would also impact a high quality tree island (WRAP score of 0.83) that may also have a special cultural value to the Tigertail family. The relocation of a high-speed highway to the north of the L-29 Levee would result in much greater wildlife mortality during high water episodes in WCA-3B than presently occurs. There could be dens of the Everglades mink in the L-29 Levee or on adjacent tree islands that are impacted, as well.

Alternatives 4a and 4b. Both of these alternatives would produce significant incursions into the Tamiami West and Tamiami East wading bird rookeries, as well as eliminate important swamp forest habitat along the remainder of the corridor. Although options 4b1-4b6 would reduce the amount of encroachment from Alternative 4b, they are only slightly better than Alternative 2b. The Everglades mink has been documented to use some of the man-made upland sites along this alignment for denning purposes, and could potentially be impacted by construction activity.

Alternatives 5a, 5b, and 5c. These alternatives are believed to be the most beneficial to wildlife, with little known impacts. These alternatives would leave important rookery vegetation intact on both sides of the Tamiami Trail and reduce potential impacts to mink denning areas. Road-related mortality of the Everglades mink, with at least 14 documented occurrences, would essentially be eliminated. However, the leaving in place of renovated sections of the old roadbed under Alternatives 5a and 5b could possibly provide suitable habitat for Everglades mink and oviposition sites for alligators and other egg-laying reptiles, as well as provide safe havens for terrestrial wildlife during high water periods.

Alternatives 6a and 6b. Alternative 6a would produce impacts to the two Tamiami rookeries as described for alternatives 1 and 2a, above. Alternative 6b and its various options would result in impacts to these rookeries and to the L-29 Canal identical to those

described under Alternative 2b, above. Road-related mortality of the Everglades mink and other wildlife would be eliminated at the four-mile bridge, and mink survival could be further enhanced by providing elevated wildlife crossing shelves under the east and west ends of the extended bridge. Mink denning areas could also be protected by avoiding the need to encroach upon the upland sites south of the existing road. Mink habitat could actually be improved by planting the abandoned upland sites south of the Trail with shrubs and trees so as to resemble native Everglades tree island communities.

Alternatives 7a and 7b. Alternative 7a would have negligible permanent impacts on the two Tamiami rookeries, but Alternative 7b would result in impacts as described above for Alternative 2b. However, we believe that greater ecological and wildlife benefits may be derived from these alternatives by a shift of the 3,000-foot bridge to the east of the Blue Shanty Canal. This would result in water discharges onto a land surface with a slightly lower average ground elevation and would be more centrally located in present day northeastern Shark River Slough. This location may likewise facilitate the safe passage of wildlife, especially if the bridge were equipped with a wildlife shelf.

Alternatives 8a and 8b. Alternative 8a would likewise have little effect on the two Tamiami rookeries, as long as new box culverts are not constructed at the rookery locations. Alternative 8b would produce impacts similar to those described for Alternative 2b. The additional box culverts under these alternatives, if placed at strategic locations, could improve the passage of aquatic and semiaquatic fauna across the roadway, especially if animal barriers were erected to deflect animals to the culvert crossings.

Potential loss of Everglades marsh and connectivity effects

In order to ascertain the potential impacts that each alternative iteration would pose to the functionality of wetlands, a multi-agency team was assembled to apply the Wetland Rapid Assessment Procedure (WRAP) to the various wetland plant communities in the Tamiami Trail corridor. The results of this assessment found that the functional value of wetland communities immediately north of the L-29 Levee in WCA-3B were of somewhat higher quality (average score of 0.74) than similar wetlands situated immediately south of the Tamiami Trail in the Everglades Expansion Area of Everglades National Park (average score of 0.62).

Alternatives 1, 2a, 2b to 2b6, 4a, and 4b to 4b6. The nine water quality treatment options of 4b through 4b6, 2b, and 2b1 were predicted to result in the loss of from 34 (2b1) to 64 (4b) wetland functional units in the Everglades Expansion Area, whereas Alternative 4a (without water quality treatment) was little better, with a predicted loss of 40 wetland functional units (Table 1). By comparison, Alternative 2a, using the existing

highway alignment and four new bridges, resulted in a relatively low loss of wetland function (10 units) at a substantially lower cost than the 2b2 to 2b6 water quality treatment options. Each of these alternatives physically connect the L-29 Canal to the marsh in Everglades National Park for only 2.5% of the entire project corridor length (i.e., create a 2.5% marsh-canal interface) by means of the four new bridges; however, creative water quality treatment options b1 to b3 of Alternatives 2, 4, and 6 would encroach into the L-29 Canal.

Alternatives 3a and 3b. The seven water quality treatment options of 3b through 3b6 presented for Alternative 3 were predicted to result in the loss of from 15 to 30 wetland functional units in WCA-3B, whereas Alternative 3a (without water quality treatment) was predicted to result in the loss of 19 functional units (Table 1). Although north-south connectivity for these alternatives is stated to be 10%, the primary purposes of the eight bridges that supposedly create this connectivity are to cross the L-29 Canal, and to span the two S-355 and three weir water conveyance structures on the L-29 Levee. Connectivity between the L-29 Canal and wetlands to the south would be no greater in Alternative 3 than under Alternatives 2 or 4, since no additional breaching of the Tamiami Trail is included under this alternative.

Alternatives 5a, 5b, and 5c. This suite of alternatives performs the best in that there is actually a net gain in functional units of wetlands (from 29 units in 5b to 45 units in 5c) compared to the base condition. Connectivity under Alternatives 5a (98%) and 5c (nearly 100%) are excellent, but if in situ water quality treatment is required (5b), connectivity would decrease markedly to 75% due to the need to leave sections of the old highway bed in place for dry retention. From a purely ecological perspective, without regard to cost or authority, Alternative 5 appears to exhibit the best overall performance.

Alternatives 6a and 6b. Alternative 6a would result in the loss of only 6.6 wetland functional units (< 10 acres) whereas Alternative 6b would result in significantly greater losses (22.8 functional units) due to the broad footprint necessary for water quality treatment. Alternative 6a is also estimated to result in about a 36% opening of the entire 10.7-mile length of the Tamiami Trail corridor, providing for a significant improvement in aquatic connectivity. Alternative 6b would provide a reduced level of connectivity (27%) due to the necessity to leave portions of the old Tamiami Trail for water quality treatment.

Alternatives 7a and 7b. Alternative 7a would result in a minimal loss of only 3.4 functional units (5 acres) of marsh. In contrast, the acreage demand for standard water quality treatment along 10 miles of roadway in Alternative 7b would result in wetland losses approaching 50 functional units (72 acres). Both of these alternatives would result in a 5% increase in the connectivity of the L-29 Canal to Everglades marshes in the south

near the western end of the project area. The ground elevation of the Everglades marsh at the western end of the project area appears to be slightly higher than at other locations to the east. If this is actually the case, the aquatic connectivity between the L-29 Canal and the marshes south of the Tamiami Trail would be severed sooner during low water conditions than would occur if such an opening were situated at a point east of the Blue Shanty Canal. Aquatic connectivity may even be reduced beyond current levels during periods of low water if Alternative 7b were selected, since the existing culverts would be filled in.

Alternatives 8a and 8b. Alternative 8a would likewise produce a minimal loss of only 3.5 wetland functional units, resembling Alternative 7a. However, wetland losses under Alternative 8b would be considerably greater (46.6 functional units). These alternatives rely on additional box culverts to convey Mod Waters flows, and would increase connectivity between the L-29 Canal and the marsh south of the roadway by a mere 0.4%. These alternatives are not compatible with the CERP concept of removing the Tamiami Trail as an impediment to flow by elevating portions of the roadway.

Features for reducing road-related wildlife mortality

In an effort to obtain some data that could be used for evaluating the need for highway features that could be employed to reduce road-related wildlife mortality, and that could be used as an aid in determining the placement of such features along the project corridor, biologists from the FWC, the U.S. Fish and Wildlife Service, and the COE conducted a preliminary survey of wildlife mortality along five miles of the Tamiami Trail corridor. Remains representing 411 individual animals were found during a walking survey of 3 miles of the Tamiami Trail on December 19-20, 2000 (Tables 2, 3, and 4) and of 2 miles on April 18, 2001 (Tables 5 and 6). During these single visit surveys, an average of 82 wildlife deaths were recorded per mile. If this same level of mortality is extrapolated for the entire 10.7 mile road corridor, the number of road-kill casualties observable on a given day would equal 880 individuals. However, since 60% of the survey length was surveyed during the coldest part of the year when reptile activity is at its lowest point, and since many carcasses are quickly scavenged from the road before they can be counted, we believe that the actual mortality would likely be several times greater than this. For example, during December, an average of 2 dead snakes and 1 alligator were documented per mile of highway; these numbers increased dramatically, following a marsh dry-down in April, to an average of 22 dead snakes and 7 alligators per mile. Recent data collected by FWS staff similarly suggests that there may be an increase in road-killed snakes during the autumn (Mike Abney, pers.comm.) An Arizona study (Kline and Swann 1998) attempting to quantify wildlife road mortality found that only 24% of road-killed animals recorded during all-night surveys were discovered on surveys the following day. Likewise, a daily walking survey of a section of central Florida secondary highway found that most road-killed snakes were present for only a

day or two, with few remains detectable for as long as two weeks (Kristin Wood, pers com.). During our study, aquatic turtles were the most commonly encountered taxa group, accounting for 66% of the total recorded mortality, followed by snakes (13%), birds (10%), mammals (5.5%), alligators (4.5%), and frogs (1%). A total of 21 species were identifiable from the remains, including 4 turtles, 7 snakes, the alligator, 4 birds, and 5 mammals. Due to the tendency for turtle shell fragments to persist for long periods of time along the road, their prevalence may have actually been less than suggested in our surveys. Aquatic or semiaquatic reptiles dominated the survey with only one terrestrial snake (*Elape guttata*) detected. Of the mammals found, only the river otter and the marsh rat were semiaquatic. The other road-killed mammals, requiring an upland habitat component, included the raccoon, the opossum, and the armadillo.

The construction of animal barriers along the Tamiami Trail corridor in between the bridges or culverts on both sides of the road could aid in reducing road-related wildlife mortality. Perhaps a barrier based on the design currently being used at Payne's Prairie State Preserve south of Gainesville, Florida would serve well here also. The review of an unpublished evaluation by Dick Franz (1996) on the effectiveness of different barrier heights ranging from one to four feet suggests that a 2-foot barrier would be sufficient for deterring all turtles, all small snakes and most large-bodied aquatic snakes, all ranid frogs, most alligators, and all rabbits. The addition of a six-inch overhang would further increase the effectiveness of this barrier. It would be difficult to exclude arboreal animals such as raccoons, opossums, treefrogs, and rat snakes, and potentially large alligators, even with the 4-foot barrier design. Furthermore, the 4-foot barriers would be a difficult obstacle for bank fishermen to traverse, especially if an over-hanging lip is present. The scenic vistas of the Everglades from the highway would likewise be greatly reduced by a 4-foot barrier. For these reasons, and the high cost ($124.24/ linear foot) associated with constructing the higher concrete barriers, we recommend that a 2-foot barrier height be considered in project design. Further cost reductions could be achieved by using alternate barrier materials such as a low field fence with aluminum flashing at the base.

Since most mammal mortality was documented in the first and last mile of the project corridor (Tables 3 and 4, Mike Abney pers. comm.), we believe that the use of wildlife underpasses and diversion fences to connect the L-30 to the L-31 Levee and the L-67A to the L-67 Extension Levee would help alleviate much of the mammalian mortality. A wildlife crossing at the L-30 Levee would be of most value since no crossing of the L-29 Canal currently exists here, and because the L-30 and L-31 levees must remain in place for flood protection. Neither would this location impede boat use of the L-29 Canal. A successful and economical design used on State Road 29 by the Florida Department of Transportation to allow safe passage for the Florida panther consists of a 50-foot concrete slab bridge placed in the highway alignment, providing a 24-foot-wide passageway with a clearance height of 8 feet. The diversion fences for channeling animals to the crossings should be of a small mesh design and extend for one-half mile on each side of the underpass. The only other section of road surveyed that exhibited a

trend of greater mammal mortality and where the greatest number of historic Everglades mink road-kills have been documented was the 1-mile section centered at the Blue Shanty Canal (Table 5). Consequently, if the western end of the bridge expanse were relocated to the vicinity of the Blue Shanty Canal, the installation of a bridge shelf there could create a safe passage corridor for large mammals (including the endangered Florida panther), medium-sized mammals and other wildlife that utilize this tree-lined agricultural canal that traverses the Tamiami Trail. A shelf width of 10 to 15 feet placed at an elevation slightly above the mean high water line would accommodate the larger animals as well as the small.

Furthermore, an improved highway design will most likely lead to faster driving speeds by motorists, which may necessitate strict enforcement of posted speed limits and stiff fines to insure that wildlife mortality does not increase.

Concerns and Recommendations

Given the stated authority limitations of the COE and the financial limitations of Everglades National Park to implement alternatives such as Alternative 5 or 6 for the Tamiami Trail portion of the Mod Waters project, Alternative 7a, or a derivative thereof, would appear to be the most reasonable interim alternative to implement prior to the approval of a more permanent solution under CERP. Although implementation of Alternative 7a will not entirely remedy all of the predrainage flow characteristics that existed prior to construction of the Tamiami Trail, it is anticipated to be capable of handling a shift in the bulk of Shark River flow volumes that will be channeled from the west side of the L-67 Levee to the east and into northeastern Shark River Slough.

Lacking in-house hydrological expertise, we must rely on the COE's modeling results, which indicate that a design high water level of 9.3 feet is sufficient for protecting the integrity of the Tamiami Trail road base, as the basis for our support of Alternative 7a. We note that the approved CERP conceptual plan, Alternative D-13R, as designed, is not expected to return the Everglades entirely to its historical flow regimes. The CERP plan may, in fact, need to be improved upon in order to reduce unnaturally high water levels and inundation periods that have been predicted under Alternative D-13R for WCA-3B. However, should any re-evaluation by the COE suggest that the design high water level of 9.3 feet would not be adequate to efficiently move flood water out of WCA-3B, then we would favor the adoption of a higher criterion to lessen the likelihood of deleterious flooding impacts upon the wildlife and vegetative communities of WCA-3B.

In summary, we offer the following recommendations concerning the alternatives under consideration, including possible improvements to Alternative 7a, the preliminary preferred alternative.

1. We support the idea of selecting an alternative that would be as compatible as possible with the upcoming CERP Decompartmentalization Project, and recommend that a real estate agreement between the COE and the Florida Department of Transportation for the Tamiami Trail be pursued in lieu of raising the profile of the roadway. We understand that such an agreement is expected to occur when the COE completes its design and specification plans for the project.

2. We understand that water quality treatment will probably not be required at this time since the impervious surface of the highway is not expected to significantly increase. Due to the potential for significant losses of high quality wetlands, impacts to important wildlife habitats, impacts to bank fishing, and possible incompatibility with CERP that would occur by including water quality treatment, we support the implementation of a water quality monitoring plan to ascertain whether treatment would be desirable in the future.

3. We are concerned about the potential reduction in public recreational access to the FSTWMA and fishing sites along the Tamiami Trail that could occur under Alternatives 3a, 3b, and the water quality treatment options b1 to b3 of Alternatives 2, 4, and 6, since such access is anticipated to decline as a result of restoration activities associated with both the Conveyance and Seepage component of Mod Waters and with the Decompartmentalization of WCA-3A Project of CERP. We are pleased to see at this time that, apart from a temporary lack of access to the south bank of the L-29 Canal during construction, Alternative 7a is expected to have minimal impacts on recreational use. However, special attention will need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4, the boat ramp and parking facility at Recreation Site No. 1, or to the boat ramp facility located west of the S-12D structure.

4. Of the viable alternatives being considered for this project, Alternative 7a would appear to have the least amount of impact on fish and wildlife resources. However, we believe that greater ecological and wildlife benefits may be derived from this alternative by a shift of the bridge from the proposed site one mile east of the L-67 Levee to a location east of the Blue Shanty Canal. If feasible, the placement of the western end of the bridge span, equipped with a wildlife crossing shelf beneath it, at a location immediately east of the Everglades Safari Airboat concession could aid in the reduction of wildlife mortality, particularly of the threatened Everglades mink.

5. Since wading bird and snail kite nesting patterns, as well as Everglades mink territories may vary with the prevailing hydrological conditions, surveys should be conducted on an annual basis by qualified biologists to determine whether any nesting efforts of state and federally protected bird species, or mink dens, would potentially be affected, prior to the commencement of construction activities. There is, in particular, a need for the COE to support a detailed study of the status and current distribution of the threatened Everglades mink along the Tamiami Trail corridor prior to the completion of the CERP Decompartmentalization Phase 1 project plan.

6. Alternatives 2b, 3a, 3b, 4a, 4b, 6b, 7b, and 8b produce an unacceptable amount of wetland functional loss, result in permanent impacts to wading bird rookeries, and have the potential to impact the threatened Everglades mink population; therefore, we recommend that they be removed from further consideration as ecologically viable alternatives.

7. Results from our preliminary wildlife mortality surveys and historical information suggest that there is a need for a more detailed wildlife mortality study on this portion of the Tamiami Trail prior to the completion of the Decompartmentalization Phase I project design plans. We are pleased that the COE is now supporting such a wildlife mortality study through the U.S. Fish and Wildlife Service, and hope that some nighttime surveys will be incorporated to document the potential effects of nocturnal or early morning scavengers on road-kill results.

8. Any reduction in recreational access or use of the Francis S. Taylor Wildlife Management Area that occurs in connection with this project would need to be compensated for on terms amenable to the FWC. We urge that the COE devise a program whereby the development of the recreational potential, adequate to meet anticipated public-use requirements, is more fully incorporated into project plans.

Sincerely,

Brian Barnett

Brian S. Barnett, Interim Director
Office of Environmental Services

BSB/DTT
ENV 2-16/4
a:\ModWat_TamTrail_FinCAR.doc
Enclosures

cc: Mr. Jay Slack, FWS, Vero Beach
Ms. Maureen Finnerty, ENP, Homestead
Ms. Tambour Ellis, COE, Jacksonville
Dr. Jon Moulding, COE, Jacksonville
Mr. Mark Robson, FWC, South Region

Literature Cited

Florida Game and Fresh Water Fish Commission. 1960. Recommended Program for Conservation Area 3. Vero Beach, Florida.

Kline, N.C. and D.E. Swann. 1998. Quantifying Wildlife Road Mortality in Saguaro National Park *in* Proceedings of the International Conference on Wildlife Ecology and Transportation FL-ER-69-98, Florida Department of Transportation, Tallahassee, Florida. 263 pp.

Table 1. Description of Alternatives being considered for the Tamiami Trail Project and their effects on wetland extent and function as determined by the Wetland Rapid Assessment Procedure.

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
1	Existing alignment and profile with 4 new bridges without water quality treatment	-1.6	-2.9
2a	Existing alignment with raised profile and 4 new bridges without water quality treatment	-11.8	-10.1
2b	Existing alignment with raised profile, 4 new bridges, with standard dry detention water quality treatment	-86.0	-37.5
2b Options	"Creative" water quality treatment options		
2b 1	Shift alignment to north and compress swale with wall element/south side	-44.6	-33.6
2b 2	Shift alignment to north and compress swale with wall element/north side	-8.0	-8.4
2b 3	Shift typical section north encroaching approximately 50 ft. into L-29 Canal	-8.0	-8.4
2b 4	Grass swips	-8.0	-8.4
2b 5	Exfiltration trenches with curb and gutter	-8.0	-8.4
2b 6	Exfiltration trenches with shoulder gutter	-7.9	-8.3
3a	New north alignment in WCA-3B with raised profile and 8 new bridges without water quality treatment	-14.3	-18.8
3b	New north alignment in WCA-3B with raised profile, 8 new bridges, and standard dry detention water quality treatment	-28.9	-30.2
3b Options	"Creative" water quality treatment options		
3b 1	Modified 2b 1 Option	-22.8	-25.4
3b 2	Modified 2b 2 Option	-10.6	-16.0
3b 3	Modified 2b 3 Option	-13.5	-18.2
3b 4	Grass swips	-9.6	-15.2
3b 5	Same as 2b 5	-10.3	-15.8
3b 6	Same as 2b 6	-10.4	-15.9

Alternative	Description	Acres Lost	Functional Units Lost (-) / Gained
4a	New south alignment with raised profile and 4 new bridges without water quality treatment	-68.4	-40.4
4b	New south alignment with raised profile, 4 new bridges, and standard dry detention water quality treatment	-103.9	-64.4
4b Options	"Creative" water quality treatment options		
4b 1	Modified 2b 1 Option	-62.6	-36.5
4b 3	Modified 2b 3 Option	-62.5	-36.5
4b 4	Grass strips	-61.3	-35.6
4b 5	Same as 2b 5	-62.6	-36.5
4b 6	Same as 2b 6	-62.5	-36.5
5a	Elevated roadway within existing right-of-way without water quality treatment	57.3	39.3
5b	Elevated roadway within existing right-of-way with water quality treatment	43.0	29.5
5c	Elevated roadway within existing right-of-way, without water quality treatment, with degradation of the existing highway embankment	65.9	45.3
6a	Existing alignment with raised profile, 4-mile bridge and 8 new box culverts without water quality treatment	-9.6	-6.6
6b	Same as alternative 6a with standard dry detention water quality treatment	-33.3	-22.8
6b Options	"Creative" water quality treatment options		
6b 1	Same as Option 2b 1 applied to remaining roadway	-30.4	-20.9
6b 2-6b 5	Same as Option 2b 2 - 2b 5 applied to remaining roadway	-4.8	-3.3

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
7a	Existing alignment with raised profile and 3000-foot bridge without water quality treatment	-5.0	-3.4
7b	Existing alignment with raised profile and 3000-foot bridge with standard dry detention water quality treatment	-72.4	-49.5
7b Options	"Creative" water quality treatment options		
7b 1	Same as Option 2b 1 applied to remaining roadway	-10.4	-7.2
7b 2	Same as Option 2b 2 applied to remaining roadway	-5.0	-3.4
7b 3	Same as Option 2b3 applied to remaining roadway	-10.4	-7.2
8a	Existing alignment with raised profile and 24 additional culverts without water quality treatment	-5.1	-3.5
8b	Existing alignment with raised profile and 40 additional culverts with standard dry detention water quality treatment	-68.0	-46.6
8b Options	"Creative" water quality treatment options		
8b 1& 8b3	Same as Options 2b1& 2b 3 applied to remaining roadway	-15.9	-7.5
8b2	Same as Option 2b2 applied to remaining roadway	-5.1	-3.5
" 9a"	Existing alignment with raised profile, 2.7-mile bridge and 8 new box culverts without water quality treatment	-2.8	-1.9
"9b"	Existing alignment with raised profile, 2.7-mile bridge and 8 new box culverts with standard dry detention water quality treatment	-39.1	-33.4

Table 2. Wildlife remains identified along Tamiami Trail, one-half mile on each side of Agricultural Canal at Coopertown, located four miles west of S-334 (December 19, 2000).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	16	12	28
Snakes	1	2	3
Frogs	1	1	2
Alligators	0	0	0
Birds	0	0	0
Mammals	0	1	1
Unidentified	1	4	5
SOUTH SIDE OF TAMIAMI TRAIL			
	East ½ mile	West ½ mile	Total
Turtles	4	6	10
Snakes	0	3	3
Frogs	0	0	0
Alligators	0	1	1
Birds	4	1	5
Mammals	0	0	0
Unidentified	2	1	3
			TOTAL 61

Table 3. Wildlife remains identified along one mile of Tamiami Trail beginning at the Flight 592 Memorial adjacent to the L-67 Canals and ending ½ mile east of Osceola Camp (December 20, 2000).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	11	7	18
Snakes	0	0	0
Frogs	0	0	0
Alligators	0	0	0
Birds	3	0	3
Mammals	0	1	1
Unidentified	0	0	0

Table 3. Continued

SOUTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	5	4	9
Snakes	0	0	0
Frogs	0	0	0
Alligators	1	1	2
Birds	1	0	1
Mammals	2	4	6
Unidentified	2	2	4

TOTAL: 44

Table 4. Wildlife remains identified on December 20, 2000 along one mile of Tamiami Trail beginning at the L-30 Canal extending one mile west and ending at a bank of culverts (Begin: UTM 550299 N; 2849310 E End: 548615 N; 2849297 E).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	38	20	58
Snakes	0	0	0
Frogs	0	0	0
Alligators	0	0	0
Birds	3	0	3
Mammals	3	0	3
Unidentified	0	1	1
SOUTH SIDE OF TAMIAMI TRAIL			
	East ½ mile	West ½ mile	Total
Turtles	18	4	22
Snakes	0	0	0
Frogs	0	0	0
Alligators	1	1	2
Birds	1	2	3
Mammals	2	1	3
Snakes	1	1	2

TOTAL: 97

Table 5. Wildlife remains identified by FWC on April 18, 2001, along one mile of Tamiami Trail (between culverts #44 to #46 at the Blue Shanty Canal [culvert #45]).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	18	3	21
Snakes	1	0	1
Frogs	0	0	0
Alligators	2	2	4
Birds	0	0	0
Mammals	0	1	1
Unidentified	1	1	2
SOUTH SIDE OF TAMIAMI TRAIL			
Turtles	19	12	31
Snakes	4	2	6
Frogs	0	0	0
Alligators	2	1	3
Birds	3	3	6
Mammals	1	5	6
Unidentified	1	0	1

TOTAL: 82

Table 6. Wildlife remains identified by FWC on April 18, 2001, along one mile of Tamiami Trail (between culverts #56 to #54 at the Tamiami West woodstork colony [culvert #55]).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	16	20	36
Snakes	5	3	8
Frogs	2	1	3
Alligators	1	2	3
Birds	4	6	10
Mammals	0	0	0
Unidentified	1	1	2
SOUTH SIDE OF TAMIAMI TRAIL			
Turtles	9	15	24
Snakes	23	7	30
Frogs	0	0	0
Alligators	2	2	4
Birds	4	3	7
Mammals	0	0	0
Unidentified	0	0	0

TOTAL: 127

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March 5, 2008

U. S. Army Corps of Engineers
LTG Carl A. Strock
Commanding General & Chief of Engineering
ATTN CECG
441 G Street NW
Washington, DC 20314-1000
carl.a.strock.ltg@usace.army.mil
fax: 202/761-4463

Marie G. Burns, Acting Chief
US Army Corps of Engineers
Planning Division, Environmental Branch
South Florida Section
P. O. Box 4970
Jacksonville, FL 32232
Barbara.B.Cintron@saj02.usace.army.mil

Re: Formal Comments
Tamiami Trail Modifications Limited Reevaluation Report

Dear LTG Strock and Ms. Burns

On March 21, 2004, I provided comments on the proposed elevation of the Tamiami Trail purportedly promoted as a form of Everglades restoration. A copy of those comments is attached and re-submitted in response to your letters dated January 28, 2008 and February 6, 2008 regarding the Tamiami Trail Modifications Limited Reevaluation Report. These comments are still relevant.

The proposed elevation of the Tamiami Trail is more problematic now than when my original comment letter was submitted, based on the adverse impacts of mining documented during the Sierra Club's suit against your agency and the US Fish and Wildlife Service regarding permit issued to the 10 mining companies in Miami-Dade County. The report does not consider the direct, indirect and cumulative adverse impacts of the proposed project, any of which would result in more damage to, rather than restoration of, the Everglades.

Sincerely,

Sydney T. Bacchus, Ph. D.
Hydroecologist

Attachment
cc: Barbara Cintron

March 21, 2004

U S Army Corps of Engineers
LTG Robert B Flowers
Commanding General & Chief of Engineering
ATTN CECG
441 G Street NW
Washington, DC 20314-1000
Robert.B.Flowers@HQ02.USACE.ARMY.MIL
202/761-0660

James C Duck, Chief
Planning Division
Attn Jon Moulding
US Army Corps of Engineers
P O Box 4970
Jacksonville, FL 32232
Jon.Moulding@saj02.usace.army.mil

Re: Formal Comments
Final GRR/SEIS for the Tamiami Trail
General Reevaluation Report for Tamiami Trail Available for Public Review
http://planning.saj.usace.army.mil/envdocs/Miami-Dade/Tamiami_/index.html

Dear Chiefs,

These technical comments are being provided on behalf of Tom Warnke, Government and Media Liaison, Palm Beach County Chapter, Surfrider Foundation, Barbara Herrin, President, Wetlands Alert, Inc., and myself. Because the profound adverse impacts that the proposed project referenced above, if funded and implemented, would have on coastal waters, Everglades and other wetlands, and on the Congressional Mandates, duties, directives, and goals of other federal, state, and local agencies throughout the United States, a copy of this letter is being forwarded to those relevant agencies. Relevant federal agencies other than the U. S. Army Corps of Engineers (COE) that are being provided a copy of this letter include, but are not limited to: the U S. Environmental Protection Agency (EPA); the U. S. Department of Interior, Fish and Wildlife Service (FWS), the U. S. Department of Commerce, National Oceanographic and Atmospheric Administration (NOAA); and the National Park Service (NPS). In several cases, the significant adverse impacts that would occur individually and cumulatively if the proposed projects referenced above were implemented would affect multiple programs within the same agency, such as NOAA's National Marine Fisheries Service (NMFS) and the Habitat Conservation Division (HCD).

On October 26, 2001, I forwarded to Col. James G. May of the Jacksonville office of your agency a copy of my formal comments regarding the scientific inadequacies of a Draft White Paper entitled "The Role of Water and Sediment Flows in the Ridge and Slough Landscape". Those comments have direct relevance to the proposed project referenced above. None of the inadequacies addressed in my 2001 comments were acknowledged or remedied in the proposed draft. Therefore, I am forwarding a second copy of these comments to you as an attached file. Please ensure that this and the other Attachments to this letter are included with this cover letter in the official agency File of Record for this project.

Before addressing additional technical inadequacies of the document referenced above, please be advised that there were problems with several of the electronically-posted files that made it impossible to access that information on-line, as advertised. Examples of the unavailable ("Missing") documents include the following. 5.7 "Evaluation of Alternatives". 5.7.1 "Environmental Effects of Alternatives". 5.7.2 "Summary of Environmental Impacts". 5.8 "Engineering Evaluation of Refined Alternatives". 5.9 "Comparison of Alternatives". 5.10 "Selection of the Recommended Plan". 5.11 "Evaluation of Principles and Guidelines Screening Criteria for the Recommended Plan". Despite the absence of those documents, it was apparent that the "Supplement EIS" was gravely deficient.

Direct, Indirect, and Cumulative Impacts:

The Supplemental EIS failed to address even the most obvious direct, indirect and cumulative adverse impacts of the proposed project, or even to provide the basic information necessary for a "hard look" at the adverse impacts to from the proposed project. As one example, the quality of the water entering and leaving the Everglades is so contaminated with high levels of nutrients, pesticides, herbicides, and other harmful chemicals that discharges already have resulted in unrepairable harm to Florida Bay and associated coastal areas on the southwest and southeast coasts of Florida. Those impacts are not addressed in the Supplemental EIS

The adverse impacts of these discharges not only are resulting in the death and decline of coastal and marine life, but are promoting serious and debilitating disease in humans who come into contact with, or are in the vicinity of that water. Humans suffer the ill effects of neurotoxic aerosols released by harmful algal blooms, sealice associated with nutrient-loading of the coastal waters and the rapidly-spreading "methicillin-resistant staphylococcus aureus" (MRSA)

As another example of the gross inadequacies of the Supplemental EIS, there was no information regarding the type or source of materials to be used for construction of the proposed bridges.

Would the bridges be made from recycled plastics, diverted from the waste stream? Unlikely.

The proposed bridges more likely would be made from raw products such as limerock, sand, and shell that originally formed the aquifer matrix that is being mined throughout the extent of the regional Floridan aquifer system. Those mining activities - like the permits your agency issued to the 10 corporations to mine the underlying structure of thousands of acres of Everglades wetlands, presently the being addressed in a federal court case - result in catastrophic adverse direct, indirect, and cumulative impacts to coastal resources and wetlands (including natural depressional wetlands in the southeastern US that your agency considers as "isolated").

The catastrophic adverse impacts associated with mining have been addressed in my numerous previous comment letters to your agency. The most relevant ones are listed under the Attachments, and are incorporated by reference, with the associated exhibits and attachments, as part of this comment letter.

Specific examples of the inadequate evaluations of these impacts can be seen in the following section of the Supplemental EIS. References to impacts on federally-listed species such as the Snail Kite and wood storks (*e.g.*, Figures 5, 28, 29, and 30) clearly show that no impacts (indirect, cumulative) beyond the direct impact of the bridge footprint on these species was considered

Appendix D and Section 5.0-Formulation of Alternative Plans (p. 201) illustrate the inability to produce a meaningful "Cost Analysis" if the most cost efficient and environmentally sound alternatives have been excluded from consideration. For example, the most cost effective and realistic (highest potential for successful) means of restoring the historic flow in the Everglades is to reduce/eliminate the mining of large volumes on ground water from the aquifer underlying the Everglades, as described more fully in my attached comments on the "Draft White Paper".

Sincerely,

Sydney T. Bacchus

Sydney T Bacchus, Ph D
Hydroecologist

Attachments:

2001

4/6/01	Bacchus comments - Jahna Sand Mine
4/18/01	Bacchus comments - Miami-Dade "Pit Belt"
8/8/01	Bacchus comments - Carabelle Mine

8/9/01	Bacchus comments - CFI/Hardee Co Mine
10/26/01	Bacchus comments - inadequacies of "Draft White Paper" on Bridge Removal
12/21/01	Bacchus comments - Everglades Integrated Feasibility Report
2002	
7/15/02	Bacchus comments - White Springs Mine
7/16/02	Bacchus comments - White Springs Mine
8/14/02	Bacchus comments - White Springs Mine
11/27/02	Bacchus comments - IMC Ona Mine
2003	
5/8/03	Bacchus comments - White Springs Mine
6/10/03	Bacchus comments - White Springs Mine
6/15/03	Bacchus comments - White Springs Mine

cc: **Elected Officials**

Senator Bob Graham — Attn: Pat Grise and Kasey Gillette
Senator Bill Nelson — Attn: M. Bridget Walsh

Federal Agencies

U. S. Department of Commerce, NOAA
Vice Admiral Conrad C. Lautenbacher, Jr. — Conrad.C.Lautenbacher@noaa.gov
Habitat Conservation Division and
National Marine Fisheries Service
14th St. & Constitution Ave., NW
Washington, DC 20230
202/482-3436
202/408-9674 (fax)

U. S. Department of Interior
Gale Norton, Secretary — gale_norton@doi.gov
National Park Service
Fran Mainella, Director — fran_mainella@nps.gov
Fish and Wildlife Service
Steve Williams, Director — steve_williams@fws.gov
Sam Hamilton, Regional Director — sam_hamilton@fws.gov
Dave Hankla, Field Supervisor — dave_hankla@fws.gov
Jay Slack, Field Supervisor — jay_slack@fws.gov

U. S. Environmental Protection Agency
Mike Leavitt, Administrator
Attn: Stephen L. Johnson, Dept. Admin. — Johnson.Stephen@epa.gov
Arial Rios Bldg.
1200 Pennsylvania Ave., NW (4606)
Washington, DC 20460
202/564-4711

U. S. Environmental Protection Agency
Office of Wetlands, Oceans and Watersheds (4502T)
Donna Downing, **ANPRM Contact** — CWAwaters@epa.gov
1200 Pennsylvania Avenue N. W.
Washington, DC 20460

U. S. Environmental Protection Agency
Office of Ground Water and Drinking Water
Howard Beard — beard.howard@epa.gov
William Diamond, Director — diamond.bill@epa.gov

Joan Farrelly, Chief/Prevention Branch 1200 Pennsylvania Ave., NW (4606) Washington, DC 20460	farrelly.joan@epa.gov
U. S. Environmental Protection Agency	
Region 4	
Veronica Fasselt	fasselt.veronica@epa.gov
Haynes Johnson	johnson.haynes@epa.gov
Shawn Komlos	komlos.shawn@epa.gov
Nancy H. Marsh	marsh.nancy@epa.gov
Heinz J. Mueller, Chief	mueller.heinz@epa.gov
Jimmy L. Palmer, Jr., Reg. Adm.	palmer.jimmy@epa.gov
Tom Welborn	welborn.tom@epa.gov
Other Agencies	
Florida Department of Environmental Protection	
Office of Intergovernmental Programs	
Sally B. Mann, Director	sally.mann@dep.state.fl.us
Florida Fish and Wildlife Conservation Commission	
Division of Marine Fisheries	
Ken Haddad, Ph. D., Director	ken.haddad@fwc.state.fl.us
Office of Environmental Services	
Brad Hartman, Director	brad.hartman@fwc.state.fl.us
Randy Kautz	randy.kautz@fwc.state.fl.us
South Florida Water Management District	
Environmental Resources Regulation	
James J. Golden, AICP, Senior Planner	jgolden@sfwmd.gov
Organizations and Individuals	
Arthur R. Marshall Foundation	
John Arthur Marshall, President	plantcypress@aol.com
Corps Reform Network	
Kelly Miller, Corps Reform Coordinator	kmiller@amrivers.org
Tom Eder, Network National Coordinator	eder@nwf.org
Clean Water, Inc	
Linda Young, President	llyoung@igc.apc.org
Defenders of Wildlife, Florida Programs	
Laurie Macdonald, Director	macmont@juno.org
Earthjustice Legal Defense Fund	
David Guest, Esquire, Florida Director	dguest@earthjustice.org
J. Todd Hutchinson, Esquire, Staff Attorney	thutchins@earthjustice.org
Aliki Moncrief, Esquire, Staff Attorney	amoncrief@earthjustice.org
Environmental Defense	
Fred Krupp	fkrupp@environmentaldefense.org
Florida League of Conservation Voters	
Susie Caplowe	SusieCaplowe@cs.com
Florida Wildlife Federation	

Manley K. Fuller, III, President	wildfed@aol.com

Floridians for Environmental Accountability and Reform

Steven Bell, Everglades Reg. Ch.	steven195545@cs.com
Kathy Cantwell, Suwanee River Reg. Ch.	Kacmd@aol.com
Clay Colson, Nature Coast Reg. Ch.	Bt73000@aol.com
Gail Duggins, Flagler Regional Ch.	coryt62@msn.com
Richard Sommerville, Accountability Liaison	RichSommerville@aol.com
Gordon Williamson, St. Johns River Reg. Ch.	FSP2@bellsouth.net

Independent Traditional Seminole Nation of Florida

Bobby C. Billie	ancientree@hotmail.com

Legal Environmental Assistance Foundation

Jeanne Zokovitch	jzokovitch@leaflaw.org
Scott Randolph	srandolph@leaflaw.org
Cynthia Valencic	cvalencic@leaflaw.org

Miccosukkee Tribe of Florida

Billie Cypress, Chairman	
Gene Duncan, Water Resource Mgmt Dept. Dir.	Duncan2U@aol.com
Dexter Lehtinen, Esquire, General Counsel	

National Parks Conservation Association

John Adornato	takeaction@npca.org

National Resources Defense Council

Erik Olson	eolson@nrdc.org
Greg Wetstone	gwetstone@nrdc.org

National Wildlife Federation, SE

John Kostyack	Kostyack@nwf.org
Randy Sargent	Sargent@nwf.org

Save the Manatee Club

Patti Thompson	pthompson@savethemanatee.org

Seminole Tribe of Florida

James E. Billie, Chairman	
James Shore, Esquire, General Counsel	
Craig Tepper, Water Res. Mgmt. Dept. Dir.	RRoff@semtribe.com

Sierra Club, Florida Chapter

Alan Farago, Everglades Chair	AFarago@bellsouth.net
John S. Glenn, Wetlands and Waters Ch.	glenjohn@email.msn.com
Barbara Lange	barbaralange@earthlink.net
Jonathan Ullman	jonathan.ullman@sierraclub.org

Sierra Club, National Office, DC

Debbie Sease	debbie.sease@sierraclub.org

Surfrider Foundation

James Cecil, Palm Beach Co. Ch., Co-Chair	
Tom Cook, South FL Ch., Co-Chair	cook@rsmas.miami.edu
Greg Gordon, Sebastian Inlet Ch., Chair	ggordon3@cfl.rr.com
Robbie Matrieschino, Palm Beach Co. Ch., Co-Chair	

Wyatt Porter-Brown, South FL Ch., Co-Chair	wbrown@mcharry.com
Scott Shine, Jacksonville Ch.	scott@jaxsurfrider.org
Tom Warnke, Govt./Media Liaison, PBC Ch.	twarnke@bellsouth.net
The Nature Conservancy	
Steve McCormick, President	smccormick@tnc.org
Dr. Deborah B. Jenson, V. P., Con. Sci. Div.	smccormick@tnc.org
Florida Chapter Board of Trustees -Atten.	ballison@tnc.org
Florida Chapter News	cmall@tnc.org
Robert Bendick, Jr., Director	rbendick@tnc.org
Patricia T. Hardin, Stewardship Vice Chr.	Pat4fla@aol.com
Douglas T. Shaw, Ph. D., Biohydrologist	dshaw@tnc.org
Jora Young, Science & Special Projects Dir.	jyoung@tnc.org
Wetlands Alert	
Barbara Herrin, President	wetlandsalert@yahoo.com
Media	
ABC Special Features	
John Thomas	JThomas@wfts.com
Florida Sportsman	
Mike Conner, Managing Editor	mikec@floridasportsman.com
Freelance Writers	
Martha Musgrove	malmusgrove@yahoo.com
Trish Riley	TRiley9@aol.com
Donald Sutherland	donaldsutherland-iso14000@WORLDNET.ATT.NET
Naples Daily News	
Cathy Zollo, Staff Writer	czollo@naplesnews.com
Outdoor Writers	
Jim Warnke	warnke@bellsouth.net
Publiceyestv	
Gary Burris	publiceyestv@aol.com
Sarasota Herald-Tribune NewsCoast	
Victor Hull, Staff Reporter	victor.hull@herald-trib.com
St. Petersburg Times	
Brady Dennis, Staff Writer	dennis@sptimes.com
Dan DeWitt, Environment & Politics	dewitt@sptimes.com
Julie Hauserman, Staff Writer	hauserman@sptimes.com
Jean Heller, Water Reporter	heller@sptimes.com
Craig Pittman, Staff Writer	craig@sptimes.com
Howard Troxler, Staff Writer	troxler@sptimes.com
Sun Sentinel	
David Fleshler, Staff Writer	dfleshler@sun-sentinel.com
Neil Santaniello, Staff Writer	nsantaniello@sun-sentinel.com
Noaki Schwartz, Staff Writer	NSchwartz@sun-sentinel.com
Surfer Magazine	
Terry Gibson, Contributing Editor	tgibson20@aol.com

Pepper Hamilton LLP
Attorneys at Law

Suite 3600
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

Todd Fracassi
313.393.7404
fracassit@pepperlaw.com

March 6, 2008

VIA EMAIL and REGULAR MAIL

Ms. Barbara Cintron
U.S. Army Corps of Engineers
Planning Division, Environmental Branch
South Florida Section
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: U.S. Army Corps of Engineers, January 28 , 2008 Scoping Letter Regarding a Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR)

Dear Ms. Cintron:

Radio One, Inc. is in receipt of the U.S. Army Corps of Engineers ("Corps") letter dated February 6, 2008, regarding the above-referenced matter. Radio One owns an approximate 80-acre parcel of property within the area that may be affected upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.[1]

Based on past correspondence with the Corps, it is our understanding that the Tamiami Trail Modification projects within the Everglades National Park may have an impact on the Radio One property, particularly due to flooding impacts. This could result in a significant impact to Radio One and we look forward to having further discussions with the Corps regarding any potential property impact. I have attached for your convenience Radio One's prior comments that it submitted on July 20, 2006.

Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered in the Draft Environmental Assessment. Radio One requests that it be kept on the mailing list for any further materials that are generated for this project. Finally, please keep us advised as to any public meetings scheduled for this project.

[1] The property previously was owned by AMFM Operating, Inc.

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Best Regards,

Todd Fracassi

TCF:cmm

cc: Thomas P. Wilczak
John Mathews (Radio One)

Pepper Hamilton LLP
Attorneys at Law

36th Floor
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

Todd Fracassi
313.393.7404
fracassit@pepperlaw.com

July 20, 2006

VIA EMAIL and REGULAR MAIL

Ms. Barbara Cintron
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Notice of Intent to Prepare Real Estate Supplement and 3rd Supplemental Environmental Impact Statement ("EIS") on Tamiami Trail Modifications, Modified Water Deliveries to Everglades National Park

Dear Ms. Cintron:

Radio One, Inc. is in receipt of the U.S. Army Corps of Engineers ("Corps") letter dated June 19, 2006, regarding the above-referenced matter. Radio One owns an approximate 80-acre parcel of property within the area that may be affected upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.[1]

Based on the Corps June 19, 2006 letter, it appears that the Corp may be proposing to acquire a portion of or the entire Radio One property for either right-of-way purposes or due to flooding impacts. This could result in a significant impact to Radio One and we look forward to having further discussions with the Corp regarding any potential property acquisition or taking. I have attached for your convenience Radio One's prior comments that it submitted on February 4, 2002 and October 11, 2005 .

Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered in the Real Estate Supplement and the 3rd Supplemental EIS. Radio One requests that it be kept on the mailing list for any further materials that are generated for this project. Finally, please keep us advised as to any public meetings scheduled for this project.

[1] The property previously was owned by AMFM Operating, Inc.

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Best Regards,

Todd Fracassi

TCF:erf

cc: Thomas P. Wilczak
John Mathews (Radio One)

Pepper Hamilton LLP
Attorneys at Law

36th Floor
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

313.393.7398
wilczakt@pepperlaw.com

February 4, 2002

VIA FEDERAL EXPRESS (EMAIL TO MR. JON MOULDING)

Col. James G. May
US Army Corps of Engineers
400 West Bay Street
Jacksonville, FL 32202

Re: Central and Southern Florida Project, Tamiami Trail Feature – Draft General Reevaluation Report/Supplement to the 1992 Final Environmental Impact Statement ("Draft GRR/SEIS") on Modified Water Deliveries to Everglades National Park

Dear Mr. May:

This letter contains the public comments of Radio One, Inc. on the above-referenced Draft GRR/SEIS. Pursuant to a telephone conversation on February 1, 2002 with my legal assistant, Ellen Zapalski, Mr. Jon Moulding indicated that comments would be accepted via email to Mr. Moulding by the February 4, 2002 due date as long as it was mailed to you on the same day.

Radio One understands that the U.S. Army Corps of Engineers ("Corps") has evaluated nine alternative plans, including the no action alternative, to protect Tamiami Trail during high discharge conditions that could result in low portions of the highway being overtopped with water from modified water deliveries under various projects to restore the Everglades National Park. Each build alternative appears to involve increasing the cross-section of openings under the highway in order to minimize the rise in water level in the canal necessary to pass the required volume of water, and to spread the water flow to the south.

It is our understanding that the Corps has selected Alternative 7a as its Recommended Alternative to modify the existing Tamiami Trail embankment profile and typical roadway cross-section within the approximate 11 mile project limit. This includes reconstructing approximately 3,000 feet of the roadway as an elevated structure between Blue Shanty Canal and Coopertown.

Radio One is concerned that the Draft GRR/SEIS has failed to adequately consider the impacts associated with the project on its property. Radio One owns a parcel of approximately 80 acres within the area that may be affected upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.[1]

Specifically, the Radio One property is located adjacent to and immediately south of Tamiami Trail (U.S. Hwy 41) in Section 8, T54S, R38E (N. Latitude: 25° 44' 53"; and W. Longitude: 80° 32' 47"), approximately four miles west of the L-31N Canal, and about five miles west of Krome Avenue (SR997). The towers and structures, which were constructed in 1980 are situated on fill pads and access from Tamiami Trail is provided along a filled road bed.

The pads and road bed were intentionally constructed above the 100 year flood level to insure access. As a result, Radio One has not had any problem with flooding or access that has adversely affected its operations. Radio One, however, is concerned that the project will create problems for Radio One's operations that were not adequately considered or addressed in the Draft GRR/SEIS.

Since the elevated structure, as we understand it, appears to be approximately one mile to the west of Radio One's property, it does not appear that access from Tamiami Trail to Radio One's property will be directly impacted by the elevated structure. It is our understanding, however, that the roadway profile along other portions of the highway will be raised. Consequently, Radio One is concerned about the potential impacts, and associated costs, that might result to continued access to its property. While the Draft GRR/SEIS indicates that access to businesses located along the Tamiami Trail will be provided during and after construction, it is not clear what businesses were considered, how such access would be provided, or the associated costs. If either the elevated structure or raised roadway profile does impact Radio One's access, it would look to the government for appropriate compensation necessary to continue to allow for access of Tamiami Trail.

Additionally, it appears that under Recommended Alternative 7A, Radio One's road bed would no longer be above the 100 year flood level. In fact, the increased water levels could limit access to the property even during minor storm events, thus adversely affecting Radio One's operations, and likely result in erosion damage to the road beds and tower pads, which could threaten the tower's structural integrity. This would result in increased maintenance and upkeep costs, and cause an environmental sedimentation impact upon the local ecosystem if the pads and road beds are eroded. Moreover, it may become necessary to access the towers via a motor boat, which in turn may result in environmental impacts that were not addressed in the

[1] The property previously was owned by AMFM Operating, Inc.

Draft GRR/SEIS. The increased water levels also could result in signal disruption or distortion interfering with Radio One's broadcast capabilities.

The Draft GRR/SEIS also does not provide adequate information regarding the hydraulic and hydrologic modeling that was conducted to evaluate the considered alternatives. Section 5.3.8 of the GRR/SEIS indicates that the "Corps modeled hydraulic conditions comparing water levels in the L-29 Canal adjacent to the road with and without improvements to the conveyance of water", however, this modeling data was not provided. In fact, the Draft GRR/SEIS does not identify the storm events considered, water flows, or water level elevations. Therefore, Radio One would request that its property be more thoroughly evaluated using the Corps modeled hydraulic conditions to better understand the ultimate effect on its property.

Furthermore, cumulative impacts of this project and other Everglade restoration projects, such as Cape Sable Seaside Sparrow are a concern. Impacts to access, as well as other impacts associated with raised water levels, need to be considered not only in light of this project, but also other projects already undertaken or to be undertaken that could result in impacts in this area.

As a result of this project, and other projects being undertaken in the Everglades, Radio One likely may incur significant costs to mitigate impacts to its business. These include, but are not limited to: (1) the potential need to re-build or raise the grade of the access road and the tower pads; (2) amend its FCC license or recognize loss of value of such license; and (3) possibly the need to reconfigure the signal from its tower or, in the worst case, relocate its towers altogether (assuming a suitable alternative location is even available).

Radio One believes that the Draft GRR/SEIS does not adequately consider these socio-economic, economic, environmental, and cumulative impacts or costs. If such adverse impacts are not planned for and mitigated with the project, Radio One's property interest likely may be significantly reduced, or completely taken in the worst case, as a result of the government's actions. In such case, Radio One will look to the government for appropriate compensation.

Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered and responded to in the draft final GRR/SEIS, with appropriate mitigating actions being included within the scope and costs of the project.

Radio One requests that it be kept on the mailing list for any further materials that are generated for the project or associated with the GRR/SEIS, including the response to these comments and the draft final GRR/SEIS. Radio One also requests to be placed on the mailing lists for any other projects that could have similar impacts on water levels in the vicinity of its property. Further, please keep us advised as to any public meetings scheduled for these projects.

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Very truly yours,

Thomas P. Wilczak

lmf
c:

Jon Moulding (USACE)
Gwen Nelson (USACE)
Linda Eckard Vilardo, Esq. (Radio One)
John Mathews (Radio One)
Sharon Aylward (Aylward Engineering & Surveying, Inc.)
Todd C. Fracassi (Pepper Hamilton LLP)

Pepper Hamilton LLP
Attorneys at Law

36th Floor
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

Thomas P. Wilczak
direct dial: 313.393.7398
wilczakt@pepperlaw.com

October 11, 2005

VIA EMAIL & U.S. MAIL
ttmcomments@usace.army.mil

Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Draft Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) For the Tamiami Trail Modifications

This letter contains the public comments of Radio One, Inc. ("Radio One") on the above-referenced Draft RGRR/SEIS.

Radio One understands that the U.S. Army Corps of Engineers ("Corps") has evaluated several alternative plans, including the no action alternative, to protect Tamiami Trail during high discharge conditions that could result in low portions of the highway being overtopped with water from modified water deliveries under various projects to restore the Everglades National Park. Each build alternative appears to involve increasing the cross-section of openings under the highway in order to minimize the rise in water level in the canal necessary to pass the required volume of water and to spread the water flow to the south.

Radio One is concerned that the Draft RGRR/SEIS has failed to adequately consider the impacts associated with the project on its property. Radio One owns a parcel of approximately 80 acres within the area that may be affected upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.[1]

[1] The property previously was owned by AMFM Operating, Inc.

Specifically, the Radio One property is located adjacent to and immediately south of Tamiami Trail (U.S. Hwy 41) in Section 8, T54S, R38E (N. Latitude: 25° 44' 53"; and W. Longitude: 80° 32' 47"), approximately four miles west of the L-31N Canal, and about five miles west of Krome Avenue (SR997). The towers and structures, which were constructed in 1980 are situated on fill pads and access from Tamiami Trail is provided along a filled road bed.

The pads and road bed were intentionally constructed above the 100 year flood level to insure access. As a result, Radio One has not had any problem with flooding or access that has adversely affected its operations. Radio One, however, is concerned that the project will create problems for Radio One's operations that were not adequately considered or addressed in the Draft RGRR/SEIS.

It is Radio One's understanding that the roadway profile along portions of the highway will be raised either by fill or by the construction of bridge spans. Consequently, Radio One is concerned about the potential impacts, and associated costs, that might result to continued access to its property. While the Draft RGRR/SEIS indicates that access to businesses located along the Tamiami Trail will be provided during and after construction, it is not clear what businesses were considered, how such access would be provided, or the associated costs. If either the elevated structure or raised roadway profile does impact Radio One's access, it would look to the government for appropriate compensation necessary to continue to allow for access of Tamiami Trail.

Additionally, it is Radio One's understanding that under several of the recommendations, Radio One's road bed would no longer be above the 100 year flood level, and in fact, the increased water levels could limit access to the property even during minor storm events, thus adversely affecting Radio One's operations, and likely result in erosion damage to the road beds and tower pads, which could threaten the tower's structural integrity. This would result in increased maintenance and upkeep costs, and cause an environmental sedimentation impact upon the local ecosystem if the pads and road beds are eroded. Moreover, it may become necessary to access the towers via a motor boat, which in turn may result in environmental impacts that were not addressed in the Draft RGRR/SEIS. The increased water levels also could result in signal disruption or distortion interfering with Radio One's broadcast capabilities.

Radio One believes that the Draft RGRR/SEIS also does not provide adequate information regarding the hydraulic and hydrologic modeling that was conducted to evaluate the considered alternatives. The Draft RGRR/SEIS does not identify the storm events considered, water flows, or water level elevations. Therefore, Radio One would request that its property be more thoroughly evaluated using the Corps modeled hydraulic conditions to better understand the ultimate effect on its property.

Furthermore, cumulative impacts of this project and other Everglade restoration projects, such as Cape Sable Seaside Sparrow are a concern. Impacts to access, as well as other impacts associated with raised water levels, need to be considered not only in light of this project, but also other projects already undertaken or to be undertaken that could result in impacts in this area.

As a result of this project, and other projects being undertaken in the Everglades, Radio One likely may incur significant costs to mitigate impacts to its business. These include, but are not limited to: (1) the potential need to re-build or raise the grade of the access road and the tower pads; (2) amend its FCC license or recognize loss of value of such license; and (3) possibly the need to reconfigure the signal from its tower or, in the worst case, relocate its towers altogether (assuming a suitable alternative location is even available).

Radio One believes that the Draft RGRR/SEIS does not adequately consider these socio-economic, economic, environmental, and cumulative impacts or costs. If such adverse impacts are not planned for and mitigated with the project, Radio One's property interest likely may be significantly reduced, or completely taken in the worst case, as a result of the government's actions. In fact, if the property is completely taken and a suitable alternative location for the towers cannot be found, WVCG's business interest may be taken. In such case, Radio One will look to the government for appropriate compensation.

Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered and responded to in the draft final RGRR/SEIS, with appropriate mitigating actions being included within the scope and costs of the project.

Radio One requests that it be kept on the mailing list for any further materials that are generated for the project or associated with the RGRR/SEIS, including the response to these comments and the draft final RGRR/SEIS. Radio One also requests to be placed on the mailing lists for any other projects that could have similar impacts on water levels in the vicinity of its property. Further, please keep us advised as to any public meetings scheduled for these projects.

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Very truly yours,

Thomas P. Wilczak

lmf

Hamilton LLP
Attorneys at Law

er 11, 2005

Jon Moulding (USACE)
Gwen Nelson (USACE)
John Jones (Radio One)
John Matthews (Radio One)

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Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

District Six
Planning and Environmental Management
1000 NW 111th Avenue, Room 6111-A
Miami, Florida 33172-5800

STEPHANIE C. KOPELOUSOS
SECRETARY

March 7, 2008

Ms. Marie G. Burns
Acting Chief, Planning Division
Environmental Branch, South Florida Section
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

SUBJECT: **Modified Water Deliveries to Everglades National Park Project / Tamiami Trail Feature Limited Reevaluation Report (LRR) Scoping Notice**

Dear Ms. Burns:
We are in receipt of your scoping notice for the National Environmental Policy Act (NEPA) document , dated February 6 2008 and offer the following comments:

- The proposed document should state that the Corps will design, permit and construct all modifications to Tamiami Trail necessary to accommodate the selected water elevation in the L29 canal.
- The NEPA document should cover both the impacts of the proposed bridge and the necessary work on the roadway to accommodate the selected water elevation in the L29 canal.
- Since there will likely be one-way traffic during construction, traffic impacts should be addressed.
- Since the Tamiami Trail is a National Register of Historic Places eligible resource, impacts to the roadway in that capacity should be addressed.

FDOT remains committed to continuing our coordination with the Corps on this important project as the various components of the Modified Waters Delivery Plan are advanced.

Sincerely,

Aileen Boucle, AICP
District Planning and Environmental Administrator

cc: Bob Crim, Florida Department of Transportation, Tallahassee
Alice Bravo, Florida Department f Transportation District VI
Paul Linton, South Florida Water Management District
Greg Knecht, Florida Department of Environmental Protection
Dan Kimball, Everglades National Park
Gerry O'Reilly, Interim District Secretary
Gwen Nelson, U.S. Army Corps of Engineers

Florida Department of
Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

March 14, 2008

Ms. Barbara B. Cintron
Jacksonville District, Planning Division
U. S. Army Corps of Engineers
P. O. Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers - Scoping Notice Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR), Water Deliveries to Everglades National Park - Miami-Dade County, Florida.
SAI # FL200802053982C

Dear Ms. Cintron:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the subject scoping notice.

The Florida Department of Environmental Protection (DEP) supported the U.S. Army Corps of Engineers (USACE) Tentatively Selected Plan (Alternative 14) presented in the 2005 General Reevaluation Report (GRR) and has also been supportive in moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project. DEP staff suggests that the USACE consider including the pilot swale project within the TTM LRR, rather than evaluating the project under a separate NEPA document. Any differences between the eastern bridge that may be proposed in the LRR and the eastern bridge in Alternative 14 from the 2005 GRR should be clearly outlined in the draft Environmental Assessment. Staff also requests that the following items be included in both the draft Environmental Assessment and permit application:

- A summary of project benefits versus impacts.
- Discussion of potential impacts to water quality and water management during and following construction.
- Discussion of any proposed water quality or ecological monitoring.
- Discussion of any potential impacts to fish and wildlife resources in the water conservation areas or Everglades National Park, particularly listed species.

The Modified Waters Delivery project, which includes the Tamiami Trail Modifications, is a foundation project that should be fully implemented prior to moving forward with Comprehensive Everglades Restoration Plan (CERP) projects in the region. It is critical to the restoration of the greater Everglades, as future CERP projects that will further restore flow to the Park cannot move forward prior to completion of the Modified Waters Deliveries project. Staff recommends that the USACE, South Florida Water Management District (SFWMD) and DEP continue to communicate and work cooperatively to facilitate the goal of initiating construction in October 2008. Please see the enclosed memoranda and contact Ms. Stacey Feken at (850) 245-8421 for further details and assistance.

The Florida Fish and Wildlife Conservation Commission (FWC) notes that the current planning process is leaning strongly towards an alternative plan that would improve conveyance near the eastern end of the Tamiami Trail with the addition of a one-mile bridge, but no conveyance improvements are planned elsewhere along the 10.7-mile stretch of roadway. Serious consideration should be given to improving conveyance along other portions of the Trail as well. Based on recent modeling results and discussions with the SFWMD, staff recommends the use of strategically placed box culverts and downstream spreader swales to increase hydraulic and ecological connectivity. Though the FWC fully supports the ecological benefits expected from the proposed project and will continue to work closely with the USACE through the project's implementation, staff requests that the concerns and recommendations contained in the enclosed FWC letter and previous letters conveyed over the past eight years be addressed.

The Florida Department of Agriculture and Consumer Services (FDACS) has expressed concerns regarding the potential for negative impacts on the Homestead agricultural community. A rise in water elevations in Northeast Shark River Slough will result in the diversion of more seepage from the Park to south Miami-Dade County through the L-31N and C-111 canals unless this proposal includes a firm commitment to operate the S-356 pump station as recommended in the CSOP process. This diversion of unwanted seepage has been a significant problem for the last 20 years and the S-356 structure was authorized, designed and built specifically to address the problem. Unfortunately, the USACE has not been able to operate the pump, even though it was constructed years ago. In addition, the G-3273 constraint on operating S-333 must not be removed until all the permits needed to operate S-356 per the operational protocol proposed in the Combined Structural and Operational Plan (CSOP) are obtained and the USACE's Water Control Plan is updated to show the use of S-356. The FDACS appreciates the opportunity to provide scoping comments on the Draft Environmental Assessment for the TTM LRR, Water Deliveries to Everglades National Park. If you have questions regarding FDACS' comments, please contact Mr. Ray Scott at (850) 410-6714.

The Florida Department of Transportation (FDOT), District VI offers the following comments:

- The proposed document should state that the USACE will design, permit and construct all modifications to Tamiami Trail necessary to accommodate the selected water elevation in the L29 canal.
- The NEPA document should cover both the impacts of the proposed bridge and the necessary work on the roadway to accommodate the selected water elevation in the L29 canal.
- Since there will likely be one-way traffic during construction, traffic impacts should be addressed.
- Since the Tamiami Trail is a *National Register of Historic Places* eligible resource, impacts to the roadway in that capacity should be addressed.

The FDOT remains committed to continuing its coordination with the USACE on this important project as the various components of the Modified Waters Delivery Plan are advanced.

Based on the information contained in the scoping notice and the enclosed state agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). The concerns identified by our reviewing agencies must be addressed prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Mr. Chris Stahl at (850) 245-2169.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/cjs
Enclosures

cc: John Outland, DEP, MS 45
Stacey Feken, DEP, MS 3560

Tim Gray, DEP, Southeast District
Mary Ann Poole, FWC
Forrest Watson, FDACS
Ray Scott, FDACS
Lisa Stone, FDOT
Marjorie Bixby, FDOT District VI

Florida
Department of Environmental Protection

"More Protection, Less Process"

Project Information	
Project:	FL200802053982C
Comments Due:	03/08/2008
Letter Due:	03/17/2008
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - SCOPING NOTICE - DRAFT ENVIRONMENTAL ASSESSMENT FOR THE TAMIAMI TRAIL MODIFICATIONS LIMITED REEVALUATION REPORT (TTM LRR), WATER DELIVERIES TO EVERGLADES NATIONAL PARK - MIAMI-DADE COUNTY, FLORIDA.
Keywords:	ACOE - TAMIAMI TRAIL MODIFICATIONS LIMITED REEVALUATION REPORT - MIAMI-DADE CO.
CFDA #:	99.997

Agency Comments:

SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL

The South Florida Regional Planning Council advises that the proposed project should be consistent with the goals and policies of Miami-Dade County's comprehensive plan and its corresponding land development regulations. Staff recommends that: impacts to natural systems be minimized to the greatest extent feasible, the extent of sensitive wildlife and vegetative communities be determined, and protection and or mitigation of disturbed habitat be required. This will assist in reducing cumulative impacts to native plants and animals, wetlands and deep-water habitat, and fisheries.

MIAMI-DADE -

AGRICULTURE - FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide scoping comments on the Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR), Water Deliveries to Everglades National Park - Miami-Dade County, Florida. The potential for negative impacts on the Homestead agricultural community is our area of interest. FDACS is concerned that a rise in water elevations in Northeast Shark River Slough will result in the diversion of more seepage from the Park to south Miami-Dade County through the L-31N and C-111 canals unless this proposal includes a firm commitment to operate the S-356 pump station as recommended in the CSOP process. This diversion of unwanted seepage has been a significant problem for the last 20 years and the S-356 structure was authorized, designed and built specifically to address the problem. Unfortunately, the Corps has not been able to operate the pump, even though it was constructed years ago. In addition, the G-3273 constraint on operating S-333 must not be removed until all the permits needed to operate S-356 per the operational protocol proposed in the Combined Structural and Operational Plan (CSOP) are obtained and the Corps' Water Control Plan is updated to show the use of S-356. FDACS appreciates the opportunity to provide scoping comments on the Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR), Water Deliveries to Everglades National Park - Miami-Dade County, Florida. If you have questions regarding FDACS' comments, please contact Mr. Ray Scott at (850) 410-6714.

COMMUNITY AFFAIRS - FLORIDA DEPARTMENT OF COMMUNITY AFFAIRS

DCA has no comment.

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

The Florida Fish and Wildlife Conservation Commission (FWC) notes that the current planning process is leaning strongly towards an alternative plan that would improve conveyance near the eastern end of the Tamiami Trail with the addition of a one-mile bridge, but no conveyance improvements are planned elsewhere along the 10.7-mile stretch of roadway. Serious consideration should be given to improving conveyance along other portions of the Trail as well. Based on recent modeling results and discussions with the SFWMD, staff recommends the use of strategically placed box culverts and downstream spreader swales to increase hydraulic and ecological connectivity. Though the FWC fully supports the ecological benefits expected from the proposed project and will continue to work closely with the Corps of Engineers through the project's implementation, staff requests that the concerns and recommendations contained in the enclosed FWC letter and previous letters conveyed over the past eight years be addressed.

STATE - FLORIDA DEPARTMENT OF STATE

No Comments Received

TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION
FDOT District VI is in receipt of the Corps of Engineers' scoping notice for the National Environmental Policy Act (NEPA) document, dated February 6, 2008, and offers the following comments: - The proposed document should state that the Corps will design, permit and construct all modifications to Tamiami Trail necessary to accommodate the selected water elevation in the L29 canal. - The NEPA document should cover both the impacts of the proposed bridge and the necessary work on the roadway to accommodate the selected water elevation in the L29 canal. - Since there will likely be one-way traffic during construction, traffic impacts should be addressed. - Since the Tamiami Trail is a National Register of Historic Places eligible resource, impacts to the roadway in that capacity should be addressed. FDOT remains committed to continuing its coordination with the Corps on this important project as the various components of the Modified Waters Delivery Plan are advanced.
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
The DEP supported the USACE Tentatively Selected Plan (Alternative 14) presented in the 2005 GRR and has also been supportive in moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project. DEP staff suggests that the USACE consider including the pilot swale project within the TTM LRR, rather than evaluating the project under a separate NEPA document. Any differences between the eastern bridge that may be proposed in the LRR and the eastern bridge in Alternative 14 from the 2005 GRR should be clearly outlined in the draft Environmental Assessment. Staff also requests that the following items be included in both the draft Environmental Assessment and permit application: ¿ A summary of project benefits versus impacts. ¿ Discussion of potential impacts to water quality and water management during and following construction. ¿ Discussion of any proposed water quality or ecological monitoring. ¿ Discussion of any potential impacts to fish and wildlife resources in the water conservation areas or Everglades National Park, particularly listed species. The Modified Waters Delivery project, which includes the Tamiami Trail Modifications, is a foundation project that should be fully implemented prior to moving forward with Comprehensive Everglades Restoration Plan (CERP) projects in the region. It is critical to the restoration of the greater Everglades, as future CERP projects that will further restore flow to the Park cannot move forward prior to completion of the Modified Waters Deliveries project. Staff recommends that the USACE, South Florida Water Management District (SFWMD) and DEP continue to communicate and work cooperatively to facilitate the goal of initiating construction in October 2008. Please see the enclosed memoranda and contact Ms. Stacey Feken at (850) 245-8421 for further details and assistance.
SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Released Without Comment

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

Visit the Clearinghouse Home Page to query other projects.

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Memorandum

TO: Florida State Clearinghouse

THROUGH: Stacey Feken
South Florida Restoration Section

FROM: John Outland, Inger Hansen, and Annet Forkink

DATE: March 5, 2008

SUBJECT: Department of the Army, Jacksonville District Corps of Engineers, Scoping Notice, Draft Environmental Assessment for the Tamiami Trail Modifications Limited Reevaluation Report, Water Deliveries to Everglades National Park, Miami-Dade County, Florida.

SAI #: FL08-3982C

The Florida Department of Environmental Protection (Department) has received the scoping letters for the above referenced project, dated January 28 and February 6, 2008, requesting assistance in gathering information that will help define issues and concerns to be addressed in the National Environmental Policy Act Document (NEPA) being prepared for the Tamiami Trail Modifications Limited Reevaluation Report (LRR). Department staff has actively participated in the plan formulation process and has provided extensive comments identifying issues and concerns for this project as part of review and development of the following documents:

1) Final 2005 General Reevaluation Report (GRR), and the associated second and third Environmental Impact Statements (EIS). We ask that you refer to our comments, dated September 19, 2005, December 29, 2005 and April 17, 2007, with regards to Department position on project issues and related regulatory requirements that remain applicable (comments attached);

2) Final GRR/SEIS for the Tamiami Trail Supplement to the 1992 Modified Water Deliveries to Everglades National Park (Department comments dated April 26, 2004);

3) Draft GRR Supplement to the 1992 Final EIS for Modified Water Deliveries to Everglades National Park (Department comments dated February 18, 2002).

Background: The Tamiami Trail Modifications Limited Reevaluation Report (TTM LRR) includes modifications to the Tamiami Trail. The project area takes place on a 10.7-mile section of the Tamiami Trail which runs parallel to the L-29 Canal (Tamiami Canal) between S-333 (near L-67 Extension) and S-334 (near L-30 and L-31N) and the downstream Northeast Shark River Slough of Everglades National Park (ENP) in Miami-Dade County. The purpose of this project is to increase flows into ENP and to help restore the ecosystem of the park. A total of 27 alternatives have been developed to examine the efforts of variations of water stage in the L-29 Canal together with several options for conveyance of water through the road from the L-29 Canal into the Park expansion area commonly referred to a Northeast Shark Slough. Stages considered ranged from 7.5 feet to 9.7 feet in the L-29 Canal. Conveyance options include

spreader swales, additional culverts, pump stations and various configurations of bridges. Alternatives will focus on raising the low areas of Tamiami Trail to a minimal roadway crown elevation to allow an 8.0-foot canal stage.

Comments: The Department supported the United States Army Corps of Engineers (USACE) Tentatively Selected Plan (Alternative 14) that was presented in the 2005 GRR providing for a two-mile bridge to the west and a one-mile bridge to the east in addition to raising the un-bridged portions of the existing highway. Compared to the previously recommended 3000-foot bridge that was part of the December 2003 GRR, the revised Alternative 14 significantly improved ecological benefits by providing greater connectivity and conveyance between the waters north of the Trail and the downstream wetlands and sloughs within the expansion portion of Everglades National Park. Department staff has also been supportive in moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project. If necessary, the USACE may want to consider including NEPA coverage of the pilot swale project within the TTM LRR, rather than evaluating the project under a separate EA/EIS.

It is our understanding, based on the permit pre-application meeting held January 25, 2008, in Tallahassee, that if the eastern bridge were proposed in the LRR, it would be minimally different from the eastern bridge in Alternative 14 from the 2005 GRR. Any differences should be clearly outlined in the draft Environmental Assessment. The meeting summary from this pre-application meeting is attached for your consideration in preparing the NEPA document. We would like to highlight the following items that should be included in both the draft Environmental Assessment and permit application:

1) A summary of project benefits versus impacts.
2) Discussion of potential impacts to water quality and water management during and following construction.
3) Discussion of any proposed water quality or ecological monitoring.
4) Discussion of any potential impacts to fish and wildlife resources in the water conservation areas or ENP, particularly listed species.

The Modified Waters Delivery project, which includes the Tamiami Trail Modifications, is a foundation project that should be fully implemented prior to moving forward with Comprehensive Everglades Restoration Plan (CERP) projects in the region. Moving this project forward is critical to the restoration of the greater Everglades, as future CERP projects that will further restore flow to the Park cannot move forward before the Modified Waters Deliveries project is complete. We recommend that the USACE, South Florida Water Management District and the Department continue to communicate and work cooperatively to facilitate the goal of initiating construction in October 2008. If you have any questions regarding these comments, please contact Stacey Feken at 850-245-8421.

Enclosures

Electronic copies to: John Outland, Stacey Feken, Ernie Marks, Chad Kennedy, Inger Hansen, Tim Gray, Annet Forkink

Modified Water Deliveries
Tamiami Trail Water Quality Certification
Pre-Application Meeting

25 January 2008 10:00 a.m. – 2:00 pm

To: Attendees

From: Everglades Partners Joint Venture (EPJV)

Subject: Tamiami Trail Water Quality Certification Pre-Application Meeting

Attendees: Please see sign-in sheets.

Handouts: Agenda
Overview for Jan 25 meeting

The meeting was held at the Florida Department of Environmental Protection, 2600 Blair Stone Road, Tallahassee, FL. Attendees included representatives from USACE, and the South Florida Water Management District (SFWMD), the Florida Department of Environmental Protection (FDEP), the Florida Department of Transportation (FDOT), Florida Fish and Wildlife Conservation Commission (FWC), U.S. Fish and Wildlife Service (FWS) and Everglades National Park (ENP). Several members also participated by phone. Debby Scerno, Everglades Partners Joint Venture (EPJV), supported the meeting.

Greg Knecht, FDEP, and Marie Burns, USACE, led the introductions and went over the purpose of meeting.

- Update on Modified Water Deliveries Tamiami Trail Modifications (TTM) project
- Update of agreements regarding above
- Determine what is required from the different agencies to complete the application
- Focus on the steps ahead

The goal is to start turning dirt (construction) in October 2008. The permit reviewers need sufficient time to review the information. Discussions today will center on the favorable alternative. The focus is on what needs to go into the application. USACE would like to get an application into the FDEP as soon as possible.

Eric Bush, USACE, stated that funds have been committed this fiscal year (~$56M) and there is an expectation of a groundbreaking in October 2008.

Joette Lorion, Miccosukee Tribe of Indians, expressed concerns that the USACE was predetermining NEPA. Barbara Cintron, USACE, stated that NEPA has not been concluded yet for the LRR. The purpose of the meeting today is to get ahead of the curve - if this was the approved plan what are the concerns. The USACE is putting together a "what if" scenario for the Eastern Bridge to investigate further funding. Joette Lorion asked what the bridge will cost and whether all the money needed to build it has been allocated.

Project Overview

Brice McKoy, USACE, presented an overview of the project including an overview of the whole Modified Water Deliveries to ENP project. Brice noted that the USACE has already spent a great amount of effort and money on the Record of Decision plan which is the 2-mile and 1-mile bridges. The expansion act called for the acquisition of lands by the DOI, however their analysis showed that the lands would not be available in time for the TTM project, so the USACE has also started a land analysis (an

EIS). Brice McKoy went over the reason for the current Limited Re-evaluation Report (LRR). At 30% design, the USACE typically updates costs. Because over 70% of the cost for the bridge/road is for material cost, and between 2004 and 2007 material costs more than doubled, this (and additional real estate cost) caused the cost to rise over the original amount [from $144 M to over $435 M (worst-case scenario)]. With the costs being this much higher, the USACE was asked to re-evaluate and recommend a less costly alternative. What has been seen thus far in the LRR investigations is that timing is very critical. At this point, they see less cost with Eastern bridge and fewer real estate concerns. Brice McKoy also noted that a stage of eight feet does occur under certain conditions currently, just not for the duration that it would be with some of the alternatives currently being considered.

Marie Burns, USACE, recorded the outstanding issues in regards to Modified Waters Delivery to ENP:

- **Sloughs – Will there be sloughs? How many?**
- **How much of the project is the Federal Government going to commit to?**
- **What is the current information on the project? What are the alternatives and their status?**
- **On those properties where HTRW issues were identified – what is the impact if the canal levels are raised to 8 feet and the properties are NOT cleaned up. Will there be inundation?**
- **What will the conveyance structures from 3B look like (the L-67s) and what does the water out of 3B look like at that time? The EDR is scheduled to begin as soon as the LRR is sent to Congress (June/July 2008) and will provide these answers.**
- **Operation Plan**
- **Put the rookery areas on the map with the project outline (either get new GIS files from Brad Foster, Gwen will be using xy's from Kevin Palmer) – to show that the approaches are not in the rookeries.**
- **During construction what culverts will be closed off and what is the affect to the water flow and water quality?**
- **Impacts (including secondary and cumulative wetland impacts) and Benefit Analysis**
- **Cultural Resources**
- **Final Footprint**

It is anticipated that using side construction methods, the construction of the bridge would take about 24 months.

The USACE anticipates assembling the Draft Limited Re-evaluation Report (LRR) for the Tamiami Trail Modifications in first week of February. The LRR will have to undergo Independent Technical Review (ITR) before it goes out to the public. External peer review will also be done (a requirement coordinated by the Ecosystem Restoration Planning Center of Expertise who identifies the panel members). The Center has requested the SFWMD and DOI identify members for the external peer review. **Joette Lorion, Miccosukee Tribe, requested that the Miccosukee Tribe also be requested to identify a member. This request will be passed along to the Center.**

There are minimal differences between the eastern bridge in Alternative 14 and the eastern bridge proposed in the LRR.

FDEP Overview

Ernie Marks, FDEP, went over some of the items the FDEP would need with the application. The number one concern for FDEP is the date by which the permit is needed. FDEP needs to have reviewed all information no later than 30 days before that date. **It was decided that a meeting should be held once a week (in addition to the weekly permit meeting) on the status and any open questions regarding the Tamiami Trail Modifications application. It was requested that each agency try to keep the meeting to one person per agency (send names to Debby Scerno, EPJV). An agenda should be sent out before each meeting.**

Ernie Marks, FDEP, outlined the four major categories for which assurances are sought. [These are not all inclusive requirements, as FDEP has rules by which they need to operate.]

1. The project component will achieve the design objectives set forth in the detailed design documents submitted as part of the application.
2. State water quality standards, including water quality criteria and moderating provisions, will be met. Under no circumstances shall the project component cause or contribute to violation of state water quality standards.
3. Discharges from the project component will not pose a serious danger to public health, safety, or welfare.
4. Any impacts to wetlands or threatened or endangered species resulting from implementation of the project component will be avoided, minimized, and mitigated, as appropriate. At the least, FDEP needs a time-line on the concurrences. At this point in time, the USACE owes the FWS some information. Tim Tolle, FWC, indicated that coordination is on-going. Barbara Cintron, USACE, stated that the USACE is asking all agencies to become NEPA cooperating agencies.

Other items that FDEP will need include:

- Coastal Zone Management review
- Sign-off from Department of State (State Historic Preservation Office - SHPO). The Memorandum of Agreement is being modified and should be sent to SHPO soon.
- Proof of real estate ownership – note that the FDEP can authorize construction in phases if some land agreements are not finished before the permit needs to be issued.

Inger Hansen, FDEP, indicated that the management of the water during construction is going to be critical since ENP is downstream of construction. They are especially interested on how and which culverts will be blocked and when. FDEP realizes that some items will not be able to be determined until the contractor is aboard. Thus once the contractor is on-board, an environmental protection plan needs to be sent to FDEP. The specifications should indicate such and indicate special concerns. Jim Riley, USACE, will be the USACE main point of contact for this application. Jim Riley asked the SFWMD for a copy of the environmental protection plan used for construction of S-12 D as he would like to use it as an example.

Ernie Marks, FDEP, discussed that this is more than one type of "Dewatering". There is the dewatering which involves removing rain water from a site (to surface water) which is usually covered by the permit for discharges from large and small construction. There is also the dewatering which involves removing groundwater and sending it to surface water, which is covered through an NPDES permit.

Ernie Marks, FDEP, also indicated that a summary of project benefits vs impacts (specifically for the bridge only – no raising of the water level in L-29) will be needed. Barbara Cintron, USACE, will be the point of contact for that information.

The USACE indicated that no blasting is anticipated.

Discussion on Concerns

Gwen Nelson, USACE, indicated that the current plan is for the plans and specifications to go from the 60% plans prepared for Alternative 14 (for which there is a signed Record of Decision) to the Final Submittal for whichever plan is approved through the LRR process. The next step would then be BCOE and from there to the corrected Final Plans and Specifications. The bridge portion of whichever plan is approved in the LRR would be the first phase with the road changes and modifications as phase II.

Ken Ammon, SFWMD, stated that the SFWMD is not fully comfortable with only building a 1-mile eastern bridge and road modifications to Tamiami Trail. Paul Linton, SFMWD, stated it is important to remember that the bridge itself does not necessarily allow a stage raise of 8 ft in L-29 canal. The current application will be for construction only and will NOT go into any operations.

Concerns were expressed over using an area near S-356 for staging. There is a boat ramp at S-356 which gives access to several agencies. **The USACE and its contractor will coordinate with the Miami Field office to ensure that staging at S-356 is done in a manner as to not disturb access. This will also be in the Specifications.**

Inger Hansen, FDEP, would like to see that the comments provided on the 60% plans for the Alt 14 be addressed as the plans are prepared for which ever alternative is approved in the LRR. The specific concerns are regarding the disposal of material and what will be spelled out in the specifications - would like to see the FDOT Specifications offered as an example. Note that FDOT has asked that the material be used in the efforts to upgrade the road.

Since this application will be for construction ONLY, operation of the stormwater system will need to be covered under a new application which may result in either a modification of the current permit or a new permit. **Need to confirm that the FDOT doesn't have to sign the application for the construction of the stormwater system – just the operation.**

Concerns/submeetings that need to occur:

- Meeting with FDOT concerning the stormwater system; relocation agreement; and right of way transfer;
- Meeting with FDOT concerning Plans and Specifications – specifically need the lawyers to help determine how to get the FDOT the updated plans without violating USACE contracting rules/regulations.
- Meeting with FDEP on what pieces of the Plans and Specifications they made comment upon and need to see revised versions of.
- Meeting to determine how FDOT should be included on the SHPO MOA (David Pugh, USACE, is the lead). They will likely be a concurring party.
- The EPA and FWC would like two weeks warning before the EA is released to the public.
- The Project Cooperation Agreement needs to be completed/negotiated
- Discussions need to be held on what will be constructed now, constructed later, and who is going to pay for it.

Questions that were answered:

- Has the requirement for signed and sealed plans been added to the task order? Yes.
- If the road is raised in the future, will the approaches take into account what the future road might look like? The task order to the consultant takes that into account. (EAC is the consultant)
- Did the USACE ever consider abandonment of the road (Ken Ammon, SFWMD)? No.
- Who is the replacement for Jon Moulding, USACE? For avian studies it is Paul Stadola, USACE. For MWD TTM, the environmental lead is Susan Conner, however, since she is out on leave Barbara Cintron is the current contact.
- Will the coordination act report be in the LRR (Tim Towles, FWC)? Yes.
- What will the alternative discussed today cost? The USACE has not completed the full cost estimate.

Questions to be answered:

- Did cultural resource assessments cover the 50 foot construction footprint, staging areas, the degrading of the road (south bank of canal)? Also note the road is 80 years old and the ENP is 60 years old.
- **Joette Lorion, Miccosukee Tribe of Indians, would like a copy of what was sent out today** – concerned that it is pre-decisional.

- Inger Hansen, FDEP, asked for the data collected by the Park (ENP) personnel on the field trip.

Discussion on Sloughs

The idea for the sloughs came about from the desire to maximize flows through the culverts over the portion of the road not being bridged (7 to 9 miles). Next came the idea of doing a few pilot sloughs to examine the shape/specifications of the sloughs and their effectiveness. If there are five or so possible areas for the sloughs, then may be able to go ahead with the application, however, FDEP will need to know all the information on all those areas. FDEP will also need the topography south of the areas. If the areas change minimally (say 10 foot change or less) it is not as big of a deal as major change (say a 1000 foot change in location). The ENP wants the entire NEPA process to be followed for the pilot sloughs, but does not object to preparing an application.

Timeline

Since FDEP needs to have reviewed and feel comfortable with all material NLT 30 days prior to need of permit, it was decided that the timeline for this permit needs to be determined as soon as possible. **Debby Scerno, EPJV, with help from Ernie Marks, FDEP, Eric Bush, Marie Burns, and Brice McKoy to determine the timeline for the permit application.**

Memorandum

TO: Florida State Clearinghouse

THROUGH: Greg Knecht, Administrator
Water Quality Standards & Special Projects Program

FROM: John Outland, Inger Hansen

DATE: April 17, 2007

SUBJECT: Central and Southern Florida Project, Draft Third Supplemental Environmental Impact Statement, Tamiami Trail Modifications, Modified Water Deliveries to Everglades National Park, Miami-Dade County

SAI#: FL07-3118C

The Department has reviewed the above-referenced Notice of intent and offers the following comments:

Background

This Supplemental Environmental Impact Statement involves the USACE securing real estate rights on seven privately owned properties along Tamiami Trail needed to implement the recommended plan to modify Tamiami Trail (one-mile Bridge at the eastern end of project and a two-mile bridge at the western end of the project) as part of the Modified Water Deliveries to Everglades National Park. The 2005 General Reevaluation Report assumed that the National Park Service (NPS) would acquire necessary real estate interest in the privately owned parcels before completion of the Tamiami trail project and before initiation of restoration of water flows directed south into Everglades National Park. However, because the NPS must complete its General Management Plan before it can proceed with real estate acquisition, it is unable to meet the schedule for Tamiami trail construction. In addition, the Corps will also be evaluating the real estate interest affected by induced flooding from higher water levels associated with implementation of the Modified Waters Deliveries project.

Comments

1. The Corps is pursing the necessary real estate right so that the recommended Tamiami Trail modifications can remain on schedule. However, there a are several unresolved issues including the temporary continuation of Air Boat businesses and the inclusion of project features that were not considered in the 2005 General Reevaluation Report.

   These additional features include the installation of the culvert maintenance/flow equalization swales, the possible acquisition of an additional five feet of right-of-way on the south side of Tamiami Trail to comply with FDOT safety requirements and a 40 foot-wide construction easement along the southern side of each of the bridges. These issues are unlikely to be resolved until appraisals have been completed to determine whether structural solutions would be more cost effective than real estate acquisition.

2. The Department supports the installation of the culvert maintenance/flow equalization swales. The construction of these swales should be prioritized to help advance the phased implementation of the MWD and the Comprehensive Structural Operation Plan (CSOP) to provide improved conveyance and flows to the eastern portion of the park and Shark River Slough while minimizing potential impacts to Subpopulation A of the Cape Sable Seaside Sparrow located further west. Final configuration and layout of these swales should be field verified prior to finalizing the construction plans so as to minimize impacts to environmental resources. Because of the maintenance swales the draft supplement notes that there may be additional right-of way requirements due to FDOT safety requirements.

3. The report states that the NPS has to complete its General Management Plan (GMP) prior to proceeding with real-estate acquisitions, and asserts that since the GMP is not scheduled for completion before 2009, that it is unable to meet the schedule for Tamiami Trail Construction. The planned completion of MWD and commencement of construction of Tamiami Trail by 2009 has been recognized as a planning critical date for many years now and it continues to be a concern to the Department that delays in acquiring restate interest may potentially further delay this very important project. Since the restoration of flows to the Park can not be initiated before the roadway construction is complete (estimated at year 2012) it may be possible to work out some of the downstream real estate needs concurrent with Tamiami Trail construction. It is also not clear why the GMP can not be expedited to answer some of the critical questions that remain outstanding such as the possibility of the three airboat tour businesses remaining operational. As a result, the Draft supplement does not determine exactly what real estate interest is required, and the associated cost and benefits of these interests cannot be evaluated.

4. Following the completion of the 2005 Revised General Re-evaluation Report, the Corps completed detailed land surveys, which determined that flooding impacts would occur to 7 privately owned parcels, and that, at a minimum, flowage easements would be required. None of the technical details of the survey or the level of flooding that would be experienced was included in the draft documents, and there is not sufficient detail provided to determine what level of demolition or cleanup is planned for the potentially flooded parcels. Pages 36 and 37 provide information about Hazardous, Toxic and Radioactive Waste associated with the business parcels. However, there is no discussion of how the potential flooding of the sites may affect the cleanup and the associated costs. These issues need to be closely coordinated with the Department's Waste Cleanup Section in the Southeast District Office in West Palm Beach.

cc: John Outland (cc)
Greg Knecht (cc)
Frank Nearhoof (cc)
Tim Gray (cc)
Chad Kennedy (cc)

Memorandum

TO: Florida State Clearinghouse

THROUGH: Greg Knecht

FROM: Inger Hansen, Temperince Morgan, and John Outland

DATE: December 29, 2005

SUBJECT: Jacksonville District Corps of Engineers and South Florida Water Management District, Final Revised General Reevaluation Report and Second Supplemental Environmental Impact Statement on Tamiami Trail as part of Modified Water Deliveries to Everglades National Park, Miami-Dade County, Florida

SAI # FL05-1704C (Reference SAI# FL05-1442C)

The Department of Environmental Protection has reviewed the above-referenced Final Revised General Reevaluation Report (RGRR) and Environmental Impact Statement (EIS) and offers the following comments:

Department staff provided extensive comments on this project in our letter dated September 19, 2005. We ask that you refer to these comments with regards to Department position on project issues and related regulatory requirements. The Department continues to fully support efforts to move the Tamiami Trail portion of the Modified Water Deliveries project forward. Alternative 14 consisting of the two-mile bridge on the west and the one-mile bridge on the east end, in addition to raising the un-bridged portions of the existing highway, is the best interim alternative to move forward without prejudging the possibility of a more permanent solution under the Comprehensive Everglades Restoration Plan (CERP). The Tentatively Selected Plan will provide early hydraulic conveyance capacity between the L-29 and Northeast Shark River Slough, enhancing ecological benefits to the ridge and slough systems. We understand that a longer bridge alternative could not be implemented at this time because it would greatly exceed the budget. In addition, completion of Modified Water Deliveries is essential for federal appropriations to construct several CERP restoration projects.

Due to the short duration of the comment period and unavailability of staff over the holidays, the Department has not yet had the opportunity to review the revised report in detail. However, it appears the significant improvements have been made to the document. We note that Appendix L includes responses to comments provided on the draft RGRR/EIS by agencies and stakeholders. It appears that the Corps has attempted to address all of our previous comments by providing clarifications and editorial changes to the text of the report, and has made suggested changes, particularly those related to storm water management concerns, to the final document. We note the following specific comments:

1) Comment 2- Section 5.8-Selection of the Recommended Plan has been expanded greatly and now provides a much more detailed explanation of the basis for selection of Alternative 14.
2) Comment 4- Concur that changes to the document were made, however these changes were in Section 7.4, not Section 5.8.
3) Comment 8- Concur that changes to the document were made, however these changes were in Section 7.65, not Section 7.20.
4) Comment 16- Response to comment indicates that text will be revised; however no changes to this section were noted.
5) Comment 23- Response to comment indicates that Appendix G has been revised; however no changes to this section were noted.

We look forward to working together further with the Corps and the SFWMD to ensure implementation of this important project.

cc: Inger Hansen (email)
Tim Gray (email)
Temperince Morgan (email)
John Outland (email)
Shelley Yaun (email)
Stacey Feken (email)

Memorandum

TO: Florida State Clearinghouse

THROUGH: Greg Knecht

FROM: Inger Hansen, Temperince Morgan, and John Outland

DATE: September 19, 2005

SUBJECT: Department of the Army, Jacksonville District Corps of Engineers, Revised General Reevaluation Report and Second Supplemental Environmental Impact Statement on Tamiami Trail as part of Modified Water Deliveries to Everglades National Park, Miami-Dade County, Florida

SAI # FL05-1442C

The Department has reviewed the above-referenced General Reevaluation Report (GRR) and Environmental Impact Statement (EIS) and offers the following comments:

The Department has been involved in the project formulation and reevaluation process for this project. We have been actively involved in the recent reevaluation efforts by participating in the benefits analysis workshops that were carried out to help identify and further refine bridge alternatives. In addition, we have coordinated closely with the Corps of Engineers providing inputs to the planning process to help identify stormwater treatment requirements for the proposed roadway improvements.

As a result of these coordination efforts, we are familiar with the alternatives that were considered and the performance measures that were utilized to screen the alternatives. We concur that Alternative 14, Two-Mile Bridge West and One-Mile Bridge East, is the best overall alternative and support its selection as the Tentatively Selected Plan (TSP). Alternative 14 will restore more natural flows to both NE and NW Shark River Slough. It performed well during the evaluation in terms of ecological and hydrological benefits, Corps planning criteria, and avoidance of constraints. In addition it was determined to be cost effective. However, it should be noted that report and its selected plan is not intended to prejudge the results of a project implementation report for the CERP component to raise Tamiami Trail.

Background

The purpose of the Modified Water Deliveries Project (MWD) is to help restore flows to Everglades National Park. Specifically, the project will convey greater volumes of water into the L-29 Canal for the restoration of flows to Northeast Shark River Slough (NESRS). Modifications to Tamiami Trail are required to allow for these improved water deliveries. The reevaluation of the 2003 Revised GRR/SEIS was required to address concerns that predicted

higher water levels would damage Tamiami Trail and increasing cost of construction materials. The higher cost also required a reevaluation of cost and benefits. The revised GRR addresses not only the requirement to provide for improved conveyance and connectivity across the existing highway, but also addresses improvements required to protect the existing road base from the increased stages that will be realized when implementing operations for the MWD project.

General Comments

The Department fully supports the Corps Tentatively Selected Plan (Alternative 14) providing for a two-mile bridge to the west and a one-mile bridge to the east in addition to raising the un-bridged portions of the existing highway. Compared to the previously recommended 3000 feet bridge that was part of the December 2003 GRR, the revised Alternative 14 significantly improves ecological benefits by providing greater connectivity and conveyance between the waters north of the Trail and the downstream wetlands and sloughs within the expansion portion of Everglades National Park.

Having not only one westerly located bridge, but also an easterly located flow-way will be critical to prevent water high water stages in the South East portion of WCA-3B, as additional MWD features allowing for conveyance of water through this WCA are implemented. Although we recognize that additional ecological benefits may be realized by constructing a skyway across the entire 11.7-mile stretch, please be aware that we do not support further delays of this project to obtain the additional funding needed. Moving this project ahead is critical to the restoration of the greater Everglades, as future CERP projects that will further restore flow to the Park can not move forward before the MWD project is complete.

When evaluating localized impacts, we note that the re-evaluation effort has led to additional environmental improvements beyond the regional ecological lift. Alternative 14 has reduced the direct impact to wetlands as compared to the previously selected plan. In addition, the Corps plan will mitigate potential water quality impacts by providing for a pollution abatement system to provide stormwater treatment for the bridge runoff to protect adjacent waters. The previously selected plan did not include stormwater treatment. The Department will continue to participate in the development and optimization of the treatment system for the bridges during the PED phase of the project.

However, based upon reviewing the Draft RGRR report and in consideration of information and comments provided during the recent Public Workshop for the Draft RGRR, it has become clear that the Draft report should be revised to more effectively communicate the details of the TSP. It should specify the reasons why merely clearing out the existing culverts is not acceptable, and most importantly clearly state the reasons for selecting Alternative 14 and associated recommendations. Inconsistencies and information carried over from previous Tamiami GRR reports, unrelated to the alternatives considered in the most recent plan formulation evaluation, should be eliminated from the report. Additional detail should be provided to better assess wetland impacts, ownership, and right of way issues.

Permitting

The recommended plan involves modifications to an existing surface water management system, and includes dredging and filling in wetlands and other surface waters; activities regulated by the

Department under Chapters 373 and 403, Florida Statutes. Tamiami Trail road improvements, which include paving, grading and construction of a stormwater system, are proposed as part of bridging and raising the existing roadway. These road improvements will allow for modification to the existing conveyance system that directs water from the L-29 canal to Everglades National Park. The recommended plan calls for SFWMD, as the local sponsor, to be responsible for operation, repair and maintenance of the resulting conveyance system. However, the plan does not identify what entity will be responsible for the maintenance of the road and associated stormwater system. The report should provide clarification on this matter
On September 5, 2005 the Department issued a Comprehensive Everglades Restoration Plan Regulation Act (CERPRA) permit to allow construction of the 8.5 Square Mile Area project phase of the MWD Project. This permit recognized all the MWD components, including the Tamiami Trail Modifications, but only allowed for commencement of construction of the 8.5 Square Mile Area works as part of the phased construction of the larger project. A major modification to the CERPRA permit is required prior to proceeding with construction of the Tamiami Trail Phase of the MWD project. Not only construction, but also operation and maintenance of the conveyance system will be part of this permit.

Stormwater or surface water management is regulated by the State of Florida under Part IV of Chapter 373, Florida Statutes. Our understanding is that the Corps will be responsible for the construction associated with the roadway improvements, and then the FDOT will take on the maintenance and operation of the roadway and associated surface water management system. If this is the case, then it may be appropriate to authorize these activities through a separate ERP permit with FDOT. Once division of operation and maintenance responsibilities for the various aspects of the project are clarified, the Corps should contact the Department to set up a pre-application meeting to resolve permitting specifics.

Ownership and right-of-way issues
The plan should provide a clear description of proposed right-of-ways and how the ownership issues will be resolved. A map should be provided showing all parcels (property owners) that will be impacted. The report also should explain how these impacts will be addressed. The current plan calls for moving portions of the existing roadway into Everglades National Park, however provides little or no details on how this will occur. Details such as how the loss of land (notably wetlands) within the park boundary will be handled have not been adequately addressed.

Specific details about the flowage easement should be provided to ensure that adequate operation and maintenance of the system can be provided. Observation of the accumulation of sediments within and downstream of the existing culverts for the conveyance system that is currently in place, clearly speaks to this issue. The existing culverts are partially clogged, with additional sediment buildup just downstream of each culvert forming small islands that are covered with woody vegetation (a mixture of native species and Brazilian pepper). There is a clear need to maintain the existing system to provide for better flow distribution to the park, yet the plan does not specifically address this issue.

In fact, the plan dismisses the need to maintain/clear out the existing flow ways based upon an FDOT statement that they found that the exotic vegetation south of the Trail does not impede

flow through the culverts (pages 50 and 51). Selective clearing to minimize impacts to natives to include removal of some of the accumulated sediments downstream of these culverts should be part of the scope of this project. Effectively conveying water around the downstream islands can perhaps be best achieved by incorporating a slightly deeper distribution ditch or spreader swales at the terminus of each culvert.

Wetland impacts and disturbance to natural areas within the park

The report does not provide specifics about proposed wetland impacts, other than providing a number of different and inconsistent estimates for acreage of wetland impacts. As previously discussed in teleconferences, details regarding wetlands loss should be provided. Our understanding was that an existing WRAP survey would be used as basis of evaluating the impacts. Avoidance and minimization should part of the analysis. In addition, there should be a discussion of how temporal and permanent wetland loss will be addressed.

The plan states that the removal of exotic vegetation on the southern side of the Trail would be necessary for the modifications and reconstruction associated with all alternatives (page 95). The benefits of removing the exotics are justified based on improved aesthetics, but notably, environmental factors are not considered. We note that on page 50, as part of evaluating preliminary alternatives, clearing exotic vegetation south of the trail was dismissed because the removal and associated land disturbance could result in further spread of the exotics into the park.

The Department supports clearing of the exotics along the trail, but note that the clearing work will have to be done with care to minimize the spread of seeds into the park. In addition an aggressive maintenance plan should be developed to ensure that exotics do not re-colonize areas that have been disturbed. A conceptual level of detail pertaining to exotic removal and control should be included in the Draft Report to ensure that the project does not contribute to migration of exotic species into the park (to ensure compliance with Executive Order 13112).

Water Quality (Section 2.3, Section 5.6.3 and Section 7.4 of the report)

As mentioned previously, the Department has coordinated closely with the Corps to help identify stormwater treatment requirements. We have provided written guidance and recommendations on how the Corps should move forward in finalizing the project design. Our written recommendations were included in section 5.6.3 of the report and are briefly summarized below.

The State's stormwater regulations require that runoff from impervious surface areas be discharged through retention areas, detention devices, filtering and cleaning devices, or subject to some other type of Best Management Practices, prior to discharge from the site. For the proposed project, the Department has determined that stormwater treatment is required to provide a level of treatment commensurate with what is provided by the existing conditions.

The proposed bridging will increase the total impervious surface area, but has no practicable means of providing grassed shoulders or traditional swales for treatment of stormwater, without causing further impacts to wetlands. Implementation of Best Management Practices (BMPs) such as incorporating pollution abatement devices into the stormwater system for the bridges to

collect and trap sediments and floatables (oil and grease) from polluted stormwater runoff (treatment of first flush) is necessary prior to discharge. That portion of the improved roadway which does not add additional impervious surface areas will only be required to provide grassed shoulders similar to the existing design.

The Department recommends that the Corps contractor responsible for the stormwater system design, consult with the Department, FDOT and the SFWMD during the design phase to ensure that the treatment system is effective in terms of cost, treatment, and operation and maintenance and meets the expectations of all parties involved.

Water quality issues are discussed in a number of other places throughout the report, including in Section 2.3, which refers to a 1999 USGS study reporting water quality along the Tamiami Trail. Further discussions are provided in this section about how stormwater runoff from Tamiami Trail must be "inferred". The section concludes that pollution from the runoff is minimal based upon a count of 5,200 vehicles per month based upon some 1990 study by Discoll et. al. The Department believes that much of the information presented in Section 2.3 is out of date, inaccurate, and misleading. We recommend moving some of the text presented in section 5.6.3 to Section 2.3 or rewriting section 2.3 to be consistent with the State's stormwater requirements.

Section 7.4 deals with water quality issues for the tentatively selected plan. Again, this section is written without any reference to the inclusion of pollution abatement system as part of the plan. It should be noted that since the receiving waters for this project include Everglades National Park, an Outstanding Florida Water (OFW), existing ambient water quality can not be lowered (e.g., turbidity), except on a temporary basis during construction, within a restricted mixing zone approved by the Department. Suitable management practices and technologies approved by the Department must be utilized to minimize degradation of water quality.

Manatees

Section 7.6.6 of the report concludes that the project would not adversely affect manatees because no work is being implemented within the L-29. Since there will be works in waters that are directly connected to the L-29 canal as part of removing the existing road to create bridged flow ways, the Corps should address protection of manatees as part of their plan. As part of protecting water quality, turbidity curtains will likely have to be deployed in the L-29 canal, which may impact the migration of manatees if not installed properly. Additionally, the plan should be specific about the need for blasting as this may impact protected species.

Section 8.0

The recommendation section is confusing and does not clearly or accurately describe the TSP. In fact, the second paragraph implies that features will be provided to convey additional flows from WCA 3B south. The need to raise the road is not discussed in the recommendations, nor is there a mention of the stormwater treatment system and the need to optimize the design.

Section 10.0

Based upon the title of this chapter, we would expect the Corps to give credit to the actively participating agencies and recognize all team members.

Specific comments on the draft document are provided below.

Section 5.6.3, pg 82, 2nd paragraph, delete following sentence "The system will be designed to meet FDEP requirements providing treatment for first flush."

Section 5.6.3, pg 82, 4th paragraph, after last sentence add "Coordination with FDEP will occur during PED to ensure that the final stormwater system design is consistent with FDEP requirements."

Section 5.6.3, pg 82, last paragraph, delete entire paragraph and revise to read "Because there is an existing WQC/permit for portions of the MWD project, the USACE would be seeking a modification to the existing permit. A modification application will be submitted when an appropriate level of detail exists regarding project design and environmental impacts."

Section 6.3 Drainage- Revise to be more consistent with Section 5.6.3; Also, it is our understanding that an analysis was conducted to evaluate differences in seepage rates resulting from the various alternatives in an effort to determine potential impacts to agricultural and urban interests to the east and south of the project area. Please include a discussion of this analysis in this report.

Section 6.7 Operations and Maintenance- This section does not indicate what entity will be responsible for maintenance of the stormwater treatment system.

Section 7.6.2- please clarify "flow would be distributed through a conveyance channel of up to four miles wide." Shouldn't this be revised to be consistent with TSP of two mile and one mile bridges?

Appendix G, G-4, revise last sentence to read "Full compliance with State regulations is anticipated."

Appendix I, 2.6.2 Mixing Zone Determination- please revise to be consistent with aforementioned comment re: OFWs and temporary mixing zones during construction

Conclusion

In general, and after consideration of the lack of funds to implement the most environmentally acceptable plan, the selected plan appears to the best interim solution to restore natural flows to Northeast Shark River Slough by improved conveyance of water from the L-29 canal into Everglades National Park. This enhanced connection will provide improved hydraulic connectivity to NESRS, benefit ridge and slough habitat restoration and allow for improved fish and wildlife movement. The completion of MWD will also allow federal funds to be appropriated for other CERP components including the CERP WCA 3 Decompartmentalization project. This project may include further conveyance enhancements such as the removal of the L-29 canal and levee and elevating more of Tamiami Trail.

Project issues which will require additional coordination with the Department as the project proceeds include: design of the stormwater treatment system, construction schedule and techniques, erosion and turbidity control measures, and application for permit modification. It is our understanding that the stormwater treatment system will be evaluated during the PED phase of the project and that the Corps will coordinate with the Department as necessary to ensure that State requirements are met.

cc: Inger Hansen (email)
Tim Gray (email)
Kim Shugar (email)
Temperince Morgan (email)
John Outland (email)
Stacey Feken (email)

From: Towles, Tim [mailto:tim.towles@MyFWC.com]
Sent: Thursday, March 27, 2008 3:29 PM
To: Riley, James M SAJ
Cc: Conner, Susan L SAJ; Cintron, Barbara B SAJ; Regan, Tim
Subject: RE: MWD WQC permit application meeting today at 1PM

Jim,

Please find a copy of our scoping letter attached. We asked that the COE address all of our previous concerns and recommendations from our previous correspondence that remain relevant to the current LRR project proposal.

These recommendations include conducting appropriate surveys to detect the presence of the state-threatened Everglades mink, active rookeries of state-listed wading bird species, and active nests of snail kites that could be affected by construction-related activity associated with the project, so that potential impacts can be avoided. We also had made a request that the COE consider including a wildlife crossing shelf at the end of the bridge, which would best be placed at the east end of the current proposed eastern 1-mile bridge.

As I mentioned, Everglades mink are secretive animals that are more difficult to survey than avian species. One of the most promising methods would likely be camera trapping which requires some time to set up and monitor. There is a biologist that is currently using this technique in an attempt to census Everglades mink in the Fakahatchee Strand. He would be a good person to contact for doing survey work for the COE on the Tamiami Trail.

Please feel free to contact me if you have any further questions.

Tim Towles
(772)778-6354

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APPENDIX H

PRIOR NEPA COORDINATION

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RECORD OF DECISION
CENTRAL AND SOUTH FLORIDA PROJECT
MODIFIED WATER DELIVERIES TO
EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS

DECISION

The Final Revised General Reevaluation Report and 2nd Supplemental Environmental Impact Statement (RGRR/SEIS) for the Central and Southern Florida Project, Modified Water Deliveries to Everglades National Park, Tamiami Trail Modifications, in Dade County, Florida address the additional water conveyance needs across the Tamiami Trail. Based upon the RGRR/SEIS, views of other Federal, State, and local agencies, Native American Tribes, non-governmental organizations, the general public, and the review by my staff, I find the plan recommended by the District Engineer, Jacksonville District, U.S. Army Corps of Engineers to be technically feasible, environmental justified, cost effective, in accordance with environmental statutes, and in the public interest. The recommendation is to implement the plan identified in the RGRR/SEIS as Alternative 14. This alternative includes the construction of a bridge up to 2-miles long at the western end of the 10.7-mile project corridor, a bridge up to one-mile long at the eastern end, and raising the profile of the unbridged portions of Tamiami Trail.

ALTERNATIVES AND CONSIDERATIONS BALANCED IN MAKING THE DECISION

The project would provide necessary capacity through Tamiami Trail (U.S. Highway 41) for the modified water flows to the Everglades National Park (ENP) while avoiding unacceptable structural impacts on Tamiami Trail due to modified flow regime.

In addition to the no-action alternative, nine other alternatives with removal of portions of the road replaced by one or more bridges of various lengths were carried through the final alternative evaluation and selection process. These included the three different bridge lengths evaluated in the 2003 GRR/SEIS that were withdrawn pending additional analyses. The present document incorporates by reference all the alternatives that were analyzed in the late 1990's and in the 2003 GRR/SEIS, but have subsequently been eliminated from further consideration. The No-Action Alternative would involve making no improvements to the Tamiami Trail to increase the capacity to convey water flows from the north without damaging the Tamiami Trail roadbed. All action alternatives included elevating the unbridged portion of the highway to prevent roadbed deterioration from elevated water levels during high water flows expected after implementation of potential future water management plans, and providing vehicle access, as needed, for the private properties along the south side of the highway. The action alternatives differed in the length of road removal/bridge spans and location. Alternative 9 consisted of a 3000-foot bridge span located at the western portion of the project corridor. Alternative 10 consisted of a centrally located four-mile bridge.

Alternative 11 consisted of an easterly located four-mile bridge. Alternative 12 consisted of a westerly located three-mile bridge. Alternative 13 consisted of a westerly located two-mile bridge. Alternative 14 is described above as the Recommended Plan. Alternative 15 consists of a two bridges with lengths of 1.3 miles and 0.7 miles located to the west and east, respectively. Alternative 16 consists of three 3000-foot bridges located in the western, central, and easterly portions of the project corridor. Alternative 17 consists of a 10.7-mile bridge spanning the entire corridor.

The alternative plans were evaluated based on their potential performance in restoring the historic hydropatterns and functions of the downstream wetland ecosystem in the Northeast Shark River Slough portion of Everglades National Park. Specific efforts were made to avoid or minimize any adverse effects on historical and cultural resources, local businesses, and Native American facilities along Tamiami Trail. Overlaid on this was a fiscal consideration in the allowable cost of construction based on the project budget limit of the Department of Interior (USDOI). Based on the analysis prepared for the RGRR/SEIS, input from other agencies, and public input, the environmentally preferable alternative is the 10.7-mile bridge designated as Alternative 17. Alternative 17 was not recommended because of its extremely high cost and significant adverse cultural and socio-economic impacts. Cognizant of the USDOI budget considerations, the Recommended Plan (Alternative 14) would best meet the ecosystem restoration objectives of the project, while minimizing cultural and socio-economic impacts and adverse effects to the private properties along the highway.

MEANS TO AVOID OR MINIMIZE ADVERSE EFFECTS

All practicable means to avoid or minimize adverse effects have been incorporated into the Recommended Plan. The road removal/bridges have been sited where they will allow significant restoration of the downstream wetlands and minimize, as much as possible, impacts to private development and to two wading bird nesting colonies along the highway. Vehicle access will be provided to all businesses during and after construction. Impacts to traffic flow will be minimized by designing the highway construction corridor to allow two-way traffic during non-construction hours in accordance with Florida Department of Transportation (FDOT) standards. The design of the bridges and remaining highway fully meets all FDOT standards for public safety and durability.

Conditions to stringently control turbidity and erosion during construction will be placed into the construction specifications to minimize any impacts to downstream resources. A storm water collection system will be designed into each bridge to treat runoff in order to meet State water quality requirements.

Consultation with the U.S. Fish and Wildlife Service (USFWS) under provisions of the Endangered Species Act on listed species under their jurisdiction has been completed. Formal consultation on the Florida panther resulted in a USFWS Biological Opinion concluding that implementation of the Recommended Plan is not likely to jeopardize the continued existence of the Florida panther. For all other listed species in

the project area, the USFWS agreed with the Corps' determination that the Recommended Plan may affect, but would not be likely to adversely affect, the indigo snake, West Indian manatee, Cape Sable seaside sparrow, and Everglade snail kite.

A cultural resources survey has been conducted and concluded that two properties and the Tamiami Trail and Canal are eligible for listing on the National Register of Historic Places for their historical significance. The State Historic Preservation Officer has concurred with these determinations and will participate in an MOA on appropriate mitigation for impacts to these features.

Government to Government consultation with the Micosukee Tribe of Indians of Florida will continue throughout the project implementation process in fulfillment of the Army's trust responsibilities to the Tribe.

PUBLIC /AGENCY COMMENTS IN THE FINAL EIS

All public comments received on the Final EIS have been addressed and incorporated into the recommended plan, as appropriate. The Miccosukee Tribe of Indians continues to oppose any bridge, preferring that the existing culverts be cleared out and augmented as needed to pass the maximum practicable flows. Non-governmental environmental organizations and their members continue to express a preference for bridging the full 10.7 mile length of the project corridor. The Florida State Clearinghouse determined that the Recommended Plan was consistent with the Florida Coastal Zone Management Program at this stage. The FDOT and the Florida Department of Environmental Protection provided documents supporting the project. No other State agencies had any further comments. The USDOI provided a letter of support for the Recommended Plan. The U.S. Environmental Protection Agency rated the Plan as LO, Lack of Objection.

COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

The Recommended Plan is in compliance with all applicable environmental laws and requirements including but not limited to the National Environmental Policy Act, Endangered Species Act, Fish and Wildlife Coordination Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, Coastal Zone Management Act, and Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations." Recommendations from the USFWS under the Fish and Wildlife Coordination Act have been incorporated into the recommended plan. The Draft and Final EISs were distributed for public comment, and all comments were incorporated and considered. The U. S. Fish and Wildlife Service transmitted the final Biological Opinion to the Jacksonville District on January 12, 2006. The Biological Opinion completes compliance with Section 7 of the Endangered Species Act for this phase of the project. As between the Federal Government and the Non-Federal Sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction,

operation, maintenance, repair or replacement of the project for lands for which the Non-Federal Sponsor has received a land compensation payment. In no event will the Federal Government assume any financial responsibility for cleanup and response costs of any CERCLA regulated materials for any lands associated with the project.

SUMMARY

Technical, environmental and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's *Principles and Guideline*. All applicable laws, executive orders, regulations, and local plans were considered in evaluating the alternatives. The recommend plan is not the environmentally preferable plan, but is the one that delivers substantial benefits in a cost effective manner while meeting the overall Federal and State objectives and incorporates features to avoid, minimize, or mitigate adverse environmental and social effects. Based on review of these evaluations, I find that the benefits gained by implementation of the recommended plan far outweigh any adverse impacts and the overall public interest will best be served. This Record of Decision completes the National Environmental Policy Act process.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Date: January 25, 2006

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

January 12, 2006

Colonel Robert M. Carpenter
District Engineer
U.S. Army Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Service Log No.: 4-1-04-F-5912
Date Received: August 26, 2005
Formal Consultation initiation Date: December 9, 2005
Project: Modified Water Deliveries: Tamiami Trail
County: Miami-Dade

Dear Colonel Carpenter:

This document transmits the Fish and Wildlife Service's (Service) biological opinion for the Tamiami Trail portion of the Modified Water Deliveries (MWD) to Everglades National Park (ENP) project, and its effects on the eastern indigo snake (*Drymarchon corais couperi*), wood stork (*Mycteria americana*), the Everglade snail kite (*Rostrhamus sociabilis plumbeus*) and Everglade snail kite critical habitat, the West Indian manatee (*Trichechus manatus*) and West Indian manatee critical habitat, Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*) and Cape Sable seaside sparrow critical habitat, and the Florida panther (*Puma concolor coryi*), in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The project site is located in Sections 01-06, Township 54 South, Range 37 East and Sections 07-11, Township 54 South, Range 38 East, Miami-Dade County, Florida (Figure 1).

The range of the threatened eastern indigo snake overlaps the project area and could be present, however, there are no known sightings within the footprint. It could potentially be affected by construction activities, so the U.S. Army Corps of Engineers (Corps) should include the "Standard Construction Precautions for the Indigo Snake" in the project design and implementation. The Corps has determined that the project "may affect, but is not likely to adversely affect" the Eastern indigo snake.

The endangered wood stork uses suitable habitats throughout the project area. Two active nesting colonies occur near the project area, including the "Tamiami East" and "Tamiami West" colonies located just south of the Trail on the eastern end of the project area. The eastern 1-mile

bridge would be constructed midway between these two colonies, such that the bridge would not overlap the established Primary or Secondary Zones of disturbance. Construction activity for the elevated unbridged road would impinge into the disturbance zone. As such, the Corps would manage the construction activities according to the Service's "Draft Supplemental Habitat Management Guidelines for the Wood Stork in the South Florida Ecological Services Consultation Area". The Corps has concluded that the project "may affect, but is not likely to adversely affect" the wood stork.

Potential effects to the Everglade 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 have been 500 feet (ft) from the road (2000) and 1,800 ft (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 Service and the Florida Fish and Wildlife Conservation Commission (FWC) monitor snail kite nesting and will notify the Corps if new information would warrant a change. There is no designated Critical Habitat located within the project area, so none would be affected. The Corps has concluded that the project "may affect, but is not likely to adversely affect" the Everglade snail kite.

The endangered West Indian manatee has rarely been documented in the project area. For the entire period of record spanning over 20 years, there has been only one recorded manatee utilizing the L-29 Canal adjacent to Tamiami Trail. The likelihood of a manatee occurring in the project area is negligible. There would be no activities in the canal during construction, therefore, the Corps has concluded that the project "may affect, but is not likely to adversely affect" the West Indian manatee.

The endangered Cape Sable seaside sparrow does not occur in the project footprint. The closest known sparrow habitat where sparrows are known to have nested 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 Corps concludes that the project "may affect, but is not likely to adversely affect" the Cape Sable seaside sparrow.

The Service concurs with the Corps' determination that the Tamiami Trail feature of the MWD to ENP Project "may affect, but is not likely to adversely affect" the eastern indigo snake, wood stork, Everglade snail kite, West Indian manatee, and Cape Sable seaside sparrow and will have "no effect" on Everglade snail kite critical habitat, West Indian manatee critical habitat, and Cape Sable seaside sparrow critical habitat. Therefore, the following biological opinion will not incorporate any further information regarding these species and will instead focus on the Tamiami Trail project and its effects on the Florida panther.

This biological opinion is based on information provided in the Corps' Biological Assessment (BA) dated August 26, 2005; the Service's Request for Additional Information delivered electronically to the Corps on September 8, 2005; the Corps' response to that request dated December 19, 2005; information submitted by the Corps' contractor GEC Incorporated on November 2, 2005; and meetings, telephone conversations, email, and other sources of information. A complete administrative record of this consultation is on file at the Service's South Florida Ecological Services Office, Vero Beach, Florida.

The 40.3-acre construction footprint of the recommended plan lies generally within 50 ft south of the Tamiami Trail along its entire 10.7-mile stretch. Based on Florida Land Use, Cover and Forms Classification System (FLUCCS) (Figure 8) the site is comprised of 0.3 acre of open water, 7.8 acres of mixed wetland hardwoods-mixed shrubs, 10.3 acres of freshwater marshes, 2.5 acres of freshwater marshes-sawgrass, 0.1 acre of spoil areas, and 19.3 acres of roads and highways. The dominant exotic species of vegetation throughout the project area is Brazilian pepper (*Schinus terebinthifolius*) and occupies greater than 50 percent of the shoulder along the entire 10.7-mile project length for a width averaging between 10 and 30 ft. The project area is bounded on the north by Water Conservation Area 3B (WCA-3B) and on the south by ENP.

In the Corps' draft letter on endangered species issues emailed to the Service on July 29, 2005, they determined that the Tamiami Trail portion of the MWD Project "may affect, but is not likely to adversely affect" the endangered Florida panther. In an email response dated September 8, 2005, and subsequent phone conversations, the Service suggested that the Corps submit a BA containing all current information regarding the projects effects on the panther and change the determination to "may affect". The Corps' final determination of "may adversely affect" was received in a letter dated August 26, 2005. The Service responded with an email on September 8, 2005, requesting additional information on the project, mainly with regards to cumulative effects. This information was received in a letter dated December 19, 2005.

Based on the analysis conducted by the Corps' contractor, GEC Incorporated, the project will result in removal of 20.6 acres of habitat marginally suitable for use by the Florida panther. This acreage would be removed due to the addition of fill to the highway embankment required for heightening the roadway. In contrast, 27.3 acres of the existing road embankment will be removed where the bridges (3 miles total) will be constructed. Although the area under the bridges may provide safe passage for any panthers wishing to cross the Trail, it does not represent good quality panther habitat due to shading by the low bridges. The Corps has agreed to compensate for the loss of 20.6 acres of panther habitat through the preservation and restoration of 30 acres located on the western side of the 8.5 Square Mile Area (SMA), which is part of the MWD Project.

The Use of Best Scientific and Commercial Information by the Service

The Service uses the most current and up-to-date scientific and commercial information available. The nature of the scientific process dictates that information is constantly changing and improving as new studies are completed. The scientific method is an iterative process that builds on previous information. As the Service becomes aware of new information, we will ensure it is fully considered in our decisions, evaluations, reviews, and analyses as it relates to the base of scientific knowledge and any publications cited in our documents.

Specifically, there is one such document cited in this biological opinion the Service acknowledges has been affected in its cited form by new scientific information. The Service has taken these new sources of information into account when using this document to help guide our analysis and decisions. This document is the South Florida Multi-Species Recovery Plan

(MSRP) of 1999 (Service 1999). In addition, the Service has examined Kautz et al. (In Review) for its scientific validity, specifically with regards to comments and recommendations by other reviewers as discussed below.

South Florida Multi-Species Recovery Plan

The MSRP was designed to be a living document and it was designed to be flexible to accommodate the change identified through ongoing and planned research and would be compatible with adaptive management strategies. These principals are set forth in both the transmittal letter from the Secretary of the Interior and in the document itself. As predicted, this is what indeed occurred in the intervening years since the MSRP was published. The Service uses the MSRP in the context it still presents useful information when taken in conjunction with all the new scientific information developed subsequent to its publication.

Kautz et al. (In Review)

The Florida Panther Subteam was charged with developing a landscape-level strategy for the conservation of the Florida panther population in south Florida. The Subteam produced the draft Landscape Conservation Strategy for the Florida Panther in South Florida in December 2002 and provided it to the Service. Upon receipt, the Service began to use the information in the draft Landscape Conservation Strategy in its decision making processes and documents since it was part of the best scientific information available to the Service at the time. Since then some portions of the science and findings in the draft Landscape Conservation Strategy have been challenged. Many, but not all, of the Subteam members have refined the methodology, further analyzed the data, and better defined the results of the Landscape Conservation Strategy into a draft article, referred to here as Kautz et al. (In Review), for submission to a professional peer-reviewed journal, Biological Conservation. To date, the authors have responded to a series of edits on their draft article and are awaiting response from the journal editor regarding acceptance of the manuscript for publication. In addition, the authors have considered the comments provided by Beier (2003) on the Landscape Conservation Strategy and the recommendations provided by the Scientific Review Team (SRT) (Beier et al. 2003) as discussed below. Dr. Jane Comiskey, one of the co-authors of Kautz et al. (In Review), has expressed some concerns about the manuscript and we have addressed her concerns below as well. We have also addressed issues relating to the ESA and Information Quality Act.

Beier (2003) Comments on the Draft Landscape Conservation Strategy

Beier provided 37 comments on the Subteam's Landscape Conservation Strategy. Kautz et al. (In Review) addressed all of Beier's comments except those discussed below.

1. Include a statement that when analyses using nighttime data are available, this picture probably will change.

This statement is not in the manuscript, but in this and other biological opinions, the Service acknowledges that nighttime and 24-hour data are generally not readily available at this time. Data from GPS collars will be considered when found to be reliable and available. Availability

of nighttime or 24-hour data may possibly change some conclusions about panther habitat in the future. In analyses of puma habitat in California, Beier (2003) found that puma show markedly broader habitat use and selection at night compared to daytime. We expect that when GPS-collar data becomes more available, there will likely be a better understanding of habitat use at night. However, the Service does not solely rely on daytime telemetry in making its decisions regarding panther habitat. The Service considers panther habitat to include all areas required for the panther to live out its full life-cycle, including areas providing food and shelter and supporting characteristic movement such as hunting, breeding, dispersal, and territorial behavior.

2. Explain the witch's finger jutting eastward from the Primary Zone. No panther is going to have a home range 10 miles long and 400 meters wide. Buffer this so that it is at least 1 mile wide at its narrowest points, and 4 to 5 miles wide in most areas. I support the idea of making this primary habitat, but strongly feel that it does not make sense to make it so narrow.

This was not addressed. This comment relates to the slender portion of the Primary Zone that protrudes eastward at the border of Palm Beach and Broward Counties and the recommendation by Beier that it be buffered to be more inclusive. While Kautz et al. (In Review) did not make this requested modification, the Service will address this omission in biological opinions, as appropriate. The Service is careful to consider Primary, Dispersal, and Secondary Zones and other panther habitat, along with additional high-quality scientific and commercial data, in our analyses and evaluations.

3. Secondary Zone: Overall, the approach is *reasonable*, but not *rigorous*. We will probably never have data to make this a rigorous analysis, so it would be unreasonable to demand it. However, if you ran a cursory sensitivity analysis, you can determine how the map varies under different assumptions about cutoff points and relative weights.

According to Kautz et al. (In Review), the Secondary Zone is defined as natural and disturbed lands adjacent to the Primary Zone that may have potential to support an expanding panther population, especially if habitat restoration were possible. A preliminary boundary of a Secondary Zone was originally drawn on a hard copy map by the Multi-species Ecosystem Recovery Implementation Team (MERIT) Panther Subteam. The landscape context of the draft Secondary Zone was evaluated by combining a set of 30-meter (m) pixel grids created to measure three habitat-related variables (i.e., proximity to Primary Zone, proximity to a forest plus buffer patch, forest plus buffer patch size) and three land-use variables (i.e., proximity to urban lands, intensity of land use, and road type and density). Pixels in the six data layers were assigned scores of 1 to 10, with 10 representing the best case for panthers. Equal interval or progressively increasing or decreasing increment functions were applied to each data layer as deemed appropriate. The Secondary Zone boundary was finalized by adjusting the preliminary boundary to conform to results of the landscape context analysis and to land use changes as indicated by recent satellite imagery. To our knowledge, a cursory sensitivity analysis varying the scores assigned to the different variables within each data layer was not run. Therefore, we do not know how a map of the Secondary Zone would vary under different assumptions about cutoff points and relative weights. However, as a group, the Subteam reviewed the draft Secondary Zone boundaries in relation to the results of the context analyses and recent satellite imagery, and achieved consensus on the adjusted boundaries that best met the definition of the

Secondary Zone. Therefore, the Service does not believe the lack of this cursory sensitivity analysis affects the scientific validity of a Secondary Zone nor the Service's ability to use it in biological opinions.

4. A density of 1 panther per 11,000 hectare (ha) is a strange inference from this simple descriptive statistic. The 11,000 ha is simply total area divided by the number of panther home ranges in the area - it is not the size of a panther home range, nor is it the amount of forest in a panther home range, nor is there any logical reason that 11,000 ha should be the 'minimum size of a forest patch to have potential use by panthers. This is a complete non sequitur. This is not a sound approach toward estimating minimum forest area for use by panthers.

In the Landscape Conservation Strategy, the MERIT Panther Subteam attempted to identify lands north of the Caloosahatchee River for their capacity to support one or more groups of reproducing panthers. In that process, they assumed that large forest patches, at least 11,000 ha in size, would be needed. This assumption was based on an estimate of population density in optimal habitat given by Maehr et al. (1991a).

In conducting a compositional analyses, Kautz et al. (In Review) determined that panther use of forest patches within fixed kernel home ranges south of the Caloosahatchee River differed significantly from random. The smallest forest patch size classes occurred within home ranges in higher proportions relative to their availability than larger forest patch sizes. With this new knowledge, Kautz et al. (In Review) did not repeat the erroneous assumption that forest patches at least 11,000 ha in size are required by panthers. Kautz et al. (In Review) did use 1 panther per 11,000 ha as a rough density estimate along with a density estimate derived from their own analysis (1 panther per 12,919 ha) to provide estimated ranges for the potential number of panthers that could be accommodated by the current configuration of the Primary, Dispersal, and Secondary Zones.

5. Habitat Capacity, "defined as areas with pixel values >3." This definition, it seems, would result in a region with Swiss-cheese holes and outlier bubbles of habitat. Was there a step that involved smoothing to create a "smooth" map? If so, describe that step. If not, acknowledge and describe the nature of the resulting map.

For the purposes of their study, the Subteam developed an estimate of panther population density. Minimum convex polygons of panther home ranges were generated for all Florida panthers by year based on telemetry records through early in 2000 (n=49,889 telemetry locations, 1981 to 2000). Each polygon was converted to a 100 m pixel grid, and the resulting grids were summed. The region of most consistent panther occupancy for the period of record was defined as areas with pixel values ≥3. This step excluded areas used only once or twice by transient animals. To estimate population density, the total land area within the resulting region of panther occupancy was divided by 62, the estimated size of the panther population in 2000 (McBride 2000). Using this method, the region of most consistent panther occupancy from 1981 through early 2000 covered 800,951 ha. Based on the estimated panther population of 62 individuals, population density was one panther per 12,919 ha in 2000. Kautz et al. (In Review) did not address the shape or character of the resulting map, nor whether its creation

involved "smoothing." However, the resulting size of area of occupancy and population density they report are consistent with other published information and are considered the most current and up-to-date scientific information available to the Service.

6. "Region of panther occupancy was divided by 62, the estimated size of the panther population in 2000." Need to be specific about whether this refers to resident adults, resident breeding adults, adults plus independent juveniles, or total panthers, including kittens. McBride's estimate, I believe, was "adults plus independent juveniles" and is thus analogous to the estimated density provided by Maehr et al. (1991a).

This was partially addressed. Kautz et al. (In Review) states that "...estimates place the population at 80-100 adults and subadults (Land and Lacy 2000; McBride 2001, 2002, 2003)." Later, where Kautz et al. (In Review) use the estimate of 62 panthers, McBride is cited. According to Kautz et al. (In Review), "To estimate population density, the total land area within the resulting region of panther occupancy was divided by 62, the estimated size of the panther population in 2000 (McBride 2000)." McBride (2000) clearly indicates that 62 panthers "...includes collared and uncollared, adult and subadult, part-Texas and pure Florida panthers. It does not include kittens at the den site, nor does it include extrapolations." The Service understands that the panther population of 62 in 2000 included adults plus subadults and not kittens at the den.

7. "A population of this size would have N_e of ~ 50 breeding adults." This statement needs explanation based on published data, otherwise delete it. N_e is a notoriously difficult parameter to estimate.

No similar statement is in Kautz et al. (In Review) and N_e is not mentioned in the text. However, N_e is in Table 5 of Kautz et al. (In Review). The presence of N_e in Table 5 does not affect the scientific validity of the document nor the Service's ability to use it. The effective population size (N_e) is the number of adults in a population contributing to offspring in the next generation. Although we understand that N_e is difficult to estimate, we believe use of it is helpful in the population guidelines given in Kautz et al. (In Review). The Service realizes that the effective population size is generally smaller than the census size and is often much smaller than the census size. Although not specifically discussed in our biological opinions, we factor this into our analyses.

8. It is hard to believe that we cannot "rank agricultural lands as panther habitat" with data already in hand. Don't we already know that unimproved pasture > improved pasture > citrus > row crops?

This has been addressed to some degree. Table 1 of Kautz et al. (In Review) does rank some agriculture lands but not to the level of detail in the comments. The Service has factored the relative value of cover types/habitat types into our analyses and decision-making process during project evaluations and reviews.

9. Please change "long-term survival of the Florida panther" to "long-term survival of the existing population of the Florida panther."

This was not addressed in Kautz et al. (In Review). However, the Service realizes that a single Florida panther population exists in south Florida. Our decisions in this biological opinion and others are based upon ensuring the survival of the panther population in south Florida while working toward what is needed for recovery throughout the panther's historic range.

Scientific Review Team Report

1. Beier et al. (2003) states that "Telemetry data have been collected for Florida panthers over a long time period (since 1981), but in some analyses of habitat use, the vegetation maps may not have been updated and ground-truthed to stay current with analyses of telemetry data. The SRT has insufficient information to know to what degree this may be a problem, but recommends attention to this potential problem in future analyses."

Kautz et al. (In Review) states that "While researchers have continued to collect telemetry data for radio-collared panthers through the date of this writing, we are reporting the results of the only telemetry data that were available at the time of our collaborative work, and the telemetry data we used were closer in time to the date of the land cover data sets used for habitat analysis." In relation to how this point was addressed in the Kautz et al. (In Review) manuscript, Randy Kautz (Florida Fish and Wildlife Conservation Commission [FWC], personal communication, 2004) stated that he "spent several hours at one point zooming in on panther telemetry against a backdrop of recent land cover data, and ... found very few obvious examples of this being a problem. My own take was that the volume of telemetry data of over 55,000 records was so huge that any currency problems comprised a very small error factor." The Service concurs with Randy Kautz's conclusion and believes that currency errors in such a large sample size would not be significant.

2. Beier et al. (2003) strongly recommends the use of compositional analyses (Aebischer et al. 1993) or another statistically appropriate method to compare the distributions of forest patch sizes available to panthers to those used by panthers.

Kautz et al. (In Review) used compositional analysis to assess the effect of forest patch size on panther habitat use within the study area south of the Caloosahatchee River. This was accomplished by reclassifying upland and wetland forest types into one forest class, determining patch size, and assigning individual forest patches to size classes according to an equal area increment function. Differences in proportions of forest patches within each home range relative to the entire study area were then tested. Kautz et al. (In Review) found that forest patches of all sizes are important to panthers and that the smallest classes of forest patches are especially important.

3. Beier et al. (2003) states, "The estimate of 84% to 87% kitten survival (Maehr and Caddick 1995) is indefensible for several reasons."

Root's (2004) population viability analysis (PVA) used the more recent and realistic survival rate of 0.62. This rate was developed by the use of data collected by FWC researchers and is one parameter within PVA at this time. This issue is further addressed below under Questions 2

and 6 within in the section addressing comments from Dr. Jane Comiskey.

4. Beier et al. (2003) states, "The SRT recommends that any future PVA models should be built from scratch and explicitly consider parameter uncertainty, variation (demographic, environmental) in parameters, and uncertainty in key functional relationships such as density dependence and the effects of inbreeding."

The Service believes that Root (2004) should be considered among the most current and up-to-date scientific and commercial information available and will use this analysis and other relevant information in our biological opinions until new, scientifically peer reviewed and verified data are present.

Dr. Jane Comiskey's February 2005 Comments on Kautz et al. (In Review)

Taken as a whole, Dr. Comiskey's concerns dealt primarily with the addition of text and explanation to Kautz et al. (In Review) if it was to be used as a substitute for the Landscape Conservation Strategy. The Service agrees that Kautz et al. (In Review) is not a stand alone document and must be used in conjunction with the body of scientific literature regarding the panther, including the work of the Panther Subteam.

1. Kautz et al. (In Review) lacks the needed ecological and environmental context to replace the full Landscape Conservation Strategy.

This may be correct in some instances. However, where the Service has cited this document in place of the Landscape Conservation Strategy we have ensured that the information is indeed included in Kautz et al. (In Review) and not part of the larger, more detailed Landscape Conservation Strategy. We believe that Kautz et al. (In Review) captures the major findings of the Landscape Conservation Strategy. Additional ecological and environmental context that is specific to an individual proposed project and proposed project site is included in biological opinions.

2. "The best we know given the current science at hand" indicates that some model assumptions are violated in the existing population and that parameter value estimates for reproductive rates and kitten survival are likely too optimistic. We need to acknowledge that in using model results.

Some parameter value estimates for reproductive rates and kitten survival may be too optimistic. Some estimates of kitten survival have been too high (e.g., 0.80) while others may be too low. It would have been our preference to see a range of kitten survival rates used in the models completed to date. Sensitivity analyses conducted by Karen Root of the Panther Subteam showed that kitten survival was the most important variable of those used within the PVA (K. Root, Bowling Green State University, personal communication, 2003). Therefore, we are aware that uncertainty within this parameter may have the greatest consequences on the projected population performance or trajectory. We acknowledge that uncertainties exist, that we are aware of them, and that Root's (2004) PVA used a 0.62 kitten survival rate. Future PVAs could include a range of updated kitten survival rates as well as other updated parameters. The Service and the FWC along with our partners will continue to monitor the panther population and the south Florida landscape and incorporate any new information and changes into our

decision-making process.

We recognize that model parameters such as this can have effects on model outcomes. The Service is mindful of the limitations that exist, and when making decisions, we focus on the well being of the species.

3. Kautz et al. (In Review) does not include a definition of habitat.

We agree that specifically stating what constitutes panther habitat would be beneficial, however, we do not agree that lack of a definition should prevent use of Kautz et al. (In Review). Most biologists have an understanding of what habitat means. We believe that the Service and our counterparts understand what constitutes panther habitat. However, the Service considers panther habitat to be all areas required for the panther to live out its full life-cycle, including areas providing food and shelter and supporting characteristic movement such as hunting, breeding, dispersal, and territorial behavior.

4. We agreed on the Florida Panther Subteam on the importance of ranking land use categories on a scale of adverse to beneficial effects on panthers and evaluating proposed land use changes in the context of this scale. Randy Kautz felt that it would be redundant to include an explicit statement about this approach toward evaluating the impact to panthers of intensification of disturbance within zones.

The Service believes that ranking land use categories on a scale of adverse to beneficial effects on panthers and evaluating proposed land use changes in the context of this scale would be helpful, but is not necessarily needed to be part of Kautz et al. (In Review).

5. RAMAS PVA Assumptions: we need more discussion of the assumptions associated with the PVA and the degree to which we know these assumptions to be violated in the existing landscape and population.

We are aware of the assumptions used in the PVA analyses and consider these in our decisions. We will acknowledge the degree to which we believe any assumptions are being violated in our documents.

According to Root (2004), "All models assumed a 1:1 sex ratio, a stable age distribution, 50 percent of females breeding in any year, and an initial population of 41 females (82 individuals including males), the approximate population size in 2001-2002 (McBride 2001, 2002). The basic version of each model incorporated no catastrophes or epidemics, no change in habitat quality or amount, and a ceiling type of density dependence. The basic versions of the models incorporated a carrying capacity of 53 females (106 individuals).

The Service acknowledges that some of these assumptions are violated and tries to factor the degrees to which assumptions may be violated into our decisions. For example, the Service is aware that the Panther Subteam had attempted to address the effects of habitat loss by assuming a 25 percent loss of panther habitat over the first 25 years (i.e., one percent per year) of the 100-year model simulation during their analyses. Although the probability of extinction only

increases approximately one percent under this scenario, the mean final abundance of panthers was reduced by 26 percent to 38 and 31 females for the optimistic and moderate model scenarios, respectively. The actual likelihood of population declines and extinction can be much higher than the guidelines suggest, depending upon the number of and severity of assumptions violated. The Service realizes that habitat loss is occurring at an estimated 0.8 percent loss of habitat per year (R. Kautz, personal communication, 2003). The Service has tried to account for habitat loss and changes in habitat quality within its regulatory program and specifically through its habitat assessment methodology. For example, we have increased the base ratio used within this methodology to account for unexpected increases in habitat loss. Similarly, we consider changes in habitat quality and encourage habitat restoration wherever appropriate.

With regard to the assumption of no catastrophes, the Service has considered the recent outbreak of feline leukemia in the panther population at Okaloacoochee Slough as a potential catastrophe. However, the FWC is carefully monitoring the situation and it appears to be under control at this time due to a successful vaccination program. However, if the outbreak spreads into the population, the Service will consider this as a catastrophe and factor this into our decisions.

6. All three of the RAMAS PVA model scenarios (conservative, moderate, and optimistic) estimate the first year kitten survival rate at 62 percent, based on the Land/Linda kitten survival analysis from FWC annual panther reports (FWC 2001, repeated in 2002, 2003, 2004). However, the selective Land/Linda analysis omits without explanation many failed litters documented in denning tables in these same annual reports, resulting in estimates of survival rates that are too optimistic, especially for the purebred Florida component of the population where most failed litters occurred. Even when reliable rates are computed, PVA scenarios should incorporate a range of survival rates, since the high survival rate among introgressed litters in part reflects expansion into unoccupied areas of the range where there is less competition for space and prey. As such, rates could decrease as the range becomes saturated and as inbreeding effects may reappear in the population.

Per Tim O'Meara (FWC, personal communication, 2005), this does include litters that failed. The FWC annual report does include all litters for which FWC was able to get into the den and determine outcome of litters 6 months later; if litters were not included it was because they did not meet those criteria (T. O'Meara, personal communication, 2005). We agree that incorporating a range of kitten survivals into various PVA models would be beneficial in the future.

7. We should include a statement acknowledging that the SRT has found serious errors in panther science and has recommended reanalysis of baseline data for the population. We should acknowledge that, as a result of errors, PVA parameter values may have been overestimated, leading to PVA results that may be too optimistic. In the meantime, decisions should err on the side of the panther.

The Service agrees that the SRT has found errors in the scientific literature related to the panther and that reanalysis of baseline demographic data for the population should be done. The SRT has made numerous recommendations and the FWC and the Service are in the process

of prioritizing these based upon need and importance to panther recovery. We realize that PVAs, like any model or analyses, are only as good as the assumptions, parameters, and data used. We believe the best estimates for the parameters available at the time were used within the PVA. We realize that there is a possibility that the PVA results may be too optimistic. We agree that our decisions should err on the side of the panther.

Endangered Species Act/Information Quality Act

1. The ESA states the Service "shall use the best scientific and commercial data available." However, the vegetation data and land use/land cover maps, as well as the panther telemetry points are several years old.

Most information must be analyzed before it is of use to us. Due to the time for analysis and the extensive and lengthy peer review and publication process, it is not possible for an article to be published in a professional journal before the data becomes several months to a few years old as is the case in this instance. We believe that Kautz et al. (In Review) is an appropriate and valid addition to the body of science and it adds to the "best scientific and commercial data available," however, part of the base data and maps are not necessarily the most current.

2. The Information Quality Act Challenge states "The estimate of an 80 percent pre-introgression kitten survival rate in Maehr et al. (1999; 2002) was based on an indefensible estimate Maehr and Caddick (1995) that was unsupported by data (Beier et al. 2003:47, 49, 143-144)."

Root (2004) used the more current and realistic survival rate of 0.62. This issue is also addressed above in Question 3 within the SRT section, and in Questions 2 and 6 within the Dr. Jane Comiskey section.

Summary

After carefully reviewing Kautz et al. (In Review) and considering the above recommendations and standards, we believe that Kautz et al. (In Review) should be considered among the best scientific and commercial data available. Therefore, Kautz et al. (In Review) and the analyses contained therein, along with all other best scientific and commercial data available, is referred to in this document and will be used in our decision making process until or unless new information suggests revisions are necessary.

CONSULTATION HISTORY

On July 27, 2005, the Corps provided a draft letter on Endangered Species issues in which it concluded that the Recommended Plan "may affect, but is not likely to adversely affect" any of the listed species expected in the project area.

The Service responded with an email dated August 4, 2005, regarding potential project impacts. The Service stated that we could not concur with the "may affect, but is not likely to adversely affect" determination for the Florida panther due to its location within the Primary Zone of the

panther consultation area and several telemetry data within 5 miles of the project site. The Service also requested the Corps provide additional information to determine the need for formal consultation pursuant to 50 CFR § 402.14.

On August 26, 2005, the Corps provided a letter containing the BA of project impacts on the agreed upon listed species expected in the project area.

In an email dated September 8, 2005, the Service requested additional information on the project and its impacts to the Florida panther in order to make a final affects determination for this species.

On November 2, 2005, the Corps forwarded additional information compiled by their contractor, GEC Incorporated, on the Florida panther.

In a letter with attachments dated December 9, 2005, the Corps provided additional information on the Florida panther mainly with regards to cumulative impacts analysis and other points raised in the Services request for additional information.

In an email dated December 21, 2005, the Corps' contractor provided further clarification on the FLUCCS analysis used which demonstrates that the recommended plan will result in a net gain of 6 acres of wetlands in the panther Primary Zone. In the contractor's analysis it was assumed that the restored habitat under the bridges would be of similar quality to Florida panthers as that removed by heightening the roadway (20.6 acres). The assumption that the shaded habitat would be of equal value to the panther as that removed was incorrect.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

Proposed Action

The Recommended Plan would create two conveyance openings through Tamiami Trail by removing up to three miles (cumulative) of the existing highway, embankment, and associated culverts. The project site is located along a 10.7-mile stretch of U.S. Highway 41 (US 41) (Tamiami Trail) between S-333 and S-334 in west Miami-Dade County, Florida. The construction footprint encompasses a total of 40.3 acres: 0.3 acre of open water, 7.8 acres of mixed wetland hardwoods-mixed shrubs, 10.3 acres of freshwater marshes, 2.5 acres of freshwater marshes-sawgrass, 0.1 acre of spoil areas, and 19.3 acres of roads and highways. The dominant exotic species of vegetation throughout the project area is Brazilian pepper and occupies greater than 50 percent of the shoulder along the entire 10.7-mile project length for a width averaging between 10 and 30 ft.

The project will result in the permanent removal of 20.6 acres of wetland habitat suitable for use by the Florida panther. The project is located within the Florida panther Primary Zone (Kautz et al. In Review) (Figure 2). The project is also within the Service's consultation area for the Florida panther (Figure 3).

The crown elevation of the roadway will be raised to 12.3 ft National Geodetic Vertical Datum, requiring additional width of the embankment on the southern edge of the road to stabilize side slopes. The Recommended Plan will require expansion of the highway footprint southward due to the necessary avoidance of the L-29 Canal. The width of the expansion is estimated to vary from 0 to 48 ft, depending on the height of the road and the amount of elevation needed, and will result in the conversion of roughly 20.6 acres of wetland habitat marginally suitable for panther use into road embankment. In contrast, removal of the existing roadway under the bridges associated with the Recommended Plan (total of 3 miles) will result in the removal of 27.3 acres of fill which currently supports roadway.

The 27.3 acres of wetland habitat produced as a result of bridging 3 miles of the roadway will most likely result in open water habitat due to shading by the bridge spans. Although the quality of this type of habitat for use by panthers is not as good as the 20.6 acres being removed via road widening, it is thought that the wildlife underpasses provided by the bridges for panthers and other wildlife will be a significant benefit. Additionally, the removal of the 20.6 acres of exotic infested habitat close to the roadway may prove beneficial in reducing road mortality to panthers by removing an attractive nuisance next to a major roadway. In addition to the restoration of usable wetland habitat and removal of exotic vegetation along the highway, implementation of the Recommended Plan would improve 109,000 acres of wetland habitat in ENP through the restoration of deep sloughs in Northeast Shark Slough (NESS) and the promotion of improved sheetflow characteristics south of the Trail.

The Corps has proposed to provide compensation for project effects to panther habitat through preservation and enhancement of approximately 30 acres of Primary Zone habitat near the 8.5 SMA, which is also a part of the MWD project. This preservation provides compensation for the loss of 20.6 acres of lower quality habitat on the project site for foraging and dispersal by the Florida panther through the off-site protection and restoration of approximately 30 acres of higher quality panther habitat in areas nearer to higher quality panther habitat (Figure 9).

Action Area

The consultation area for the Florida panther includes lands in Charlotte, Glades, Hendry, Lee, Collier, Palm Beach, Broward, Miami-Dade, and Monroe Counties, as well as the southern portion of Highlands County (Figure 3). Developed urban coastal areas in eastern Palm Beach, Broward, and Miami-Dade Counties, and in western Charlotte, Lee, and Collier Counties were excluded because they contain little or no panther habitat and it is unlikely that panthers would use such areas.

Movements of Florida panthers are much larger than the project site and, therefore, the action area is larger than the proposed action area identified by the Corps' public notice. The action area, which is a subset of the current panther range, includes those lands the Service believes may experience direct and indirect effects from the proposed development. Maehr et al. (1990b) monitored five solitary panthers continuously for 130-hour periods seasonally from 1986 to 1989, rarely observing measurable shifts in location during the day, but nocturnal shifts in location exceeding 20.0 kilometers (km) (12.4 miles) were not unusual. Maehr et al. (2002) in a later report documents a "mean maximum dispersal distance" of 68.1 km (42.3 miles) for subadult males and

20.3 km (12.6 miles) for subadult females. In the same report Maehr et al. (2002) documents a "mean dispersal distance" of 37.3 km (23.1 miles) for subadult males. Comiskey et al. (2002) documents a "mean dispersal distance" for subadult male panthers as an average distance of 40.1 km (24.9 miles) from their natal range, which is similar to the dispersal distance referenced by Maehr et al. (2002).

Therefore, for both direct and indirect effects, the Service defined the action area (Figure 7) as all lands within a 25-mile radius of the proposed bridge spans along the Tamiami Trail, which is slightly greater than the mean dispersal distance for subadult males. This action area does not include urban lands, lands east of L-30 and L-31N levees, and lands outside the Service's panther consultation area. This action area includes areas anticipated to sustain direct and indirect effects, such as roadways experiencing increased traffic, areas with increased human disturbance (project area and periphery of project), and areas in which habitat fragmentation and intraspecific aggression may be felt.

STATUS OF THE SPECIES AND CRITICAL HABITAT RANGEWIDE

The State of Florida declared the panther a game species in 1950, gave it complete protection in 1958, although not an official designation, and closed the hunting season. The Federal government listed the panther as endangered in 1967 (32 FR 4001). Heavy hunting and trapping, an inability to adapt to changes in the environment, and land development were cited as reasons for the species decline. Critical habitat has not been designated for the Florida panther, therefore, none will be affected.

Status

Of the 27 recognized subspecies of *P. concolor* described by Hall (1981), the Florida panther is the sole remaining subspecies in the eastern United States. 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 to the north with *P. c. cougar*, and to the west and northwest with *P. c. stanleyana* and *P. c. hippolestes* (Young and Goldman 1946). The Florida panther had been eliminated from most of the historic range by 1950. Occasional sightings and signs were reported throughout the rural southeast between 1950 and 1980 (Anderson 1983). The only confirmed panther population was found in south Florida (Anderson 1983).

Species Description

The Florida panther was first described by Charles B. Cory in 1896 as *Felis concolor floridana* based on a specimen he collected in Sebastian, Florida (Hall and Kelson 1959). Bangs (1899), however, noted *Felis floridana* had previously been used for a bobcat and, believing the panther was restricted to peninsular Florida and could not breed with any other form, assigned it full specific status as *Felis coryi*. The taxonomic classification of the *Felis concolor* group was revised by Nelson and Goldman (1929), and the panther was assigned subspecific status as *Felis concolor coryi*. This designation also incorporated *Felis arundivaga*, which had been classified by Hollister (1911) from specimens collected in Louisiana. Detailed descriptions of each of the

subspecies are provided in Young and Goldman (1946) (30 subspecies) and Hall (1981) (27 subspecies). The genus *Felis* was recently revised so all mountain lions, including the Florida panther, were placed in the genus *Puma* (Nowell and Jackson 1996).

The Florida panther is a medium-sized mammal described as dark tawny in color, with short, stiff hair (Bangs 1899), and having longer legs and smaller feet (Cory 1896) than other puma subspecies. Adult males reach a length of 2.15 m (7 feet [ft]) from their nose to the tip of their tail and may reach or exceed 68 kilograms (kg) (150 pounds) in weight, but typically average around 54.5 kg (120 pounds). They stand approximately 60 to 70 centimeters (23 to 27 inches) at the shoulder. Adult females are smaller, with an average weight of 34 kg (75 pounds) and length of 1.85 m (6 ft). The skull of the Florida panther has been described as having a broad, flat, frontal region, and broad, high-arched or upward-expanded nasals (Young and Goldman 1946).

The coat of an adult Florida panther is unspotted and typically rusty reddish-brown on the back, tawny on the sides, and pale gray underneath. The long cylindrical tail is slender compared to some of the other subspecies of *Puma concolor* (Belden 1989). Florida panther kittens are gray with dark brown or blackish spots and five bands around the tail. The spots fade as the kittens grow older and are almost unnoticeable by the time they are 6 months old. At this age, their bright blue eyes turn to the light-brown straw color of the adult (Belden 1989).

Three external characteristics are often observed in Florida panthers that are not found in combination with other subspecies of *Puma concolor*. These characteristics are a right angle crook at the terminal end of the tail, a whorl of hair or "cowlick" in the middle of the back, and irregular, light flecking on the head, nape, and shoulders (Belden 1986). The light flecking may be a result of scarring from tick bites (Maehr 1992a; Wilkins 1994). The kinked tail and cowlicks are considered manifestations of inbreeding (Seal et al. 1994).

Life History

Panthers are essentially solitary. Interactions between adult females and their kittens are most frequent. Interactions between adult male and female panthers are second in frequency, last from 1 to 7 days, and usually result in pregnancy. Conflicts between males are common and often result in serious injury or death to some individuals. Between October 1984 and June 2004, there were 36 known deaths attributed to intraspecific aggression (FWC 2004). While most of those were between males, one-third occurred between male and female panthers resulting in 12 deaths of females (FWC 2004). Overall, the amount of mortality from intraspecific aggression appears to be increasing with a total of 13 mortalities during the first 10 years of study and nearly double that in the second 10 years (FWC 2004). In addition, the extant of mortality in female panthers from intraspecific aggression appears to be increasing. Since 1995, 10 of the 23 known deaths from intraspecific aggression were female panthers, whereas in previous years only 2 of 13 such deaths were females (FWC 2004). Maehr et al. (1991a) believes higher densities may lead to increases in panther interactions and aggressive conflicts between male panthers, and male and female

panthers. However, aggressive encounters between females were not documented in the Maehr et al.'s (1991a) studies. Increases in published verified population numbers from 2000 to 2003 and changes in land use during the same period suggest the densities of panthers may have increased to some degree.

Panther activity levels peak around sunrise and sunset. The lowest activity levels occur during the middle of the day. Females at natal dens follow a similar pattern with less difference between high and low activity periods. Although some travel occurs during the day, panthers are mostly crepuscular (Maehr et al. 2004). There are no known differences in seasonal movements, wet and dry season habitat use, seasonal variation in diet, or effects of season on road crossings. Responses to fluctuations in water levels are believed to be not significant (Maehr et al. 1989, 1990b, 1991a).

Habitat

Human persecution over a 100-year period, along with bounty hunting, land clearing, lumbering, and market hunting of deer, resulted in a range-wide decline of the panther, and as a result, panthers now occupy just 5 percent of their former range. The remaining breeding population is in south Florida, south of the Caloosahatchee River. Maehr (1990a) estimated the occupied range of the panther in 1990 to be 2.2 million acres (880,000 ha) in south Florida. Logan et al. (1993) estimated the range to be 3.1 million acres (1,254,500 ha). The area of most consistent panther occupancy from 1981 through early 2000 was estimated by Kautz et al. (In Review) to be 2 million acres (800,951 ha). Native landscapes within the Big Cypress Swamp region of south Florida, within occupied panther range, are dominated by slash pine, cypress, and freshwater marshes, interspersed with mixed-swamp forests, hammock forests, and prairies. Private lands represent about 25 percent of the Primary, Secondary, and Dispersal Zones in south Florida (Kautz et al. In Review). The largest contiguous tract of panther habitat is the Big Cypress/Everglades ecosystem in Collier, Monroe, and Miami-Dade Counties. Suitable habitat also extends into Lee, Hendry, Charlotte, Glades, Broward, Palm Beach, Highlands, Sarasota, Polk, Osceola, Hardee, and Desoto Counties. Some researchers are of the belief the low nutrient, frequently saturated soils prevalent south of I-75 in south Florida do not produce the quality or quantity of forage required to support large herds of white-tailed deer (*Odocoileus virginianus*), a dominant prey species for panthers (see Food Habits), and believe it is unlikely habitat in Big Cypress National Park (BCNP) and Everglades National Park (ENP) is as productive as habitat on private lands in northern and western Collier County in terms of panther health, reproduction, and density (Maehr 1992a). However, more recent reports provide contradictory information (McBride 2002, 2003). In addition, according to Beier et al. (2003), the conclusion that ENP and BCNP are poor habitats for panthers is not scientifically supported.

Forests provide important diurnal habitat for panthers. Belden et al. (1988) reported Florida panthers use hardwood forests and mixed swamps more than would be expected based on their occurrence in the landscape. While panthers may seek upland forests for daytime uses, as indicated by telemetry data, Kautz et al.'s (In Review) compositional analysis also confirmed that panther home ranges also included non-forest cover types interspersed in landscapes of forest patches, including freshwater marsh, prairie and shrub lands, agricultural lands, and pasture lands.

Telemetry data are the best available information about daytime panther habitat use. However, there are limitations and assumptions that should be stated about any conclusions based on telemetry data. Beier et al. (2003) points out several biases in research by Maehr and Cox (1995) in relating the importance of forests as panther habitat. These biases are stated to result from the use of daytime telemetry locations to describe habitat use, the selective use of telemetry data, and using location of telemetry versus panthers as a sampling unit. First, the panther telemetry data is collected in the morning, which creates a disjuncture between the time of data collection (beginning shortly after 7:00 am) and the times of peak panther activity (dawn and dusk). Habitat selection by panthers may be considerably broader at dawn and dusk (Beyer and Haufler 1994; Rettie and McLoughlin 1999). Second, the majority of panthers that have been radio-collared were on public lands. Telemetry research began in the Fakahatchee Strand State Preserve in 1981 (Belden et al. 1988) and gradually expanded to include BCNP, ENP, Florida Panther National Wildlife Refuge (NWR), Picayune Strand State Forest, Okaloacoochee Slough State Forest, and Corkscrew Regional Ecosystem Watershed (CREW). It also expanded to include some telemetry data research on private lands in Collier, Hendry, Glades, and Lee Counties. Lastly, tests of the accuracy of some of the telemetry locations revealed the difference between the actual location of the transmitter and the recorded location averaged 77 m (Dees et al. 2001) and can be as large as 230 m (Belden et al. 1988). These results were obtained by placing test transmitters in known locations in the field, plotting transmitter locations from the air, and then determining the error of actual versus observed locations.

A more recent analysis (Maehr et al. 2004) suggests some likelihood daytime telemetry locations are not dissimilar to areas used by panthers at night. However, 24-hour telemetry has not returned enough data to fully address this question. Maehr et al. (1990b) found panthers were very active around sunrise, a time of day well represented by aerial telemetry data, but that Comiskey et al. (2002) claims is missing from previous analyses of panther habitat use. Although it is not known exactly what behavior each animal was engaged in at the time these data were collected, it likely included a variety of activities, *e.g.*, walking, hunting, feeding, grooming, and resting. Maehr et al. (2004) believes daytime telemetry data include periods during which panthers are quite active. However, Maehr et al. (2002) did not compare habitats recorded by observers during periods of activity (as indicated by mercury tip switches or radio-collars) to habitats available to the panther.

The Service and the FWC commissioned a SRT to do an independent critical review of literature related to ecology and management of the panther. The team (referred to as the SRT) published their findings in Beier et al. (2003). Included in these findings, the SRT: (1) encourages the acquisition and analysis of nighttime telemetry data to provide a more complete picture of Florida panther habitat use; (2) urges researchers to fully disclose and explain reasoning for selective use of data; (3) believes panthers rather than individual panther locations should be the sampling unit for determining habitat use; (4) believes vegetation maps used in habitat analysis be current with the data being analyzed; and (5) recommends to cease using a 90-m distance from forest cover, minimum sizes of forest patches, and the Panther Habitat Evaluation Model in making decisions about habitat mitigation and acquisition. Following release of these critical review findings, revised analyses of panther telemetry data and habitat use data were undertaken by Kautz et al. (In Review) to address issues associated with the use of individual panther telemetry data,

vegetation maps, and the use of the 90-m distance from forest cover. Furthermore, the Service does not use or rely on habitat assessments that incorporate the Panther Habitat Evaluation Model (Maehr and Cox 1995) in site evaluations.

Maehr and Cox (1995) studied 10 female and 13 male panthers and found the home ranges included 6 percent freshwater marsh, 5 percent grass and agriculture, 3 percent dry prairie, 3 percent shrub swamp, and 1 percent barren land; and concluded panthers can remain part of the native fauna in areas where agricultural activities exist. The above cover types, which represent open habitat, totaled 18 percent of the panther's home range. Maehr et al. (1991a) states panthers may travel through agricultural areas at night. Panthers currently in ENP have home ranges less than 10 percent forest cover (Comiskey et al. 2002). Maehr et al. (2002) found three panthers that crossed the Caloosahatchee River all went through areas with limited forest cover, and dispersing males wander widely through unforested and disturbed areas (Maehr 1992a). Beier et al. (2003) reported Comiskey et al. (2002) made a credible case that no significant relationship exists between home range size and forest cover.

Reproduction and Demography

Male panthers are polygynous and maintain large home ranges that may overlap home ranges of others males, although not to the extent overlapping that of several females. Breeding peaks in fall and winter (Maehr 1992b). Gestation lasts 90 to 96 days. Parturition is distributed throughout the year with the majority of births occurring between March and July. Prenatal litters range from three to four. Postnatal litters range from one to four kittens (FWC 2001). Litters surviving to 6 months of age average 2.2 kittens. Female panthers losing their litters generally produce replacement litters within the same breeding season. Intervals between litters range from 19 to 22 months (FWC 2004). Den sites are usually located in dense, understory vegetation, typically saw palmetto (Maehr 1990a).

Historical records of den sites and birth rates for the past 5 years for the Florida panther, based on data provided by the FWC (2004), were: 7 dens, 18 kittens in 2003/2004; 6 dens, 17 kittens in 2002/2003; 12 dens, 26 kittens in 2001/2002; 8 dens, 21 kittens in 2000/2001; and 6 dens, 17 kittens in 1999/2000. Based on 2.5 kittens per den and an understanding a female panther will generally produce kittens every other year, the female population is estimated to include an average of 14 to 16 producing females with 7 to 8 females per year producing 18 to 20 kittens per year.

Early estimates of infant mortality varied and were in conflict. For example, Roelke et al. (1993) characterized infant mortality as relatively high with fewer than half of all births resulting in offspring that survive beyond 6 months of age. Land (1994) estimated the kitten survival rate between age 6 months and 1 year at 0.895, based on a sample of 15 radio-instrumented kittens. More recently, however, the FWC has been visiting den sites of female Florida panthers and Texas puma females since 1992 and has documented the number of kittens that survived to 6 months of age for 38 of these litters (FWC 2004). Florida panther and Texas puma kitten survival to 6 months-of-age were estimated to be 52 and 72, respectively, but were not significantly different (P=0.2776) (FWC 2004). Average kitten survival, therefore, was 62 from birth to 6 months of age (FWC 2004). The FWC (2004) determined the survival of kittens

greater than 6 months of age by following the fates of 55 radio-collared dependent-aged kittens, including 17 Texas puma descendants from 1985 to 2004. They found only 1 of these 55 kittens died before reaching independence (a 98.2 percent survival rate) (FWC 2004). Twenty-three of 24 female panthers, first captured as kittens, became residents and 18 (78.3 percent) produced litters. One female was too young to determine residency status (FWC 2004). Female panthers were considered as adult residents if they were older than 18 months of age, established home ranges, and bred or if they were older than 3 years of age and established a home range (Maehr et al. 1991b). Twenty-eight of the 31 male panthers became residents; three males were too young to determine residency status (FWC 2004). Male panthers were considered residents if they were older than 3 years of age and established a home range that overlapped with females (FWC 2004).

Females are readily recruited into the population as soon as they are able to breed (Maehr et al. 1991a). Age at first reproduction has been documented as early as 18 months for females (Maehr et al. 1989). However, 50 percent of known panther dens were initiated by females aged 2 to 4 years. Females aged 5 to 11 years initiated the remaining 50 percent.

The first sexual encounters for males have occurred at about 3 years of age (Maehr et al. 1991a). Dispersing females are quickly assimilated into the resident population, typically establishing home ranges less than 1 home range width from their natal ranges (Maehr et al. 2002), while males usually go through a period as transient (non-resident) subadults, moving through the fringes of the resident population and often occupying suboptimal habitat until an established range becomes vacant (Maehr 1997). Turnover in the breeding population is low and documented mortality in radio-collared panthers is greatest in subadult and non-resident males (Maehr et al. 1991b). Maehr (1990a) believes there is a lack of unoccupied suitable habitat for dispersing subadult Florida panthers, which may increase fighting among males, and successful male recruitment appears to depend on the death or home range shift of a resident adult male (Maehr et al. 1991a). However, more recent population data (FWC 2004) show an increase in population numbers, home ranges, and subadults panthers, which is in conflict with Maehr's (1990a) data. The increase in panthers is believed to be associated in part with the genetic restoration benefits from the introduction of Texas cougars into the Florida panther population (FWC 2004).

Natural genetic exchange with other panther populations ceased when the Florida panther became geographically isolated over a century ago (Seal et al. 1994). Isolation, reduced population size, and inbreeding resulted in loss of genetic variability and diminished health. Data on polymorphism and heterozygosity, along with records of multiple physiological abnormalities, suggest the panther population has experienced inbreeding depression (Roelke et al. 1993; Barone et al. 1994). Inbreeding depression has been related to decreased semen quality, lowered fertility, reduced neonatal survival, and congenital heart defects in a variety of domesticated and wild species (Lasley 1978; Ralls and Ballou 1982; Wildt et al. 1982; O'Brien et al. 1985; Roelke 1991). Congenital heart defects have been shown to be related to diminished panther survival and reproduction (Roelke 1991; Dunbar 1993; Barone et al. 1994). The Florida panther exhibits diminished male reproductive characteristics compared to other populations of *Puma concolor* in North and Latin America (Barone et al. 1994). In a comparison of 16 male Florida panthers and 51 males from *Puma concolor* populations in Texas, Colorado, Latin

America, and North American zoos, Wildt (1994) found a much higher rate of unilateral cryptorchidism (43.8 versus 3.9 percent), lower testicular and semen volumes, diminished sperm motility, and a greater percentage of morphologically abnormal sperm in the Florida panther samples.

Measured heterozygosity levels indicate the Florida panther has lost 60 to 90 percent of its genetic diversity (Culver et al. 2000). Measured levels of mitochondrial DNA variation are the lowest reported for any similarly studied feline population, including leopards, cheetahs, and other *Puma concolor* subspecies. Electrophoretic analyses also indicated the Florida panther has less genetic variation than any other *Puma concolor* subspecies. Panther DNA fingerprint variation is nearly as low as in the small, isolated population of Asiatic lions of the Gir Forest Sanctuary in India (Roelke et al. 1993).

A genetic restoration program was initiated for the Florida panther in 1995. FWC (2001, 2003, 2004) indicated representation of Texas cougar genes in the south Florida population is probably close to the goal of 20 percent (Seal et al. 1994), although two of the eight Texas females are over-represented. The occurrence of kinked tails and cowlicks has been reduced in intercross progeny. Information on other morphological traits associated with genetic isolation and inbreeding such as cryptorchidism sperm deformities, atrial septal heart defects, and skull morphology cannot be collected until the intercross progeny mature or pass away. However, the fecundity of the intercross progeny would seem to indicate sperm deformities have been reduced. For example, one first-generation male captured and examined in the field by Smithsonian Theriogenologist, Dr. Jo Gayle Howard, had a sperm count 3 times that of a Florida panther, a sperm motility rate twice as high, a percentage of normal sperm 4 times greater, and a sperm concentration 10 times higher (McBride 2001). Since the genetic restoration program was initiated in 1995, the number of panthers monitored annually has increased, highway mortality has increased, and panthers have moved into formerly unoccupied niches on public land in south Florida (McBride 2002). This may indicate a more robust population that varies dramatically from population parameters prior to 1995. However, Maehr and Lacy (2002) recommended caution in claiming success through genetic management. They state it is likely local prey populations cannot support the increased number of panthers over the long term, and as long as the panthers are restricted to southwest Florida, the problems of inbreeding and genetic variation that led to the genetic restoration program will return. Still, McBride (2002) states panther recovery continues to benefit from genetic restoration and an existing State land acquisition program (for large tracts of land) north of BCNP will provide additional benefits.

Mortality, Trauma, and Disturbance

Records of mortality on uncollared panthers have been kept since February 13, 1972, and records of mortality on radio-collared panthers have been kept since February 10, 1981. A total of 143 panther mortalities have been documented through June 2004, with 59 (41 percent) known deaths occurring in the past 4 years (FWC 2001, 2002, 2003, 2004). Overall, documented mortality ($n = 99$) of radio-collared and uncollared panthers averaged 3.4 per year through June 2001. However, from July 2001 through June 2004, documented mortality ($n = 48$) increased with an average of 16.0 per-year during these years (FWC 2002, 2003, 2004).

Eighty-four free roaming, radio-collared panthers have died since 1981, and intraspecific aggression was the leading cause accounting for 41 percent of these mortalities (74 percent males and 26 percent females) (FWC 2004).

Unknown causes and collisions with vehicles accounted for 24 percent and 19 percent of mortalities, respectively. Other factors (7 percent), infections (5 percent), and diseases (4 percent) caused the remaining mortalities (FWC 2004). Except for intraspecific aggression, the causes of mortality were found to be independent of gender (FWC 2004). It is likely, some causes, such as road mortality, are more likely to be found and, therefore, are over represented in the above total.

Between February 13, 1972, and June 30, 2004, Florida panther vehicular trauma ($n = 73$), averaged 2.3 panthers per year (FWC 2004). From July 1, 2004, through December 2005, there were 14 additional instances of vehicular trauma (FWC, unpublished data), for a total of 87 instances. Although the relative significance of vehicular trauma to other sources of mortality is not entirely known, it has been the most often documented source of mortality (Maehr 1989; Maehr et al. 1991b) because the death of uncollared panthers, due to other causes (*e.g.*, intraspecific aggression, old age, disease, etc.) often goes undetected.

There are presently 28 wildlife underpasses with associated fencing suitable for panther use along I-75 (Figure 7). There are four underpasses suitable for panther use currently existing, and two additional underpasses presently proposed by the Florida Department of Transportation (FDOT) along U.S. Highway 29 (US 29) (Department of the Army Public Notice SAJ-2004-778) (Figure 7). Several additional panther/wildlife crossings are proposed along roadways in rural Lee and Collier Counties in addition to the proposals along US 29 (FWC 2001). In addition, Collier County, in cooperation with the National Wildlife Federation and the Florida Wildlife Federation, is coordinating a study of the segment of CR 846 east of Immokalee and the section of Oil Well Road where the road crosses Camp Kies Strand by Dr. Reed Noss and Dr. Daniel Smith to determine the optimum location for wildlife crossing construction (WilsonMiller 2005). However, vehicular trauma still occurs on outlying rural roads and the FWC is conducting a study to determine the impacts of vehicular collisions to panthers and studying ways to minimize panther vehicle collisions (FWC In Review).

In an examination of the location of panther-suitable wildlife crossings and locations of vehicular collisions, we note that after installation, no collisions have been recorded in the immediate vicinity of those crossings, with the exception of one recent collision in December 2005 on SR 29. There have been no collisions on east-west I-75 in the vicinity of crossings since installation in 1991. Prior to 1991, there were five recorded deaths from collisions. The FDOT has also identified the location of, the proposed the construction of, and the construction of several wildlife crossing on SR 29. Proposed crossings A and B (Figure 7) will be in an area of 10 documented collisions from 1980 to 2004. Existing crossings C and D, north of I-75, were installed in 1995. There were two recorded collisions in the vicinity of crossing D from 1979 to 1990, but none at either C or D since crossing installation. Existing crossing E was installed in 1997. There has been one collision approximately 1 mile to the north in 2002. Existing

crossing F was installed in 1999. There was one documented collision in the immediate vicinity in 1981, two collisions approximately 1.5 miles to the north since crossing installation, and one collision approximately 0.5 mile to the south in December 2005.

Florida panthers were hunted for bounty during the 1800s and for sport up until the 1950s (Tinsley 1970). Seven panther shootings, six fatal and one non-fatal, were documented between 1978 and 1986. A female Texas puma introduced for genetic restoration was shot in 1998 (FWC 1999). Education, self-policing among hunters and regulation are the tools by which shootings are minimized. All free-ranging pumas in Florida are protected by a "similarity of appearance" provision in the ESA (56 FR 40265-40267; August 14, 1991).

Food Habits

Florida panther food habit studies indicate commonly consumed prey include feral hog (*Sus scrofa*), white-tailed deer, raccoon (*Procyon lotor*), nine-banded armadillo (*Dasypus novemcinctus)*, and alligator (*Alligator mississippiensis*) (Maehr et al. 1990a; Dalrymple and Bass 1996). Adult panthers generally consume one deer or hog per-week, supplemented by opportunistic kills of smaller prey (Maehr 1997). A female with kittens may need the equivalent of two such kills per-week. The high caloric intake needed to sustain successful reproduction and rearing of kittens is best achieved when a dependable supply of large prey is available (Roelke 1990). Deer and hogs accounted for 85.7 percent of consumed biomass north of I-75 and 66.1 percent south of I-75 (Maehr et al. 1990a). Differences in prey abundance and availability were indicated by an eight-fold greater deer abundance north of I-75 versus south of I-75, although the estimated number of deer consumed did not differ between the north and south portions of the study area. Hog numbers were lower south of I-75. Hogs dominated the diet of panthers in the north in terms of both estimated biomass and numbers. In the south, deer accounted for the greatest estimated biomass consumed, whereas raccoons were the highest estimated number of prey items consumed. Domestic livestock were found infrequently in scats or kills, although cattle were readily available north of I-75 (Maehr et al. 1990a). There appears to be a consensus among land managers and Federal biologists that white-tailed deer and wild hogs are the dominant prey for panther, while rabbits, raccoon, and armadillos are of secondary importance (Beier et al. 2003).

Prey Density

Panther prey density, especially deer, is an important factor in evaluating panther habitat. The type and number of prey available affects the health and distribution of panthers, as well as their ability to breed and support young. Environmental factors, specifically the availability of high quality forage, affect the prey density and influence the carrying capacity and population dynamics of the prey species, especially deer herds (Fleming et al. 1993). In the Everglades region, deer inhabit a variety of landscape types, including pinelands, high ridges, and adjacent periphery wetlands, which include the mosaic of sawgrass and wet prairie savannahs and sloughs that comprise the interior freshwater marshes and coastal mangrove forest.

Deer are ruminants, with small stomach capacities, and are selective for high quality forage to meet their nutritional needs. To meet these high quality forage needs, deer selectively move through the mosaic of habitat types taking advantage of the seasonal forage that provide the most benefit to the deer. Water management practices have reduced habitat heterogeneity and the sequence of seasonal and successional patterns of plant growth and appear to have affected deer abundance (Fleming et al. 1993).

Other adverse changes in habitat characteristics that affect deer density include the invasion of exotics into native uplands, over drainage of marshes, and the establishment of monotypic stands of unpalatable plant species, generally resulting from nutrient enrichment related to agricultural and urban runoff. The replacement of these native plant communities reduces important habitat heterogeneity and the ability of deer to meet their critical dietary needs. For example, deer densities on over-drained, exotic species-infested private lands being developed in northwest Lee County averaged one deer per 591 acres (Turrell 2001) to one deer per 534 acres (Passarella 2004). As a contrasting example, in historic communities in the Everglades Wildlife Management Areas, deer densities in the mid-to-late 1950s averaged one deer per 100 acres (40 ha) when the vegetative community was a mosaic of native species, whereas more recent surveys after succession of the native community to a monotypic stand of cattails (1993) showed a 67 to 76 percent decrease (one deer per 300 acres to one deer per 475 acres) of the 1959 population estimate (Fleming et al. 1993).

In further comparison to higher quality habitat communities, deer densities in wildlife management areas in the BCNP's Corn Dance Unit were predicted to be between one deer per 165 acres and one deer per 250 acres (Steelman et al. 1999). However, deer densities in these units may also have been affected by off road vehicle use. Predictions of deer density in Fakahatchee Strand were estimated to be higher than one deer per 18.2 acres (McCown 1991). Deer densities in the Mullet Slough area of BCNP yielded an estimated density range of one deer per 93 acres and one deer per 250 acres. The Stairsteps Unit of BCNP support densities of one deer per 190 acres to one deer per 218 acres from track count estimates. Aerial surveys for the same units used after 1982, estimated deer densities between one deer per 60 acres and one deer per 2,643 acres (Steelman et al. 1999). Harlow (1959) predicted deer density in wet prairie habitat in Florida to be one deer per 115 acres.

Movements and Dispersal

Adult Florida panthers occupy available habitat in a pattern similar to western cougars (Land 1994). More than 7,000 telemetry locations on 26 radio-collared panthers between 1985 and 1990 indicated home range size varied from 21 to 461 square miles (53 to 1,194 square km), averaging 200 square miles (519 square km) for resident males and 75 square miles (193 square km) for resident females. Beier et al. (2003) found estimates of panther home ranges varying from 74 to 153 square miles (193 to 396 square km or 47,359 to 97,920 acres) for females and 168 to 251 square miles (435 to 650 square km or 107,520 to 160,639 acres) for males to be reliable. The most current estimate of home-range sizes (minimum convex polygon method) for established, non-dispersing adult panthers, based on radio-collared panthers monitored during the 2003-2004 genetic restoration and management annual monitoring report ($n = 37$), averaged 60.3 square miles (156.1 square km or 38,572 acres) for females ($n = 22$) and

160.6 square miles (416 square km or 102,794 acres) for males (n = 10) (FWC 2004). Home ranges of resident adults were stable unless influenced by the death of other residents and home range overlap was extensive among resident females and limited among resident males (Maehr et al. 1991a).

Maehr et al. (1990b) monitored five solitary panthers continuously for 130-hour periods seasonally from 1986 to 1989, rarely observing measurable shifts in location during the day, but nocturnal shifts in location exceeding 20 km (12.4 miles) were not unusual. Maehr et al. (2002) in a later report documents a "mean maximum dispersal distance" of 42.3 miles (68.1 km) for subadult males and 12.6 miles (20.3 km) for subadult females. In the same report Maehr et al. (2002) documents a "mean dispersal distance" of 37.3 km for subadult males. Dispersal patterns tend to be circular and of insufficient length to ameliorate inbreeding. Comiskey et al. (2002) documents a "mean dispersal distance" for subadult male panthers as an average distance of 40.1 km (24.9 miles) from their natal range, which is similar to the dispersal distance reference by Maehr et al. (2002). Subadult dispersal typically occurs around 1.5 to 2 years of age, but may occur as early as 1 year of age. Dispersing males wander widely through unforested and disturbed areas (Maehr 1992a).

Janis and Clark (1999) compared the behavior of panthers before, during, and after the recreational deer and hog-hunting season (October through December) in areas opened (BCNP) and closed (Florida Panther NWR, Fakahatchee Strand State Preserve) to hunting. The variables examined were: (1) morning activity rates; (2) movement rates; (3) predation success; (4) home range size; (5) home range shifts; (6) habitat selection; (7) distance from panther locations to trails; and (8) frequency of panther use in the Bear Island Unit of BCNP. The authors failed to detect any relationship between hunting and the first 6 variables. Of the last 2 variables, they determined the distance of panther locations from trails increased an average of 0.31 mile (0.57 km) and the frequency of panther use in the Bear Island Unit decreased from 30 up to 40 percent during the hunting season. An analysis of movement rates, a measure of energy expenditure, predation success, and energy intake do not indicate any direct, negative energetic responses to increased human activity during the hunting season. However, the increase in average distance from trails and decrease in panther use of the Bear Island Unit are indicative of a behavioral change. Janis and Clark (1999) surmise the increase in the distance of panther locations from trails is "biologically minor" and probably related to prey behavior (*i.e.*, white-tailed deer moving deeper into the forest to avoid hunters). The decrease in panther use of the Bear Island Unit is balanced by an increase in use of private lands north of BCNP as "refugia." However, Beier et al. (2003) finds this and other studies of hunting impacts to panthers to be inconclusive.

Disturbance

Panthers, because of their wide-ranging movements and extensive spatial requirements, are also particularly sensitive to habitat fragmentation (Harris 1985). Mac et al. (1998) defines habitat fragmentation as: "The breaking up of a habitat into unconnected patches interspersed with other habitat which may not be inhabitable by species occupying the habitat that was broken up. The breaking up is usually by human action, as, for example, the clearing of forest or grassland for agriculture, residential development, or overland electrical lines." The reference to

"unconnected patches" is a central underpinning of the definition. For panther conservation, this definition underscores the need to maintain corridors connecting habitat in key locations of south Florida. Habitat fragmentation can result from road construction, urban development, and agricultural land conversions within migratory patterns of panther prey species and affect the ability of panthers to move freely throughout their home ranges. Construction of highways in wildlife habitat typically results in loss and fragmentation of habitat, traffic related mortality, and avoidance of associated human development. Roads can also result in habitat fragmentation, especially for females who are less likely to cross them (Maehr 1990a).

Kautz et al. (In Review) estimated approximately 27 percent of panther habitat within the Primary Zone is on private land. Maehr (1990a) indicated development of private lands may limit panther habitat to landscapes under public stewardship. From March 1984 through January 4, 2006, the Service concluded or is concluding consultation on 63 projects involving the panther and habitat preservation (Table 1). The minimum expected result of these projects is impacts to 89,402 acres and the preservation of 29,434 acres of panther habitat (Table 1). Of the 89,402 acres of impacts, 39,918 are due to agricultural conversion and 49,484 acres to development and mining. Portions (10,370 acres) of the largest agricultural conversion project, the 28,700 acres by U.S. Sugar Corporation, were re-acquired by the Federal Government as a component of the Talisman Land Acquisition (Section 390 of the Federal Agricultural Improvement and Reform Act of 1996 [Public Law 104-127] Farm Bill Cooperative Agreement, FB4) for use in the Comprehensive Everglades Restoration Project. The non-agriculture impacts are permanent land losses, whereas the agricultural conversions may continue to provide some habitat functional value to panthers, depending on the type of conversion. However, these land conversions provide less functional value than native habitats. The 49,484 acres of expected impacts from development and mining included a mixture of agricultural fields consisting of row crops and citrus groves and natural lands with varying degrees of exotic vegetation. Management actions on some of the lands preserved include exotic species removal, fire management, wetland hydrology improvement, improved forest management practices, and recreational benefit improvements.

Habitat Management

Prescribed burning is probably the single most important habitat management tool available to public land stewards. Dees et al. (1999, 2001) examined panther use of habitat in response to prescribed burning at Florida Panther NWR and BCNP between 1989 and 1998. The greatest temporal response by panthers to burning in pine was within 1 year followed by a decline in subsequent years and is likely due to the rapid re-growth of vegetation, which attracted prey (Dees et al. 2001). Panthers demonstrated notable selection for pine stands that had been burned within 1 year relative to older burns. Compositional analysis showed that panthers were more likely to position their home ranges in areas that contained pine. Dees et al. (2001) suggest that panthers were attracted to less than 1-year-old burns because of white-tailed deer and other prey responses to vegetation and structural changes caused by prescribed fire. According to Dees et al. (2001), it was the effect of burning in pine, rather than the pine per se, which most influenced habitat selection by panthers. However, they caution that the effects of shorter burning intervals on vegetation composition and landscape-level changes be determined before burning rotations are reduced.

To counteract the threat of exotic species invasion and monotypic stands of unpalatable plant species, all public land and most private land managers pursue exotic and invasive species management and habitat improvement through fire management and eradication programs. However, these actions are restricted by available funds to implement these programs.

Land Conservation Trends

The 1.4-million-acre ENP was established in 1947, more than 2 decades before the Florida panther was listed as endangered. The 577,000-acre BCNP was established in 1974, just 1 year after passage of the ESA. Additional State and Federal acquisitions since the establishment of ENP and BCNP include Fakahatchee Strand Preserve State Park (58,373 acres), Florida Panther NWR (26,400 acres), Picayune Strand State Forest (55,200 acres), Collier-Seminole State Park (7,271 acres), Okaloacoochee Slough State Forest (34,962 acres), and CREW (24,028 acres). As of April 2001, non-profit organizations, local governments, State and Federal agencies, and Tribes have protected approximately 2.21 million acres of panther habitat south of the Caloosahatchee River within the Primary, Secondary, and Dispersal Zones (Kautz et al. In Review). These protected lands are the cornerstones for the Service's continuing effort to work in tandem with the private sector and State and county government, to preserve and manage panther habitat. These lands are protected by conservation easements or transferred by title to public entities to manage.

Distribution

A variety of human activities contributed to the decline of the Florida panther. The first bounty on Florida panthers was passed in 1831. An 1887 Florida law authorized a payment of $5 for scalps (Tinsley 1970). Panthers were also shot on sight, hunted, poisoned, and trapped. Agricultural land clearing in the southeastern United States between 1850 and 1909 totaled 31.6 million acres (12.8 million ha). Lumbering reduced the original southern forest nearly 40 percent from 300 million acres (121.4 million ha) to 178 million acres (72.0 million ha) by 1919 (Williams 1990). Meanwhile the white-tailed deer, primary prey of the panther, was reduced from a range-wide population of about 13 million in 1850, to under 1 million by 1900 (Halls 1984). Over a 100-year period, bounty hunting, land clearing, lumbering, and market hunting of deer contributed to the range-wide decline of the panther.

At the beginning of the 20th century, the Florida panther population may have numbered as many as 500 (Seal et al. 1989). The State of Florida declared the panther a game species in 1950 and in 1958 totally protected the animal. In the 1970s, the FWC established a Florida Panther Record Clearinghouse to ascertain the status of the panther. The first field searches were made in 1972. The Florida Panther Act, a State law enacted in 1978, made killing the panther a felony.

Telemetry investigations began in 1981, primarily on public lands in southwest Florida. Maehr et al. (1991a) estimated the average density of panthers in southwest Florida between February and July 1990 to be one panther per 42.95 square miles (110 square km or 27,456 acres). When extrapolated over a 1,945.9-square-mile (5,040-square-km or 1,257,979-acre) area thought to be occupied by radio-collared panthers in southwest Florida, the estimated population of the area was 46 adults (9 resident males, 28 resident females, and 9 transient males) between

December 1985 and October 1990. This estimate assumed homogeneous density and similar age and sex composition over time and space. Maehr et al. (1991a) considered the actual population to be higher because the estimation technique excluded panthers in ENP, eastern BCNP, and areas north of the Caloosahatchee River. The Florida Panther Interagency Committee, comprised of the Service, National Park Service, Florida Department of Environmental Protection, and the FWC, estimated the population in 1993 at 30 to 50 adults (Logan et al. 1993). More recent estimates show a panther population (adults and subadults) of 62 in 2000 (McBride 2000), 78 in 2001 (McBride 2001), 80 in 2002 (McBride 2002), and 87 in 2003 (69 adults and 18 yearlings) (FWC 2003). No documented population number has been provided by FWC for 2004 to date. However, D. Land (FWC, personal communication, November 2004) estimates the population to be between 70 and 100 panthers.

Human persecution over a 100-year period, along with bounty hunting, land clearing, lumbering, and market hunting of deer, resulted in a range-wide decline of the panther, and as a result panthers now occupy just 5 percent of their former range. The remaining breeding population is in south Florida, south of the Caloosahatchee River. Dispersing males occasionally cross the Caloosahatchee River and have been observed in rural habitats of south-central Florida.

In the south Florida breeding population, habitat loss, habitat fragmentation, habitat degradation, and increased human disturbance resulting from agricultural and residential development are now considered among the primary threats to long-term panther persistence. Continued development associated with the expansion of Florida's urbanized east coast, urban development on the west coast, and the spread of agricultural development in the south Florida interior, have placed increasing pressure on panthers and panther habitat (Maehr 1990b, 1992b; Maehr et al. 1991a). Past land use activity, hydrologic alterations, road construction, and lack of fire management (Dees et al. 1999) have also affected the quality and quantity of panther habitat.

In southwest Florida, agriculture development between 1986 and 1990 resulted in a row crop acreage increase of 8,990 acres (3,640 ha) or 21 percent; a sugarcane increase of 16,000 acres (6,475 ha) or 21 percent; and a citrus increase of 54,000 acres (21,850 ha) or 75 percent. Rangeland, much of it suitable for panther occupation, decreased by 160,000 acres (64,750 ha) or 10 percent. In a more current analysis, (B. Stys, FWC, unpublished data, 2002) performed a change detection analysis for Collier, Lee, Hendry, Charlotte, and Glades Counties, and found the area of disturbed lands in these five counties increased 31 percent between 1986 and 1996. Most (66 percent) of the land use change over the 10-year period was due to conversion to agricultural. Forest cover types accounted for 42 percent of land use conversions, dry prairies accounted for 37 percent, freshwater marsh accounted for 9 percent, and shrub/brush lands accounted for 8 percent.

Residential, commercial, and industrial development projects may have an adverse direct effect on the Florida panther through: (1) the permanent loss and fragmentation of panther habitat; (2) the permanent loss and fragmentation of habitat that supports panther prey; (3) the loss of available habitat for foraging, breeding, and dispersing panthers; and (4) a reduction in the geographic distribution of habitat for the species. Indirect effects may include: (1) an increased risk of roadway mortality to panthers traversing the area due to the increase in vehicular traffic; (2) increased disturbance to panthers in the project vicinity due to human activities; (3) the reduction

in panther prey; (4) the reduction in value of panther habitat adjacent to the project due to habitat fragmentation; and (5) a potential increase in intraspecific aggression between panthers (and an increase in mortality of subadult male panthers) due to reduction of the geographic distribution of habitat for the panther.

Verified Panther Population

In September 2003, the documented south Florida panther population was 87 adults and subadults, not including kittens at the den (FWC 2003). The south Florida panther population has shown an increase in the survivability of young and juveniles (McBride 2003) and an increase in the population estimates from 62 in 2000 (McBride 2000) to 78 in 2001 (McBride 2001) to 80 in 2002 (FWC 2002) to 87 in 2003 (FWC 2003). No documented population number has been provided by FWC for 2004; however, D. Land (FWC, personal communication, November 2004) estimates the population to be between 70 and 100 panthers.

Population Dynamics

PVA has emerged as key components of endangered species conservation. This process is designed to incorporate demographic information into models that predict if a population is likely to persist in the future. PVAs incorporate deterministic and stochastic events including demographic and environmental variation, and natural catastrophes. PVAs have also been criticized as being overly optimistic about future population levels (Brook et al. 1997) and should be viewed with caution; however, they are and have been shown to be surprisingly accurate for managing endangered taxa and evaluating different management practices (Brook 2000). They are also useful in conducting sensitivity analyses to determine where more precise information is needed (Hamilton and Moller 1995; Beissinger and Westphal 1998; Reed et al. 1998; Fieberg and Ellner 2000).

As originally defined by Shaffer (1981), "a minimum viable population for any given species in any given habitat is the smallest isolated population having a 99 percent chance of remaining extant for 1,000 years despite the foreseeable effects of demographic, environmental and genetic stochasticity, and natural catastrophes." However, the goal of 95 percent probability of persistence for 100 years is the standard recommended by population biologists and is used in management strategies and conservation planning, particularly for situations where it is difficult to accurately predict long-term effects (Sarkar 2004; Shaffer 1978, 1981, 1987).

A total of 108 Florida panthers since 1981 have been radio-collared and monitored on public and private lands throughout south Florida (Maehr et al. 2002; Shindler et al. 2001). These data were used by researchers to estimate survival rates and fecundity and were incorporated into PVA models previously developed for the Florida panther (Cox et al. 1994; Kautz and Cox 2001; Seal et al. 1989, 1992; Maehr et al. 2002). These models incorporated a range of different model parameters such as general sex ratios, survival rates, age distributions, and various levels of habitat losses, density dependence, and intermittent catastrophes or epidemics. The outputs of these models predicted a variety of survival scenarios for the Florida panther and predicted population levels needed to ensure the survival of the species.

The Service, in February 2000, in order to develop an updated landscape-level strategy for the conservation of the Florida panther population in south Florida, appointed the Florida Panther Subteam. This Subteam is part of the overarching MERIT. MERIT includes more than 30 members representing Federal, State, and local governmental agencies, the Seminole Tribe of Florida, the Miccosukee Tribe of Indians of Florida, academia, industry, and the private sector, and was created with the purpose of overseeing the implementation of the recovery and restoration tasks identified in the MSRP. One of the actions the Subteam evaluated was the current status of the Florida panther and the various PVA models developed. Based on this assessment, members of the Subteam requested the development of an updated set of PVA models for the Florida panther. These models, developed and presented by Root (2004), were based on RAMAS GIS software (Akçakaya 2002). These models were used to perform a set of spatially explicit PVAs.

Three general single-sex (*i.e.,* females only) models were constructed using demographic variables from Maehr et al. (2002) and other sources. A conservative model was based on Seal and Lacy (1989); a moderate model was based on Seal and Lacy (1992); and an optimistic model was based on the 1999 consensus model of Maehr et al. (2002). In each model, first-year juvenile survival was set at 62 percent based on recent information from routine panther population monitoring (Shindle et al. 2001). All models assumed a 1:1 sex ratio, a stable age distribution, 50 percent of females breeding in any year, and an initial population of 41 females (82 individuals including males), the approximate population size in 2001-2002 (McBride 2001, 2002).

Basic Versions: The basic versions of each model incorporated no catastrophes or epidemics, no change in habitat quality or amount, and a ceiling type of density dependence. The basic versions of the models incorporated a carrying capacity of 53 females (106 panthers - 50/50 sex ratio). Variants of the models were run with differing values for density dependence, various levels of habitat loss, and intermittent catastrophes or epidemics. Each simulation was run with 10,000 replications for a 100-year period. The minimum number of panthers needed to ensure a 95 percent probability of persistence for 100 years was estimated in a series of simulations in which initial abundance was increased until probability of extinction at 100 years was no greater than 5 percent. More detailed information concerning the PVA model parameters appears in Root (2004).

The results of these model runs predicted a probability of extinction for the conservative model of 78.5 percent in 100 years with a mean final total abundance of 3.5 females. Also, the probability of a large decline in abundance (50 percent) was 94.1 percent. The moderate model resulted in a 5 percent probability of extinction and mean final abundance of 42.3 females in 100 years. The probability of panther abundance declining by half the initial amount was 20 percent in 100 years under the moderate model. The optimistic model resulted in a 2 percent probability of extinction and mean final abundance of 51.2 females in 100 years. The probability of panther abundance declining by half the initial amount was only 9 percent in 100 years under the optimistic model. These models also provide a probability of persistence (100 percent minus probability of extinction) over a 100-year period of 95 percent for the moderate model and 98 percent for the optimistic model.

One Percent Habitat Loss: Model results were also provided by Root (2004) for probability of extinctions for 1 percent loss of habitat, within the first 25 years of the model run. The 1 percent loss of habitat equates to essentially all remaining non-urban privately owned lands in the Primary Zone and corresponds to the estimated rate of habitat loss (Root 2004) from 1986 to 1996 for the five southwest counties based on land use changes. For the moderate model, the model runs predict a probability of extinction increase of approximately one percent, from a probability of extinction of approximately 5 percent with no loss of habitat to 6 percent with 1.0 percent habitat loss per year, for the first 25 years. For the optimistic model, probability of extinction increased from approximately 2 percent with no loss of habitat to 3 percent with 1.0 percent habitat loss per year, for the first 25 years. These models also predicted the mean final abundance of females would decrease from 41 to 31 females, a 24.3 percent reduction for the moderate model and from 41 to 38 females, a 7.3 percent reduction for the optimistic model.

The model runs also predict a probability of persistence (100 percent minus the probability of extinction) over a 100-year period of approximately 94 percent for the moderate model and 97 percent for the optimistic model. The model runs, predict a mean final abundance of 62 individuals (31 females and 31 males) for the moderate model and 76 individuals (38 females and 38 males) for the optimistic model.

Population Guidelines: Kautz et al. (In Review), following review of the output of Root's PVA models and those of other previous PVAs for the Florida panther, suggested a set of population guidelines for use in management and recovery of the Florida panther. It is important to state that these broad guidelines represent a review of previous science, and not a new PVA. These guidelines are: (1) populations of less than 50 individuals are likely to become extinct in less than 100 years; (2) populations of 60 to 70 are barely viable and expected to decline by 25 percent over 100 years; (3) populations of 80 to 100 are likely stable but would still be subject to genetic problems (*i.e.*, heterozygosity would slowly decline); and (4) populations greater than 240 have a high probability of persistence for 100 years and are demographically stable and large enough to retain 90 percent of original genetic diversity.

Population guidelines for populations of panthers between 50 and 60 individuals and between 70 and 80 individuals were not specifically provided in Kautz et al. (In Review). However, the Service views the guidelines in Kautz et al. (In Review) as a continuum. Therefore, we consider populations of 50 to 60 individuals to be less than barely viable or not viable with declines in population and heterozygosity. Similarly, we consider populations of 70 to 80 to be more than barely viable or somewhat viable with some declines in population and heterozygosity. Like other population guidelines presented in Kautz et al. (In Review), these assume no habitat loss or catastrophes.

PVA Summaries and Population Guidelines: Root's (2004) moderate model runs, which have a carrying capacity 53 females (106 individuals), show final populations of 42.3 females (84 total) and 31.2 females (62 total) with extinction rates of 5 percent and 6 percent, respectively, for the basic and 1 percent habitat loss scenarios. The predicted final populations in Root (2004) are 84 and 62 panthers for no loss of habitat and 1 percent loss of habitat, respectively, over a 100-year period.

Kautz et al.'s (In Review) population guidelines applied to the Root (2004) moderate models for a population of 62 to 84 panthers, with or with/out habitat loss, respectively, describe the "with habitat loss" population as barely viable and expected to decline by 25 percent over a 100-year period. The "without habitat loss" is likely stable but would still be subject to genetic problems.

In conclusion, the Service believes the model runs show that lands in the Primary Zone are important to the survival and recovery of the Florida panther and that sufficient lands need to be managed and protected in southwest Florida to provide for a population of 80 to 100 panthers, the range defined as likely stable over 100 years, but subject to genetic problems. As discussed in the following section, the Service has developed a southwest Florida panther conservation goal that, through regulatory reviews and coordinated conservation efforts with land owners and resource management partners, provides a mechanism to achieve this goal.

Model Violations: The actual likelihood of population declines and extinctions may be different than the guidelines and models suggest, depending upon the number of and severity of assumptions violated. The Service realizes that habitat loss is occurring at an estimated 0.8 percent loss of habitat per year (R. Kautz, FWC, personal communication, 2003). The Service has accounted for some habitat loss and changes in habitat quality within its regulatory program, and specifically through its habitat assessment methodology (discussed in the Effects of the Action). For example, we have increased the base ratio used within this methodology to account for unexpected increases in habitat loss. Similarly, we consider changes in habitat quality and encourage habitat restoration wherever possible.

With regard to the assumption of no catastrophes, the Service has considered the recent outbreak of feline leukemia in the panther population at Okaloacoochee Slough as a potential catastrophe. However, the FWC is carefully monitoring the situation and it appears to be under control at this time due to a successful vaccination program. However, if the outbreak spreads into the population, the Service will consider this as a catastrophe and factor this into our decisions.

We acknowledge that uncertainties exist, assumptions can be violated, and catastrophes can occur. However, the Service and the FWC, along with our partners, will continue to monitor the panther population and the south Florida landscape and incorporate any new information and changes into our decision-making process.

Panther Habitat Conservation Plans: In the early 1990s, two plans for the protection of Florida panther habitat in south Florida were developed (Logan et al. 1993; Cox et al. 1994). Both of these plans identified privately owned lands that contained habitats important to the long-term conservation of the Florida panther. Logan et al. (1993) identified specific parcels of land by section, township, and range as Priority 1 and 2 preservation areas. However, this plan has been criticized as being too general (*i.e.*, targeted lands perceived as including too many areas not truly panther habitat [active rock and sand mines]) and for not having been available for public review and comment prior to publication. Cox et al.'s (1994) plan identified specific lands based on their habitat features and the likelihood they could support a minimally viable population of panthers for the next 200 years.

The lands identified in each of these planning studies, although referred to in the studies as essential to the survival and recovery of the Florida panther, were intended to be guides for land acquisition planning purposes, because of their inclusion of lands containing urban developments and other lands not considered truly panther habitat (*i.e.*, active rock and sand mines). These land preservation recommendations have been used by Federal, State, and county resource agencies as guides for public land acquisition programs, local land-use planning, and, in a few cases, compensation for land-use conversion projects proposed for lands identified in the plans.

An example of use of these planning studies is shown in Figure 8. This figure provides a representative view of the existing and proposed public land acquisition and preservation efforts within the southwest Florida landscape that not only benefits the Florida panther, but also provides benefits to the mosaic of other species important to the south Florida ecosystem. Table 2 provides a summary of the targeted and acquired acreages of conservation lands in southwest Florida. Based on the table, total lands targeted for acquisition to date are 3,588,749 acres.

Panther Recovery Goal: The 1987, 1995, and 1999 recovery objectives (Service 1987, 1995, 1999) for the panther were to achieve three viable, self-sustaining populations within the historic range of the Florida panther. In 2001, a new Florida Panther Recovery Team was appointed to revise the recovery plan. Although preliminary, the revised recovery objectives established in 2004 continue to be to achieve at least three self-sustaining, viable breeding populations of panthers within the historic range.

A high priority for recovery and conservation of the Florida panther is to ensure the survival of the existing breeding population south of the Caloosahatchee River. The Service's southwest Florida panther recovery goal is to achieve this priority and to identify lands north of the Caloosahatchee River that can be the recipient area for the expansion of the South Florida panther breeding population from south of the Caloosahatchee River to other parts of its historic range. We believe sufficient lands may be found north of the Caloosahatchee River and possibly elsewhere throughout the southeast (Thatcher et al. 2003), in conjunction with the lands conserved south of the river, to support a population of greater than 240 individuals.

The PVA models discussed in the previous section, and in detail in Root (2004) predict a population of greater than 80 individuals is needed for stability over a 100-year period, although subject to genetic problems and a population greater than 240 is needed to retain 90 percent of original genetic diversity. The Service also believes a stable population in southwest Florida will serve as the founder population for the recovery of the Florida panther throughout its historic range.

Land Preservation Needs: To further refine the land preservation needs of the Florida panther and to specifically develop a landscape-level program for the conservation of the Florida panther population in south Florida, the Service as previously discussed, in February 2000, appointed a Florida Panther Subteam. The Subteam in addition to the assignments discussed previously, was also charged with developing a landscape-level strategy for the conservation of the Florida panther population in south Florida. The results of this collaborative effort are partially presented in Kautz et al. (In Review). One of the primary goals of this effort was to identify a strategically located set of lands containing sufficient area and appropriate land cover types to

ensure the long-term survival of the southwest population of the Florida panther (Figure 9). Kautz et al. (In Review) focused their efforts on the area south of the Caloosahatchee River, where the reproducing panther population currently exists.

Kautz et al. (In Review) created an updated Florida panther potential habitat model based on the following criteria: (1) forest patches greater than 4.95 acres (2 ha); (2) non-urban cover types within 656 ft (200 m) of forest patches; and (3) exclusion of lands within 984 ft (300 m) of urban areas. The potential habitat map was reviewed in relation to telemetry data, recent satellite imagery (where available), and panther home range polygons. Boundaries were drawn around lands defined as the Primary Zone (Figure 8), defined as the most important area needed to support a self-sustaining panther population. Kautz et al. (In Review) referred to these lands as essential; however, as observed in the two previous plans (Logan et al. 1993; Cox et al. 1994), lands within the boundaries of the Primary Zone included some urban areas and other lands not considered to be truly panther habitat (*i.e.*, active rock and sand mines).

The landscape context of areas surrounding the Primary Zone was modeled and results were used to draw boundaries of the Secondary Zone (Figure 9), defined as the area capable of supporting the panther population in the Primary Zone, but where habitat restoration may be needed (Kautz et al. In Review). Kautz et al. (In Review) also identified, through a least cost path model, the route most likely to be used by panthers dispersing out of south Florida, crossing the Caloosahatchee River, and dispersing into south-central Florida. Kautz et al. (In Review) used ArcView GIS© version 3.3 and ArcView Spatial Anc yst© version 2 (Environmental Systems Research, Incorporated, Redlands, California) to construct the least-cost path models and identify optimum panther dispersal corridor(s). The least-cost path models operated on a cost surface that ranked suitability of the landscape for use by dispersing panthers with lower scores indicating higher likelihood of use by dispersing panthers. The lands within the boundaries of the least cost model prediction were defined as the Dispersal Zone (Figure 9). The preservation of lands within this zone is important for the survival and recovery of the Florida panther, as these lands are the dispersal pathways for expansion of the south Florida panther population. The Primary Zone covers 2,270,590 acres (918,895 ha); the Secondary Zone covers 812,104 acres (328,654 ha); and the Dispersal Zone covers 27,883 acres (11,284 ha); providing a total of 3,110,578 acres (1,258,833 ha) (Kautz et al. In Review). The combined acreage of lands within the Primary, Dispersal, and Secondary Zones is 3,110,577 acres (1,258,833 ha) (Kautz et al. In Review).

As part of their evaluation of occupied panther habitat, in addition to the average density estimate of one panther per 27,181 acres (11,000 ha) developed by Maehr et al. (1991a), Kautz et al. (In Review) estimated the present average density during the timeframe of the study, based on telemetry and other occurrence data, to average 1 panther per 31,923 acres (12,919 ha). In the following discussions of the number of panthers that a particular zone may support, the lower number is based on the 31,923 acres (12,919 ha) value (Kautz et al. In Review) and the higher number is based on the 27,181 acres (11,000 ha) value (Maehr et al. 1991a).

Based on these average densities, the Primary Zone could support 71 to 84 panthers; the Secondary Zone 8 to 10 panthers without habitat restoration and 25 to 30 panthers with habitat restoration (existing high quality panther habitat currently present in the Secondary Zone is

estimated at 32 percent of the available Secondary Zone lands); and the Dispersal Zone, 0 panthers. Taken together, the three zones in their current condition apparently have the capacity to support approximately 79 to 94 Florida panthers.

Kautz et al.'s (In Review) assessment of available habitat south of the Caloosahatchee River determined that non-urban lands in the Primary, Secondary, and Dispersal Zones were not sufficient to sustain a population of 240 individuals south of the Caloosahatchee River. However, Kautz et al. (In Review) determined sufficient lands were available south of the Caloosahatchee River to support a population of 79 to 94 individuals (although not all lands are managed and protected).

Southwest Florida Panther Population Goal: As stated previously, the Service's goal for Florida panther conservation in southwest Florida is to locate, preserve and restore sets of lands containing sufficient area and appropriate land cover types to ensure the long-term survival of a population of 80 to 100 individuals (adults and subadults) south of the Caloosahatchee River. The Service proposes to achieve this goal through land management partnerships with private landowners, through coordination with private landowners during review of development proposals, and through sensitive land management and acquisition programs with Federal, State, local, private, and Tribal partners. The acreages of lands necessary to achieve this goal, based on Kautz et al. (In Review) average density of 31,923 acres (12,919 ha) per panther is 2,551,851 acres (1,032,720 ha) for 80 panthers or 3,189,813 acres (1,290,900 ha) for 100 panthers.

The principle regulatory mechanisms that allow the Service to work directly with private land owners during review of development and land alteration projects are through section 7 and section 10 consultations under ESA. Section 7 consultations, which are the more common consultations, are primarily with the Corps. In August 2000, the Service, to assist the Corps in assessing project effects to the Florida panther, developed the Florida panther final interim Standard Local Operating Procedures for Endangered Species (SLOPES) (Service 2000). The Florida panther SLOPES provide guidance to the Corps for assessing project effects to the Florida panther and recommends actions to minimize these effects. The Florida panther SLOPES also includes a consultation area map (Figure 4) that identifies an action area where the Service believes land alteration projects may affect the Florida panther and is used by the Corps project managers in evaluating consultation needs with the Service.

Compensation Recommendations: To achieve our goal to locate, preserve, and restore sets of lands containing sufficient area and appropriate land cover types to ensure the long-term survival of a population of Florida panthers south of the Caloosahatchee River, the Service chose the mid point (90 panthers) in Kautz et al.'s (In Review) population guidelines that a population of 80 to 100 panthers is likely to be stable, although subject to genetic problems, through 100 years. More importantly, a population of 90 individuals is eight individuals greater than a population of 82 individuals, which according to the best available PVA (Root 2004) is 95 percent likely to persist over 100 years (assuming a 50:50 male to female ratio). These eight individuals provide a buffer for some of the assumptions in Root's (2004) PVA. Our process to determine compensation recommendations for project affects that cannot be avoided in both our section 7 and section 10 consultations is based on the amount and quality of habitat that we believe is necessary to support a population of 90 panthers in southwest Florida.

The Service, based on Kautz et al.'s (In Review) average panther population density of 31,923 acres per panther determined 2,873,070 acres of Primary Zone "equivalent" lands need to be protected and managed. This equivalency factor is needed, since Secondary Zone lands are of less value than Primary Zone lands to the panther, to assure that additional acreage (special consideration) is required in the Secondary Zone to compensate for its lower quality panther habitat. In other words, more than 31,923 acres per panther would be needed, hypothetically, if this acreage were all in the Secondary Zone (see discussion of Primary Zone equivalent lands in the Effects of the Action). The combined acreage of lands within the Primary, Dispersal, and Secondary Zones is 3,110,577 acres (1,258,833 ha) (Kautz et al. In Review). Currently, 2,094,988 acres of Primary Zone equivalent lands are preserved, so 778,082 additional acres need to be preserved to support a population of 90 panthers in south Florida (2,873,070 minus 2,094,988 equals 778,082).

The SLOPES consultation area map as previously discussed, included lands north of the Caloosahatchee River and "Other" Zone lands. Since the Service's southwest Florida panther conservation goal is to focus on habitat conservation in the Primary, Secondary, and Dispersal Zones, which are south of the Caloosahatchee River, conservation recommendations for projects south of the Caloosahatchee River are restricted to south of and conservation recommendations for projects north of the Caloosahatchee River are restricted to north of the Caloosahatchee River, respectively.

To evaluate project effects to the Florida panther, the Service considers the contributions the project lands provide to the Florida panther, recognizing not all habitats provide the same functional value. Kautz et al. (In Review) also recognized not all habitats provide the same habitat value to the Florida panther and developed cost surface values for various habitat types, based on use by and presence in home ranges of panthers. The FWC (In Review), using a similar concept, assigned likely use values of habitats to dispersing panthers. The FWC's habitats were assigned habitat suitability rank between 0 to 10, with higher values indicating higher likely use by dispersing panthers.

The Service chose to evaluate project effects to the Florida panther through a similar process. We incorporated many of the same habitat types referenced in Kautz et al. (In Review) and FWC (In Review) with several adjustments to the assigned habitat use values reflecting consolidation of similar types of habitats and the inclusion of Everglades Restoration water treatment and retention areas. We used these values as the basis for habitat evaluations and the recommended compensation values to minimize project effects to the Florida panther (Table 3) (see the detailed discussion of the application of the habitat assessment methodology in the Environmental Baseline).

ENVIRONMENTAL BASELINE

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions, which occur simultaneously with the consultation in progress.

Status of the Species within the Action Area

As stated previously, for the purposes of this consultation, the action area includes the Corps' project area and surrounding lands frequently visited by panthers (Figure 4). The action area is a subset of the current geographic range of the panther and includes those lands that the Service believes may experience direct and indirect effects from the proposed development. Therefore, for both direct and indirect effects, the action area is defined as all lands within a 25-mile radius of the project. This action area does not include urban lands, lands east of the protective levee, and lands that are outside of the Service's panther consultation area. The proposed action may have direct and indirect effects on the ability of panthers to breed, feed, and find shelter, and to disperse within the population.

The Service used current and historical radio-telemetry data, information on habitat quality, prey base, and evidence of uncollared panthers to evaluate panther use in the action area. Panther telemetry data are collected 3 days per-week from fixed-wing aircraft, usually in early to midmorning. However, researchers have shown that panthers are most active between dusk and dawn (Maehr et al. 1990a; Beier 1995) and are typically at rest in dense ground cover during daytime monitoring flights (Land 1994). Therefore, telemetry locations may present an incomplete picture of panther activity patterns and habitat use (Comiskey et al. 2002). In addition, telemetry data alone may be misleading since less than half of the panther population is currently monitored.

Although telemetry data may not provide a complete picture of panther activity patterns, telemetry locations are a good indicator, due to the extensive data set, of the approximate boundaries of home ranges, panther travel corridors, and the range of Florida panthers south of the Caloosahatchee River. The FWC also uses observational data collected during telemetry flights to assess the yearly breeding activity of radio-collared panthers. Female panthers accompanied by kittens or male panthers within close proximity of an adult female were assumed to have engaged in breeding activity during that year. Documentation by Land et al. (FWC 2005) shows that between July 2004 and June 2005, only one Florida panther (male #125) which was captured on February 13, 2004, traveled within 5 miles of the project site. He ranged eastward from the loop road area of BCNP just under the current L-67 extension and then northeastward in a semi-circle motion ending near the cross section of Krome Avenue and Tamiami Trail (Figure 5).

There have been a total of 5 panthers (4 male and 1 female) recorded within 5 miles of the project site on 117 occasions using telemetry data from February 1989 though June 2005 (Figure 6). This translates to an average of 7.3 occurrences per year, which equates to an average of one occurrence every 50 days. Several telemetry records indicate that one or more of the four panthers ranged very near to Tamiami Trail and most likely within the construction footprint located around the eastern bridge. Four of the five panthers are no longer alive. All four panthers (FP 16-male, FP 27-female, FP 42-male and FP 85-male) died of unknown causes and none had ranged within 5 miles of the project area since 2001. Four panthers have been involved in vehicle collisions within the 25-mile action area (Figure 5). Three of the four deaths occurred as a result of vehicle strikes on Tamiami trail west of the project area (FP 26-male

(1998), FP 62-female (2004), and FP 71-male (2005). The most recent of these collisions took place just east of 11 Mile Road which is roughly 10 miles west of the western bridge location. The status and activities of uncollared Florida panthers within the action area are unknown.

Factors Affecting Species Environment within the Action Area

Factors that affect the species environment (positive and negative) within the action area include, but are not limited to, highway, urban, agriculture, resource extraction, public lands management (prescribed fire, public use, exotic eradication, etc.), hydrological restoration projects, public and private land protection efforts, effects of genetic inbreeding, and genetic restoration.

Development activities may result in avoidance or limited use of remaining suitable habitat by panthers as well as habitat loss, habitat fragmentation, habitat degradation, and also an increase in risk of vehicular collision (*e.g.*, injury or death).

Public and private land management practices can have a positive, neutral, or negative effect, depending on the management goals. Land protection efforts will help to stabilize the extant population. Hunting of the panther is no longer sanctioned, although there still may be instances of intentional or unintentional shooting of individuals for various reasons.

EFFECTS OF THE ACTION

This section analyzes the direct and indirect effects of the project on the Florida panther and Florida panther habitat.

Factors to be Considered

Residential, commercial, and industrial development projects may have a number of direct and indirect effects on the Florida panther and panther habitat. Direct impacts, which are primarily habitat based, may include: (1) the permanent loss and fragmentation of panther habitat; (2) the permanent loss and fragmentation of habitat that supports panther prey; (3) the loss of available habitat for foraging, breeding, and dispersing panthers; and (4) a reduction in the geographic distribution of habitat for the species. Indirect effects may include: (1) an increased risk of roadway mortality to panthers traversing the area due to the increase in vehicular traffic; (2) increased disturbance to panthers in the project vicinity due to human activities; (3) the reduction in panther prey; (4) the reduction in value of panther habitat adjacent to the project due to habitat fragmentation; and (5) a potential increase in intraspecific aggression between panthers (and an increase in mortality of subadult male panthers) due to reduction of the geographic distribution of habitat for the panther. These indirect effects are habitat based, with the exception of vehicular mortality, which could result in lethal "take." Intraspecific aggression, though habitat based, could also result in lethal "take."

This project site contains marginal quality panther habitat and is located on the edge of occupied panther habitat and panther habitat value has been diminished by the encroachment of exotic vegetation and its proximity to a major roadway. The timing of construction for this project, relative to sensitive periods of the panther's lifecycle, is unknown. Panthers have the potential to

be found on and adjacent to the proposed construction footprint year-round but are less likely during the rainy season when water levels could be considerably higher in NESS. The project will be constructed in a single, disruptive event, and result in permanent loss and alteration of a portion of the existing ground cover on the project site. The project will also result in the conversion of roadway embankment back into usable panther habitat and also provide wildlife passages in the form of bridges. The time required to complete construction of the project is not known.

Analyses for Effects of the Action

The 40.3-acre Tamiami Trail construction footprint is located along a 10.7-mile corridor just south of US 41 in the Florida panther Primary Zone as designated by Kautz et al. (In Review), and is located inside the panther consultation area as defined by the Service (2000). The site currently provides habitat of marginal quality for the Florida panther. The project site is located on the edge of occupied habitat, is adjacent to a major roadway, and is not located within known dispersal corridors (FWC In Review) between larger publicly owned managed lands. The project will result in the conversion of 20.6 acres of marginal quality panther habitat on-site into shoulder of the existing roadway.

Compensation for the loss of 20.6 acres of marginal quality panther habitat will be through the off-site protection and restoration of approximately 30 acres or the equivalent of 270 Habitat Units (HU) of similar quality habitat in the core habitat area (Figure 3) and Primary Zone (Kautz et al. In Review) of the Florida panther. These "core area" lands include the majority of home ranges of the current population of the Florida panther (see definition of core panther area in Effects of the Action – Primary Equivalent Lands). Off-site compensation is located in an area with a moderate level of documented panther usage (telemetry data) in replacement for the loss of 108 HUs in an area bordered by a major highway and exhibiting lower documented panther usage (telemetry data).

Habitat Assessment: In this section, we assess habitat compensation recommended to offset project impacts to Florida panther habitat. Through the methodology described below, we assess how to compensate when habitat loss or degradation resulting from a proposed project cannot be avoided and when adverse effects have been minimized, but loss will still occur. The purpose of this assessment is to ensure that adequate compensation will occur to prevent any significant reductions in the likelihood of survival and recovery of the species due to habitat loss. The Service, in coordination with the Corps, agreed to evaluate the project's effects to the Florida panther through a habitat assessment methodology that incorporates many of the habitat importance values referenced in Kautz et al. (In Review) and FWC (In Review). Our analysis evaluates habitats from 0 to 10 with low scores reflecting low habitat value to the Florida panther (Table 3). The habitat suitability scores as developed by the Service incorporate a direct calculation per acre with a base ratio (2.5) multiplier to compensate for unavoidable project effects to the Florida panther.

Our process to determine compensation is based on the amount of habitat that we believe is necessary to support a population of 90 panthers in south Florida, which is the mid-point (90 panthers) in Kautz et al.'s (In Review) management guidelines that a population of 80 to

100 panthers is likely to be stable, although subject to genetic problems and assumptions previously stated, through 100 years. More importantly, a population of 90 individuals is eight individuals greater than a population of 82 individuals, which according to the best available PVA (Root 2004) is 95 percent likely to persist over 100 years (assuming a 50:50 male to female ratio). These eight individuals provide a buffer for some of the assumptions in Root's (2004) PVA. The Service, based on Kautz et al.'s (In Review) average panther population density of 31,923 acres per panther, determined 2,873,070 acres of Primary Zone equivalent lands (see discussion of Primary Zone equivalent lands below) need to be protected and managed. Currently, 2,094,988 acres of Primary Zone equivalent lands are preserved, so 778,082 additional acres need to be preserved to support a population of 90 panthers in south Florida (2,873,070 minus 2,094,988 equals 778,082).

Primary Zone Equivalent Lands: Kautz et al. (In Review), through their habitat evaluation of lands important to the Florida panther, identified three sets of lands, *i.e.*, Primary Zone, Secondary Zone, and Dispersal Zone, and documented the relative importance of these lands to the Florida panther. These lands generally referred to as the core area, include the majority of the home ranges of the current population of the Florida panther. The Service, in our evaluation of habitat needs for the Florida panther expanded the boundaries of the Kautz et al. (In Review) core area to include those lands south of the Calooshatchee River where additional telemetry points historically were recorded. These additional lands, referred to as the "Other Zone," added to the lands in Kautz et al.'s (In Review) core lands are referred to by the Service as the Core Area (Figure 3). The "Other" Zone lands, as well as the lands within the Secondary Zone, provide less landscape benefit to the Florida panther than the Primary and Dispersal Zones, but are important as a component of our goal to preserve and restore sufficient lands to support a population of 90 panthers in south Florida. To account for the lower landscape importance of these lands in our preservation goals and in our habitat assessment methodology, we assigned lands in the Other Zone a value of 1/3 and lands in the Secondary Zone a value of 2/3 to convert these lands to Primary Zone value, *i.e.*, Primary Zone equivalents (Table 4). Dispersal Zone lands are considered equivalent to Primary Zones lands with a 1/1 value. For example, non-urban at-risk lands in the Other Zone total 819,995 acres, multiply these by 1/3 to determine the acres of Primary Zone equivalent lands the Other Zone can provide (819,995 times 1/3 equals 273,332 acres of Primary Zone equivalent lands). Using this assessment, the 471,466 acres of Secondary Zone lands equate to 314,297 acres of Primary Zone equivalent lands. These equivalent values, 1/3 and 2/3, for Other and Secondary Zones, respectively, and 1/1 for Dispersal Zone, are important components in our assessment of compensation needs for a project in the panther consultation area and are components of our habitat assessment methodology as discussed below.

Base Ratio: To develop a base ratio that will provide for the protection of sufficient acreage of Primary Zone equivalent lands for a population of 90 panthers from the acreage of Primary Zone equivalent non-urban lands at risk, we developed the following approach.

The available non-urban Primary Zone equivalent lands in the core area (Figure 3) are estimated at 3,272,493 acres (actual acreage is 4,486,364 acres [the "actual acreage" value includes acres of lands in each category in the Secondary and Other Zones as well as the lands in the Primary Zone]) (Table 4). Currently 2,094,988 acres of Primary Zone equivalent lands (actual acreage is

2,605,046 acres) of non-urban lands are preserved. The remaining non-urban at-risk private lands are estimated at 1,177,506 acres of Primary Zone equivalent lands (actual acreage is 1,881,318 acres). To meet the protected and managed lands goal for a population of 90 panthers, an additional 778,082 acres of Primary Zone equivalent lands are needed. The base ratio is determined by dividing the acres of at-risk habitat to be secured (778,082 acres) by the result of the acres of at-risk habitat in the Primary Zone (568,549 acres) times the value of the Primary Zone (1); plus the at-risk acres in the Dispersal Zone (21,328 acres) times the value of the Dispersal Zone (1); plus the at-risk acres in the Secondary Zone (471,446 acres) times the value of the Secondary Zone (2/3); plus the at-risk acres in the Other Zone (819,995 acres) times the value of the Other Zone (1/3); minus the at-risk acres of habitat to be protected (778,082 acres). The results of this formula provide a base value of 1.95.

$$778{,}082 / ([568{,}549 \times 1.0] + [21{,}328 \times 1] + [471{,}446 \times 0.667] + [819{,}995 \times 0.333]) - 778{,}082 = 1.95$$

In evaluating habitat losses in the consultation area, we used an estimate of 0.8 percent loss of habitat per year (R. Kautz , FWC, personal communication, 2004) to predict the amount of habitat loss anticipated in south Florida during the next 5 years (*i.e.*, 6,000 ha / year; 14,820 acres / year for the five county area). The 0.8 percent is based on an analysis that compared the panther potential habitat model (Cox et al. 1994) to 1986-1996 land use changes in five southwest Florida counties, which yielded an estimate of the rate of habitat loss at 0.82 percent per year. We assumed that half of the projects would occur in the Primary Zone and half would occur in the Secondary Zone. We then adjusted the base ratio slightly higher than the 1.95 to 2.25 to account for unexpected increases in habitat loss.

We also realize that, collectively, habitat losses from individual single-family residential developments will compromise the Service's goal to secure sufficient lands for a population of 90 panthers. We believe that, on an individual basis, single-family residential developments by individual lot owners on lots no larger than 2.0 ha (5.0 acres) will not result in take of panthers on a lot-by-lot basis; however, collectively these losses may impact the panther. Compensation for such small-scale losses on a lot-by-lot basis is unlikely to result in meaningful conservation benefits for the panther versus the more holistic landscape level conservation strategy used in our habitat assessment methodology. To account for these losses, we adjusted the base value from 2.25 to 2.5, which is our base ratio.

The Service intends to re-evaluate this base ratio periodically and adjust as needed to achieve the Service's conservation goal for the Florida panther.

Landscape Multiplier: As discussed previously in the above section on Primary Zone Equivalent Lands, the location of a project in the landscape of the core area of the Florida panther is important. As we have previously discussed, lands in the Primary and Dispersal Zones are of the most importance in a landscape context to the Florida panther, with lands in the Secondary Zone of less importance, and lands in the Other Zone of lower importance. These zones affect the level of compensation the Service believes is necessary to minimize a project's effects to Florida panther habitat. Table 5 provides the landscape compensation multipliers for various compensation scenarios. As an example, if a project is in the Other Zone and compensation is proposed in the Primary Zone, a Primary Zone equivalent multiplier of 1/3 is applied to the

habitat units (see discussion of habitat units below) developed for the project. If the project is in the Secondary Zone and compensation is in the Primary Zone, then a Primary Zone equivalent multiplier of 2/3 is applied to the habitat units developed for the project.

Habitat Units: Prior to applying the base ratio and landscape multipliers discussed above, we evaluate the project site and assign functional values to the habitats present. This is done by assigning each habitat type on-site a habitat suitability value from the habitats shown in Table 3. The habitat suitability value for each habitat type is then multiplied by the acreage of that habitat type resulting in a number representing HUs. These HUs are summed for a site total, which is used as a measurement of the functional value the habitat provides to Florida panthers. This process is also followed for the compensation sites.

Exotic Species Assessment: Since many habitat types in south Florida are infested with exotic plant species, which affects the functional value a habitat type provides to foraging wildlife species (*i.e.*, primarily deer and hog), we believe the presence of these species and the value these species provide to foraging wildlife needs to be considered in the habitat assessment methodology. As shown in Table 3, we have a habitat type and functional value shown for exotic species. This category includes not only the total acres of pure exotic species habitats present but also the percent-value acreages of the exotic species present in other habitat types.

For example, a site with 100 acres of pine flatwoods with 10 percent exotics would be treated in our habitat assessment methodology as 90 acres of pine flatwoods and 10 acres of exotics. Adding another 100 acres of cypress swamp with 10 percent exotics would change our site from 90 acres of pine flatwoods and 10 acres of exotics to 90 acres of pine flatwoods, 90 acres of cypress swamp, and 20 acres of exotics.

Habitat Assessment Methodology Application: The application of the habitat assessment methodology including the base ratio, landscape multiplier, HU determinations, and compensation recommendations, are presented below for the Tamiami Trail and compensation areas.

Table 6 illustrates the HU calculations for the Tamiami Trail project with impacts to 40.3 acres of land in the Primary Zone with compensation provided by preservation and enhancement of approximately 30 acres in the Primary Zone. Calculations show the 40.3-acre on-site impact area to presently support 108 HUs before applying a landscape compensation multiplier. Since the project is located in the Primary Zone and compensation is in the Primary, the base ratio HUs are adjusted by the landscape compensation multiplier of (108 x 2.5), to provide a combined recommended compensation need of 270 HUs.

The 30-acre compensation site provides for 270 HUs with restoration. Therefore, the Service believes the habitat values lost by the proposed development will be offset by the compensation actions proposed by the Corps. The lands proposed for construction are on the edge of occupied habitat and panther habitat value has been diminished by the presence of exotic vegetation and the close proximity to a major roadway. Lands proposed for preservation will be in the Primary Zone, adjacent to other natural lands, and will be consistent with the Service's panther goal to

strategically locate, preserve, and restore sets of lands containing sufficient area and appropriate land cover types to ensure the long-term survival of the Florida panther population south of the Caloosahatchee River.

Wildlife Assessment: As discussed previously in the status of the species and in the environmental baseline, the Service believes the existing habitat conditions present on a site and the foraging value that a site provides to the Florida panther and panther prey species are an important parameter in assessing the importance of the project site to the Florida panther and other wildlife species. In order to assess this importance, the Service requires wildlife surveys and plant species compositions as part of the Corps' biological assessment prepared for the project. To assess the foraging value of the project site the Service relied on an inter-agency Wetland Rapid Assessment Procedure (WRAP) and road mortality studies conducted by the Service along Tamiami Trail. The complete findings of both of these studies can be found in the Final Fish and Wildlife Coordination Act Report and supplements to that report (Service 2003, 2005). Very few mammals of the size sufficient for panthers (*i.e.*, deer, hogs, etc) were identified in road mortality studies along the trail. An occasional raccoon and opossum were encountered. Similarly, no prey or signs of prey sufficient for panthers was observed (*e.g.*, scat or tracks) on-site during WRAP assessments.

As discussed previously, white-tailed deer densities and other prey species are influenced by the quality of the foraging habitat present in an area. Monotypic stands of poor quality foraging plant species and the invasion of a site by exotic plants provide lower habitat foraging values and affect the utilization by and density of foraging species. The habitats in the project area have experienced similar vegetation changes. The site consists of a mixture of native and disturbed communities with an exotic coverage, primarily Brazilian pepper, varying from 30 percent to more than 50 percent in some locations.

Deer densities in the wet prairie/tree island complex of BCNP and ENP have been estimated by Labisky et al., 1995, to be 3.5-4.0 deer per 247 acres and 4.5-5.0 deer per 247 acres respectively. These densities are lower than those found in northern Florida and other parts of the white-tail range, most likely due to the limited production of quality forage in the Everglades wetlands. The Tamiami Trail project site is located in the deeper portions of NESS which further limits the production of quality browse for deer.

Deer are ruminants with small stomach capacities and are selective for high quality forage to meet their nutritional needs. To meet these high quality forage needs, deer selectively move through the mosaic of habitat types taking advantage of the seasonal forage that provide the most benefit to the deer. The invasion of habitats along the Tamiami Trail by exotics have resulted in the growth unpalatable plant species that provide poor quality foraging needs for resident deer, hog, and other prey species.

The proposed compensation site is located within the 8.5 SMA in southwestern Miami-Dade County. The 8.5 SMA project is an integral feature of MWD which when complete will provide restorative flows and hydropattern to NESS. Upon implementation of MWD as authorized, the net increase in water introduced to NESS would potentially raise elevations of ground water in the adjacent 8.5 SMA. As a result, the volume of storage of ground water available to retain

runoff form rainfall would be reduced. This would raise the potential for flooding impacts. Consequently, the ENP Protection and Expansion Act (the MWD authorization) authorized a system to provide mitigation to the area.

The original proposed alignment of the flood mitigation works for the 8.5 SMA included an outer levee and seepage canal alignment on the western boundary of the 8.5 SMA. In preparation for construction of this alternative, the "recommended plan" in the 1992 General Design Memorandum, the Corps acquired privately owned lands along the levee alignment. That portion of those acquired lands that fell into the ENP land acquisition area is under transfer or has been transferred to ENP. A total of 868 acres of short-hydroperiod marl marsh located in core panther habitat, were so preserved and added to the Park. The formerly proposed levee will not be built, and these lands are in natural short-hydroperiod marsh. Lands now proposed for levee and/or seepage canal construction are former residential plots of low value as panther habitat.

In 2000, the GDM was revised with the identification of a new Recommended Plan (Alternate 6D, Figure 9), and additional lands were identified for restoration totaling 2,280 acres. These lands have either already been acquired or are in the process of acquisition via willing sellers or condemnation, for construction of the 8.5 SMA plan. They will be transferred to the South Florida Water Management District and will be restored. This acreage represents former farm/residential lands that will be restored to natural marshes. There are a few tree islands included in these lands that with the removal of residences, businesses, and farms, will provide additional habitat for panthers.

Compensation for the loss of 20.6 acres impacted during the raising of Tamiami Trail will be achieved through the acquisition and preservation of 30 of the afore mentioned 3,148 acres in the 8.5 SMA. Wetland function and vegetation at the compensation site have been affected by reduced hydroperiod due to its proximity to the L-31N Canal and the absence of historical sheetflow through NESS. This site will receive hydrological restoration and enhancement of the wetlands on-site via restoration of sheetflow to the area and removal of exotic species. melaleuca (*Melaleuca quinquenervia*) and, to a lesser extent, Brazilian pepper are present on-site. Removal of these species will directly benefit the native vegetation on-site and will yield quality forage to panther prey species, especially resident deer populations.

Conservation Measures: The beneficial effects of the project include the preservation and enhancement of approximately 30 acres within the 8.5 SMA. This site is also located in the Primary Zone and overlaps with some of the home ranges of panther that inhabit the eastern side of Shark Slough in ENP. The habitat quality provided to the Florida panther through preservation and enhancement is superior to that of the areas to be impacted. Enhancement in hydrological restoration of sheetflow to acres of disturbed marl marsh along with the eradication of exotic vegetation, primarily melaleuca, and to a lesser degree, Brazilian pepper, will improve suitability for the panther primarily through the resultant improvement in panther prey base. There have been several telemetry locations of panthers recorded on the periphery and just west of the compensation area during the period of record. Within a 3.5-mile range of the proposed compensation site, there have been a total of 165 records for four individual panthers:

FP 16-male, FP 42-male, FP 61-F, and FP 85-male (Figure 10). Three of these panthers are now dead from unknown causes. The remaining cat FP 85-female was last recorded within 3 miles of the compensation site in August 2002. The Service considers the compensation site to be a valuable area for breeding, foraging, and dispersal habitat that is important to panthers located on the eastern side of NESS. The amount of use of the compensation site and the project site by uncollared panthers is unknown and none have been documented at either site.

Direct Effects

Direct effects are those effects that are caused by the proposed action, at the time of construction, are primarily habitat based, and are reasonably certain to occur. We have identified four types of direct effects that may result from the proposed action. The four types include: (1) the permanent loss and fragmentation of panther habitat; (2) the permanent loss and fragmentation of habitat that supports panther prey; (3) the loss of available habitat for foraging, breeding, and dispersing panthers; and (4) a reduction in the geographic distribution of habitat for the Florida panther. Panthers may also be subject to harassment by construction activities. The direct effects this project will have on the Florida panther within the action area are discussed below.

Permanent Loss of Habitat: The project will result in the loss of 20.6 acres of habitat available for occasional use by panthers. The project lands are located inside the panther Primary Zone. The land will be converted to roadway shoulder along the southern edge of the Tamiami Trail. A one-time WRAP and road mortality study did not document site utilization by white-tailed deer, a primary panther prey species; however, a few smaller prey items were identified in the road mortality study. Telemetry shows very little documented panther utilization of the site. Habitat quality is generally poor, as it consists of a mixture of exotic infested native and disturbed communities. Based on the above analysis, we believe the loss of the habitat associated with these lands is insignificant.

Fragmentation of Habitat: Mac et al. (1998) define habitat fragmentation as: "The breaking up of a habitat into unconnected patches interspersed with other habitat which may not be inhabitable by species occupying the habitat that was broken up. The breaking up is usually by human action, as, for example, the clearing of forest or grassland for agriculture, residential development, or overland electrical lines." The reference to "unconnected patches" is a central underpinning of the definition. For panther conservation, this definition underscores the need to maintain corridors connecting habitat in key locations of south Florida. The project site is located along a thin corridor adjacent to a major roadway that bisects WCA-3B and ENP. Although no passageway currently exists for panthers to move north and south between these areas, the project as currently proposed would potentially provide 3 miles of safe wildlife passage via two bridges. The remaining obstacles standing in the way of complete reconnection of WCA-3B and NESS are the L-29 canal and the L-29 levee both located just north of and run parallel to Tamiami Trail. Removal of the L-29 levee and land bridges across the L-29 canal were recommended by the Service in its FWCA Reports (Service 2003, 2005). As such, fragmentation of panther habitat and panther prey species habitat is not expected and connectivity could actually be improved by the project.

Road Way Improvements: Improvements to the entire length of the Tamiami Trail, in the form of raising and resurfacing the unbridged portions are proposed in association with the project.

Construction: The timing of construction for this project, relative to sensitive periods of the panther's lifecycle, is unknown. Panthers have the potential to be found on and adjacent to the proposed construction footprint year-round but are less likely to be found there during the rainy season when water levels in Shark Slough are considerable higher. The project will be constructed in a single, disruptive event, and result in permanent loss and alteration of a portion of the existing ground cover on the project site. The time required to complete construction of the project is not known. The disturbance associated with the project will be permanent and result in a loss of marginal habitat currently available to the panther.

Compensation: The Service believes the habitat values lost by the raising of Tamiami Trail will be offset by the preservation and restoration actions in other portions of the MWD project area (8.5 SMA). The lands proposed for construction are on the edge of the panther's occupied range and panther habitat value has been diminished by on-site infestation of exotic vegetation and close proximity to a major roadway. The lands proposed for preservation are consistent with the Service's panther conservation strategy to locate, preserve, and restore sets of lands containing sufficient area, access, and appropriate cover types to ensure the long-term survival of the Florida panther south of the Caloosahatchee River.

Interrelated and Interdependent Actions

An interrelated action is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent action is an activity that has no independent utility apart from the action under consultation. No interrelated or interdependent actions are expected to result from the project.

Indirect Effects

Indirect effects are those effects that result from the proposed action and are reasonably certain to occur. We have identified five types of indirect effects that may result from the proposed action. The five types include: (1) an increased risk of roadway mortality to panthers traversing the area due to the increase in vehicular traffic; (2) increased disturbance to panthers in the project vicinity due to human activities (human/panther interactions); (3) the reduction in panther prey; (4) the reduction in value of panther habitat adjacent to the project due to habitat fragmentation; and (5) a potential increase of intraspecific aggression between panthers due to reduction of the geographic distribution of habitat for the panther.

Increased Risk of Roadway Mortality: In evaluating a project's potential to increase roadway mortality to the Florida panther, we consider the location of the project in relation to surrounding native habitats, preserved lands, and wildlife corridors that are frequently used by the Florida panther. We also consider the current configuration and traffic patterns of surrounding roadways and the projected increase and traffic patterns expected to result from the proposed action. We

evaluate the habitats present on-site, their importance in providing foraging needs for the Florida panther and panther prey species, and if the site development would further restrict access to surrounding lands important to the Florida panther and panther prey species.

The project will not result in an increase in vehicular traffic during construction. Vehicular mortality data provided by the FWC indicate that collisions with motor vehicles are a potential source of panther mortality in the project vicinity (Figure 5); however, due to the lack of increased vehicular traffic associated with the project, it is unlikely that the construction of the Tamiami Trail modifications will increase the risk of roadway mortality to panthers. In actuality, the risk may be reduced as the project will provide wildlife crossings in the form of two bridges (3 cumulative miles). In the future, should the incidence of panther road mortality increase due to the attraction of more animals to the openings in the roadway, other means of deterrence such as fencing should be used to prevent the animals entering the roadway.

Habitat Fragmentation: The project site is adjacent to a major roadway which bisects and eliminates connectivity between WCA-3B and NESS which are considered Secondary and Primary panther habitat respectively. This project, when completed, will provide a crucial first step towards reconnecting these important public lands, therefore, the proposed action will not fragment panther habitat or panther prey habitat.

Panther and Prey Disturbance (Panther/Human Interactions) and Intraspecific Aggression: Potential increases in intraspecific aggression and disturbance to the Florida panther were evaluated. As discussed previously in our assessment of fragmentation, we considered habitat quality related factors and occurrence data for the Florida panther and panther prey species. This information is also the basis of our evaluation of disturbance and intraspecific aggression to the Florida panther and to panther prey species. The Service believes, as previously discussed, the habitats on the construction footprint provide little forage value for prey species, which directly affects the frequency and duration of use of the property by panthers. Therefore, since we do not believe that Florida panthers utilize the property on a frequent basis, the loss of the limited use of the site by panthers will not significantly increase the risk of disturbance to panthers in the project action area due to human activities, will not increase mortality from intraspecific aggression between panthers, and will not significantly increase disturbance to panthers and panther prey species in the project action area.

Species Response to the Proposed Action

The proposed action will result in increased human activity and noise in the project area during construction of the project. However, since panthers are not commonly known to use lands within and adjacent to the project site, activities associated with construction of the administration complex is not anticipated to increase risk of disturbance to panthers.

The project will result in the loss of the small amount (20.6 acres) of potential panther habitat, which represents less than 0.06 percent of a female panther's home range (38,563 acres) and approximately 0.02 percent of a male panther's home range (119,968 acres). Because the project

area provides poor quality panther habitat and panthers are not known to commonly use the project area, we do not expect that the project will significantly affect use of the area by the panther.

Panthers are sensitive to habitat fragmentation. However, the project site is located on the eastern fringe of occupied habitat, is adjacent to a major roadway, and is not located within known dispersal corridors (FWC In Review) between larger publicly owned managed lands. This project may actually restore ecological connectivity between WCA-3B and NESS once complete. Therefore, fragmentation of panther habitat is not expected to result from project implementation.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action but located in the action area are not considered in this section because they require separate consultations pursuant to section 7 of the ESA.

The Corps conducted a cumulative effects analysis using the following assumptions:

1. Additional effects on panther habitat south of Tamiami Trail are limited to ENP and the restored section of the 8.5 SMA, and to any Corps 404 permits issued along Tamiami Trail to either concessionaires or to Tribal villages; but activities inside established Miccosukee villages or the Miccosukee Reserved Area will not affect panther habitat.

2. There are no known further impacts to panther habitat up to 20 miles north of Tamiami Trail in the evaluation zone. These lands are part of the State-owned Everglades and are protected from development. While Comprehensive Everglades Restoration Plan (CERP) projects may affect them in the future, none are currently proposed for construction.

3. This evaluation will not consider structural changes that may be recommended as part of the MWD Combined Structural and Operational Plan, which will undergo its own evaluation when a Preferred Alternative for water management and structural changes is identified.

4. Similarly, this evaluation cannot include potential future modifications to the Trail or structures in the WCA-3s under CERP Decompartmentalization, as that project is still in early conceptual stages.

In evaluating cumulative impacts, the Corps has found no new permits issued in the past 2 years to private interests along the Trail segment. Checks with the Miami-Dade County Department of Environmental Resource Management likewise indicated no permits along this stretch. Tribal interests have utilized a Programmatic General Permit for a cumulative 22.96 acres of fill (mainly expansion of existing house pads) inside the Miccosukee Reserved Area, adjacent to the western end of the project action area. An additional single individual permit was issued for

0.31 acre of fill at a Miccosukee camp located about halfway between 40-Mile Bend and 50-Mile Bend along the Trail. Mitigation for the wetlands loss was by purchase in the Panther Island Mitigation Bank. No private individual or nationwide section 404 or land use permits were found during the period dating from early 2003, along the Trail in Miami-Dade County.

Within the action area, based on the Corps' analysis, two permits affecting approximately 23.3 acres have occurred within the past 2 years; however, both of these permits were subject to review through the Clean Water Act section 404 and therefore do not fit the definition of cumulative effect. The Corps did not identify any permits within the past 2 years that were exempt from the federal permitting process. For the purpose of this analysis the Service will assume that the 23.3 acres would be exempt from the Federal permit process and furthermore represent the level of development that could be reasonably expected in the future. According to the most current home range estimates of the Florida panther (FWC 2004), this level of development represents 0.06 percent of a female panther home range (38,563 acres) and 0.02 percent of a male panther home range (119,968 acres).

In conclusion, the Corps' cumulative effects analysis has identified approximately 23.3 acres within the action area that could be developed without Federal wetland permit involvement. This level of development, which the Service believes is representative of future non-Federal actions, is reasonably certain to occur and will not involve a Federal action and, therefore, meets the definition of cumulative effect. Based on the above analysis, we believe the loss of the habitat associated with these lands is insignificant.

SUMMARY OF EFFECTS

Panther Usage: The timing of construction for this project, relative to sensitive periods of the panther's lifecycle, is unknown. The start date for construction and the time required to complete construction of the project is not known. According to telemetry data, no panther activity has been recorded on-site within the past 2 years. The status and activities of uncollared Florida panthers within the action area is unknown. There are no known den sites within 5 miles of the project boundaries and the quality and quantity of the foraging prey base is low. Therefore, we believe panther usage of the site is limited and we do not believe project construction will result in direct panther mortality.

Traffic: Although there may be minor changes in vehicular traffic patterns in the project vicinity during construction, we believe as discussed above and in previous sections, the lands on the project site provide limited value to the Florida panther and panther prey species; the site is adjacent to a major roadway. The Service believes, based on the current habitat conditions on the site, the existence of the adjacent roadway, the lack of documented recent use of the site by the Florida panther, and the lack of increased vehicular traffic associated with the project, the project will not significantly increase the risk of roadway mortality or injury to panthers. In fact, the proposed project will provide 3-miles (cumulative) of safe passage for panthers under the Tamiami Trail.

Habitat Loss: The Service, based on the habitat evaluations discussed previously, believes the project will result in the direct loss of 20.6 acres of mostly low quality panther habitat within the Primary Zone. Habitat types are primarily a mixture of exotic infested native and disturbed communities. Lack of wildlife utilization of the site shows limited foraging values to panther prey species. This loss of 20.6 acres of panther habitat represents a negligible percentage of the 1,881,318 acres of available non-urban private lands in the core area. The Service believes this small loss of non-urban public lands adjacent to an existing major roadway will not adversely affect the Service's land conservation and preservation goals.

Compensation: On the other hand, the project will also provide for the preservation of approximately 30 acres of Primary Zone habitat in southwestern Miami-Dade County in the 8.5 SMA which will be protected within ENP and is known to support panthers. Approximately 3,148 acres of disturbed marl marsh and slough habitat including the 30 acre compensation site will be enhanced through hydrological restoration of sheetflow and subsequent eradication of exotic vegetation. Therefore, we believe the preservation of approximately 30 acres of panther habitat in the panther core area will have a beneficial effect on the panther and will offset the loss of lower quality habitat and further the Service's goal in panther conservation.

Fragmentation: The project site is also located on the edge of occupied habitat, is adjacent to a major roadway, and is not located within known dispersal corridors to larger publicly owned and managed lands important to the panther. Therefore, fragmentation of panther habitat is not expected to result from project implementation. In fact, the project will potentially reconnect Primary panther habitat (NESS) and Secondary panther habitat (WCA-3B) via 3 miles of bridge.

Intraspecific Aggression: Potential increase in intraspecific aggression and disturbance to the Florida panther was evaluated. However, the Service believes, as previously discussed, the habitat on the property provides low quality foraging for prey species, which directly affects the frequency and duration of use of the property by panthers. Therefore, the Service believes it is unlikely the loss of this limited use of the site by panthers will significantly increase the risk of mortality from intraspecific aggression between panthers and increase disturbance to panthers in the project action area due to human activities.

Cumulative Analysis: In the cumulative effects analysis, the Corps identified the potential loss of approximately 23 acres in the action area within the immediate past; however, these lands could not be developed without Federal wetland permit involvement. The Service does not anticipate any future land development in the 25 mile action area that would be exempt from the Federal permitting process; however, for the purpose of this analysis we considered 23 acres as the level of development which would represent future non-Federal actions expected to occur in the action area. This level of development represents a small percentage (0.2 percent of the 1,881,318 acres) of available non-urban private lands in the core area. In general, these lands are primarily within previously impacted areas or are in the western more urbanized portion of the Florida panther's consultation area. Although this small percentage of lands may be lost from the core area of private lands available for panther conservation, the Service believes the loss of these lands will not adversely affect the Service's land conservation and preservation goals.

CONCLUSION

In conclusion, the Service believes there will be no direct take in the form of mortality or injury of the Florida panther resulting from this project. The loss of habitat from implementing the project, taking into consideration the status of the species, remaining habitat, and other factors considered in this biological opinion, such as the overall recovery objectives and other cumulative effects from actions in the action area, will be offset by the conservation/restoration of other, more functionally valuable habitat. Therefore, the proposed construction of the Tamiami Trail modification is not likely to jeopardize the continued existence of the Florida panther. No critical habitat has been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." "Harm" is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking, that is incidental to and not intended as part of the agency action, is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

Although there may be minor and temporary changes to traffic patterns with the construction of the project, we believe as discussed in previous sections, the lands on the project site provide limited value to the Florida panther and panther prey species. Furthermore, the site is adjacent to existing urban development and the proposed action will further restrict suitability of the site for use by either resident or dispersing panthers. The Service believes, based on the current habitat conditions on the site, the proximity to a major roadway, the lack of documented recent use of the site by the Florida panther, and the absence of increases in traffic generated by operation of the proposed project on the surrounding roads, the project will not significantly increase the risk of roadway mortality or injury to panthers. Therefore, the Service does not anticipate the proposed action will result in the direct mortality or injury of any Florida panthers. Accordingly, the Service is not anticipating any direct take in the form of mortality or injury to the Florida panther.

However, the Service anticipates incidental take of panthers in the form of harm and harassment associated with the loss of 20.6 acres of panther habitat within the Primary Zone lands. Based on the analysis provided in the previous sections, the Service believes this level of anticipated take is not likely to result in jeopardy to the species.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined this level of anticipated take is not likely to result in jeopardy to the species. The amount of panther habitat affected by the proposed action is a negligible percentage of an estimated 2 million acres of habitat occupied by the panther.

The proposed action will result in the restoration and preservation of approximately 30 acres of panther habitat in the Florida panther Primary Zone, in southwestern Miami-Dade County. The proposed action will increase the preservation and enhancement acreage of panther habitat through permitted Federal actions by about 0.1 percent from 29,434 acres to approximately 29,464 acres (Table 1). The cumulative increase in the preservation and enhancement of panther habitat to permitted Federal actions will be from 700 acres in 1990 to 29,464 acres.

The proposed action will result in the loss of 20.6 acres of mostly low quality panther habitat. The proposed action will increase the impacts from direct and indirect effects to panther habitat from residential and commercial developments, mining, and agriculture by about 0.0002 percent from 89,402 acres to 89,423 acres. Of the 89,423 acres of impacts, 39,918 acres are due to agricultural conversion and 49,484 acres to development and mining. Portions (10,370 acres) of the largest agricultural conversion project, the 28,700 acres by U.S. Sugar Corporation, were re-acquired by the Federal Government as a component of the Talisman Land Acquisition (Section 390 of the Federal Agricultural Improvement and Reform Act of 1996 [Public Law 104-127] Farm Bill Cooperative Agreement, FB4) for use in the Comprehensive Everglades Restoration Project. The 49,484 acres impacted by development and mining include a mixture of agricultural fields consisting of row crops and citrus groves, and natural lands with varying degrees of exotic vegetation. The non-agricultural impacts are permanent land losses, whereas the agricultural conversions may continue to provide some habitat functional value to panthers, although of less value than native habitats.

The lands proposed for compensation/preservation from the proposed take of panther habitat are lands adjacent to other larger tracts of natural and preserved lands and are consistent with the Service's panther goal to locate, preserve, and restore sets of lands containing sufficient area and appropriate land cover types to ensure the long-term survival of the Florida panther south of the Caloosahatchee River. Therefore, based on the evaluations provided above for the project's direct, indirect and cumulative effects, the status of the species, and the compensation proposed by the Corps, the Service believes that the proposed construction and operation of the Tamiami Trail modifications will not jeopardize the survival and recovery of the Florida panther.

REASONABLE AND PRUDENT MEASURES

The Service believes the Corps has incorporated all reasonable and prudent measures necessary and appropriate to minimize impacts of incidental take of Florida panthers into the design of the proposed action. In summary, the Corps will ensure that no more than 20.6 acres of panther habitat will be lost as a result of implementation of the proposed action and that approximately 30 acres in panther Primary Zones will be preserved to benefit the Florida panther and its prey.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and outline reporting/monitoring requirements. The terms and conditions described below are non-discretionary, and must be undertaken by the Corps for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protection coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement (50 CFR § 402.14(i)(3)).

1. The Corps will adhere to the conservation measures listed below and the description of the proposed action that commits the Corps to purchase, preserve, and manage high quality panther habitat, which is necessary and appropriate to minimize incidental take of panthers by the proposed action. Specifically, to compensate for impacts to 20.6 acres of Florida panther habitat, the Corps proposes to restore and preserve 30 acres in ENP southwester Miami-Dade County. All habitats to be preserved are in the panther Primary Zone;

2. The preservation site will be enhanced through restoration of sheetflow characteristics and more natural hydrologic regimes as outlined in MWD authorization;

3. The Corps will monitor the permit conditions regarding conservation measures to minimize incidental take of panthers by providing the Service a report on implementation and compliance with the conservation measure within 1 year of the start of construction;

4. The Corps will provide documentation to the Service for completion of proposed off-site enhancement and restoration;

5. Upon locating a dead, injured, or sick panther specimen, initial notification must be made to the nearest Service Law Enforcement Office; Fish and Wildlife Service; 9549 Koger Boulevard, Suite 111; St. Petersburg, Florida 33702; 727-570-5398. Secondary notification should be made to the FWC; South Region; 3900 Drane Field Road; Lakeland, Florida; 33811-1299; 1-800-282-8002; and

6. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or in the handling of dead specimens to preserve biological material in the best possible state for later analysis as to the cause of death. In conjunction with the care of sick or injured panthers or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service is not proposing any conservation recommendations at this time.

REINITIATION NOTICE

This concludes formal consultation on the Tamiami Trail portion of the MWD to ENP project. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; (3) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your cooperation and effort in protecting fish and wildlife resources. If you have any questions regarding this project, please contact Kevin Palmer at 772-562-3909.

Sincerely yours,

James J. Slack
Field Supervisor
South Florida Ecological Services Office

cc:
Corps, Jacksonville, Florida (Dennis Duke, Jon Moulding, Brian Files)
DEP, Tallahassee, Florida (Greg Knecht, Inger Hansen)
District, West Palm Beach, Florida (Paul Linton)
DOI, Miami, Florida (Rock Salt)
DOI, Washington, DC (Don Jodrey)
ENP, Homestead, Florida (Dan Kimball, Bruce Boler)
EPA, Jacksonville, Florida (Eric Hughes)
FWC, Vero Beach, Florida (Joe Walsh, Tim Towles)
Miccosukee Tribe of Indians, Miami, Florida (Billy Cypress)
Service, ARD, Atlanta, Georgia (Noreen Walsh) (electronic copy only)
Service, Jacksonville, Florida (Miles Meyer)
Service, Vero Beach, Florida (Chris Belden) (electronic copy only)

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Table 1. Biological opinions and habitat preservation efforts resulting from consultations with the Service for projects affecting Florida panther habitat from March 1984 through November 2005.

Date	Service Log Number	Corps Application Number	Project Name	County	Habitat Impacts (Acres)	Habitat Preserved On-site (Acres)	Habitat Preserved Off-site (Acres)	Total Habitat Preserved (Acres)
03/29/84	4-1-83-195	83M-1317	Ford Test Track	Collier	530	0	0	0
02/21/85	4-1-85-018	unknown	I-75	Broward Collier	1,517	0	0	0
10/17/86	4-1-87-016 4-1-87-017	unknown	Exxon Master Plan	Collier	9	0	0	0
01/07/87	4-1-86-303	86IPM-20130	Citrus Grove	Collier	11,178	0	0	0
01/11/88	4-1-88-029	unknown	NERCO - Clements Energy	Collier	3	0	0	0
02/23/88	4-1-88-055	unknown	Shell Western E&P	Collier Dade Monroe	0	0	0	0
02/10/89	4-1-89-001	FAP IR-75-4(88)81	SR 29/I-75 Interchange	Collier	350	0	0	0
08/15/90	4-1-90-289	unknown	I-75 Recreational Access	Collier	150	0	0	0
09/24/90	4-1-90-212	89IPD-20207	U.S. Sugar Corporation	Hendry	28,740	700	0	700
03/12/91	4-1-91-229	90IPO-02507	Lourdes Cereceda	Dade	97	0	0	0
01/14/92	4-1-91-325	199101279	Dooner Gulf Coast Citrus	Collier	40	40	0	40
09/25/92	4-1-92-340	unknown	STOF, BCSIR Citrus Grove	Hendry	1,995	0	0	0
06/18/93	4-1-93-217	199200393	Corkscrew Road	Lee	107	0	0	0
02/25/94	4-1-94-209	199301131	Daniels Road Extension	Lee	65	0	0	0
05/09/94	4-1-93-251	199202019	Corkscrew Enterprises	Lee	563	437	0	437
10/27/94	4-1-94-430	199302371 199400807 199400808	Florida Gulf Coast University Treeline Boulevard	Lee	1,088	526	0	526
05/24/95	4-1-95-230	199302130	Turner River Access	Collier	1,936	0	0	0
08/07/95	4-1-95-274	199405501	Bonita Bay Properties	Collier	509	491	0	491
08/15/95	4-1-94-214	199301495	SW Florida Airport Access Road	Lee	14	0	0	0
09/19/96	4-1-95-F-230	199302052 199301404	I-75 Access Points	Broward	116	0	0	0
03/10/98	4-1-98-F-3	L30 (BICY)	Calumet Florida	Collier Broward Dade	0	0	0	0
03/27/98	4-1-97-F-635	199604158	Willow Run Quarry	Collier	359	190	0	190
06/11/99	4-1-98-F-398	199800622	STOF Water Conservation Plan	Hendry	1,091	0	0	0

Table 1 (continued).

Date	Service Log Number	Corps Application Number	Project Name	County	Habitat Impacts (Acres)	Habitat Preserved On-site (Acres)	Habitat Preserved Off-site (Acres)	Total Habitat Preserved (Acres)
09/27/99	4-1-98-F-310	199130802	Daniels Parkway	Lee	2,093	0	94	94
12/08/99	4-1-98-F-517	199607574	Cypress Creek Farms	Collier	239	0	24	24
04/17/00	4-1-98-F-428	199507483	Miromar	Lee	1,323	0	194	194
06/09/00	4-1-99-F-553	199900619	Naples Reserve	Collier	833	0	320	320
02/21/01	4-1-00-F-135	199803037	Corkscrew Ranch	Lee	106	0	0	0
04/17/01	4-1-00-F-584	200001436	Sun City	Lee	1,183	0	408	408
07/30/01	4-1-94-357	199003460	Naples Golf Estates	Collier	439	175	0	175
08/31/01	4-1-00-F-183	199900411	Colonial Golf Club	Lee	1,083	0	640	640
12/14/01	4-1-00-F-585	199301156	SW Florida Airport	Lee	8,058	0	6,986	6,986
01/30/02	4-1-98-F-372	199402492	Florida Rock	Lee	5,269	802	0	802
03/07/02	4-1-00-F-178	199901251	Southern Marsh Golf	Collier	121	75	80	155
04/24/02	4-1-01-F-148	199901378	Hawk's Haven	Lee	1,531	267	0	267
09/24/02	4-1-01-F-135	200001574	Verandah	Lee	1,456	0	320	320
10/08/02	4-1-02-F-014	199602945	Winding Cypress	Collier	1,088	840	1,030	1,870
05/19/03	4-1-02-F-1741	200200970	Apex Center	Lee	95	10	18	28
06/10/03	4-1-01-F-1955	200003795	Walnut Lakes	Collier	157	21	145	166
06/18/03	4-1-01-F-136	199701947	Twin Eagles Phase II	Collier	593	57	98	155
06/23/03	4-1-01-F-143	199905571	Airport Technology	Lee	116	55	175	230
07/02/03	4-1-98-F-428	199507483	Miromar	Lee	342	158	340	498
09/04/03	4-1-02-F-1486	200206725	State Road 80	Lee	33	2	12	14
10/06/03	4-1-02-F-0027	200102043	Bonita Beach Road	Lee	1,117	145	640	785
12/29/03	4-1-02-F-1743	200202926	The Forum	Lee	650	0	310	310
01/18/05	4-1-04-F-4259	199702228	Bonita Springs Utilities	Lee	79	0	108	108
02/21/03 03/09/05	4-1-01-F-607	200001926	Mirasol	Collier	800	914	145	1,059
03/31/05	4-1-04-F-5656	200306759	Gateway Shoppes II	Collier	82	0	122	122
04/08/05	4-1-04-F-8176	2004-5312	Seminole Mine	Broward	110	0	220	220
04/29/05	4-1-04-F-5780 4-1-04-F-5982	2003-5331 2003-6965	Arborwood and Treeline Avenue	Lee	2,329	0	1,700	1,700
06/06/05	4-1-03-F-7855	2003-11156	Collier Regional Medical	Collier	44	0	64	64

06/14/04 06/21/05	4-1-04-F-5744	199603501	Terafina	Collier	437	210	261	471
02/22/05 03/16/05 06/29/05	4-1-04-F-6866	200309416	Ava Maria DRI	Collier	5,027	0	7,285	7,285
06/29/05	4-1-03-F-3915	199806220	Wenthworth Estates	Collier	917	0	458	458
07/15/05	4-1-04-F-5786	199405829	Land's End Preserve	Collier	231	0	61	61
09/08/05	4-1-04-F-5260	200106580	Parklands Collier	Collier	489	157	434	591
09/23/05 10/26/05	4-1-04-F-9348	200101122	Super Target-Tarpon Bay Plaza	Collier	34	0	20	20
11/14/05	4-1-04-F-6043	20034914	Summit Place	Collier	108	0	61	61
11/15/05	4-1-04-F-8847	20048995	STOF Administrative Complex	Collier	6	0	8	8
12/6/05	4-1-03-F-3483	200302409	SW Florida Commerce Center	Lee	207	0	305	305
12/6/05	4-1-04-F-6691	200310689	Rattlesnake Hammock Road Widening	Collier	23	0	23	23
1/04/06	4-1-04-F-9777	20048577	Logan Boulevard Extension	Collier	30	0	10	10
1/04/06	4-1-04-F-8388	2004554	Immokalee Regional Airport - Phase I	Collier	67	0	43	43
1/12/06	4-1-04-F-5912		Modified Water Deliveries; Tamiami Trail	Miami-Dade	21	0	30	30
				Totals	89,423	6,272	23,192	29,464

Table 2. *Targeted and acquired acreage totals of Conservation Lands in south Florida directly affecting the panther.

Name	Targeted[1] Acreage	Acquired Acreage	Indian Reservation
Federal Conservation Lands			
Everglades National Park	1,508,537	1,508,537	--
Big Cypress National Preserve	720,000	720,000	--
Florida Panther National Wildlife Refuge	26,400	26,400	--
Subtotal	**2,254,937**	**2,254,937**	--
State of Florida: Florida Forever Program			
Belle Meade	28,505	19,107	--
Corkscrew Regional Ecosystem Watershed	69,500	24,028	--
Twelvemile Slough	15,653	7,530	--
Panther glades	57,604	22,536	--
Devil's Garden	82,508	0	--
Caloosahatchee Ecoscape	18,497	2,994	--
Babcock Ranch	91,361	0	--
Fisheating Creek	176,760	59,910	--
Subtotal	**540,388**	**136,105**	--
State of Florida: Other State Acquisitions			
Water Conservation Area Number 3	491,506	491,506	--
Holey Land Wildlife management Area	33,350	33,350	--
Rotenberger Wildlife Management Area	25,019	20,659	--
Fakahatchee Strand State Preserve	74,374	58,373	--
Picayune Strand State Forest	55,200	55,200	--
Okaloacoochee Slough State Forest and WMA	34,962	34,962	--
Babcock-Webb Wildlife Management Area	79,013	79,013	--
Subtotal	**793,424**	**773,063**	--
Indian Reservations[2]			
Miccosukee Indian Reservation	--	--	81,874
Big Cypress Seminole Indian Reservation	--	--	68,205
Brighton Seminole Indian Reservation	--	--	37,447
Subtotal	--	--	**187,526**
GRAND TOTALS	**3,588,749**	**3,164,105**	**187,526**

[1] Targeted acres not available for all lands. In Such cases, targeted equals acquired acreage.

[2] Indian lands are included due to their mention in the MSRP. Acreages taken from GIS data.

* Table 2 was excerpted from the Brief of Amicus (2003). However, the lands shown as acquired in this table may include some private in-holdings and may include lands currently under sales negotiations or condemnation actions.

Table 3. Habitat suitability values for use in assessing habitat value to the Florida panther.

Land Cover Type	Value	Land Cover Type	Value	Land Cover Type	Value
Water	0	STA	4.5	Cypress swamp	9
Urban	0	Shrub swamp	5	Sand pine scrub	9
Coastal strand	1	Shrub and brush	5	Sandhill	9
Reservoir	1.5	Dry prairie	6	Hardwood-Pine forest	9
Mangrove swamp	2	Grassland/pasture	7	Pine forest	9
Salt marsh	2	Freshwater marsh	9	Xeric oak scrub	10
Exotic plants	3	Bottomland hardwood	9	Hardwood forest	10
Cropland	4	Bay swamp	9		
Orchards/groves	4	Hardwood swamp	9		

Table 4. Lands within the Core Area (Acres)

	Total			Conserved			At-Risk		
	Total	Urban	Non-urban	Total	Urban	Non-urban	Total	Urban	Non-urban
Primary	2,270,617	20,732	2,249,885	1,688,033	6,697	1,681,336	582,584	14,035	568,549
Dispersal	25,410	675	24,735	3,447	40	3,407	21,963	635	21,328
Secondary	807,428	25,551	781,877	311,208	777	310,431	496,220	24,774	471,446
Other	1,545,655	115,788	1,429,867	613,499	3,627	609,872	932,156	112,161	819,995
Total	4,649,110	162,746	4,486,364	2,616,187	11,141	2,605,046	2,032,923	151,605	1,881,318
Primary equivalents	3,349,530	77,037	3,272,493	2,103,452	8,464	2,094,988	1,246,079	68,573	1,177,506

Table 5. Landscape Compensation Multipliers

Zone of Impacted Lands	Zone of Compensation Lands	Multiplier
Primary	Secondary	1.5
Secondary	Primary	0.667
Other	Secondary	0.5
Other	Primary	0.333

Table 6. Florida Panther Habitat Matrix

Land Cover Types	Habitat Values	Project Footprint 40.3 acres				Off-site Compensation in Primary Zone **30 acres****			
		Functional Units Needed = 270				Functional Units Provided = 270			
Land Cover Type	**Score**	**Pre**		**Post**		**Pre**		**Post**	
		Acres	PHU	Acres	HU	Acres	PHU	Acres	HU
Urban	0	19.4	0	40	0				
Water	0	0.3	0	0.3	0				
Exotics	3	10.3	31						
Shrub Swamp	5	3.9	20						
Freshwater Marsh	9	6.4	58			30	270	30	270
Subtotal		40.3	108		0	30	270	30	270

HUs needed - 108 times the base multiplier of 2.5 equals 270 HUs. Project is in the Primary Zone with compensation in the Primary Zone.

The Corps is providing 270 HUs.

** The Corps is using 270 HUs as compensation for the Tamiami Trail project, leaving 28,062, of 28,332 HUs which are a part of the 8.5 SMA project and are slated to be restored. The excess of 28,062 HUs may be used as compensation for future Corps projects, if determined by the Service to be appropriate.

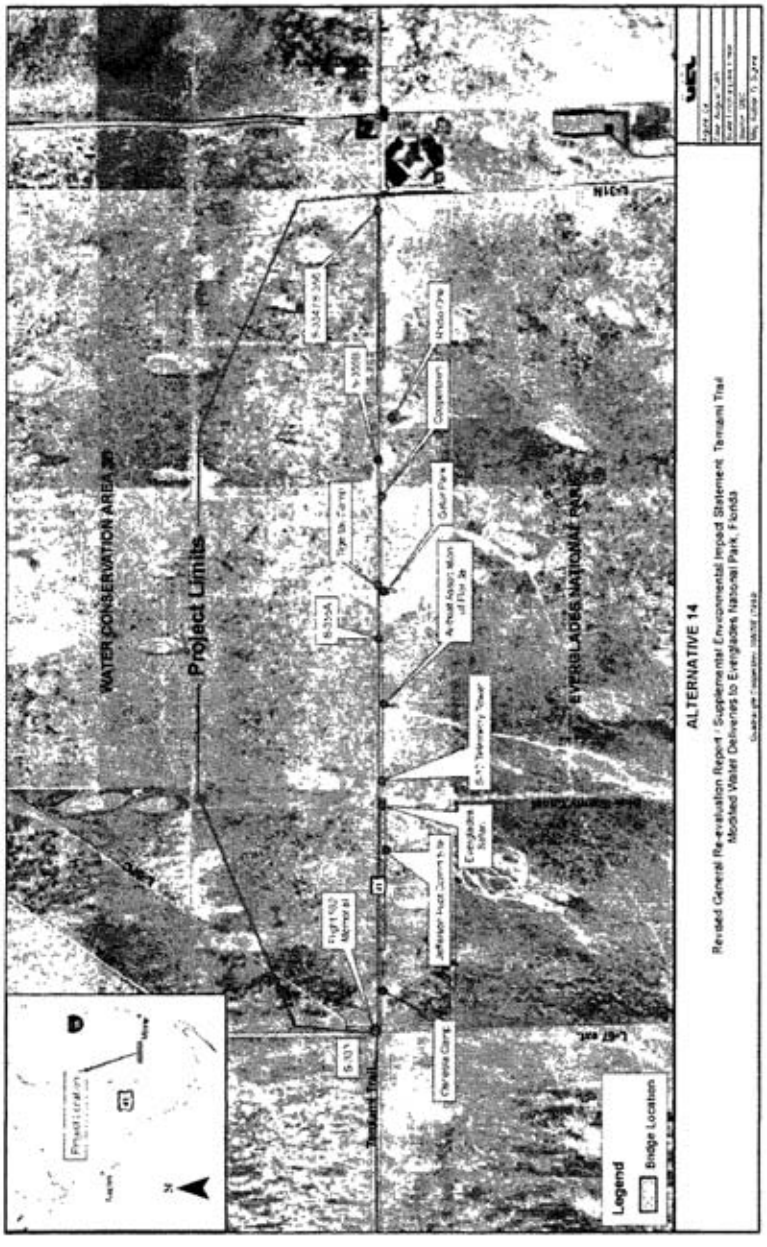


Figure 1. Location map.

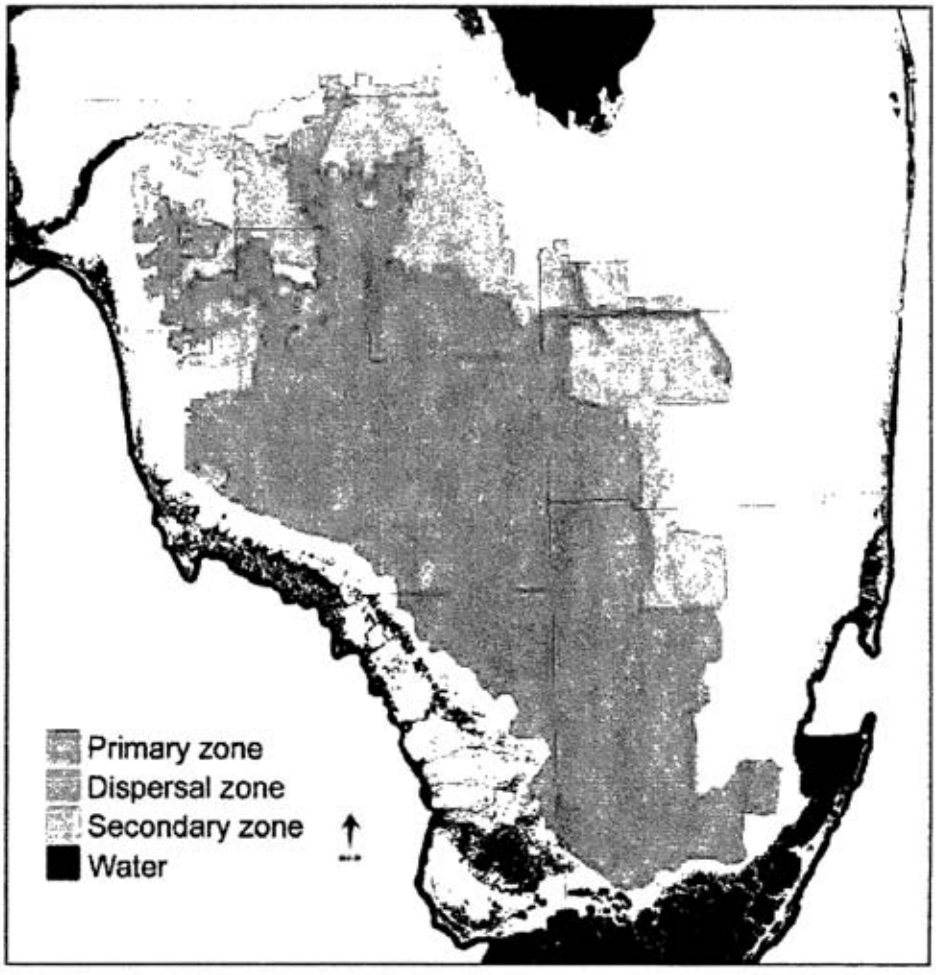


Figure 2. Florida panther zones.

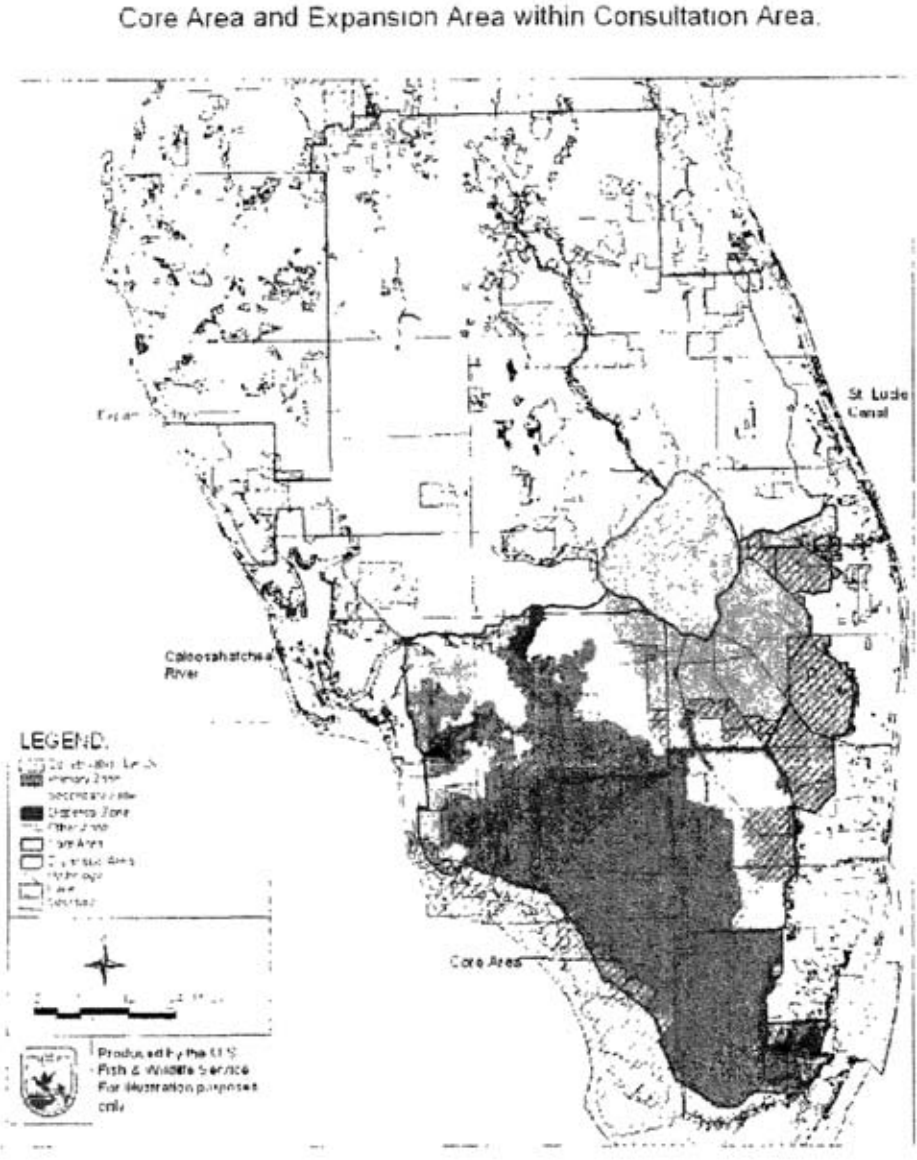


Figure 3. Florida panther core area.

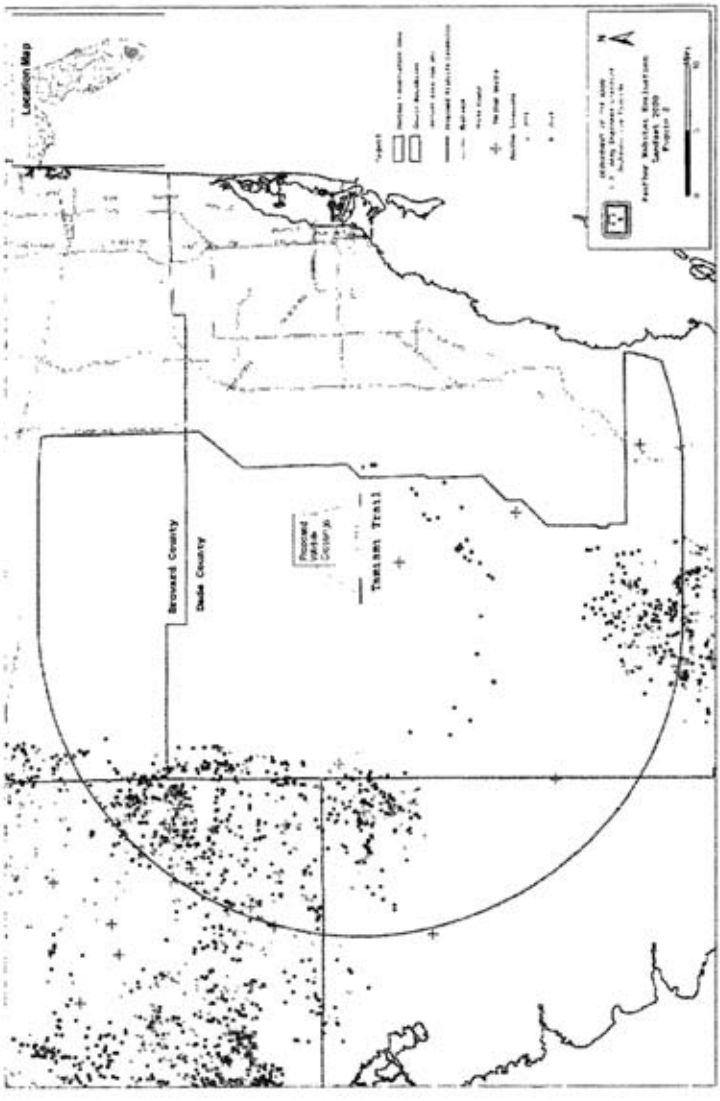


Figure 4. Satellite image showing 25-mile action area and recent (2004-2005) panther telemetry points.

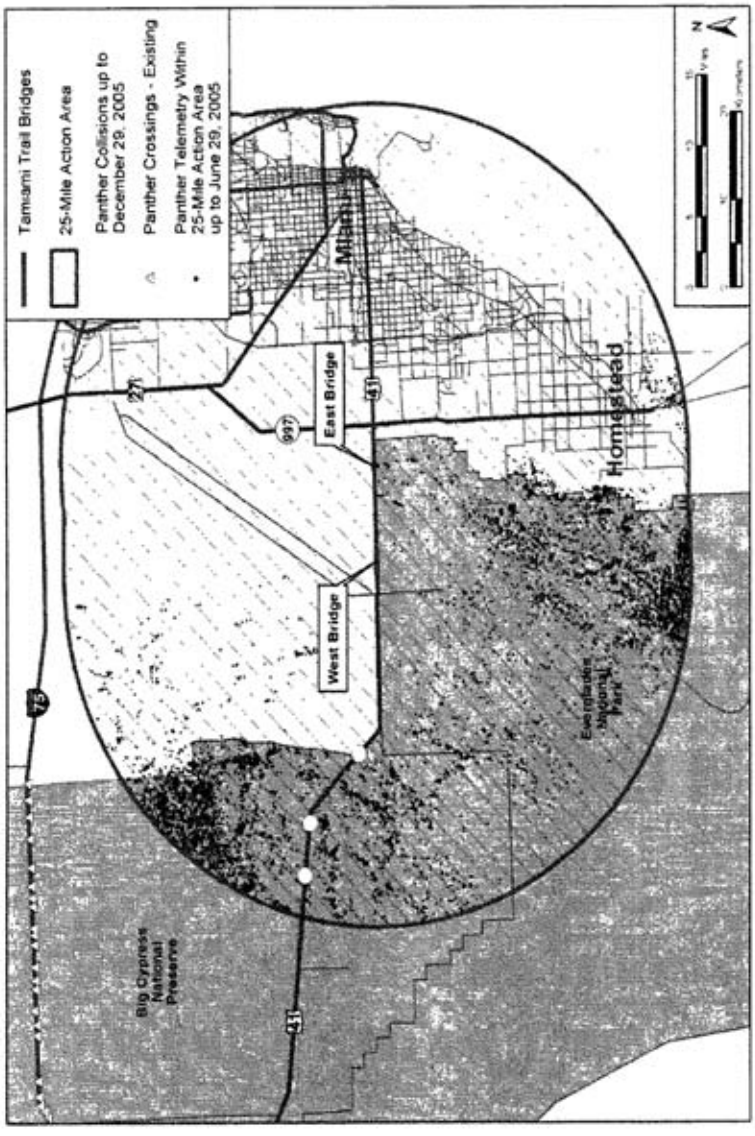


Figure 5. 25-mile action area showing all panther telemetry records, panther collisions, and existing panther crossings.

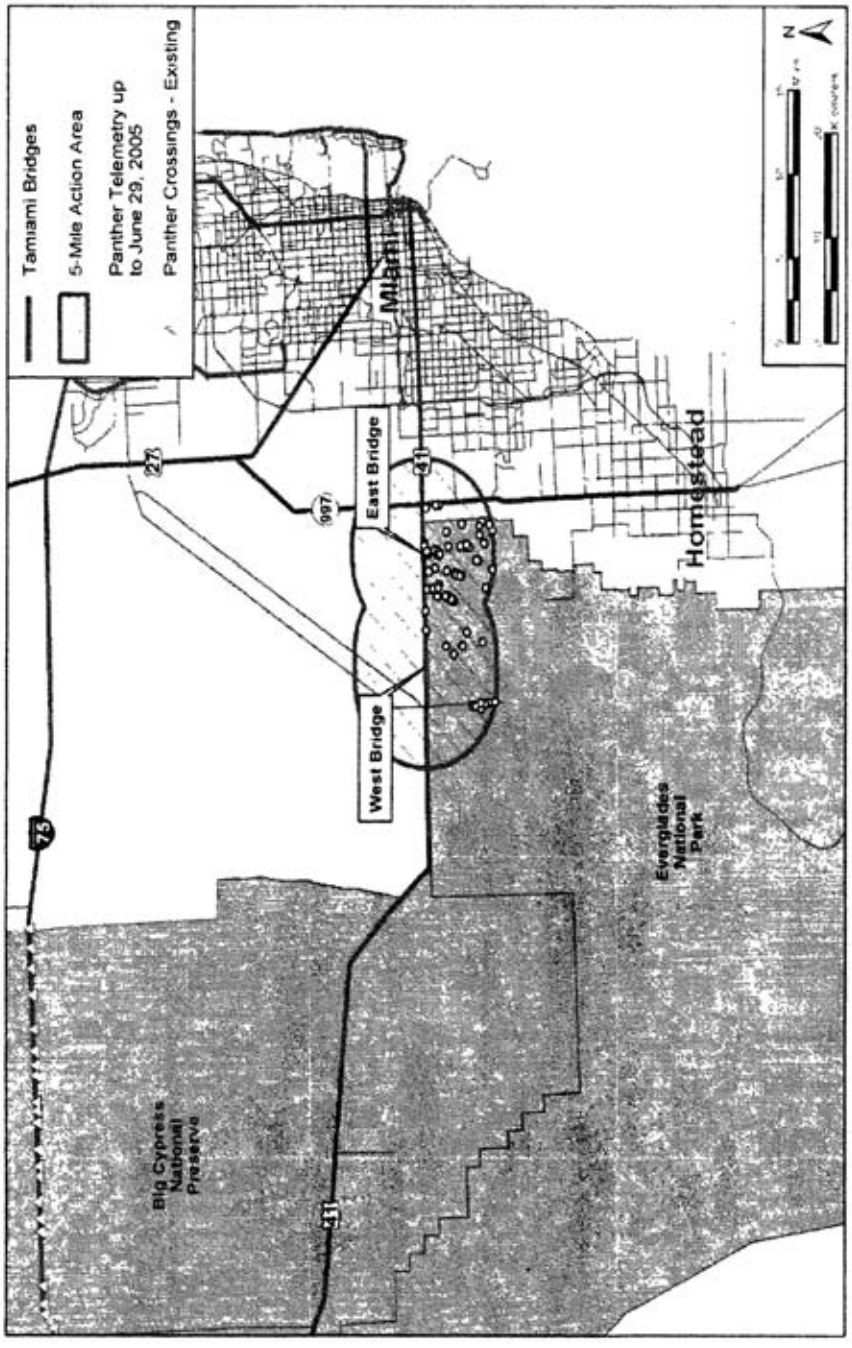


Figure 6. 5-mile action area showing all panther telemetry points

Figure 7. Real color satellite image showing project area and 25-mile action area.

732

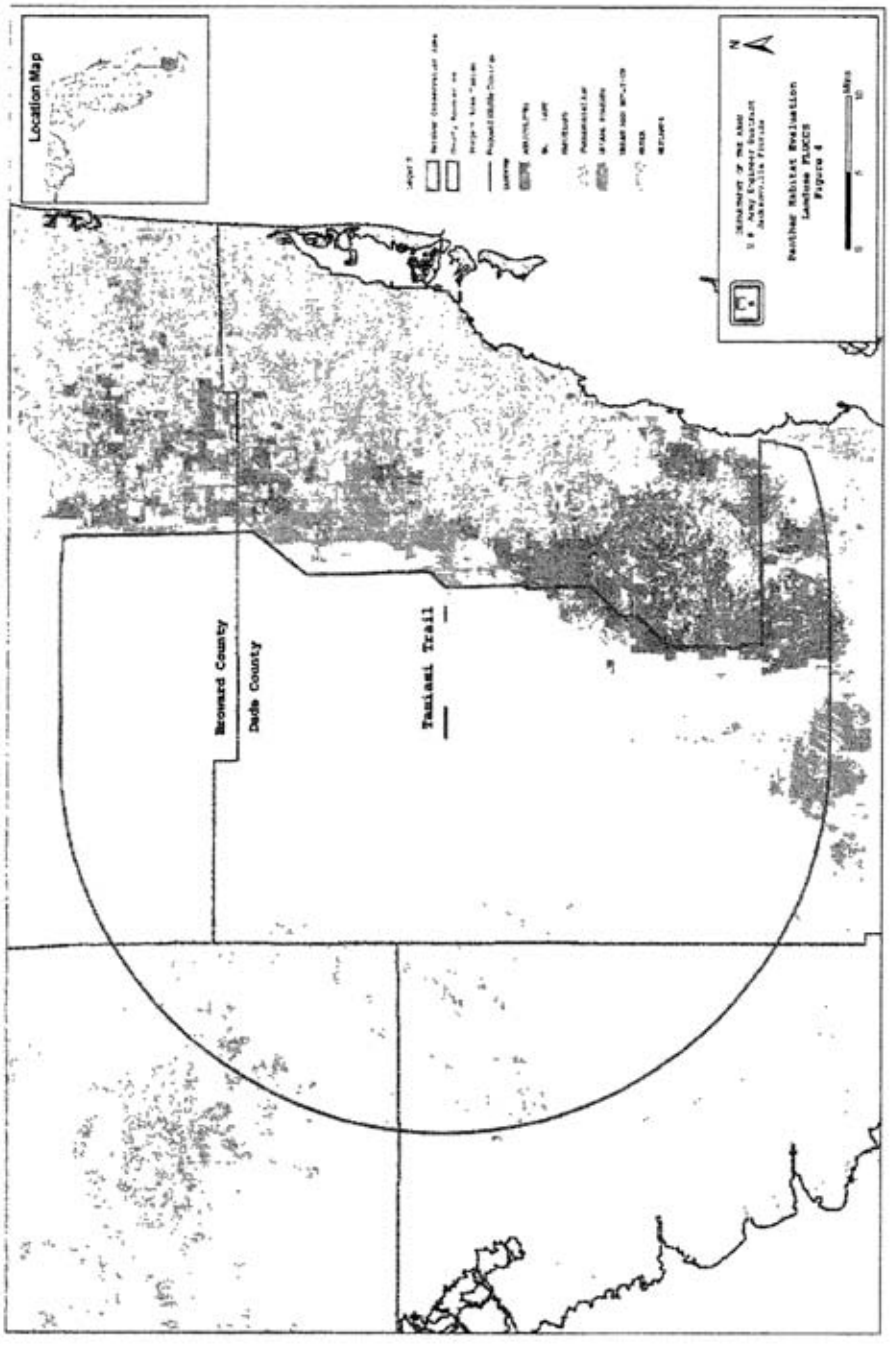


Figure 8. Land use (FLUCCS) map depicting 25-mile action area.

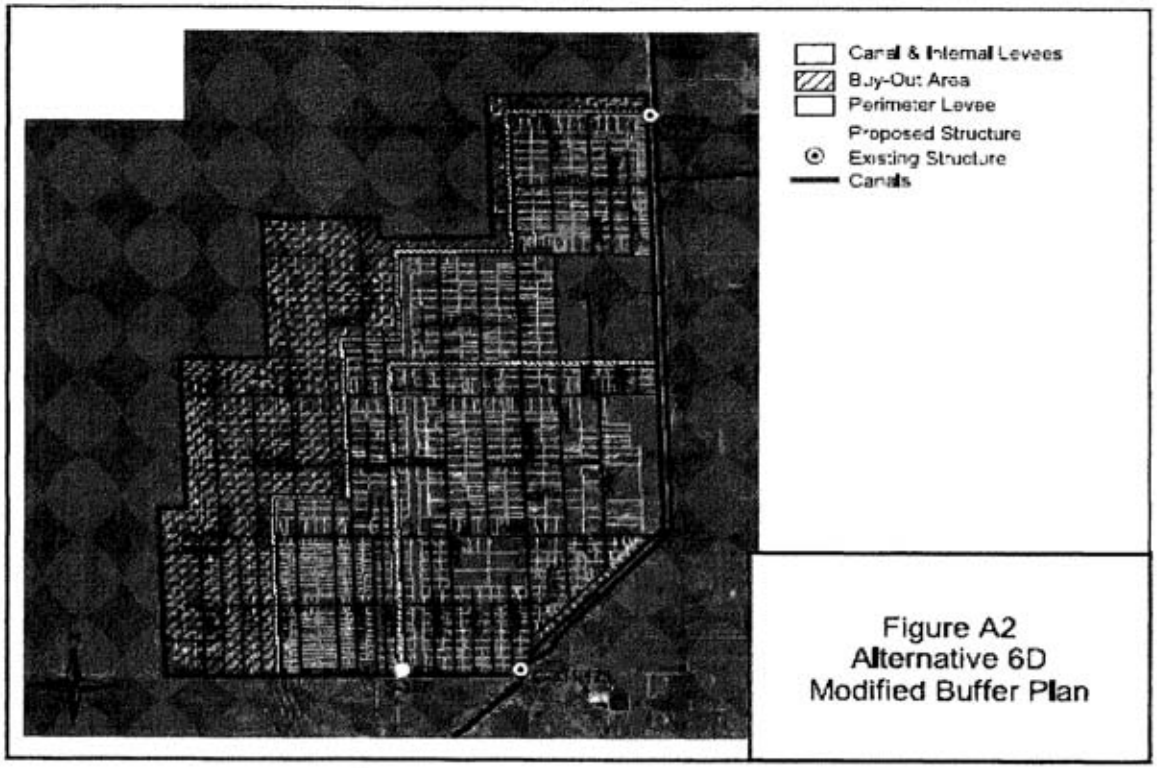


Figure 9. 8.5 SMA alternative 6D showing canal and levee alignments and buy-out area which will all serve as compensation for Tamiami Trail.

Figure 10. Aerial showing 3.5-mile buffer around the compensation area with all panther telemetry.

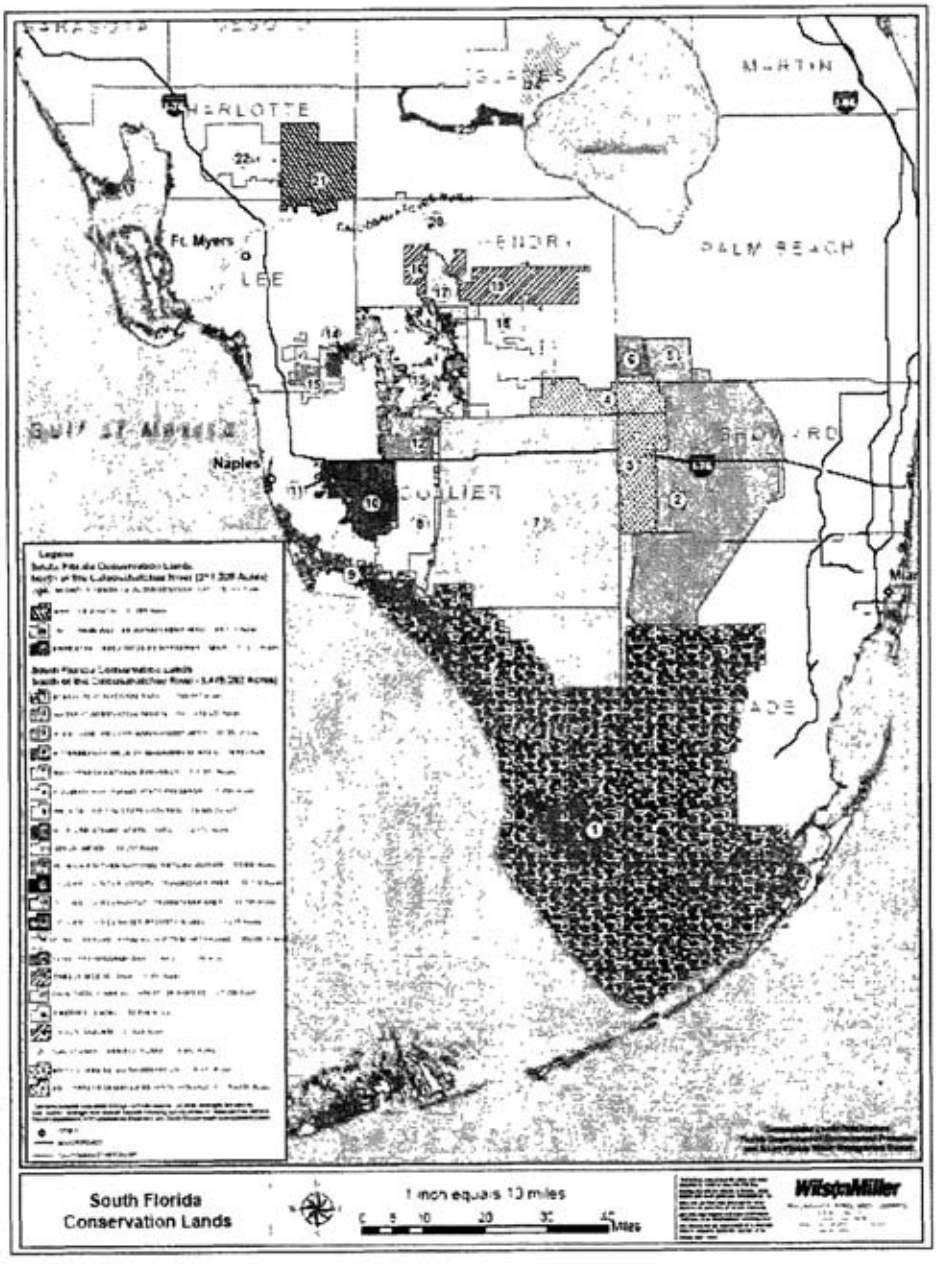


Figure 11. South Florida conservation lands.

Scoping Comments for the
Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modifications Modified Water Deliveries to Everglades National Park
November 2005

Letters of Comment on the
Final RGRR/SEIS
Tamiami Trail

U.S. Department of the Interior, Office of the Secretary, January 6, 2006

U.S. Environmental Protection Agency, Region 4, January 9, 2006

Florida State Clearinghouse, Florida Department of Environmental Protection, January 9, 2006

Florida Department of Environmental Protection, January 6, 2006

Florida Department of Transportation, January 9, 2006

Florida Department of State, Division of Historical Resources, December 15, 2005

Sierra Club, January 9, 2006

The Everglades Foundation, undated

Florida Power and Light, December 14, 2005

National Parks Conservation Association. January 4, 2006

Miccosukee Tribe (Lehtinen, Vargas & Riedi), January 9, 2006

Sample "form letter" of comment, 1,981 copies received, various dates through January 2006.

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

January 6, 2006

Honorable John Paul Woodley
Assistant Secretary of the Army
U.S. Department of the Army
Office of the Assistant Secretary Civil Works
108 Army Pentagon
Washington, DC 20310-0108

Dear Mr. Secretary:

Thank you for the opportunity to review and provide comments on the *Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement for the Tamiami Trail Modifications, Modified Water Deliveries to Everglades National Park, U.S. Army Corps of Engineers, Jacksonville District, South Atlantic Division, November 2005* (Report). The Report addresses the concerns identified by the Department of the Interior (Department) in our October 11, 2005, comment letter on the draft report. The Department appreciates the Corps' extraordinary effort to address our concerns. The completion of the Modified Water Deliveries to Everglades National Park Project remains as the highest Everglades restoration priority for the Department.

The Department supports the Recommended Plan, Alternative 14, described in the Report. Alternative 14, the Raised Profile with Two-Mile Bridge West and One-Mile Bridge East, achieves in the most cost effective manner the goal of restoring more natural flows of water to Everglades National Park – and thereby habitat within the Park – as set forth in the legislation authorizing the Modified Water Deliveries to Everglades National Park Project. The Recommended Plan will increase flow volumes, connectivity, and distribution of flows and is a crucial step towards restoring historic ridge and slough patterns and historic vegetative communities in Everglades National Park. It will significantly improve fish and wildlife resources in South Florida.

We look forward to working with the Corps toward the expeditious completion of the Modified Water Deliveries to Everglades National Park Project and the achievement of vital benefits for Everglades National Park and the region.

Sincerely,

Terrence C. Salt
Director of Everglades Restoration Initiatives

Cc: Lieutenant General Carl Strock, Commander and Chief of Engineers

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JAN 0 9 2006

District Engineer
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232
Attention: Dr. Jon Molding

SUBJECT: **Tamiami Trail Feature Revised General Reevaluation Report and Second Supplement to the 1992 Final Environmental Impact Statement (GRR/SEIS) on Modified Water Deliveries to Everglade National Park; Central and Southern Florida Project; Dade County, Florida; CEQ No. 20050509; ERP# COE-E 36167-E-FL [dated November, 2005]**

Dear Sir:

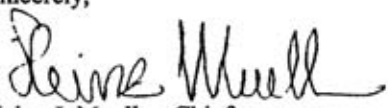
Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act [NEPA], the U.S. Environmental Protection Agency [EPA], Region 4 has evaluated the long-term environmental consequences of the two-bridge design which will be used to facilitate water movement under the Tamiami Trail [Trail] and then into the Everglades National Park [ENP]. This modification became necessary because water in the L-29 Canal would be at a higher design stage than had previously been estimated. This change in the bridge design will unavoidably raise the costs to lessen potential structural impacts to the Trail. However, its will also have the desired effect of reducing the likelihood of erosion/water penetration and/or low points of the roadway being overtopped. Since the Trail is an important east-west connector in South Florida, especially during hurricane evacuation scenarios, its blockage would be very problematic.

As a result of further review we determined that our original comments were satisfactorily addressed. Our lack of objections to this proposal is a function of its overall societal and environmental benefits and the fact that future projects associated with the Comprehensive Everglades Restoration Plan [CERP] will improve existing upstream water quality problems. Nonetheless, we believe that an adaptive management approach would be beneficial to take maximum advantage of information gained from concurrent/future water quality monitoring and wetland functions' analysis.

EPA appreciated the opportunity to review the document and intends to continue its collaboration with all involved parties on this and future CERP projects. Mr. Eric Hughes [EPA's Jacksonville District Liaison -904-232-2464] and Mr. Ron Miedema

[EPA's South Florida Office - 561 616-8741] will serve as initial points of contact for wetland issues while Dr. Gerald Miller [404 562-9626] can be contacted regarding over all NEPA matters.

Sincerely,



Heinz J. Mueller, Chief
NEPA Program Office

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

January 9, 2006

Mr. Jon Moulding
Planning Division, Jacksonville District
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Corps of Engineers and South Florida Water Management District – Central and Southern Florida Project – Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modified Water Deliveries to Everglades National Park – Miami-Dade County, Florida.
SAI # FL200512061704C (Reference SAI # FL200508191442C)

Dear Mr. Moulding:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the referenced final RGRR/SEIS.

The Florida Department of Environmental Protection (DEP) continues to support the proposed project and the Recommended Plan – Alternative 14, Two-Mile Bridge West and One-Mile Bridge East. Staff notes that the final RGRR/SEIS document includes significant improvements and addresses many of the state's and DEP's previous comments. Please refer to the enclosed DEP memorandum for additional comments and recommendations.

The Florida Department of Transportation (FDOT) notes that the final RGRR/SEIS reflects the implementation of all the major issues of concern identified in their comments on the draft RGRR/SEIS. FDOT staff will continue to work with the Corps of Engineers on development of a maintainable stormwater pollution abatement system, project design phase discussions, and operational plan effects on the redesigned Tamiami Trail. Please refer to the enclosed letter from the FDOT for further details.

The Florida Department of State (DOS) indicates that staff has reviewed Sections 2.10, 5.6.10, and 7.10, pertaining to Cultural Resources, in the referenced final RGRR, and concurs with the information provided. DOS looks forward to coordinating with the Corps of Engineers in minimizing adverse effects to the Tamiami Trail (8DA6767), due to its potential eligibility for the *National Register of Historic Places*. Please see the enclosed DOS letter for further information.

Based on the information contained in the final RGRR/SEIS and the comments provided by our reviewing agencies, the state has determined that, at this stage, the referenced project is consistent with the Florida Coastal Management Program (FCMP). The applicant must, however, address the concerns identified by the state agencies prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review the proposed project. If you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Sincerely,

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm
Enclosures

cc: Greg Knecht, DEP, MS 3560
John Outland, DEP, MS 45
Tim Gray, DEP, Southeast District
Charlotte Hand, FDOT
Scott Edwards, DOS

Florida
Department of Environmental Protection

"More Protection, Less Process"

Project Information	
Project:	FL200512061704C
Comments Due:	12/30/2005
Letter Due:	01/09/2006
Description:	DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS AND SOUTH FLORIDA WATER MANAGEMENT DISTRICT - CENTRAL AND SOUTHERN FLORIDA PROJECT - FINAL REVISED GENERAL REEVALUATION REPORT/SECOND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (RGRR/SEIS) FOR THE TAMIAMI TRAIL MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK - MIAMI-DADE COUNTY, FLORIDA.
Keywords:	ACOE/SFWMD - TAMIAMI TRAIL MODIFIED WATER DELIVERIES TO EVERGLADES RGRR/SEIS
CFDA #:	99.997
Agency Comments:	
AGRICULTURE - FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES	
No Comments Received	
FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION	
No Comment per Mary Ann Poole on 12/23/2005.	
STATE - FLORIDA DEPARTMENT OF STATE	
The DOS has reviewed Sections 2.10, 5.6.10, and 7.10, pertaining to Cultural Resources, in the referenced final RGRR, and concurs with the information provided. Staff looks forward to coordinating with the Corps of Engineers in minimizing adverse effects to the Tamiami Trail (8DA5767), due to its potential eligibility for the National Register of Historic Places.	
TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION	
Comments were transmitted to the Clearinghouse by letter on January 9, 2006.	
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	
DEP continues to support the proposed project and the Recommended Plan - Alternative 14, Two-Mile Bridge West and One-Mile Bridge East. Staff notes that the final RGRR/SEIS document includes significant improvements and addresses the state's and DEP's previous comments.	
SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT	
The SFWMD is a partner with the USACOE in this project. Consequently, a consistency determination is not necessary.	

For more information please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

Visit the Clearinghouse Home Page to query other projects.

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Privacy Statement

Memorandum

TO: Florida State Clearinghouse

THROUGH: Greg Knecht

FROM: Inger Hansen, Temperince Morgan, and John Outland

DATE: December 29, 2005

SUBJECT: Jacksonville District Corps of Engineers and South Florida Water Management District, Final Revised General Reevaluation Report and Second Supplemental Environmental Impact Statement on Tamiami Trail as part of Modified Water Deliveries to Everglades National Park, Miami-Dade County, Florida

SAI # FL05-1704C (Reference SAI# FL05-1442C)

RECEIVED
JAN 0 6 2006
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The Department of Environmental Protection has reviewed the above-referenced Final Revised General Reevaluation Report (RGRR) and Environmental Impact Statement (EIS) and offers the following comments:

Department staff provided extensive comments on this project in our letter dated September 19, 2005. We ask that you refer to these comments with regards to Department position on project issues and related regulatory requirements. The Department continues to fully support efforts to move the Tamiami Trail portion of the Modified Water Deliveries project forward. Alternative 14 consisting of the two-mile bridge on the west and the one-mile bridge on the east end, in addition to raising the un-bridged portions of the existing highway, is the best interim alternative to move forward without prejudging the possibility of a more permanent solution under the Comprehensive Everglades Restoration Plan (CERP). The Tentatively Selected Plan will provide early hydraulic conveyance capacity between the L-29 and Northeast Shark River Slough, enhancing ecological benefits to the ridge and slough systems. We understand that a longer bridge alternative could not be implemented at this time because it would greatly exceed the budget. In addition, completion of Modified Water Deliveries is essential for federal appropriations to construct several CERP restoration projects.

Due to the short duration of the comment period and unavailability of staff over the holidays, the Department has not yet had the opportunity to review the revised report in detail. However, it appears the significant improvements have been made to the document. We note that Appendix L includes responses to comments provided on the draft RGRR/EIS by agencies and stakeholders. It appears that the Corps has attempted to address all of our previous comments by providing clarifications and editorial changes to the text of the report, and has made suggested changes, particularly those related to storm water management concerns, to the final document. We note the following specific comments:

1) Comment 2- Section 5.8-Selection of the Recommended Plan has been expanded greatly and now provides a much more detailed explanation of the basis for selection of Alternative 14.
2) Comment 4- Concur that changes to the document were made, however these changes were in Section 7.4, not Section 5.8.
3) Comment 8- Concur that changes to the document were made, however these changes were in Section 7.65, not Section 7.20.
4) Comment 16- Response to comment indicates that text will be revised; however no changes to this section were noted.
5) Comment 23- Response to comment indicates that Appendix G has been revised; however no changes to this section were noted.

We look forward to working together further with the Corps and the SFWMD to ensure implementation of this important project.

cc: Inger Hansen (email)
Tim Gray (email)
Temperince Morgan (email)
John Outland (email)
Shelley Yaun (email)
Stacey Feken (email)

Florida Department of Transportation

JEB BUSH
GOVERNOR

DENVER J. STUTLER, JR.
SECRETARY

January 9, 2006

Colonel Robert M. Carpenter
U. S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: FDOT Comments on the Central and Southern Florida Project, Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modifications

Dear Colonel Carpenter:

We would like to commend you and your staff for your significant effort to respond to our prior comments dated September 30, 2005 on the Draft Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (EIS) for the Tamiami Trail Modifications. Our comments have been focused on issues related to maintenance, long-term project viability, division of project responsibility, and project costs. The Final document, dated November 2005, reflects the implementation of all our major comments of concern.

The Florida Department of Transportation (FDOT) will continue to work with the Corps towards development of a maintainable stormwater pollution abatement system during the final design stage for the bridges. We will continue to participate in your design phase to ensure development of a practical design which meets FDOT's approval for design variations, drainage design, pavement design, and emergency operations. The FDOT will also continue to work with the Corps on operational plans regarding water elevations, emergency operations, and/or future projects on the redesigned Tamiami Trail.

We also note that we have numerous issues to be worked out through future negotiations including the various real estate authorizations as generally described in your Real Estate Plan Appendix H, geotechnical issues, and utility relocations. We look

forward to the receipt of your Record of Decision for this project.

Sincerely,

Alice Bravo

Alice N. Bravo, P.E.
District Planning and Environmental Management Engineer

cc: Stuart Appelbaum, USACE
Dennis Duka, USACE
Rock Sak, DOJ
Denver Stutler, Jr., FDOT
John Martinez, FDOT
State of Florida Clearinghouse

FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF HISTORICAL RESOURCES

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DEC 19 2005
OIP / OLGA

December 15, 2005

Ms. Lauren Milligan
Director, Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

RE: DHR No. 2005-12491 / Date Received: December 9, 2005
SAI No. FL200508191442C/ Jacksonville District Corps of Engineers
Central and Southern Florida Project - Final Revised General Reevaluation Report/ Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modifications - Modified Water Deliveries to Everglades National Park

Dear Ms. Milligan:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties*, Chapter 267, *Florida Statutes*, Florida's Coastal Management Program, and implementing state regulations, for possible impact to historic properties (archaeological, architectural, and historical) listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

We reviewed Sections 2.10, 5.6.10 and 7.10, pertaining to Cultural Resources, in the referenced final revised general reevaluation report, and concur with the information provided. We look forward to coordinating with the Corps in minimizing adverse effects to the Tamiami Trail (8DA6767), due to its potential eligibility for the NRHP.

If you have any questions concerning our comments, please contact Janice Maddox, Historic Sites Specialist, at jmaddox@dos.state.fl.us or 850/245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Frederick P. Gaske, Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • http://www.flheritage.com

☐ Director's Office (850) 245-6300 • FAX: 245-6436
☐ Archaeological Research (850) 245-6444 • FAX: 245-6436
■ Historic Preservation (850) 245-6333 • FAX: 245-6437
☐ Historical Museums (850) 245-6400 • FAX: 245-6433
☐ Southeast Regional Office (954) 467-4990 • FAX: 467-4991
☐ Northeast Regional Office (904) 825-5045 • FAX: 825-5044
☐ Central Florida Regional Office (813) 272-3843 • FAX: 272-2340

Stuart J. Appelbaum
Chief, Planning Division
Attn. Jon Moulding
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

January 9, 2006

Re: Final Revised General Reevaluation Reports/Second Supplemental Environmental Impact Statement (RGRR/SEIS) For the Tamiami Trail Modifications

Dear Mr. Appelbaum,

The Sierra Club appreciates the opportunity to comment upon the Final Revised General Reevaluation Reports/Second Supplemental Environmental Impact Statement (RGRR/SEIS) For the Tamiami Trail Modification Project ("Project"). The Sierra Club is dedicated to the exploring, enjoying and protecting wild places on earth; to practicing and promoting responsible uses of the Earth's resources and ecosystems; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives.

In our commitment to promoting stewardship of the natural resources, one of Sierra Club's priority national conservation campaigns is to protect and restore the Everglades. For over two decades the Sierra Club and its Florida Chapter and been actively involved in this essential pursuit. Sierra Club educates citizens through numerous outings into the many habitats of the Everglades to bring a clear understanding of the resources and the challenges involved in restoring this crucial resource. Sierra Club collaborates with many other organizations as a member of the Everglades Coalition working together to educate, promote, and cajole numerous local, state and federal agencies to attain protection and restoration of this World Biosphere Heritage site.

The raising of Tamiami Trail has great importance to Sierra Club and is recognized as a cornerstone of Everglades restoration. The Florida Chapter has a dedicated Website concerning the project (www.build-the-skyway.com) to educate citizens about the project.

It therefore was a great disappointment to see that despite numerous concerns, both scientific and financial that the RGRR/SEIS selected Alternative 14 as the preferred plan. Sierra club would like the record to reflect our serious misgivings about choosing Alternative 14 over Alternative 17. The environmentally preferred plan and the most cost effect plan were not selected based upon short-term cost prohibitions. Moreover, the RGRR/SEIS lacked adequate scientifically based responses to relevant information and questions brought forth by governmental agencies, non-governmental organizations citizens, and academia alike.

The Everglades National Park Protection and Expansion Act of 1989 (PL 101-229), the authorizing legislation for this project, states:

> *Construction of project modifications authorized in this subsection...are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the park in particular and shall not require further economic justification.* (Section 104(a)(3))

Given the above cited reference, it is therefore further unjustified that the Army Corps of Engineers (ACOE) would choose an option that does not consider long-term restoration goals, but rather opts for a plan that often provides less than half of the environmental benefits and objectives that Alt. 17 would provide (see appendix E "Tamiami Trail Modifications Benefits Analysis Procedures"). Worst yet, conclusions were based upon a financial objection to the "skyway" cost, but does not take into account future actions and costs associated with retrofitting Tamiami trail to accommodate for the Comprehensive Everglades Restoration Project (CERP) that taxpayers will have to bear.

Furthermore, in response to the numerous governmental and public comments centered upon the shortcomings of the Alt. 14 2-1 split appeared flippant, and often conflicting in response.

For example, the Florida Fish and Wildlife Conservation Commission comment letter (page 3, September 19, 2005) refers to Alt. 14 as "an interim alternative to implement prior to the approval of a more permanent solution under the Comprehensive Everglades Restoration Project." Yet, the ACOE refused to acknowledge numerous comments based upon these concerns that that Alt 14 will implemented only to be inadequate to meet future restoration goals criteria (for example see Appendix L Public Involvement, FL Dept of Transportation issues that need to be addressed- 4.a. "The consistency of this project design with future restoration objectives and projects.").

Another example of inadequate response to agency concerns please refer to Appendix L Public Involvement: Department of Interior - Pg. 9.56 regarding the compatibility with future planning with CERP Decompartmentalization Project (Decomp) currently planned Phase 1 projects: "*...Mod waters TT does not depend on Decomp; it is the other way around.*" Further on page 4, the FEIS response further stated that

> "*... regrets cannot accommodate DOI concerns and needs due to schedule requirements.*" and "*... this level of detail is not appropriate for a feasibility-level study*"

Responses such as these simply do not even attempt to ameliorate the tax payer's burden of assuming retro fitting TT to accommodate Decomp. authorizations. And is this not the appropriate time to explore and address relevant concerns before the Record of Decision?

As the FEIS acknowledges: "Individuals with resource and regulatory agencies, environmental advocacy organizations and the public have expressed a strong preference for providing an elevated highway that would provide additional environmental benefits." FEIS, vol. 1, p. ES-v. The FEIS further acknowledges that this choice among competing alternatives is a "controversial" and "unresolved" issue. Id. Especially given the level of controversy surrounding this issue, the Corps has an obligation, under NEPA, to provide a more comprehensive discussion regarding the feasibility of the Skyway alternative. The FEIS fails to fulfill that obligation. The Corps should prepare a new Draft EIS that vigorously explores the feasibility and environmental advantages of the Skyway alternative and re-circulate that new DEIS for public and agency review and comment.

Additionally, EPA- Pg 1 1. Inadequate response to the inquiries of Tamiami Trail's integrity in given future high water, forecasted hurricane episodes and evacuation needs, and possible overtopping of the roadbed. Not included in the RGRR/FEIS is the quite possible removal of fill that will be required to make the trail safe for increased flow under Mod waters; nor increased cost of DOT to maintain TT due to poor planning and engineering and result impacts to Everglades resources (See Appendix L for DOI/ENP potential impacts and ACOE responses).

The Corps apparently recognizes that the discussion of cumulative impacts in the DEIS is woefully deficient. See, eg, FEIS, vol. 2, p. 106 (response to Sierra Club comments acknowledging that DEIS failed to identify and discuss past, present and future related actions).

Unfortunately, the FEIS continues to fail to satisfy NEPA for the same reason. While the Corps has added a list that contains "some example" of related actions, the FEIS fails to discuss the environmental effects of those related actions in combination with the proposed action and action alternatives. Moreover, the FEIS fails to discuss the related actions that Sierra Club identified in its comments on the DEIS. This omission renders the FEIS inadequate as a matter of law. The Corps must prepare a new DEIS that includes a comprehensive list of related actions and that discusses the cumulative environmental effects of those actions in combination with the project, and the agency must re-circulate that draft for public and agency review.

In summary, it will be more difficult and more expensive in the long run to later construct a needed single bridge once the two separate bridges are in place, and should funds be available for this modification under additional funding sources. TTM should not be disassociated with CERP as taxpayers will have to shoulder the burden of additional cost that could have been ameliorated under TTM.

- The FEIS misleads the public by distorting the facts, such as cost benefits, wetland loss/gains, and net associations.
- The FEIS fails to adequately address a particular impact (glosses over an issue, includes only conclusion statements unsupported by scientific evidence, fails to

provide studies or quantitative data to support assertions, fails to address competing expert evidence, etc.)

- FEIS ignores projects that could have cumulative impacts when considered in combination with the Tamiami project.
- FEIS fails to adequately address an alternative that would reduce significant environmental effects.
- FEIS ignores best buy figures.

Statements such as in response to an DOI inquiry *pg 11, #83 DOI- "...details that are not available a this time..."* are simply not acceptable on such a crucial project. Yet we are supposed to assume that everything created in future plans will be in the best interest of restoration, and thus will be able to answer these present concerns adequately.

Sierra Club will look forward to the realization of Everglades restoration through projects such as TTM and the "skyway" as a way to put forth the very best science to serve citizenry and our natural resources in the optimal capacity.

Kim Anaston-Karas
Co-chair, Everglades Committee
Florida Chapter, Sierra Club

1/17/2006

Comments on Final RGRR/SEIS for the Tamiami Trail Modifications, November 2005 (Modified Water Deliveries to Everglades National Park)

It is disappointing to find that this EIS process has not resulted in the selection of an alternative that would not only best meet the stated project's objective, but also one that is cost effective. As clearly noted by various resource agencies within the Department of Interior and voiced by the numerous public comment letters submitted in response to the draft revised RGRR/SEIS (Appendix L), Alternative 17, the 10.7 mile bridge, represents the "environmentally preferred plan" that best meets the four objectives of restoring the wetland functions of Northeast Shark River Slough. The Everglades National Park Protection and Expansion Act of 1989 (PL 101-229), the authorizing legislation for this project, states:

> *Construction of project modifications authorized in this subsection...are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the park in particular and shall not require further economic justification.* (Section 104(a)(3))

The environmental benefits for Alternative 17 are described in supporting documents from the U.S. Fish and Wildlife Service and Everglades National Park (Appendix F) and the EIS document itself also stated that this alternative provides the "greatest potential" for restoration of ridge and slough habitat within Everglades National Park. However, the EIS concludes that the longer bridge alternative could not be recommended because its costs would greatly exceed the project budget, even though this alternative was demonstrated to be cost effective relative to habitat units provided (Table 25).

It should also be noted, for the record, that even though the EIS indicates that Alternative 17, the 10.7 mile bridge, was not selected because of cost, the EIS presents misleading calculations of environmental benefits and impacts of this alternative relative to the other evaluated alternatives. For example, in Table 7, Impacts to Wetlands, the area under the proposed bridges is described as a wetland loss, in part due to shading by proposed bridges. However, open-water habitat is classified as wetland habitat under the National Wetland Inventory system and thus is not actually a loss, but rather a conversion of habitat. Additionally, the document presents another type of method for calculating wetland impacts in Section 7.6.5 (FLUCCS analysis), but this calculation is used only for the preferred alternative, which results in a wetland gain rather that a previously calculated net loss of wetland habitat. This analysis should have been used comparatively for all of the alternatives. However, more importantly, a wetland functional analysis should have been performed for the alternatives evaluated.

Given that the recommended plan selected presents an alternative that consists of two bridges as well as raising the crown elevation of the road from an *average* elevation of 11 feet to 12.3 feet, there is a concern that this alternative will create additional problems that were not addressed in the EIS. First, as noted by comments submitted to the draft document by the National Parks Conservation Association (letter dated October 11, 2005), the construction of these structures may preclude future modifications that may be proposed for the CERP Decompartmentalization Project. It will be more difficult and more expensive in the long run to construct a single bridge once the two separate bridges

are in place should funds be available for this modification under additional funding authorizations.

Additionally, the raising of the road is likely to result in an increase in road mortality not documented in the EIS. The Tamiami Trail has been described as an "avenue(s) of destruction for snakes" and represents a significant barrier to mass reptile and amphibian migration (as described by Tennant in *A Field Guide to Snakes of Florida*, 1997). By increasing the road elevation, wildlife will require longer crossing time thereby increasing the exposure time to road traffic and subsequent injury or mortality. This environmental impact has not been evaluated in the current EIS.

Recommendation: The Corps, *at minimum*, should consider an alternative that incorporates a single 4-mile bridge, as described within the *Draft Tamiami Trail Alternative Optimization Report*, prepared by Everglades National Park (Appendix F). This alternative appears to result in restoring similar historic flow volumes to Northeast Shark River Slough as the 10.7 mile bridge alternative. However, a four mile bridge will only provide 37% of the potential connectivity between Water Conservation Area 3B and Northeast Shark River Slough (ENP Report, p. vii). Therefore, the Corps and DOI should work as expeditiously as possible to secure funds that will allow the construction of an elevated roadway across the entire 10.7 mile portion of the Tamiami Trail between S-334 and S-333.

Thank you for this opportunity to comment.

Sincerely,

Dr. Betty J. Grizzle
Wetland Scientist
The Everglades Foundation
18001 Old Cutler Road, Suite 625
Palmetto Bay, FL 33157
305-251-0304
bgrizzle@evergladesfoundation.org

FPL Comments on Tamiami Trail Final
From: Florette_Braun@fpl.com
Sent: Wednesday, December 14, 2005 1:19 PM
To: TTMComments SAJ
Subject: Comments on Tamiami Trail Project Plans

Dear Mr. Moulding: FPL would like to reiterate our earlier comments noting that we have a distribution line running along the length of Tamiami Trail within your proposed project. This critical line serves the Indian Reservation. The line will need to be relocated and/or modified to accommodate the Tamiami Trail project, but it can not be taken out of service for any length of time. An alternate location will need to be provided for this line and the new facility will need to be constructed and in service before the existing line can be removed. If the new line is to be designed into the new bridge you will need to accommodate attachments and built-in manholes into the proposed bridges.

In order to minimize impacts to both the government and FPL it will be important to involve FPL in early review of plans for the bridges and elevated roadways. In this manner creative opportunities and solutions can be identified and costly impacts recognized and minimized.

Florida Power and Light will need at least one year's notice before the start of the project in order to provide time for cost estimation, budgeting, planning and relocation work. A contract agreement will also be needed to perform the distribution work.

In addition, this proposed work appears to cross a currently open FPL transmission line right-of-way where future facilities are to be located. Should the proposed project impact this right-of-way an agreement will need to be reached with FPL to address additional engineering and construction costs that may be incurred to accommodate bridges or elevated roadways within the right-of-way.

If you have any questions about our comments please let us know.

Thank you

Florette Braun
Environmental Services
561-691-7059

NATIONAL PARKS CONSERVATION ASSOCIATION®

Protecting Parks for Future Generations SM

4 January 2006

Stuart J. Appelbaum
Chief, Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

VIA EMAIL and post

Dear Mr. Appelbaum:

On behalf of National Parks Conservation Association (NPCA), I again urge the US Army Corps of Engineers (Corps) to select Alternative 17, the 10.7-mile, elevated "Skyway," as the best and viable alternative to restore water flow and ecological connection through America's Everglades into Everglades National Park and Florida Bay. NPCA is disappointed that the Corps's Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modification of MWD continues to recommend an alternative that does not deliver significant environmental benefits for Everglades National Park, and could preclude the construction of the Skyway in the future with other authorizations or appropriations.

We appreciate the Corps's attempts to address a number of issues NPCA raised in our previous comments, dated October 11, 2005. We understand the fiscal constraints presented by the Corps and the Department of Interior, however, we remain unconvinced of the benefits that the Corps's preferred plan provide for Everglades National Park and the greater Everglades ecosystem. Other alternatives are less costly and build a single span bridge, which would be more compatible with a possible future Skyway.

Without completely unimpeded flow, life-giving water will continue to flood the conservation areas and not travel naturally through Everglades National Park out to Florida Bay. Only a Skyway will truly reestablish unrestricted, free flowing water to the park, a critical component to a fully restored Everglades, on which South Florida's wildlife and its six million residents rely for drinking water, recreation, and other uses.

Sincerely,

John Adornato, III
Everglades Restoration Program Manager

NATIONAL PARKS CONSERVATION ASSOCIATION ®

National Office:
1300 19th Street, NW, Suite 300, Washington, DC 20036
Office: 202-223-NPCA (6722) Fax: 202-659-0650

Sun Coast Regional Office:
3475 Sheridan Street, Suite 307, Hollywood, FL 33021
Office: 954-961-1280 Fax: 954-985-8047

cc: Dan Kimball, Superintendent, Everglades National Park
Rock Salt, Everglades Restoration Initiative, Department of Interior
Carol Wehle, Executive Director, South Florida Water Management District

LEHTINEN VARGAS & RIEDI
ATTORNEYS AT LAW
A PROFESSIONAL ASSOCIATION

January 9, 2006

Colonel Robert Carpenter
District Commander
Jacksonville District
Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, Florida 32207

Via Fax, E-mail, and Regular Mail

Re: Miccosukee Tribe's Comments on the Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (Final RGRR/SEIS) for the Tamiami Trail Modifications

Dear Colonel Carpenter,

The Miccosukee Tribe of Indians of Florida hereby provides comments on the U.S. Army Corps of Engineers ("Corps") Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement ("Final RGRR/SEIS") for the Tamiami Trail Modifications dated August 2005. The Tribe incorporates by reference its comments on the Draft GRR/EIS previously submitted on October 11, 2005; the Tribe's comments on the Final GRR/EIS on Tamiami Trail dated 2003; the Tribe's comments on the Draft GRR/SEIS dated February 4, 2002; and the comments made at all public meetings.

The Miccosukee Tribe ("Tribe") contends that the two bridge Recommended Plan (Alternative 14) is unnecessary, expensive, and will continue to delay the restoration of the dying Everglades. The Tribe further contends that the Recommended Plan is contrary to the Water Resources Development Act of 2000 ("WRDA 2000"), and that the Corps has no authority to construct it under the Modified Water Deliveries Project ("MWD"). The Corps' selection of this bridging option is a thinly veiled attempt to build the Comprehensive Everglades Restoration Plan ("CERP") decompartmentalization component, which Congress directed could not be constructed until MWD was implemented. It will also continue to delay the implementation of both MWD and the Combined Structural and Operational Plan ("CSOP").

The Corps is well aware that when Congress passed WRDA 2000, it specifically required completion of the MWD Project prior to authorization of the CERP Decompartmentalization

7700 N. KENDALL DRIVE, SUITE 303 MIAMI, FLORIDA 33156 TELEPHONE (305) 279-1166 FAX (305) 279-1365

Project. WRDA 2000 mandates: "No appropriation shall be made to construct the Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project (including...Raise and Bridge East Portion of Tamiami Trail...) until the completion of the project to improve water deliveries to Everglades National Park authorized by section 104 of the Everglades National Park Protection Act of 1989 (16 U.S.C. 410 r-8)." Congress clearly prohibited exactly what the Park and Corps are now attempting to do. Building Tamiami Trail bridges as part of MWD will not stand up to a legal challenge.

The Tribe is disappointed that the Final RGRR/SEIS continues to fail to analyze the reasonable alternative of clearing, enlarging, and if necessary, constructing some additional culverts to allow the maximum projected flow of MWD of 4,000 cubic feet per second (cfs) through Tamiami Trail. Instead, the $159 million dollar Recommended Plan selected is nearly twice the amount initially authorized by Congress for the entire MWD Project ($81 million dollars). Under the 1989 Act which authorized MWD, the Secretary of the Army was only authorized to restore natural hydrologic conditions to the extent practicable. Therefore, even if delivering the projected 4,000 cfs is not practicable due to the constraints of the existing roadbed, the Secretary will have met his obligation by restoring the amount of water that is "practicable." Thus, spending almost double the cost of the initially authorized cost of the entire project for a minor component is clearly not "practicable," especially when Appendix D, Annex A shows that the current culvert system has the hydraulic capacity to pass the 4,000 cfs maximum projected flow. (Appendix D, Annex A at ¶ 3 and Table 2.) Perhaps that is the reason that the Corps fails to emphasize the 4,000 cfs contained in the Final GRR/SEIS dated December 2003 in the 2005 Final RGRR/SEIS.

Appendices D and E show that a bait and switch has been used to attempt to fool Congress into believing this expensive white elephant is necessary under MWD. Although the projected MWD maximum flow is 4,000 cfs, the advisory group utilized by the Corps improperly used NSM 4.6.2 modeling which provides a volume of water greater than CERP to model alternatives and justify the bridge (i.e. 1372 acre feet of water is far more than the 921 acre feet of water authorized for CERP D13R in the Yellow Book adopted by Congress.) (Section 3.2 and Appendix D, Annex A, Table 3; *See*, Table 3 attached as Tribe's Exhibit A.) Clearly, the two bridge Recommended Plan is not necessary to pass MWD predicted flows, and Congress and the public are being asked to provide a huge sum of money to build an unnecessary two bridge alternative that could prejudge the ultimate CERP solution for Tamiami Trail. It will also delay the implementation of MWD causing continued destruction of the priceless Everglades.

The Tribe contends that the Hydrology and Hydraulics Report (Annex A) also shows that the inexpensive alternative of cleaning the existing culverts, and adding a few more where necessary, would allow MWD to move forward expeditiously so that we can move forward toward CERP. The Final RGRR/FEIS admits that the culverts under Tamiami Trail have the capacity to convey the MWD required volume of water of 4,000 cfs. Id. at ¶ 3 and Table 2). The Corps also admits in response to the Tribe's comments that the Hydrology and Hydraulics Report "demonstrates that the current culverts do have the capacity to move large volumes of water." (Appendix L, Page 37 at Comment 25.) Yet, rather than choose the simple and inexpensive culvert alternative, the Park has manipulated the Corps into selecting a Recommended Plan that wastes

taxpayer money and violates the prohibition against constructing CERP Decompartmentalization before MWD is completed. Clearly, both the Park and the advisory group utilized by the Corps, have ignored the directive of Congress that MWD must be implemented before it will allow the bridging of the Trail to move forward. It is improper to spend money to raise the Trail under MWD when Congress has not authorized it.

The Tribe provided the Corps with its Ten Tamiami Trail Tenets in its October 11, 2005 comments on the Draft RGRR/SEIS. (See, Exhibit B.) Only after these Tenets have been met and the blockages have been cleared from the culverts and structures, will the Tribe ever support the bridging of Tamiami Trail. The modeling chicanery used in the Final RGRR/SEIS shows that the Park, not happy with MWD design volumes, has succeeded in getting the Corps to use a model that uses far more acre feet of water than Congress has even authorized for CERP to select the Tamiami Trail alternative. (See, Section 3.21 and Appendix D, Annex A, Table 3.) The result is that the taxpayer will waste money on an unnecessary bridge for a Pre-CERP project the cost of which has all ready escalated more than 300%. This cost is certain to escalate more, since Appendix I-12 shows that the disposal site for the road materials south of the 8.5 SMA is not permanent, yet the huge cost of moving these disposal materials a second time is not included in the cost.

The Tribe is also disturbed that the Corps continues to refuse to calculate the costs, both economic and environmental, that have occurred to the Everglades as a result of the delay of the MWD. The lengthy, unwieldy title of this document is indicative of the delay that has been caused by DOI's continued attempts to implement the $8.4 billion dollar CERP through this originally estimated $81 million dollar Pre-CERP MWD Project. The expeditious implementation of this long delayed restoration project is vital to the Tribal Everglades, which supports the culture and way of life of the Miccosukee Tribe. Despite this, the Corps allowed an ad hoc advisory group to meet in secret and remove performance measures that had been derived in previous public meetings that would have looked at impacts and benefits to the Tribe's lands in WCA 3A. (See, 5.21-5.23 and Appendix E at page 3.)

The Tribe's goal throughout the long Tamiami Trail process has always been to help the Corps select a plan for MWD that is economical and within its statutory authority under PL 101-229, so that this important project would be implemented expeditiously. The Final RGRR/SEIS correctly states that MWD is a prerequisite to WCA 3A Decompartmentalization under CERP and that any delay in the project will delay CERP. The two bridge Recommended Plan is guaranteed to cause continued delay. In 1992, when the Corps presented the MWD GDM/EIS to Congress, it claimed that the $81 million dollar project would be completed by 1997. In 1994, the Project Cooperation Agreement ("PCA") was signed to construct a project that had already ··calated from an $81 million to a $141 million dollars. Completion dates for the project included December 31, 2001; December 31, 2003; and December 31, 2006. None of the dates were met. The MWD Project cost has now escalated to at least $400 million dollars and its new completion date is 2010. Selection of the unauthorized two bridge Recommended Plan, which has not been authorized or approved by Congress and may never be, will guarantee this project important to the Tribe and the Everglades, will remain mired in morass.

II. SPECIFIC COMMENTS ON THE FINAL RGRR/SEIS

A. A TALE OF TWO BRIDGES: USING MODELING CHICANERY TO EXCEED AUTHORITY

"Get your facts first, then you can distort them as you please." - Mark Twain

PL 101-229 is the legislation that authorized the MWD Project. Tamiami Trail improvements were only a minor component of MWD, since as the Final RGRR/SEIS states at page ES-l, "it was believed that the existing culverts under the roadway would be adequate to convey the flow of water." The story of how a minor component became a major $159 million dollar Recommended Plan costing 2 times the entire cost of the originally authorized MWD Projects smacks of politics and chicanery. The Federal objective for the MWD Project, apparently long forgotten by the Corps, was to restore natural conditions to the extent practicable, which in the 2003 GRR/SEIS was a projected (maximum) MWD flow of 4,000 cfs through Tamiami Trail. (See, Corps'2003 GRR/SEIS and the Hydrologic and Hydraulics Report in the FEIS/RGRR/SEIS at Appendix D, Annex A, page 3, ¶ 2 which explains that the 4,000 cfs is based on the discharge capacity of certain structures.) Despite the fact that PL 101-229 only directed the Secretary of the Army to restore flows "to the extent practicable," and the prohibition of WRDA 2000 that there would be no bridging of Tamiami Trail before MWD was implemented, DOI conspired to get a bridge based on modeling impacts with greater volumes of water than even CERP allows.

The Hydrologic and Hydraulics Report contained in the Final RGRR/SEIS at Annex A contains many facts not contained or explained in the Final RGRR/SEIS itself. Annex A also admits that the "current system has the hydraulic capacity to convey the required volume of water." Id. at page 2, ¶ 3 and Table 2). Apparently, to get by the fact that the current system could handle projected MWD flows as the initial 1992 GDM had predicted, those who wanted more water improperly used a model that provided volumes of water far greater than Congress approved even for CERP to justify bridging Tamiami Trail under MWD. Buried in a separate volume in Appendix D, Annex A, technical information not contained in Volume I shows that NSM Model Version 4.62, which provides 1372 acre feet of water greater than the 921 acre feet of water authorized under CERP, was used to assess impacts of alternatives on Tamiami Trail. (Appendix D, Annex A, page 4, ¶ 6 and Table 3; Section 3.21.) While the Hydrology and Hydraulics Report says this model run was chosen because it represents stage and duration target for the Greater Everglades System, it should be remembered that MWD was never intended to produce CERP volumes of water, let alone those that exceed CERP. Id. at Page 4, ¶ 6.

The inappropriate use of an NSM model that produces volumes of water greater than CERP by the ad hoc advisory group to model water levels in WCA 3B and the L-29 canal and to determine impacts to Tamiami Trail has resulted in the selection of an over-designed Recommended Plan that will cost at least $159 million dollars. This is almost twice the amount of the funds of $81 million dollars authorized for the entire MWD Project. While the Tribe recognizes that the technical solution for the Tamiami Trail component needs to be compatible with the expected hydraulic conveyance of CERP, the 4,000 cfs projected (maximum) MWD flow

should be the federal objective. It is improper to over-design a project, and exceed project authorization, based on the future CERP which may never be authorized or built. While the Corps is quick to use Department of Transportation ("DOT") safety concerns as an excuse for reiniating the Tamiami Trail process and choosing such an expensive fix, a review of Appendix D, Annex B shows that DOT was kept in the dark about the modeling assumptions used for many years. A March 22, 2004 letter from DOT to the Corps in Annex B shows that it had requested information on hydrologic modeling assumptions used by the Corps as early as September 29, 2000, but that this modeling information had not even been provided as late as March 5, 2004. Thus, it appears that the only modeling assumptions ever provided to DOT, if they ever were, used NSM 4.6.2 modeling assumptions with water volumes far in excess of what MWD would provide.

The Tribe contends that the Corps has exceeded its MWD authority by using NSM 4.6.2 to over-design Tamiami Trail modifications, and that it currently has no authority without Congressional authorization to build this Tamiami Trail Project. Annex A claims that using the NSM created a more "prudent" design because it would be compatible with future restoration projects that are part of CERP," but the Tribe contends that the culvert analysis in Table 2 shows that the current system has the hydraulic capacity to convey the required quantity of water for the MWD Project and also provides a hydraulic connection to the sloughs. Id. at Page 6 at ¶ 8 and Page 11 at ¶ 17. The Corps has no authority to design Tamiami Trail for CERP under the MWD Project. Use of the west bookend model as a boundary condition because it was the most environmentally aggressive plan that put the largest amount of water in NESRS was also not in the Corps authority for MWD. Id. at page 9, ¶ 14(e); Appendix E; and Appendix L at Comment 43. In fact, the west bookend has been soundly criticized and rejected in the CSOP Advisory Team Process as not being within MWD project authority. It is unclear why the Corps would allow this unrestrained DOI model, which would create vast flooding in urban and agricultural areas, to be used for a project that is only supposed to restore more natural hydrological conditions "to the extent practicable."

B. AN AD HOC ADVISORY TEAM, WHICH FAILED TO COMPLY WITH FACA, MADE RECOMMENDATIONS ON PLAN & BRIDGE PLACEMENT

Contrary to the Federal Advisory Committee Act ("FACA"), the Corps assembled a team of non-federal entities and consultants who developed performance measures and screened alternatives at two secret, non-public meetings on May 23-26 and July 6-7, 2005. (Section 5.21.) This advisory group adopted the faulty Park analysis and allegedly prepared the MWD Tamiami Trail Modification Benefits Analyses Procedures dated August 2005 attached as Appendix E to the Final RGRR/SEIS. While the Corps attempts to paint this advisory group as a fact finding team, it is clear that it made policy recommendations and that the Corps improperly delegated their statutory authority to them. This advisory group not only deleted performance measures from the prior EIS process that had been devised in public meetings, it also created new ones, and revised and changed objectives of the project itself. Id. at page 3. Moreover, contrary to the National Environmental Policy Act ("NEPA"), the group failed to analyze all reasonable alternatives for Tamiami Trail. Thus, the Final RGRR/SEIS fails to analyze the viable culvert alternative. Instead, the document analyzes and rubber stamps new alternatives that were screened and developed by an ad hoc advisory team that met in a non-public process. This group was an advisory group that

screened and recommended alternatives to the Corps but was not constituted under the Federal Advisory Committee Act "FACA".

The advisory group also selected bridge locations. The western bridge is to be sited between the Blue Chanty Canal and one-half mile east of the Osceola camp. The eastern bridge is to be sited approximately one mile west of the S-334 and will extend to the west for approximately one mile. The Tribe contends that from a hydrologic, hydraulic, and environmental point of view, that the best way to distribute flows across Tamiami Trail is by clearing out and utilizing the existing culvert system. Depending on the ultimate flows to be passed, it may be necessary to increase the size and/or number of culverts, but passing the water on a broad front that mimics historic flow patterns and distribution must be better than concentrating flows at one point as the bridge will. Should the Recommended Plan ever be authorized by Congress, the Tribe contends the bridges should be positioned to be effective and non-obtrusive. The current proposed location does not meet these goals. The heart of Shark River Slough is several miles to the east of the proposed location, roughly in the middle of the 6.5-foot contours, which is readily apparent from topographic maps or satellite images. It would be logical and prudent to place the longer bridge in the east, so that it passes larger quantities of waters along historic flow lines. The current proposed location for the western bridge could force water to flow to the southeast, in an unnatural way, until it intersects the historic flow path and turns back to the southwest.

In addition, the proposed location for the Recommended Plan forces the water to circumvent a good portion of NE Shark River Slough, thus losing restoration benefits and wasting the tens of millions of dollars spent to forcibly buy out many residences in the 8.5 Square Mile Area allegedly to permit the raising of water in this area. Placing the larger bridge to the east would also help abate any impacts to the Tiger Tail and Osceola Indian Camps, which is a Tribe priority. The Final RGRR/SEIS fails to conduct a modeling analysis of how the Recommended Plan would impact the Miccosukee Reserve Area (MRA). With the entire L-67 Extension removed, and most of the water being released much closer to the MRA, one can logically expect that water levels around and/or in the MRA will increase, thus potentially creating flooding problems for the Tribe. This was not analyzed in the Final RGRR/SEIS.

C. FINAL RGRR/SEIS FAILS TO COMPLY WITH NEPA

1. Final RGRR/SEIS Improperly Segments the Modified Water Deliveries Project

Contrary to the conclusion in Section 1.4, the Tribe contends the Final RGRR/SEIS fails to comply with the National Environmental Policy Act ("NEPA"). The Tribe contends that the Corps has improperly segmented the MWD Project into separate components, such as the 8.5 Square Mile Area, Tamiami Trail, and Seepage Control components, contrary to the National Environmental Policy Act (NEPA). The 1992 General Design Memorandum ("GDM") and EIS for the MWD Project detailed the condition of the environmental and resources within a much larger study area than is currently being analyzed in the Final RGRR/SEIS. Tribal lands in WCA 3A, a 915 square mile area, were included in the impacted area in the 1992 GDM but are excluded from the analysis in the Final GRR/SEIS. NEPA clearly provides that connected projects should be evaluated in a single Environmental Impact Statement (EIS). (40 C.F.R. § 1502.4). The

Council on Environmental Quality (CEQ) regulations governing NEPA state that, *proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.* When the Corps prepared its GDM for the MWD Project in 1992, it evaluated all aspects of this interrelated project in a single EIS. This improper segmentation has caused the Final RGRR/SEIS to fail to adequately assess impacts on Tribal lands and resources. Finally, contrary to NEPA, the Corps did not respond to the Tribe's comments on this improper segmentation in the Final RGRR/SEIS.

2. The Final RGRR/SEIS Improperly Narrows the Purpose, Scope and Study Area

The narrow purpose and scope in Section 1.3 of the Final RGRR/SEIS allows the impacts of delay, especially those to the Tribal lands in WCA-3A, to remain unassessed and skews the analysis of the alternatives. It should be noted that Section 104(3)(d) of PL. 101-229, which directed the Corps to construct the Modified Water Deliveries Project, says that the *project modifications are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the Park in particular.* The purpose and scope should be that of the MWD that is contained in the 1992 GDM, which included the Water Conservation Areas, Northeast Shark River Slough and the Shark River Slough Basin of Everglades National Park (ENP). The 1992 GDM stated that: *when fully operational the MWD project will benefit the ecosystem function and habitat value of approximately 100,000 acres of wetlands in NESRS, 600,000 acres of wetlands in WCA-3A and 200,000 acres of wetlands within the Shark River Slough basin of ENP.* Thus, the described benefits in the Final RGRR/SEIS should include these areas that comprise 900,000 acres of Everglades wetlands.

Due to the failure of the Corps to broaden the study area, and consider the serious environmental harm being caused by the failure to complete MWD, the Final RGRR/SEIS omits issues of vital importance, such as the impact of the project and project delays on Tribal Everglades and the endangered and threatened species that inhabit these areas. The Corps has admitted in the Final GRR/SEIS on the 8.5 Square Mile Area component of the MWD project that *the loss of tree islands has an impact on critical habitats and cultural resources in WCA 3A, delayed implementation of the MWD project will cause an estimated loss of 8.4 islands and 246 acres per year at an estimated cost of $50,000 to $500, 000 per acre.* (Final GRR/SEIS on the 8.5 Square Mile Area, Section 5.2.7, page 64 and Table 7.) In light of the serious environmental and economic costs of delay, the Corps's excuse in the Final RGRR/SEIS Appendix L at Comment 29 that "the true ecological costs of delay can not be determined" (so they didn't do it), is belied by the fact that they have done it before. Placing the blame for delay on CSOP shows how little the person answering the Tribe's comments knows about the MWD Project, which is part of CSOP.

3. The Future Without Project Condition Is Improperly Defined

The Final RGRR/SEIS improperly defines the future without project conditions under NEPA in Section 3. Tamiami Trail modifications are not a Congressionally authorized project. The authorized project is Modified Water Deliveries. Thus, the *future without project condition* for the Modified Water Deliveries Project is NO MODIFIED WATER DELIVERIES PROJECT and not "the future of the study area as it would be expected to develop, if no improvements were

made to Tamiami Trail." It violates NEPA to segment the MWD project. There is no Congressionally authorized "Tamiami Trail Project." If the Corps believes they have authorization to build the Tamiami Trail modifications under MWD, then it is a component of the MWD and the scoping should encompass the entire project area. The Corps' failure to do so merely supports the Tribe's position that the Corps has no authorization to construct a $159 two bridge Recommended Plan under MWD and will have to go back to Congress for funding an authorization. Indeed, the Corps' response to the Tribe's comments at Appendix L, Comment 21 proves the Tribe's point in that it states that MWD operations are not a Tamiami Trail feature. (Note: The Tribe will not reiterate its comments on the FWS CAR since the Corps comments say it has no authority to address the CAR even though its conclusion is contained in the body of the Final RGRR/SEIS. The Tribe incorporates its prior comments in its October 11, 2005 comments. (Exhibit B.)

4. Corps Failed to Adequately Analyze Cumulative Impacts in the Final RGRR/SEIS

NEPA and its implementing regulations require that the cumulative impacts of past, present, and future actions be analyzed in the Final RGRR/SEIS. Section 7.18 of the Final RGRR/SEIS is woefully inadequate in that it only discusses the future impacts of CERP while it turns a blind eye to past and present actions. The Tribe contends that the cumulative impacts analysis must analyze the combined impacts that the delay of the MWD Project, coupled with the impacts of seven years of interim operational plans implemented due to that delay (such as ISOP and IOP), have had on the Tribal lands and endangered species in WCA 3A and other areas of the Everglades. For instance, the endangered Snail Kite population has declined 50% during the years of IOP operations and will be further jeopardized by another five years of these damaging interim water management operations. The Final RGRR/SEIS failed to analyze the cumulative impacts that at least five more years of IOP that will result from the Recommended Plan will have on the Everglades, endangered species, and Tribal lands.

5. The Final RGRR/SEIS Fails to Analyze the Reasonable Culvert Alternative

The Tribe continues to support the additional placement of culverts or minimal road raising, only as necessary, to restore flows to the extent practicable without adversely impacting flood protection and degrading the road bed. The Final RGRR/FEIS fails to analyze this reasonable alternative despite the fact that Appendix D shows the current system has the capacity to convey the required volume of water and provides a hydrological connection to the existing sloughs. Appendix D, Annex A at ¶ 2, ¶ 11 and Table 2.) The Corps failed to analyze the reasonable alternative of the cleaning, widening, and possible placement of additional culverts, as required under NEPA. The Corps response to the Tribe's comments that although the current culverts do have the capacity would allow restoration of natural conditions "to the extent practicable" is nonsensical in light of the fact that the two bridge Recommended Plan will continue to have the L-29 levee restricting flows. (Appendix L at Page 21 and Comment 1.) The comment that cleaning out the culverts would not be as effective as the vegetation would grow back is equally nonsensical in light of the fact that the Corps is obligated to maintain these structures. Id. (Note: The *reasonable* culvert alternative which the Tribe is requesting to be analyzed is not the same as the complicated and expensive $44.3 million dollar Alternative 8 that was analyzed in Section 5.7.2.9 of the previous Draft EIS.)

6. The Draft FWS CAR Analysis of Alternatives is Fundamentally Flawed

In Appendix L, Comment 26, the Corps says the FWS CAR on which it relied it is not subject to comment. The Tribe continues to contend that the FWS CAR analysis in Appendix F is flawed because its scope and study area are also woefully inadequate for the same reasons articulated in section 6 of its October 11, 2005 comments attached as Exhibit B.

7. The Recommended Plan Is Not Within Statutory Authority & Fiscal Constraints

The Tribe suggested inclusion of the WRDA 2000 constraint language on the MWD Project in both the Draft and Final RGRR/SEIS. Even though the Corps included this language, it selected a Recommended Plan that ignores the Congressional directive in it. WRDA 2000 clearly prevents the two bridge Recommended Plan from being built as part of MWD. Moreover, there is no funding to build it. (See, Section 5.7.5 which says, "Construction of alternatives 10, 11, 12, or 14 would also be greater than the amount budgeted.") It is unfortunate that the Corps selected a Recommended Plan that neither it nor DOI has the money to build, while failing to analyze the *reasonable* culvert alternative which could be accomplished within the project authority. The Recommended Plan is *unreasonable* and *unimplementable* under MWD and contrary to the mandate of WRDA 2000, which requires that MWD be completed prior to raising and bridging the Trail.

8. Performance Measures for Alternatives Failed to Include the Cost of Delay

The cost of delay that will be caused to the Miccosukee Tribal lands, and other parts of the Everglades, should have been listed as a performance measure for analyzing the alternatives in the Final RGRR/SEIS. The Corps's excuse in the Final RGRR/SEIS Appendix L at Page 41, Comment 29 that "the true ecological costs of delay can not be determined" (so they didn't do it), is belied by the fact that the Corps did just that in Table 7 of the GRR/SEIS on the 8.5 Square Mile Area Component of the MWD Project, which estimated that about 246 acres of tree islands in WCA-3A are being lost for each year of delay of MWD and that the cost of restoration would be from $50,000 to $500,000 per acre. Thus, the Corps could have easily estimated that for each year of delay of MWD, the cost to restore tree islands lost by delay is $23-$123 million dollars a year in the Final RGRR/SEIS but failed to do so. Delay of the MWD project will also causes damage to Lake Okeechobee, the Caloosahatchee and St. Lucie estuaries and Everglades National Park which should have been assessed, as well. These cumulative impacts and indirect costs required to be assessed by NEPA, were not addressed in the Final RGRR/SEIS.

9. The Final RGRR/ SEIS Improperly Includes the Engineering Report on the Design of the Bridges and Reconstruction of Roadway for the First Time in the FEIS

The Draft RGRR/SEIS improperly excluded the Engineering Report on the design of the bridges and roadway reconstruction from Appendix D. This is contrary to NEPA, which requires that the public be given the opportunity to comment on these important engineering reports both in

the draft and final report. The Tribe contends that it was improper for the Corps to include the engineering report in the Final RGRR/SEIS for the first time.

10. The Environmentally Preferred Alternative Analysis is Flawed

Section 5.7.3 in the Final RGRR/SEIS lists Alternative 17, the skyway, as the plan that maximizes environmental outputs without regard to fiscal or other constraints. The Corps listed but did not respond to the Tribe's comments on this matter because it says the Tribe's comments related to the FWS CAR. Yet, the Corps used the faulty FWS CAR analysis in its Final RGRR/SEIS. The Tribe continues to contend that the quick and economical culvert cleaning, is the true environmentally preferred alternative as it would allow MWD and benefits to 900,000 acres of Everglades wetlands to move forward. The Corps admits in the Final RGRR/SEIS because of cost the skyway cannot be implemented based on WRDA 2000. The Corps also admits it does not have the funding to build the $159 million dollar Recommended Plan. The Final RGRR/SEIS should not have analyzed these unreasonable alternatives.

11. The Corps Fails to Conduct An Adequate Analysis on Impacts to Archeological Sites

The Corps failed to conduct an adequate analysis in the Final RGRR/SEIS on impacts of the Recommended Plan, and the high water that will be caused by the delay of constructing it, on archeological sites, including tree islands. Moreover, the Corps allowed the ad hoc advisory group to remove performance measures for reducing high water in WCA 3A that may have helped determined such impacts.

12. The Corps Failed to Respond to All the Tribe's Comments on the Final RGRR/SEIS

There are numerous instances in Appendix L where the Corps listed, but failed to respond to the Tribe's comments or responded with comments that contradicted the information provided in the Report. (See, for example, Comment 16, 20, 27, 31, 34, 51.) The Corps has a duty under NEPA to respond fully to all the Tribe's comments.

D. THE FINAL RGRR/SEIS FAILS TO COMPLY WITH THE ESA

The project area assessed under the Endangered Species Act ("ESA") in the Final RGRR/SEIS in Section 5.6.5.6 is woefully inadequate. The FWS Section 7 consultation looked at Tamiami Trail construction impacts only (See, Appendix F, August 10, 2005 letter.) The Tribe continues to contend that the area assessed under the ESA should be the entire area analyzed in the 1992 GDM/EIS on MWD. Such an analysis must include any potential adverse impacts to the endangered species on Tribal Everglades in WCA 3A, including the snail kite and the wood stork, that have been caused, and will continue to be caused, by the delay of the MWD Project. This should include the impacts of delay which has caused the IOP to be implemented, which is adversely impacting 88,300 acres per year of snail kite critical habitat as referenced in the March 2002 FWS Amended Biological Opinion. Under the Recommended Plan, IOP will be in place for another five years and those adverse environmental impacts should have been assessed in the Final RGRR/SEIS but were not. There has also been a 50% decline in the endangered Snail Kite

population under IOP operations which has not been analyzed in the Final RGRR/SEIS. The Report also fails to mention that MWD completion is vital to other endangered species, including the wood stork, snail kite, American crocodile and manatee.

E. SPECIFIC COMMENTS ON THE FINAL RGRR/SEIS

1. Project Partners, Section 1.2: The Corps has responded to the Tribe's comment that the Project Partners described in this report, SFWMD, DOI, FWS, ENP, FWC, FDOT and DERM are not all project partners and has named some participating agencies. The fact is that these were really members of an ad hoc advisory team consisting of non-federal entities and consultants that to provided recommendations on Tamiami Trail to the Corps without complying with the Federal Advisory Committee Act (FACA).

2. Study Authority: The Tribe notes that the Corps accepted the Tribe's suggestion from the previous EIS process and provided the exact language of the law in the Final RGRR/SEIS. Section 1 correctly states that: *PI 101-229...authorized the Secretary of the Army to undertake certain action to improve water deliveries to ENP and shall, to the extent practicable, to restore natural hydrologic conditions...* Unfortunately, the Corps' use of a model that provides even greater than CERP water volumes to justify a $159 million dollar Tamiami Trail fix shows they did not follow the "to the extent practicable" directive of Congress.

3. Biological Opinion and Interim Flow Targets: The Tribe disagrees with the discussion of the interim flow targets from the Biological Opinion contained in section 3.3. This section fails to state that the closing of the S-12 structures was the option selected and has been going on for over eight years and has, and continues to be, enormously environmentally destructive to Tribal lands in WCA-3A. The Corps should not base interim flow targets on a faulty Biological Opinion that has never been subject to NEPA review, nor an Amended Biological Opinion, which arbitrarily and capriciously removed the requirement that the MWD Project be completed by December 31, 2003.

4. **Cultural Resources:** Section 5.6.5.6 of the Final SEIS mentions the historical importance of the Coopertown Airboat rides, but continues to fail to mention the historical importance of the authentic Miccosukee Indian Village along old Tamiami Trail, because it claims these areas are outside the project boundary. The Tribe contends the project area is that of the MWD Project. Thus, the Village, which is an historic family camp and the cultural resources that could be impacted by this project, include the cultural resources of the Miccosukee Tribe and peoples, including the tree islands in WCA-3A and other parts of the Everglades. The Tribe is pleased to read that it is the Corps' intent not to impede access to the Osceola and Tiger Tail Camps and will monitor the situation to see that this commitment is met.

5. Tribal Lands: The Final RGRR/SEIS states at Section 7.14 and in their reply to the Tribe's comments that there will be no "direct" impacts on Tribal lands. Section 5.6.14 also claims that "no Tribal lands will be affected." The Tribe is concerned that the Corps can not definitively make this statements because it has not conducted the analysis necessary to find any harm and has improperly narrowed the scope of its analysis to only the Tiger Tail and Osceola Camps. Moreover, statements in Final RGRR/FEIS that visitors to Tribal businesses could be affected

during construction of the Recommended Plan appears to belie this statement and should have been analyzed in the Final RGRR/SEIS. Under NEPA, the impacts on Tribal lands analyzed should include direct, indirect, and cumulative impacts to both Tribal reservation and lease lands in WCA 3A, and the Miccosukee Reserved Area. These lands will all be either adversely or beneficially impacted by the selection of a Tamiami Trail alternative. The scope of the Tribal lands should be the same as it was in the 1992 GDM, and the impact of delay that would be caused by selection of certain alternatives should have been quantitatively and qualitatively assessed but was not. The Tribe appreciates the Corps' statement that there will be no impact to the Tiger Tail and Osceola camps but is concerned that this may also be inaccurate. There is no modeling to show that this is so. The Report states, "coordination with the Osceola Camp is underway to complete its raising prior to implementation of this component." Section 5.6.14. Yet, no analysis exists. In response to the Tribe's comments, the Corps has removed the statement in Appendix H at 10 that, " Relocation of the Osceola Camp is outside the scope of the authorized Corps project. The Everglades National Park (NPS) has accepted responsibility and will make all necessary arrangements for relocation or elevation of the camp." In Appendix L at Page 54, Comment 54, the Corps says the reference to relocation has been removed. The Tribe will continue to monitor the situation and has made it clear that will not accept adverse impacts on the Osceola camp or any interference with their traditional practices.

6. Hurricane Evacuation: Section 5.3.2 discusses hurricane evacuation. The Tribe has continuously told the Corps that even though the Trail may not be a DOT hurricane evacuation route, it is the only route out for the Tribal members who live along the Trail in a hurricane. This reality should have been contained in the Final RGRR/SEIS. However, as the Miccosukee Tribal members and others in the Service Area use Tamiami Trail to travel across the Everglades, the Tribe is pleased to see that the Corps has committed to not impeding the traffic flow during hurricane season. Evacuation access is vital to protect the health and safety of both Tribal members and the public.

7. Compatibility With CERP: The Tribe supports the federal government's desire for compatibility with CERP in Section 5.7.8, but not in a manner that delays the implementation of the Pre-CERP MWD Project. The Tribe does not believe the Recommended Plan offers that compatibility in that it has a potential for political and bureaucratic mischief plus delay. The Corps apparently thinks that despite the WRDA prohibition against bridging the Trail prior to MWD completion, it is okay to bridge the Trail as long as the L-29 levee remains in place. The prohibition against bridging the Trail in WRDA 2000 makes no such distinction. This quibling is an attempt to hood wink Congress into wasting taxpayer money to build a bridge that has a levee still in place. The eminently reasonable culvert cleaning/widening alternative proposed by the Tribe is compatible with CERP and would allow MWD to be expeditiously completed so that decompartmentalization could proceed. The use of the NSM model of greater than CERP acre volumes of water to justify the Recommended Plan is improper and attempts to fool Congress into wasting vast sums of money.

8. Socioeconomic Factors: In Section 5.6.15, the Corps has discarded the performance measure used in the previous EIS to avoid and minimize impacts to the Tiger Tail and Osceola Camps as a constraint in evaluating the alternatives. In the last EIS, the Corps had developed a performance

measure to assess the impacts to the camps, including access, privacy and encroachment, both during and after the construction phase. The Tribe is concerned that the secret advisory team discarded this Performance Measure and cautions the Corps to keep its word that the access to the camps not be impeded. The Tribe reiterates that it will not accept any adverse impacts to either the Tiger Tail or Osceola Camps and that any interference with the traditional use of these camps is non-negotiable. Finally, the Tribe notes that this section mentions for the first time in the Final RGRR/SEIS that a reduction in visitors to the Miccoskee Indian Village, Airboats, Restaurant, and Gas station located west of the project area could be experienced but does not assess the economic impact. Buffalo Tiger and other Tribal members also have airboat concessions along the Trail and the impacts to these concessions have also not been analyzed. Failure to analyze this economic impact to the Tribe in the Final Report violates NEPA. It also fails to mention, or analyze, a reduction in visitors that could occur to the Miccosukee Resort.

9. Hydraulics and Hydrology: In Section 5.3.4 of the Final Report, the Corps has changed its requirement from Section 5 of the 2003 GRR/FEIS, that the final alternative selected need only pass the MWD design volume of 4,000 cfs in favor of an NSM model that passes 1372 acre feet of water which is even greater than the 921 acre feet of CERP D13R. This section now substitutes language concerning the L-29 canal only. The Final RGRR/SEIS fails to contain a hydrological analysis of NE Shark River Slough to show whether the Recommended Plan is even necessary using 4,000 cfs. This is improper under NEPA which requires a full disclosure document.

10. Costs and Section 902: The initial GRR on Tamiami Trail contained a $20.215 million dollar cost constraint on the Tamiami Trail component of the MWD project. Section 5.7.5 of the Final RGRR/SEIS contains no cost constraint but refers to the DOI Capital Assets Plan. Moreover, this section provides evidence that the $159 million dollars for the Recommended Plan exceeds the amount in the DOI Capital Assets Plan. The Final RGRR/SEIS is supposed to be a full disclosure document and should include only the funding currently in hand as a cost constraint. The blank check mentality of DOI and the Corps is due to the failure to comply with Section 902, which provides that the costs of MWD water can not exceed a certain percentage without going back to Congress. When the PCA for MWD was signed in 1994, the $81 million dollar project cost escalated to $114 million. The cost is now at $400 million. It is astounding to think that the Corps would even think of spending $159 million dollars that it does not have on a Recommended Plan for a mere component of an entire project that was initially authorized at $81 million dollars. Only through the application of Section 902 will this blank check mentality of the agencies be stopped.

11. WRDA Constraint Language: Although the Final RGRR/SEIS contains the WRDA 2000 constraint language, the Corps ignored the language in selecting its Recommended Plan.. Section 601(b)(2) of WRDA 2000 prevents CERP components from being funded until the MWD Project is completed. Despite this Congressional mandate, the Corps refuses to recognize that it is incumbent on it select an alternative that is within the funding constraints and statutory authority of PL 101-229 and WRDA 2000. Neither the Corps not DOI has funding to construct the Recommended Plan. Moreover, the Corps appears to incorrectly think that raising and bridging Tamiami Trail is not contrary to WRDA 2000, as long as the L-29 levee is not removed. This "quibling" is dangerous and will not bode well with Congress if they discover the agencies are funding the bridging that WRDA 2000 prohibits. Moreover, Congress and the public will be even

more incensed to learn that the Corps is wasting precious tax dollars by constructing white elephant bridges that will do little for flow with the levee still in place.

12. Betterments: The Final RGRR/SEIS finds that betterments to protect and enhance wildlife are not part of the project purpose. The Tribe urges the Corps to make certain that any DOI or SFWMD decision to incorporate them does not delay MWD.

13. Flood Damage to Road: Section 4.3 Of the Final Report raises concerns about saturation and overtopping of the road, but fails to contain an analysis that uses the 4,000 cfs predicted maximum MWD flow to show whether this would happen. Instead, the Corps and DOI have improperly used modeling with NSM Version 4.6.2 that provides far more acre feet of water than was authorized for CERP to determine impacts. (Appendix D, Annex A at Table 3.) The Tribe contends the cleaning, widening and placement of additional culverts as necessary, would provide such flows as are "practicable" and would allow MWD to be completed and CERP to move forward. The Tribe has consistently supported only such infrastructure as is necessary for the Tamiami Trail component of the MWD Project, but has also emphasized that Tribal and public safety are of the utmost importance and must be protected both during and after construction. It should be noted that Section 3.4 states that water would begin overtopping the highway at an event frequency of between 200 and 500 years, which is well above the 100 year frequency that is usually the design basis. Through the use of NSM Version 4.6.2, and an excessive design frequency, the Corps has exceeded its authority, over-designed the Trail component and will cost taxpayers to waste $159 million dollars. This section also states that Tamiami Trail is currently in need of maintenance, which is state responsibility and should not be shoved off onto the federal taxpayer. The state's needed maintenance could have been combined with the federal government's selection of the culvert clearing/widening alternative to reduce the cost and delay of the project

14. No Schedule or Project Implementation Date: The Final RGRR/SEIS contains no schedule for completion for Alternative 14. The 2003 Final RGRR/SEIS stated in Section 6.12 stated that the duration of the construction of the Plan would be 24 months. The 2005 Final RGRR/SEIS says the construction of the Recommended Plan will take approximately 36 months. The Tribe contends that the date the project could be completed should have been a factor in screening alternatives and must be included in the Final EIS. Failure to obtain Congressional authorization or funding for the Recommended Plan could delay MWD and CSOP beyond the new 2010 completion date.

15. Transportation: Section 5 of the Final RGRR/SEIS states that Tamiami Trail will continue to be accessible during storms and hurricanes under the proposed Alternative 14. The Tribe reiterates that the Corps must take all precautions that both transportation and the safety of the Tribe and the public not be compromised during, or after, construction.

16. Impact on Tribal Lands: The statement in Sections 7.14 and 5.6.14 that no tribal lands would be affected and that there will be no direct impacts of any alternatives on Tribal lands is not supported by evidence in the record or the document itself. The Final RGRR/SEIS continues to fail to assess the indirect and secondary and cumulative impacts to Tribal lands that the construction of the Recommended Plan would have by delaying the MWD project will continue to have on Tribal Everglades in WCA 3A. Moreover, the Final RGRR/SEIS fails to use the greater than CERP

water volumes used to predict impacts to the bridge to analyze impacts to the Tiger Tail and Osceola Camps. It also fails to conduct an analysis of these flows on the MRA and other Tribal properties.

17. Impact on Businesses: The Final RGRR/SEIS fails to adequately assess the impact that would be caused to Tribal businesses by any alternative that delayed MWD or provided greater than CERP acre feet of water. While the Final RGRR/SEIS finally admits construction of the Recommended Plan could impact visitors to certain Tribal businesses, it fails to analyze the potential impacts, including economic, that it will have on the Miccosukee Resort and Gaming Facility, and the Tribe's Miccosukee Indian Village, Airboats, Restaurant, and Gas Station whose customers use Tamiami Trail.

18. Osceola Camp: The advisory team utilized by the Corps removed the analysis of impacts to the Osceola Camp as a Performance Measure. Without such a PM, the Tribe is concerned that the statement of no impact to the Osceola Camp may be inaccurate. The Final RGRR/SEIS does not analyze the impact that providing the greater than CERP acre feet of water will have on the Osceola Camp. While the Corps contends the large volume of water used to justify the bridge alternative will not be provided under MWD, it is clear that the bridge is being built to accommodate it. Thus, there is no reason to believe that DOI will not demand these water levels. The Final RGRR/SEIS dismisses the Osceola concerns by stating that "DOI is coordinating with the Osceola Camp to complete its raising prior to implementation of this component of MWD." Section 5.6.14. The Corps has a duty to conduct an analysis. The Tribe notes that the Corps has removed the offensive statements in the Real Estate Appendix H at 10, that: " Relocation of the Osceola Camp is outside the scope of the authorized Corps project. The Everglades National Park (NPS) has accepted responsibility and will make all necessary arrangements for relocation or elevation of the camp." While the Corps contends that the Tribe misunderstood the word "relocation," and that there is no intention to do that, the Tribe will continue to monitor the situation. As stated earlier, the Tribe will not accept adverse impacts on the Osceola camp, or any interference with their traditional practices.

19. Tiger Tail Camp: The advisory team utilized by the Corps removed the analysis of impacts to the Tiger Tail Camp as a Performance Measure. Without such a Performance Measure, the Tribe is concerned that the statement of no impact to the Tiger Tail camp is inaccurate. The Final RGRR/SEIS has not analyzed what impact providing greater than CERP acre feet of water, as used in the modeling, will have on the Tiger Tail Camp in the Final RGRR/SEIS. While the Corps contends these large volumes of water used to justify the bridge alternative will not be provided under MWD, it is clear that the bridge is being built to accommodate it. Thus, there is no reason to believe that DOI will not demand these water levels. As stated earlier, the Tribe will not accept adverse impacts on the Tiger Tail Camp, or any interference with their traditional practices.

20. Environmental Justice: Section 5.6.18 claims, without the requisite analysis, that no long term impacts would be created for the residents of the Tiger Tail and Osceola Camps. The Tribe is concerned that the Corps' advisory team has removed the previous Performance Measure that would have allowed it to conduct the necessary analysis of potential adverse impacts of alternatives on the Tiger Tail and Osceola Camps. The Tribe contends that the Corps must ensure

that the project is not likely to affect the environmental health or safety, and traditional way of life, of either the Tiger Tail or Osceola Camps. The Corps also failed to analyze the disparate impacts to Tribal Everglades and its culture and way of life due to the failure to implement the MWD Project in this section in the Final RGRR/SEIS. The Recommended Plan will delay MWD, and adversely and disproportionately impact, the Miccosukee Tribe of Indians. These impacts have not been analyzed.

21. Public Involvement: Section 9.1 claims that the Corps complied with USACE and NEPA policies and sought public input. The Corps also claims in its response to the Tribe that it complied with FACA. (Appendix L at Comments 17 and 18.) In reality, the process conducted by the Corps was a secretive back door process which excluded the public. An ad hoc advisory group, which did not comply with FACA, met in private and invited the public in after the decisions were made to feign "public involvement." This is contrary to both FACA and NEPA. While the Corps contends the group did comply with FACA, this is incorrect. This group was never constituted under FACA, meetings were never published in the Federal Register, and other requirements of FACA were not met.

22. Public Agency Meetings: This section finally removes a misleading statement about the Miccosukee Tribe which it has asked to be removed many times.

23. Water Quality: Section 2.3 purports to analyze water quality of the project. In the prior EIS process, the Tribe contended that its unanalyzed culvert alternative would allow any traffic runoff to continue to be treated at the shoulder. Section 2.2 discusses the massive S-9 pump, which discharges water to the Everglades and the Park under MWD. The Final RGRR/SEIS fails to contain an analysis of the pollutants that will have to be cleaned up from these S-9 discharges before the project is implemented. The Corps contends that this will be done under CSOP.

24. Safety: As stated throughout these comments, the Tribe insists that both Tribal and public health and safety be strictly maintained both during, and after, construction of the Tamiami Trail modifications. The Tribe contends that if the Corps had not allowed modeling to be used that incorporates greater than CERP acre feet of water on a project that only needs to pass 4,000 cfs, the current system would be able to pass flows "to the extent practicable" and safety would not be an issue. The Corps is not required the massive volumes of water DOI is insisting on under MWD, only what is "practicable" and consistent with the public health and safety.

25. Tamiami Trail List of Preparers: NEPA requires an EIS to be a full disclosure document. The Tribe disputes that the list of preparers at page 145 is the full list of people who contributed to this document. NEPA requires this document to include the name of the advisory team and anybody else who worked on the RGRR/SEIS process.

F. THE CORPS DID NOT MEET ITS TRUST RESPONSIBILITY TO THE MICCOSUKEE TRIBE IN THE RGRR/SEIS PROCESS

The RGRR/SEIS process was not consistent with the Corps' Trust Responsibility to the Tribe. The Tribe was asked to attend "interagency meetings" in the prior Tamiami Trail EIS

process, which it insisted be public meetings. This time, despite the fact that the Tribe directly asked the Corps to be included in the process, it was excluded from the meetings which were secretly held without both the Tribe and the public. The Tribe only found out about these secret meetings, which discussed matters that had a direct impact on the Tribe, when documents were leaked. This is not only discouraging, it is also contrary to the Corps' Trust responsibility to the Tribe. The Corps has a duty to conduct meaningful pre-decisional consultation. The Corps' response to the Tribe's comments that it was invited to attend all public meetings is insulting and does not meet this requirement. Appendix L at Page 58, Comment 62. The Corps has a solemn trust responsibility to choose a plan that will protect Tribal natural resources and Trust resources and should have rejected the Recommended Plan because it will cause further destruction of Tribal lands. The Corps' selection of Alternative 14 as the Recommended Plan in the Final RGRR/SEIS does not meet its Trust Responsibility and will ensure continued destruction of the Tribe's Everglades homeland.

III. CONCLUSION

The Recommended Plan selected in the Final RGRR/SEIS is not consistent with the Project Purpose in PL 101-229, WRDA 2000, and the Corps' solemn Trust Responsibility to the Miccosukee Tribe. The review process did not select a plan that meets the project purpose, and that will allow the expeditious completion of the MWD Project that will benefit 900,000 acres of the Everglades. The Recommended Plan is expensive, unnecessary to pass the projected 4,000 cfs MWD flow, and/or the amount of water that is "practicable," and is not authorized under Public Law 101-229 and the 1992 MWD GDM that was approved by Congress. The Tribe is disappointed that the Corps did not resist political pressure from those who refuse to abide by the purpose and authority of MWD and has embraced an unwise plan that is contrary to WRDA 2000 and will cause further delay of the restoration of the only Everglades in the world.

Sincerely,

Dexter W. Lehtinen

cc: Chairman Billy Cypress

Table 3
Average Annual Overland Flow Across Tamiami Trail
(Transect 17 = WSS and Tansect 18 = ESS)

SFWMM Simulation	Transect 17 1000 acre-ft	Transect 18 1000 acre-ft	SRS Total 1000 acre-ft	% Distribution West / East
NSM 4.6.2	477	895	1372	35% / 65%
D13R	434	487	921	47% / 53%
CERP0 *	398	509	907	44% / 56%
Alt7R5	623	172	795	78% / 22%
No Action	376	493	869	43% / 57%
East Bookend (CSOP)	452	516	968	47% / 53%
West Bookend (CSOP) **	447	597	1044	43% / 57%
West Bookend (b) (CSOP)	451	683	1134	40% / 60%
Alternative 3 (CSOP)	527	631	1158	46% / 54%
Alternative 4 (CSOP)	434	540	974	45% / 55%
Alternative 5 (CSOP)	437	538	975	45% 55%

*CERP0 flows at T18 do not include S-356 flows, which discharges south of T18 into NESRS
** Used in RMA-2 Analysis

MICCOSUKEE TRIBE'S
EXHIBIT A

LEHTINEN VARGAS & RIEDI
ATTORNEYS AT LAW
A PROFESSIONAL ASSOCIATION

October 11, 2005

MICCOSUKEE TRIBE'S
EXHIBIT B

Colonel Robert Carpenter
District Commander
Jacksonville District
Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, Florida 32207

Via Fax, E-mail, and Regular Mail

Re: Miccosukee Tribe's Comments on the Draft Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modifications

Dear Colonel Carpenter,

The Miccosukee Tribe of Indians of Florida hereby provides comments on the U.S. Army Corps of Engineers ("Corps") Draft Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement ("RGRR/SEIS") for the Tamiami Trial Modifications dated August 2005. The Tribe also incorporates by reference its Comments on the Final GRR/EIS on Tamiami Trail dated 2003, the Draft GRR/SEIS dated February 4, 2002, and the comments made at all public meetings.

The Miccosukee Tribe ("Tribe") objects to the so-called "Tentatively Selected Plan," Alternative 14. The Tribe does not believe that Alternative 14 is a legally viable option. The Corps has no authority for a Tamiami Trail Project. It only has authority for the Modified Water Deliveries Project ("MWD") of which Tamiami Trail is only a component. Any Tamiami Trail modification must be consistent with MWD authority and Congressional directives. The Corps' selection of any bridging option is nothing more than a thinly veiled attempt to build the CERP decompartmentalization component. Congress authorized MWD in 1989 and promised it would be completed by 1997. After nearly a decade of delay, Congress wanted to ensure that MWD would get the attention it deserves and be implemented. Therefore, when the Congress passed WRDA 2000, it specifically required completion of the MWD Project prior to authorization of the Comprehensive Everglades Restoration Plan ("CERP") Decompartmentalization Project. WRDA 2000 mandates: "No appropriation shall be made to construct the Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project (including...Raise and Bridge East

7700 N. KENDALL DRIVE, SUITE 303 MIAMI, FLORIDA 33156 TELEPHONE (305) 279-1166 FAX (305) 279-1365

Portion of Tamiami Trail...) until the completion of the project to improve water deliveries to Everglades National Park authorized by section 104 of the Everglades national Park Protection Act of 1989 (16 U.S.C. 410 r-8)." Congress clearly anticipated exactly what the Park and Corps are now attempting to do - and prohibited it. Alternative 14 and any alternative that bridges Tamiami Trail as part of MWD, cannot, and will not, stand up to a legal challenge.

The Tribe contends that Alternative 14 is unnecessary, expensive, and delay provoking. The Tribe is disappointed that the Corps has not analyzed the reasonable alternative of clearing, enlarging, and if necessary, constructing some additional culverts to allow the 4,000 cfs MWD flows to pass. Alternative 14, the Two-Mile Bridge West and 1 Mile Bridge East Alternative, is estimated to cost the taxpayers over $125 million dollars and is totally unnecessary to the completion of the MWD Project. Under the provisions of the 1898 Everglades National Park Protection and Expansion Act, Secretary of the Army is only authorized to take those steps necessary to restore natural hydrologic conditions to the extent practicable under MWD authority. That is to say, even if the desired 4000 cfs flows are not practicable, then the Secretary of the Army will meet his legal obligation to restore flows to the extent practicable. The Draft RGRR/SEIS, however, shows that the current system has the hydraulic capacity to pass the required MWD flows. (Section 5.6.5.1 and Appendix D at para 3.) Appendix D also shows that the modeling used NSM 4.6.2 for the design high water for roadway improvements, which means that 1372 acre feet, which is even greater than the 921 acre feet of CERP D13R flows used in the Yellow Book adopted by Congress in WRDA 2000, was improperly used to model alternatives. (Appendix D, Table 3.) The Corps is not obligated, or authorized, to send every drop of water demanded by the Park.

By the Corps' own admission, the culverts under Tamiami Trail, which have existed for 50 years, should continue to provide service for an additional 50 years. Unfortunately, the culverts are currently blocked with sediment and heavy vegetation built up on the discharge side. Incredibly, Everglades National Park ("Park") staff have stubbornly refused to allow the sediment/vegetation blockage to be removed. Thus, the Park is preventing the water - which they claims they want - from being delivered through the existing culverts. Moreover, the S-12s also show extreme blockage and restriction of flow and should also be cleaned out. Instead, based on faulty assumptions and modeling chicanery, the Park has manipulated the Corps into building a bridge which wastes taxpayer money and violates the prohibition against constructing CERP Decompartmentalization before the MWD is completed. Now, both agencies are attempting to fool Congress into thinking the white elephant bridge is necessary to complete MWD.

It is clear that if the Park only wanted the additional 4000 cfs water, they would insist on cleaning the downstream discharge areas of the culverts. Table 2 of the RGRR/SEIS shows the discharge ratings of the Tamiami Trail culverts. It is obvious that the culverts are not currently discharging at the capacity which they were designed for, and for which they are capable. Over the past 50 years, sediment and heavy vegetation have created small islands immediately downstream of the culvert discharge points. Only after these blockages have been cleared, and the requirements in Tribe's Tamiami Trial Tenets described below are met, will it ever support the bridging of Tamiami Trail. In reality, the modeling trick used in the RGRR/SEIS shows that the Park, not happy with MWD flows, is attempting to get more acre feet of water than Congress even

authorized for CERP. (*See*, Section 4.62 and Appendix D, Table 3.) The RGRR/SEIS is a veiled attempt to fool Congress and the public into wasting money on an unnecessary bridge for a Pre-CERP project the cost of which has all ready escalated more than 300%. Contrary to NEPA, the woefully deficient Draft RGRR/SEIS even fails to contain an Engineering Report on the design of the bridges and reconstruction of the roadways for the public to comment on.

The Corps claims they have reopened the EIS process because the Department of Transportation's ("DOT's") safety concerns have increased the costs of the prior selected Alternative 7a, the 3,000 ft. bridge. It fails to tell the public that DOT was provided with modeling for far more water than MWD was authorized to deliver. The real reason for the new SEIS is hinted at on page 1 which states that DOI determined that water in the L-29 canal would be at a higher design stage than had been previously calculated. The Corps again fails to disclose that DOI modeling was also based on much more water than MWD was authorized to deliver. Moreover, the Corps' dismal failure to implement a plan once it was selected in 2003 has caused a price increase in all the alternatives. The cost of the skyway, 4 mile bridge, and skyway has escalated dramatically. The Corps also continues to refuse to calculate the costs, both economic and environmental, that have occurred to the Everglades as a result of their failure to act. The lengthy, unwieldy title of this document is indicative of the delay to the MWD Project that has been caused by DOI's continued attempts to implement the 8.4 billion dollar CERP through this originally estimated $81 million dollar Pre-CERP project. The expeditious implementation of this long delayed restoration project is vital to the Tribal Everglades, which supports the culture and way of life of the Miccosukee Tribe.

In the first Tamiami Trail EIS process, the Tribe provided its Tamiami Trail Tenets. The Tribe's goal was then, and is now, to help the Corps select a plan that is economical and within its statutory authority under PL 101-229, so that MWD would be implemented expeditiously. Completion of MWD, as the Draft RGRR/SEIS correctly states is a prerequisite to WCA 3A Decompartmentalization under CERP. Thus, any delay in the MWD Project, or its Tamiami Trail component, would delay CERP. The Tribe has reiterated its Ten Tamiami Trail Tenets in Section I below, while recognizing that unfortunately both for the Tribe and the Everglades, the December 31, 2003 deadline for the completion of MWD has long ago passed. The Tribe recalls that under Colonel Salt in 1992, the MWD EIS was presented to Congress and claimed that the $81 million dollar project would be completed by 1997. Under Colonel Rice, the Project Cooperation Agreement ("PCA") was signed to construct what had already escalated from an $81 million to a $141 million dollar project. Under Colonel Miller, the MWD Project was supposed to be completed by December 31, 2001. Colonel May, who followed Miller, set a completion date of December 31, 2003, which again was not met. When Colonel Carpenter took over he pledged to complete the project by December 31, 2006. The project cost has now escalated to at least $400 million dollars and its completion date has been delayed to at least 2010. Today, this Pre-CERP restoration project, so important to the Tribe and the Everglades, remains mired in morass. The selection of Alternative 14 will only add to the cost and contribute to more delay.

I. THE MICCOSUKEE TRIBE'S TEN TAMIAMI TRAIL TENETS

The Tribe submitted the following Ten Tamiami Trail Tenets in the prior EIS process and incorporates them again herein without updating them noting that the 2003 date has passed. The Tribe believes that the Corps could still meet the December 31, 2006 deadline if it adopted a culvert alternative and operated to pass as much water as is practicable while maintaining flood control and public health and safety. The Tribe's Ten Tamiami Trail Tenets are:

1. The Tribe is opposed to all plans that will elevate Tamiami Trail before the Modified Water Deliveries Project is completed and implemented, including the protection for the 8.5 Square Mile Area mandated by PL101-229. (The Tribe opposes a *skyway*.) The Tribe believes that the Corps should take maximum advantage of existing infrastructure in place, and should only add new infrastructure that is absolutely essential to protect public health and safety and to meet the requirements of the Modified Water Deliveries Project, as directed by PL101-229.

2. The Corps' selected alternative must ensure that the Modified Water Deliveries Project is completed and operational on, or before, December 31, 2003. (Note: 2003 date has passed.)

3. Any alternatives that have no funding and would delay the Modified Water Deliveries Project beyond December 31, 2003, should be deemed "unreasonable" and removed from further consideration as the Tamiami Trail component of the Modified Water Deliveries Project Draft RGRR/SEIS. (Note: 2003 date has passed.)

4. Any plan recommended by the Corps for Tamiami Trail must be consistent with the requirements of PL101-229, the Water Resources and Development Act of 2000 (WRDA 2000), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA) and the Corps' trust responsibility to the Tribe.

5. The Tribe will oppose any plan to modify Tamiami Trail that has an adverse impact on the Tiger Tail and Osceola Camps. Any interference with the traditional use of these camps is non-negotiable.

6. The Tribe will oppose all plans to elevate Tamiami Trail until I-75 is also elevated.

7. The Tribe will oppose all plans to elevate Tamiami Trail until all the levees are pushed into the canals (e.g. the L-29 and Miami canal); and will oppose any plan that elevates Tamiami Trail that does not remove the levee that separates WCA-3A and WCA-3B from the L-29 canal, with any such decompartmentalization plans being contingent upon the provisions in Tenet 8.

8. Control of the water at Tamiami Trail must not be given up under any future CERP decompartmentalization plans until it is absolutely certain that the flow north and south of the Trail are compatible. This cannot be done until the component of the flow lost to Miami-Dade and Broward Counties has been reinstated via the Comprehensive Everglades Restoration Plan (CERP), which is based on technologies that are so suspect that each requires a pilot study prior to proceeding.(i.e. in ground reservoirs, wastewater reuse and L-31 North seepage control.)

9. The Corps must operate the water management system to ensure that the access and egress of the Miccosukee Tribe is not jeopardized until such time as Tamiami Trail is modified to the extent necessary to protect it from degradation due to higher water levels during those events which would threaten the stability of the road.

10. While attempting to make the Tamiami Trail component of the Modified Water Deliveries Project compatible with CERP is a noble goal, it must not delay this already seriously delayed project, which only authorizes those flows directed in PL101-229, or compromise the health and safety of the public or the Tribe.

II. SPECIFIC COMMENTS ON THE DRAFT RGRR/SEIS

A. AN AD HOC ADVISORY TEAM, WHICH FAILED TO COMPLY WITH FACA, MADE RECOMMENDATIONS ON PLAN & BRIDGE PLACEMENT

Contrary to the Federal Advisory Committee Act ("FACA"), the Corps assembled a team of non-federal entities and consultants who developed performance measures and screened alternatives at two secret, non-public meetings on May 23-26 and July 6-7, 2005. (Section 5.21.) This advisory group adopted the faulty Park analysis and allegedly prepared the MWD Tamiami Trail Modification Benefits Analyses Procedures dated August 2005 attached as Appendix E to the Report. While the Corps attempts to paint this advisory group as a fact finding team, it is clear that it made policy recommendations. The Corps improperly delegated their statutory authority to this advisory group. This group not only deleted performance measures from the last EIS process, it also deleted old one, created new ones, and revised and changed objectives.

Moreover, contrary to the National Environmental Policy Act ("NEPA",) the group failed to analyze all reasonable alternatives for Tamiami Trail. Thus, the Draft RGRR/SEIS fails to contain the viable culvert alternative. Instead, the document analyzes and rubber stamps new alternatives that were screened and developed by an ad hoc advisory team that met in a non-public process. The new words for the recommended alternative, "tentatively selected plan," do not hide the fact that an advisory group that is not constituted under the Federal Advisory Committee Act ("FACA"), screened and "recommended" alternatives. The "Tentatively Selected Plan," Alternative 14, consists of two bridges. The western bridge is to be sited between the Blue Chanty Canal and one-half mile east of the Osceola camp. The eastern bridge is to be sited approximately one mile west of the S-334 and will extend to the west for approximately one mile.

The Tribe continues to contend from a hydrologic, hydraulic, and environmental point of view, that the best way to distribute flows across Tamiami Trail is by clearing out and utilizing the existing culvert system. Depending on the ultimate flows to be passed, it may be necessary to increase the size and/or number of culverts, but passing the water on a broad front that mimics historic flow patterns and distribution must be better than concentrating flows at one point as the bridge will. Even if the two bridge alternative was necessary, which the Tribe contends it is not, it should be positioned to be both effective and non-obtrusive. The current proposed location meets neither of these goals. The heart of Shark River Slough is several miles to the east of the proposed

location, roughly in the middle of the 6.5-foot contours. This is readily apparent from topographic maps or satellite images. It would be only logical and prudent to place the longer bridge in the east, so that it passes larger quantities of waters along historic flow lines. Alternative 14 does not. Also, the current proposed location for the western bridge could force water to flow to the southeast, in an unnatural way, until it intersects the historic flow path and turns back to the southwest. In addition, the proposed locations forces the water to circumvent a good portion of NE Shark River Slough, thus losing restoration benefits and wasting the tens of millions of dollars spent to forcibly buy out many residences in the 8.5 Square Mile Area allegedly to permit the raising of water in this area. Placing the larger bridge to the east would also help abate any impacts to the Tiger Tail and Osceola Indian Camps, which is a Tribe priority. The Corps should also conduct modeling to analyze how Alternative 14 would impact the Miccosukee Reserve Area (MRA). With the entire L-67 Extension removed, and with most of the water being released much closer to the MRA, one can logically expect that water levels around and/or in the MRA will increase, thus potentially creating flooding problems for the Tribe. This must be analyzed in the Final Draft RGRR/SEIS.

B. DRAFT RGRR/SEIS FAILS TO COMPLY WITH NEPA

1. RGRR/SEIS Improperly Segments the Modified Water Deliveries Project

Contrary to the conclusion in Section 1.4, the Tribe contends the Draft RGRR/SEIS fails to comply with the National Environmental Policy Act ("NEPA"). The Tribe contends that the Corps has improperly segmented the MWD Project into separate components, such as the 8.5 Square Mile Area, Tamiami Trail, and Seepage Control components, contrary to the National Environmental Policy Act (NEPA). The 1992 General Design Memorandum ("GDM") and EIS for the MWD Project detailed the condition of the environmental and resources within a much larger study area than is currently being analyzed in the Draft RGRR/SEIS. Tribal lands in WCA 3A, a 915 square mile area, were included in the impacted area in the 1992 GDM but are excluded from the analysis in the Final GRR/SEIS. NEPA clearly provides that connected projects should be evaluated in a single Environmental Impact Statement (EIS). (40 C.F.R. § 1502.4). The Council on Environmental Quality (CEQ) regulations governing NEPA state that, *proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.* When the Corps prepared its GDM for the MWD Project in 1992, it evaluated all aspects of this interrelated project in a single EIS. This improper segmentation has caused the Draft RGRR/SEIS to fail to adequately assess impacts on Tribal lands and resources.

2. The Draft RGRR/SEIS Improperly Narrows the Purpose, Scope and Study Area

The narrow purpose and scope in Section 1.3 of the Draft RGRR/SEIS allows the impacts of delay, especially those to the Tribal lands in WCA-3A, to remain unassessed and skews the analysis of the alternatives. It should be noted that Section 104(3)(d) of PL. 101-229, which directed the Corps to construct the Modified Water Deliveries Project, says that the *project modifications are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the Park in particular.* The purpose and scope should be that of the MWD that is

contained in the 1992 GDM, which included the Water Conservation Areas, Northeast Shark River Slough and the Shark River Slough Basin of Everglades National Park (ENP). The 1992 GDM stated that: *when fully operational the MWD project will benefit the ecosystem function and habitat value of approximately 100,000 acres of wetlands in NESRS, 600,000 acres of wetlands in WCA-3A and 200,000 acres of wetlands within the Shark River Slough basin of ENP.* Thus, the described benefits in the Draft RGRR/SEIS should include these areas that comprise 900,000 acres of Everglades wetlands.

Due to the failure of the Corps to broaden the study area, and consider the serious environmental harm being caused by the failure to complete MWD, the Draft RGRR/SEIS omits issues of vital importance, such as the impact of the project and project delays on Tribal Everglades and the endangered and threatened species that inhabit these areas. The Corps has admitted in the Final GRR/SEIS on the 8.5 Square Mile Area component of the MWD project that *the loss of tree islands has an impact on critical habitats and cultural resources in WCA 3A, delayed implementation of the MWD project will cause an estimated loss of 8.4 islands and 246 acres per year at an estimated cost of $50,000 to $500, 000 per acre.* (Final GRR/SEIS on the 8.5 Square Mile Area, Section 5.2.7, page 64 and Table 7.) In light of the serious environmental and economic costs of delay, the Corps must assess the cost of delay associated with the selection of each of the alternatives in the Final RGRR/SEIS.

3. The Future Without Project Condition Is Improperly Defined

The Draft RGRR/SEIS improperly defines the future without project conditions under NEPA in Section 3. Tamiami Trail modifications are not a Congressionally authorized project. The project is Modified Water Deliveries. Thus, the *future without project condition* for the Modified Water Deliveries Project is NO MODIFIED WATER DELIVERIES PROJECT and not "the future of the study area as it would be expected to develop, if no improvements were made to Tamiami Trail." It violates NEPA to segment the MWD project. (It should be noted that the Final GRR/SEIS had a "design flow" of 4,000 cfs which has been removed from this section of the new report.) There is no Congressionally authorized Tamiami Trail "project." It is merely a component of the MWD project. The failure to define the true without project condition of MWD, as required by NEPA, has resulted in a skewed analysis of alternatives in both the Draft RGRR/SEIS and the Fish and Wildlife Service (FWS) Draft Coordination Act Report (Draft CAR). The CAR analysis also fails to properly assess the impact that the delay of the MWD,, which will be caused by the selection of bridging alternatives, will have on hundreds of thousands of acres of Tribal Everglades and the wildlife in WCA 3A, as well as other areas of the Everglades. Nor does it properly analyze the benefits that MWD will have on hundreds of thousands of acres of wetlands, which would negate any claim that the Corps should somehow mitigate for the Tamiami Trail impacts.

4. Cumulative Impacts Are Not Adequately Assessed in the Draft RGRR/SEIS

NEPA and its implementing regulations require that the cumulative impacts of past, present, and future actions be analyzed in the Draft RGRR/SEIS. Section 7.18 of the Draft RGRR/SEIS is woefully inadequate in that it only discusses the future impacts of CERP while it

turns a blind eye to past and present actions. The Draft FWS also does the same. The Tribe contends that the cumulative impacts analysis must analyze the combined impacts that the delay of the MWD Project, coupled with the impacts of seven years of interim operational plans implemented due to that delay (such as ISOP and IOP), have had on the Tribal lands and endangered species in WCA 3A and other areas of the Everglades. For instance, the endangered Snail Kite population has declined 50% during the years of IOP operations and will be further jeopardized by another five years of these damaging interim water management operations. The Draft RGRR/SEIS must analyze the cumulative impacts that at least five more years of IOP that will result from Alternative 14 will have on the Everglades, endangered species, and Tribal lands.

5. The Draft RGRR/SEIS Fails to Analyze Reasonable Alternatives and Incorrectly Analyzes, But Correctly Rejects, the Unreasonable *Skyway* Alternative 17

As stated previously, the Tribe supports the additional placement of culverts or minimal road raising, only as necessary, to restore flows to the extent practicable without adversely impacting flood protection and degrading the road bed. The Tribe rejects the cost excessive, delay producing Alternative 17 listed in Section 5.4 and believes it should not have been analyzed in the Draft RGRR/SEIS because it is *unreasonable* in the NEPA context. Indeed, years have been wasted because the Corps did not reject the *skyway* alternative early in the last EIS process. The Tribe supports the Corps' decision to not select the ten mile bridge due to fiscal restraints, but contends the Corps also does not have the authority to construct it. The Tribe contends that all bridging alternatives should be rejected from being analyzed in the FEIS for lack of funding and authority. Instead, the Corps should analyze the cleaning, widening, and possible placement of additional culverts as a reasonable alternative. It should be noted that the *reasonable* culvert alternative which the Tribe is requesting to be analyzed is not the same as the complicated and expensive $44.3 million dollar Alternative 8 that was analyzed in Section 5.7.2.9 of the previous Draft EIS.

6. The Draft FWS CAR Analysis of Alternatives is Fundamentally Flawed

The FWS CAR analysis in Appendix F of the Draft RGRR/SEIS is flawed because its scope and study area are also woefully inadequate. It only analyzes the impacts that the road will have on the direct area of 11 miles and does not assess the impact that the delay of building alternatives, such as the skyway or two bridges, would have on wetlands throughout 900,000 acres of Everglades that are included in the study area of the 1992 GDM on the MWD project. Additionally, it does not analyze the overwhelming wetland benefits that the completion of the MWD project would bring. The alternatives analysis is also incorrectly based on a *future without project condition* that is really a *future with project condition* because it considers the MWD project completed, instead of the *project not completed condition* that would result from the delay. A proper analysis that factored in the wetland destruction being caused by the failure to implement the MWD project would result in the selection of the alternative that would allow MWD to be completed expeditiously, and would not have resulted in the delay producing *skyway* alternative being selected as an *environmentally preferred alternative*.

7. Any Plan Must Be Based on Statutory Authority & Fiscal Constraints

The Tribe suggested and supports the Corps' inclusion of the WRDA 2000 constraint language on the MWD Project, and statutory authority and fiscal constraints, in the Draft RGRR/SEIS. WRDA 2000 clearly prevents the bridge alternatives from being selected. Moreover, neither the Corps nor DOI have the funding to build them. The Tribe contends that the *reasonable* culvert alternative, which includes the clearing and widening of culverts, and constructs any more necessary to pass flows, must be analyzed in the Final RGRR/SEIS. The skyway and other bridge alternatives are *unreasonable* and *unimplementable* under MWD and contrary to the mandate of WRDA 2000, which requires that MWD be completed prior to raising and bridging the Trail. The Tribe is concerned that Alternative 14, which places a longer bridge is the area of lesser flows, may be a trick, and that there is some undisclosed plan to substitute the *skyway* before it is built. Since NEPA is a full disclosure document, the Corps must clearly outline any potential future plans that they are aware of in the Final GRR/SEIS, and any failure to do so would be a NEPA violation.

8. Modeling Trickery and the Changed Federal Objective Not Based on PL 101-229

PL 101-229 is the legislation that authorizes the MWD Project of which Tamiami Trail is only a component. The Tribe notes that the 2003 GRR/SEIS recognized that the federal objective was to only pass the MWD Project *design flow* of 4,000 cfs. Yet, the Draft RGRR/SEIS shows that greater than CERP D13R acre feet of water flows were used to model alternatives and assess impacts to the Trail. (Appendix D, Table 3 and Section 3.21.) This inappropriate bait and switch has resulted in this unnecessary SEIS process in which even more expensive alternatives have been analyzed. While the Tribe recognizes that the technical solution for the Tamiami Trail component needs to be compatible with the expected hydraulic conveyance of CERP, the 4,000 CFS hydraulic conveyance of PL 101-229 should be the only federal objective for MWD. The fact that greater than CERP flows were used to screen alternatives and predict impacts to the Trail is proof that the Corps continues to allow those who seek to improperly accomplish CERP under the Pre-CERP MWD Project continue to get their way with the Corps.

9. Performance Measures for Alternatives Must Include the Cost of Delay

The cost of delay that will be caused to the Miccosukee Tribal lands, and other parts of the Everglades, should have been listed as a performance measure for analyzing the alternatives in the Draft RGRR/SEIS and should be a factor in the Final RGRR/SEIS. Delay was a performance measure in Table 7 of the GRR/SEIS on the 8.5 Square Mile Area Component of the MWD Project, which estimated that about 246 acres of tree islands in WCA-3A are being lost for each year of delay of MWD and that the cost of restoration would be from $50,000 to $500,000 per acre. Thus, for each year of delay of MWD, the cost to restore tree islands lost by delay is $23-$123 million dollars a year, if they can ever even be restored. Delay of the MWD project also causes damage to Lake Okeechobee, the Caloosahatchee and St. Lucie estuaries and Everglades National Park. These cumulative impacts and indirect costs are required to be assessed by NEPA. The cost of delay that will be caused by the selection of an alternative that will delay the completion of the MWD Project should be estimated and factored into the analysis of alternatives in the Draft RGRR/SEIS.

10. The Draft RGRR/ SEIS Improperly Excludes the Engineering Report on the Design of the Bridges and Reconstruction of Roadway from the EIS

The Draft RGRR/SEIS has improperly excluded the Engineering Report on the design of the bridges and roadway reconstruction from Appendix D of the RGRR/SEIS. This is contrary to NEPA, which requires that the public be given the opportunity to comment on these important engineering reports. The Tribe contends that the Corps must release another SEIS with these documents before completing the EIS process if the bridge alternative is to be selected by the Corps.

11. Any Plan That Maximizes Environmental Outputs Without Regard to Costs Should be Rejected As Not Meeting the Project Purpose

Section 5.7.3 claims that Alternative 17, the skyway, is recognized as the plan that maximizes environmental outputs without regard to fiscal or other constraints. The faulty FWS CAR analysis also designated Alternative 17 as the environmentally preferred alternative. Yet, the FWS Draft CAR totally ignores the fact that the MWD Project will benefit 900,000 acres of wetlands and the excessive delay of this project caused by Alternative 17 would allow thousands of acres to continue to be destroyed. Certainly the selection of an alternative that meets the project purpose and will allow the expeditious completion of a project that will benefit 900,000 acres of the Everglades, such as the quick and economical culvert cleaning, is the real environmentally preferred alternative. The costly Alternative 17 would clearly fail as the environmentally preferred plan if the Corps had not improperly segmented and narrowed the scope of the MWD project and used flows greater than CERP to model alternatives.

Moreover, Alternative 17 should not have been assessed without regard to costs and the purpose of the MWD Project. Failure to have the money necessary to construct this alternative would both further delay MWD and compromise CERP, since WRDA 2000 requires that the MWD project be completed before important restoration components are funded. Under NEPA, the Corps is only required to analyze *reasonable alternatives.* This alternative is not reasonable under the MWD statutory authority and funding. The Corps admits in the RGRR/SEIS because of cost but has apparently removed its prior finding that cannot be implemented based on WRDA 2000. The Corps had no responsibility or authority to analyze such an unreasonable and unimplementable alternative. Section 902 of WRDA 1986 clearly prohibits the adoption of this alternative without authorization by Congress, as the cost is a whopping $343, 299, 369 (up from $142,156,700 in the 2003 EIS) which is more than three times the $81 million dollars that Congress initially authorized for the entire MWD project of which the Trail was a minor component. While the Draft RGRR/SEIS states at Section 5.7.5 that the $109, 760, 000 contained in the DOI Capital Assets Plan is available for Tamiami Trail, it fails to note that Congress has not authorized that funding for the Trail. The amount of funding currently available should be disclosed in the Final RGRR/SEIS.

Note: an example of the confusion caused by obfuscation are tables 24 and 25, which somehow conclude that the four mile and ten mile bridges are a cost effective best buy. This

absurd analysis is reflective of the back-door Tamiami Trail process that has been ongoing for a number of years.

C. THE DRAFT RGRR/SEIS FAILS TO COMPLY WITH THE ESA

The project area assessed under the Endangered Species Act (ESA) in the Draft RGRR/SEIS in Section 5.6.5.6 is woefully inadequate. The FWS Section 7 consultation looked at Tamiami Trail construction impacts only (See, Appendix F, August 10, 2005 letter.) The Tribe continues to contend that the area assessed under the ESA should be the entire area analyzed in the 1992 GDM/EIS on MWD. Such an analysis must include any potential adverse impacts to the endangered species on Tribal Everglades in WCA 3A, including the snail kite and the wood stork, that have been caused, and will continue to be caused, by the delay of the MWD Project. This should include the impacts of delay which has caused the IOP to be implemented, which is adversely impacting 88,300 acres per year of snail kite critical habitat as referenced in the March 2002 FWS Amended Biological Opinion. Under Alternative 14, IOP will be in place for another five years and those adverse environmental impacts must be assessed in the Final RGRR/SEIS. There has also been a 50% decline in the endangered Snail Kite population under IOP operations which is not analyzed, or even discussed, in the letter or the report. It also fails to mention that MWD completion is also vital to other threatened and endangered species, including the wood stork, snail kite, American crocodile and manatee.

D. SPECIFIC COMMENTS ON THE DRAFT RGRR/SEIS

1. Project Partners, Section 1.2: The Project Partners described in this report, SFWMD, DOI, FWS, ENP, FWC, FDOT and DERM are not all true project partners. The MWD Project is a federal responsibility. It appears that the Corps is merely using this term to disguise the fact that it has created an ad hoc advisory team, which consists of non-federal entities and consultants, to provide recommendations without complying with the Federal Advisory Committee Act (FACA).

2. Study Authority: The Tribe notes that the Corps accepted the Tribe's suggestion from the previous EIS process and provided the exact language of the law in the Draft RGRR/SEIS. Section 1 now correctly states that: *PI 101-229...authorized the Secretary of the Army to undertake certain action to improve water deliveries to ENP and shall, to the extent practicable, to restore natural hydrologic conditions...* Unfortunately, the Corps' use of a model that provides greater than CERP acre feet of water to assess impacts shows they do not intend to follow this directive of Congress.

3. Biological Opinion and Interim Flow Targets: The Tribe disagrees with the discussion of the interim flow targets from the Biological Opinion contained in section 3.3. This section fails to state that the closing of the S-12 structures was the option selected and has been going on for nearly eight years and has, and continues to be, enormously environmentally destructive to Tribal lands in WCA-3A. The Corps should not base interim flow targets on a faulty Biological Opinion that has never been subject to NEPA review, nor an Amended Biological Opinion,

which arbitrarily removed the requirement that the MWD Project be completed by December 31, 2003.

4. **Cultural Resources**: Section 5.6.5.6 of the Draft SEIS mentions the historical importance of the Coopertown Airboat rides, but again fails to mention the historical importance of the authentic Miccosukee Indian Village along old Tamiami Trail, because it claims these areas are outside the project boundary. The Tribe contends the project area is that of the MWD Project. Thus, the Village, which is an historic family camp and the cultural resources that could be impacted by this project, include the cultural resources of the Miccosukee Tribe and peoples, including the tree islands in WCA-3A and other parts of the Everglades. The Tribe also urges the Corps to ensure that access to the Osceola and Tiger Tail Camps is not impeded.

5. Tribal Lands: The Draft GRR/SEIS states at Section 7.14 that there will be no DIRECT impacts on Tribal lands. Section 5.6.14 also claims that NO TRIBAL LANDS WILL BE AFFECTED. The Tribe contends that the Corps can only make this statements because it has not conducted the analysis necessary to find any harm and because it has improperly narrowed the scope of its analysis to only the Tiger Tail and Osceola Camps. Under NEPA, the impacts on Tribal lands analyzed should include direct and indirect and cumulative impacts to both Tribal reservation and lease lands in WCA 3A, and the Miccosukee Reserved Area. These lands will all be either adversely or beneficially impacted by the selection of a Tamiami Trail alternative. The scope of the Tribal lands should be the same as it was in the 1992 GDM, and the impact of delay that would be caused by selection of certain alternatives should be quantitatively and qualitatively assessed. Also, the Tribe is concerned that the statement of no impact to the Tiger Tail and Osceola camps is also inaccurate. The Draft RGRR/SEIS has not identified precisely what impact the MWD project water levels, which now appear to have been modeled using even greater than CERP acre feet of water, will have on the Osceola Camp. It merely states that, "DOI is coordinating with the Osceola Camp to complete its raising prior to implementation of this component of MWD." Section 5.6.14. Moreover, Appendix H at 10, contains the following disconcerting statements: " Relocation of the Osceola Camp is outside the scope of the authorized Corps project. The Everglades National Park (NPS) has accepted responsibility and will make all necessary arrangements for relocation or elevation of the camp." As stated earlier, the Tribe will not accept adverse impacts on the Osceola camp or any interference with their traditional practices. The Tribe will also vigorously oppose any forced relocation of this camp, which existed long before DOI even existed. Any attempt at "Indian Removal" will not be tolerated by the Tribe.

6. Hurricane Evacuation: Section 5.3.2 discusses hurricane evacuation. The Tribe has continuously told the Corps that even though the Trail may not be a DOT hurricane evacuation route, it is the only route out for the Tribal members who live along the Trial in a hurricane. As the Miccosukee Tribal members and others in the Service Area use Tamiami Trail to travel across the Everglades, we reiterate our request that the Corps make certain that access is always maintained to protect the health and safety of both Tribal members and the public.

7. Compatibility With CERP: As stated previously, the Tribe supports the federal government's desire for compatibility with CERP in Section 5.7.8, but it must not delay the

implementation of the MWD Project. The Tribe does not believe that Alternative 14 offers that compatibility and reiterates that the two bridge Alternative 14 has a potential for political and bureaucratic mischief plus delay. The Corps apparently thinks that despite the WRDA prohibition against bridging the Trail prior to MWD completion, it is okay to bridge the Trail as long as the L-29 levee remains in place. The prohibition against bridging the Trail in WRDA 2000 makes no such distinction. This quibling is an attempt to hood wink Congress into wasting taxpayer money to build a bridge with the levee still in place. The reasonable culvert cleaning/widening alternative proposed by the Tribe would allow MWD to be expeditiously completed so that CERP decompartmentalization, including any Tamiami Trail modifications deemed necessary, could proceed. Again, the use of the NSM model of greater than CERP acre feet of water to assess impacts on the Trail is improper and attempts to fool Congress into wasting vast sums of money.

8. Socioeconomic Factors: In reference to the socioeconomic factors outlined in Section 5.6.15 it appears that the Corps has discarded the performance measure used in the previous EIS to avoid and minimize impacts to the Tiger Tail and Osceola Camps as a constraint in evaluating the alternatives. In the last EIS, the Corps had developed a performance measure to assess the impacts to the camps, including access, privacy and encroachment, both during and after the construction phase. The Tribe is concerned that the secret advisory team discarded this PM and insists that access to the camps not be impeded. The Tribe reiterates that it will not accept any adverse impacts to either the Tiger Tail or Osceola Camps and that any interference with the traditional use of these camps is non-negotiable. The Tribe will also vigorously oppose any attempt to forcibly relocate the Osceola Camp.

9. Hydraulics and Hydrology: In Section 5.3.4, the Corps also appears to have changed its requirement from Section 5 of the 2003 GRR/FEIS, that the final alternative selected need only pass MWD flows of 4,000 cfs in favor of a model that passes acre feet of water greater than CERP. This section now substitutes language concerning the L-29 canal only. The Draft RGRR/SEIS should contain a hydrological analysis of NE Shark River Slough to show whether Alternative 14 is necessary using 4,000 cfs and how the placement of the bridges was decided.

10. Costs and Section 902: Section 4.16.3 contained a $20.215 million dollar cost constraint on the Tamiami Trail component of the MWD project. The Draft RGRR/SEIS replaces this with the $109, 760, 000 contained in the DOI Capital Assets Plan. This DOI funding has not been provided by Congress and this should be so stated. The Draft RGRR/SEIS is supposed to be a full disclosure document and must include only the funding currently available as a cost constraint. The blank check mentality of DOI and the Corps continues due to the failure to comply with Section 902, which provides that the costs of MWD water can not exceed those allowed by Section 902 without going back to Congress. When the PCA was signed in 1994, the $81 million dollar project cost escalated to $114 million. The cost is now at $400 million. Additionally, even the cost of the Tamiami Trail alternatives have dramatically escalated since 2003: For instance, the cost of the skyway went from $142 million dollars to $343 million dollars. It is astounding to think that the Corps would even think of spending $343 million dollar for a mere component of MWD which was initially authorized at $81 million dollars for the

entire project. Only through the application of Section 902 will this blank check mentality of the agencies be stopped.

11. WRDA Constraint Language: Although the Draft RGRR/SEIS contains the WRDA 2000 constraint language, the selection of alternatives defies it. Section 601(b)(2) of WRDA 2000 prevents CERP components from being funded until the MWD Project is completed. Despite this Congressional mandate, the Corps refuses to recognize that it is incumbent on them to select an alternative that is within the funding constraints and statutory authority of PL 101-229, so that the MWD Project can be completed expeditiously. The Corps and/or DOI does not have the funding for Alternative 14. Moreover, the Corps appears to incorrectly think that raising and bridging Tamiami Trail is not contrary to WRDA 2000, as long as the L-29 levee is not removed. This "quibling" is dangerous and will not bode well with Congress if they discover they are funding the raising and bridging that WRDA 2000 prohibits. Moreover, they will be even more incensed to learn that the Corps is wasting precious tax dollars by constructing white elephant bridges that will do little for flow with the levee still in place.

12. Betterments: The Draft RGRR/SEIS finds that betterments to protect and enhance wildlife are not part of the project purpose. The Tribe urges the Corps to make certain that any DOI or SFWMD decision to incorporate them not delay MWD.

13. Flood Damage to Road: Section 4.3 raises concerns about saturation and overtopping of the road but fails to contain an analysis using 4,000 cfs that shows that this would happen. Instead, the Corps and DOI have used N.S.M. modeling that provide acre feet of water that are even greater than those authorized for CERP. (Appendix D, Table 3.) The Tribe believes that a proper analysis that uses 4,000 cfs to model impacts, along with the cleaning, widening and placement of additional culverts as necessary, would provide such flows as are "practicable" and would allow MWD to be completed and CERP to move forward. The Tribe has consistently supported only such infrastructure as is necessary for the Tamiami Trail component of the MWD Project, but has also emphasized that Tribal and public safety are of the utmost importance and must be protected both during and after construction. It should be noted that Section 3.4 states that water would begin overtopping the highway at an event frequency of between 200 and 500 years, which is well above the 100 year frequency that is usually the design basis. Finally, this section also states that Tamiami Trail is currently in need of maintenance, which is not a federal responsibility but a state responsibility. This state maintenance could be combined with the federal government's selection of the culvert clearing/widening alternative to reduce the cost and delay of the project

14. No Schedule or Project Implementation Date: The Draft RGRR/SEIS contains no schedule for completion for Alternative 14. The 2003 Final GRR/SEIS which stated in Section 6.12 states that the duration of the construction of the Plan would be 24 months. The Tribe contends that the date the project could be completed should have been a factor in screening alternatives and must be included in the Final EIS. Under Project Implementation in Section 6.10, the document states that "If the Tenatively selected Plan is approved, design and construction would be completed approximately four years following the Record of Decision.

Thus, there is no project completion date! A prolonged EIS process could cause the project to be delayed indefinitely even beyond the new delayed December 2010 completion date.

15. Transportation: In reference to Section 5, although the Draft RGRR/SEIS states that Tamiami Trail will continue to be accessible during storms and hurricanes under the proposed Alternative 14, the Tribe reiterates that the Corps must take all precautions that both transportation and the safety of the Tribe and the public not be compromised during, or after, construction.

16. Impact on Tribal Lands: The statement in Sections 7.14 and 5.6.14 that no tribal lands would be affected and that there will be no direct impacts of any alternatives on Tribal lands is not supported by evidence in the record. The Draft RGRR/SEIS fails to assess the indirect and secondary and cumulative impacts to Tribal lands that all bridge alternatives would have by delaying the MWD project will continue to have on Tribal Everglades in WCA 3A. Moreover, the use of greater than CERP flows must also be analyzed for impacts to the Tiger Tail and Osceola Camps. An analysis of the impacts these flows will have on the MRA and other Tribal properties must also be conducted.

17. Impact on Businesses: The Draft RGRR/SEIS does not adequately assess the impact that would be caused to Tribal businesses by any alternative that delayed MWD or provided greater than CERP acre feet of water. Nor does this section adequately assess the potential impacts that construction activities will have on the Miccosukee Resort and Gaming Facility, and the Tribe's Miccosukee Indian Village, Airboats, Restaurant, and Gas Station whose customers use Tamiami Trail.

18. Osceola Camp: It appears that the Corps has removed the analysis of impacts to the Osceola Camp as a Performance Measure. Without such a PM, the Tribe is concerned that the statement of no impact to the Osceola Camp may be inaccurate. The Draft RGRR/SEIS does not analyze the impact that providing the greater than CERP acre feet of water, as used in the modeling, will have on the Osceola Camp and wants this analyzed in the Final RGRR/SEIS. It merely states that "DOI is coordinating with the Osceola Camp to complete its raising prior to implementation of this component of MWD." Section 5.6.14. The Real Estate Appendix H at 10, contains the following disconcerting statements: " Relocation of the Osceola Camp is outside the scope of the authorized Corps project. The Everglades National Park (NPS) has accepted responsibility and will make all necessary arrangements for relocation or elevation of the camp." As stated earlier, the Tribe will not accept adverse impacts on the Osceola camp, or any interference with their traditional practices. The Tribe will also vigorously oppose any attempt to forcibly relocate this Camp.

19. Tiger Tail Camp: It appears that the Corps has removed the analysis of impacts to the Tiger Tail Camp as a Performance Measure. Without such a PM, the Tribe is concerned that the statement of no impact to the Tiger Tail camp is inaccurate. The Draft RGRR/SEIS has not identified precisely what impact providing greater than CERP acre feet of water, as used in the modeling, will have on the Tiger Tail Camp and wants the Corps to analyze this in the Final RGRR/SEIS. As stated earlier, the Tribe will not accept adverse impacts on the Tiger Tail Camp,

or any interference with their traditional practices. The Tribe will oppose any plan that has adverse impacts on the Tiger Tail Camp.

20. Environmental Justice: Section 5.6.18 claims, without the requisite analysis, that no long term impacts would be created for the residents of the Tiger Tail and Osceola Camps. The Tribe is concerned that the advisory team has removed the previous Performance Measure that would allow them to analyze the potential adverse impacts of alternatives on the Tiger Tail and Osceola Camps. The Tribe contends that the Corps must ensure that the project is not likely to affect the environmental health or safety, and traditional way of life, of either the Tiger Tail or Osceola Camps. Moreover, the statement about "relocation" of the Osceola Camp contained in Appendix H is reminiscent of the deplorable practice of Indian Removal, contrary to environmental justice, and should be removed from any further consideration and this document. The Tribe also continues to contend that the disparate impacts to Tribal Everglades and its culture and way of life due to the failure to implement the MWD Project, should also be analyzed in this section. Any alternative that delays this project should be identified as adversely and disproportionately impacting the Miccosukee Tribe of Indians.

21. Public Involvement: Section 9.1 claims that the Corps complied with USACE and NEPA policies and sought public input. In reality, the process conducted by the Corps was a secretive back door process which excluded the public. An ad hoc advisory group, which did not comply with FACA, met in private and invited the public in after the decisions were made to feign "public involvement." This is contrary to both FACA and NEPA.

22. Public Agency Meetings: This section contains a misleading statement about the Miccosukee Tribe which we have asked to have removed in the prior process.
It fails to acknowledge that the Tribe ultimately rejected the *skyway* in its comments on the prior Draft and Final EIS and continues to do so, because it would delay the completion of the MWD Project. The Tribe does not understand why the Corps stubbornly insists on contending that this is still the Tribe's position, when the Tribe, a sovereign government, has asked that this be corrected numerous times. The Tribe once again requests that the Corps state its position accurately in this section.

23. Water Quality: Section 2.3 purports to analyze water quality of the project. In the prior EIS process, the Tribe contended that its unanalyzed culvert alternative would allow any traffic runoff to continue to be treated at the shoulder. Section 2.2 discusses the massive S-9 pump, which discharges water to the Everglades and the Park under MWD. This section should contain an analysis of the pollutants that will have to be cleaned up from these S-9 discharges before the project is implemented.

24. Natural System Model: Section 3.2.1 shows that an Natural System Model (NSM) which uses greater acre feet than CERP D13R was improperly used to predict water levels in WCA 3B and the L-29 canal and to determine the potential impacts to Tamiami Trail. The Tribe contends that it was improper to use NSM 4.6.2 to determine Tamiami Trail modifications and that this has resulted in unnecessary and expensive alternatives being analyzed and selected. Appendix H states this model run was chosen because it represents stage and duration target for the Greater

Everglades System, but fails to acknowledge these targets are for CERP and not for MWD. While this appendix claims that using this NSM model is prudent, the Tribe believes it is unauthorized and has resulted in the selection of an unnecessary and expensive alternative that would not be required if proper MWD modeling that passed 4,000 cfs MWD flows was used. (Note: Appendix H admits the current system has the hydraulic capacity to pass MWD flows and provides a hydraulic connection to the sloughs.)

25. Safety: As stated throughout these comments, the Tribe insists that both Tribal and public health and safety be strictly maintained both during, and after, construction of the Tamiami Trail modifications. The Tribe contends that if the Corps had not allowed modeling to be used that incorporates greater than CERP acre feet of water on a project that only needs to pass 4,000 cfs, the current system would be able to pass flows to the extent practicable and safety would not be an issue.

26. Tamiami Trail List of Preparers: NEPA requires an EIS to be a full disclosure document. The Tribe disputes that the list of preparers at page 145 is the full list of people who contributed to this document. NEPA requires this document to include the name of the advisory team and anybody else who worked on the Draft RGRR/SEIS.

E. THE CORPS' DID NOT MEET ITS TRUST RESPONSIBILITY TO THE MICCOSUKEE TRIBE IN THE DRAFT RGRR/SEIS PROCESS

The RGRR/SEIS process was not consistent with the Corps' trust responsibility to the Tribe. The Tribe was asked to attend "interagency meetings" in the prior Tamiami Trail EIS process, which it insisted be public meetings. This time, despite the fact that the Tribe directly asked the Corps to be included in the process, it was excluded from the meetings which were secretly held without both the Tribe and the public. The Tribe only found out about these meetings, which discussed matters that had a direct impact on the Tribe and its natural resources, when documents prepared for the meetings were somehow released. This is not only discouraging, it is also contrary to the Corps' Trust responsibility to the Tribe. The Corps has a duty to conduct meaningful pre-decisional consultation. The Corps also has a solemn trust responsibility to choose a plan that will protect Tribal natural resources and trust resources and should reject any alternative that will cause further destruction of Tribal lands.

III. CONCLUSION

The Tamiami Trail modifications selected must be consistent with the Project Purpose in PL 101-229, WRDA 2000 language, and the Corps' trust responsibility to the Miccosukee Tribe. The review process must select a plan that meets the project purpose, and that will allow the expeditious completion of the MWD Project that will benefit 900,000 acres of the Everglades. The Tribe believes that Alternative 14 is expensive and unnecessary to pass MWD flows. The Tribe urges the Corps to resist political pressure from those who refuse to abide by the purpose and authority of MWD and urge it to embrace an unwise plan that causes further delay to the detriment of the Everglades.

The MWD Project is not CERP. It was intended to be an interim restoration project designed to protect and preserve 900,000 acres of Everglades wetlands, including hundreds of thousands of acres of Tribal Everglades in WCA 3A. The Tribe urges the Corps to abide by its Trust responsibility and select a Tamiami Trail modification, such as the cleaning and widening of culverts, and possible construction of new ones, that would allow the MWD Project to be constructed expeditiously. The culture and way of life of the Miccosukee Tribe of Indians, and the future of the Everglades, and its restoration as directed by WRDA 2000, depends on it.

Sincerely,

Dexter W. Lehtinen

cc: Chairman Billy Cypress

example email comment on TTM final

From: Fumiko Sakoda [wolffirst@hotmail.com]
Sent: Tuesday, January 10, 2006 12:43 AM
To: TTMComments SAJ
Subject: Tamiami Trail

Dear Mr. Appelbaum,

I am concerned about the restoration of Everglades National Park. Choosing the 11-mile Tamiami Trail skyway option, or at least a single section of bridging that could be further built upon by another project, will help restore water flow through America's Everglades. The current alternative--2- and 1-mile bridge sections for the Modified Water Deliveries to Everglades National Park-Tamiami Trail Project--does not go far enough to restore significant water flow through the park to Florida Bay.

Modifying Tamiami Trail is one of the most important elements of Everglades restoration, and should be given the highest priority. Without a change in the proposed plan, the Everglades will not achieve the highest level of protection that the American public expects.

The skyway provides significantly more benefits than any other plan and it's worth the expense to do the work the right way the first time. I urge the Corps to take a proactive step to restore natural water flow to Everglades National Park and Florida Bay and choose the skyway.

Thank you for your consideration.

Sincerely,

Fumiko Sakoda
P.O. Box 104
Rosston, OK 73855

Draft Responses to the
Letters of Comment on the
Final RGRR/SEIS
Tamiami Trail

The following draft responses to the comments on the Final RGRR/SEIS for Tamiami Trail were current as of 20 January 2006. Final responses are in preparation.

Commenter		Comment	
See List #1 and List #2	1	I am concerned about the restoration of Everglades National Park. Choosing the 11-mile Tamiami Trail skyway option, or at least a single section of bridging that could be further built upon by another project, will help restore water flow through America's Everglades. The current alternative--2- and 1-mile bridge sections for the Modified Water Deliveries to Everglades National Park-Tamiami Trail Project--does not go far enough to restore significant water flow through the park to Florida Bay.	JDM: All of the alternative bridge plans have sufficient conveyance capacity to restore the entirety of expected future MWD flows through the Park. They differ only in the distribution of flows across NESRS.
	2	Modifying Tamiami Trail is one of the most important elements of Everglades restoration, and should be given the highest priority. Without a change in the proposed plan, the Everglades will not achieve the highest level of protection that the American public expects.	NR
	3	The skyway provides significantly more benefits than any other plan and it's worth the expense to do the work the right way the first time. I urge the Corps to take a proactive step to restore natural water flow to Everglades National Park and Florida Bay and choose the skyway.	JDM: The cost of the 10.7-mile bridge ("Skyway") exceeds the budgeted funding for the project.
Cindy Snyder		Same as List #1 comments adding only the following:	NR
	1	Taxpayers and Florida citizens are spending billions of dollars to restore the Everglades. It must be done right, or it will be our nation's most expensive environmental failure.	JDM: The cost of the 10.7-mile bridge ("Skyway") exceeds the budgeted funding for the project.
Sarah Linney		Same as List #1 comments adding only the following:	NR
	1	Besides restoring historic waterflow across the Florida Bay, and elevated road will also remove the danger of cars and wildlife such as Brown Bears, White-tailed Deer, and the endangered Florida Panther from hitting each other. These animals are all large enough to cause an accident.	JDM: There are no records of vehicle collisions with large animals. If this became a significant safety issue, it could be more economically addressed with roadside barriers such as used along portions of Alligator Alley.
Bill Parker	1	...I am concerned about the restoration of Everglades National Park. The Tamiami Trail, as I am sure you know, is a road that in essence acts as a dam. This dam is a major barrier to the natural water flow, and its presence continues to impede restoration of the Everglades. Modifying the Tamiami Trail is one of the most important elements of Everglades restoration, and consequently should be given the highest priority. Without a change in the proposed plan, the Everglades will not achieve the highest level of protection that the American public expects.	NR
	2	The current alternative, as I understand, is 2 and 1 mile bridge sections for the Modified Water Deliveries to Everglades National Park. This Tamiami Trail Project simply does not go far enough to restore a significant water flow through the park to Florida Bay.	JDM: The recommended plan provides for full MWD restoration flows through the Park.
	3	Choosing the 11-mile Tamiami Trail skyway option, or at least a single section of bridging that could be further built upon by another project, will help restore water flow through America's Everglades.	JDM: The recommended plan provides for full MWD restoration flows through the Park.
David Addison	1	As a very concerned American citizen, I strongly urge you to choose the 11-mile Tamiami Trail skyway option as the only sensible course of action. From your well acknowledged and rightfully praised experience, you are fully aware of the damages already caused by the damming effects of the too long established US highway 41 in this specific area. In order to correctly improve and restore the Everglades National Park to a semblance of its natural well-being, and to contribute to the established renovation project which Florida Governor Jeb Bush described over three years ago, this 11-mile stretch will be beneficial to all.	NR
Michael Matthews	1	It is imperative that the Army Corps of Engineers go with the 11-mile bridge (the "skyway") option in its plans for modifications to the Tamiami Trail (US highway 41). This highway cuts through Shark River Slough, one of the Everglades' deepest and most important water passageways and this 11-mile section of the 1928 road must be elevated into a "skyway" if Everglades restoration is to succeed. The skyway will be an important first step in returning the historic water sheet flow through parched Everglades National Park and into Florida Bay. It will be beneficial to wildlife by reducing habitat fragmentation and preventing road kill. The project will create jobs and increase tourism while raising Everglades awareness at the same time. An 11-mile skyway will serve as a visible symbol of Everglades restoration. Finally, the Everglades Expansion and Protection Act states that the MWD Project features (of which this is one) are "justified by the environmental benefits to be derived the Everglades ecosystem in general a ...e park in particular an shall not require further economic justification...".	JDM: The 10.7-mile bridge alternative could not be recommended because its cost exceeded the available budget for the MWD project. Economic justification was not a consideration.

	1 cont ...	... If this is true, then the 11-mile skyway—the environmentally preferred option—should be selected as the plan to go with, not what the Miami Herald has dubbed a "$125 million two-bridge patch-up".		
Brian McMahon	1	I agree Alternative 14 seems to be the best plan. It allows adequate water flow, and has the highest benefit per dollar ratio. It also preserves traditional and cultural uses for the Indians and recreational users. Maintaining public access should be a high priority in all Mod Waters and CERP planning. Alternative 14 is a step in the right direction.ı		NR
M. Raines	1	I am gravely concerned about the restoration of Everglades National Park. Please make Tamiami a bridge--a skyway. We must preserve this national treasure. The planet is about more than us having a fast, convenient way to find another Wal-Mart or Radio Shack. Building the bridge will make both people and nature happy.		NR
Beth Franks	1	The idea of restoring Everglades National Park to "increase the level of protection of [its] outstanding natural values...and to enhance and restore the ecological values, natural hydrologic conditions" is very exciting. But I am concerned about the plan itself. I understand Tamiami Trail, a road that currently acts as a dam, is a major barrier to the natural water flow, and its presence continues to impede restoration of the Everglades. Does the current plan of building one- and two-mile bridge sections for the Modified Water Deliveries to Everglades National Park-Tamiami Trail go far enough to restore significant water flow through the park to Florida Bay? Experts are saying "No." An alternative, the 11-mile Tamiami Trail skyway option--or at least a single section of bridging that could be further built upon by another project--will help restore water flow through America's Everglades. Modifying Tamiami Trail is one of the most important elements of Everglades restoration, and should be given the highest priority. Without a change in the proposed plan, the Everglades will not achieve the level of protection that the American public expects. ı		JDM: The recommended plan goes all the way in restoring water flows through the Park. The major difference between it and the 10.7-mile bridge is the distribution of flows across NESRS.
Robert Stegman	1	Truly effective restoration of Everglades National Park is one of the most important environmental projects on our national agenda. Only the 11-mile Tamiami Trail skyway option will allow the water flow needed to restore America's Everglades. The alternative 2- and 1-mile bridge sections for the Modified Water Deliveries to Everglades National Park-Tamiami Trail Project are inadequate to restore significant water flow through the park to Florida Bay. ı ı The skyway is so superior to any other plan that the expense is fully justified. I urge the Corps to enact the plan required to finally restore natural water flow to Everglades National Park and Florida Bay by choosing the skyway alternative.		JDM: The recommended plan is equally adequate to restore significant water flow through the Park as the 10.7-mile bridge plan. The latter could not be recommended because of insufficient availability of funds, not justification.
George & Frances Alderson	1	Everglades National Park is a national treasure, and the restoration of water flow is long overdue. It is needed to sustain the Everglades and its wildlife. I (George) have visited the park and got a good grasp of its setting in south Florida, including the Tamiami Trail as an obstacle to the flow of water.ı ı Restoration of the water will not be achieved if you adopt the inadequate proposal of piecemeal bridge sections no more than 1 or 2 miles in length. That is simply not adequate. ı ı We feel a more aggressive option should be selected: a skyway of 11 miles. Alternatively, a skyway section of several miles would help bring more water through, and this could be extended by future construction projects.		JDM: A 10.7-mile bridge would not bring more water through than the recommended plan. It would just distribute it differently across NESRS.
Spence	1	The massive plan for the Tamiami Trail which has been in place since 1926 doesn't make that much sense. The Glades survived and in the early 60's was a paridise of birds and animals.What is destroying the Glades is the Army corp. and the Fla, water mangement dept allowing the issuance of permits for the continued sprawls. The expense of the Tamiami project would be out of this world and as long as Alligator Alley has dammed the flow of the river of grass what is the benefit?		JDM: A major factor in the ecological decline in the Everglades was the construction of the water impoundment areas north of Tamiami Trail culminating in the 1960s. The MWD project, of which Tamiami Trail is a part, will address this problem, as will the follow-on CERP projects.

Florida Power and Light, Florette Braun	1	Dear Mr. Moulding: FPL would like to reiterate our earlier comments noting that we have a distribution line running along the length of Tamiami Trail within your proposed project. This critical line serves the Indian Reservation. The line will need to be relocated and/or modified to accommodate the Tamiami Trail project, but it can not be taken out of service for any length of time. An alternate location will need to be provided for this line and the new facility will need to be constructed and in service before the existing line can be removed. If the new line is to be designed into the new bridge you will need to accommodate attachments and built-in manholes into the proposed bridges. In order to minimize impacts to both the government and FPL it will be important to involve FPL in early review of plans for the bridges and elevated roadways. In this manner creative opportunities and solutions can be identified and costly impacts recognized and minimized. Florida Power and Light will need at least one year's notice before the start of the project in order to provide time for cost estimation, budgeting, planning and relocation work.	
	1 cont ...	...A contract agreement will also be needed to perform the distribution work. In addition, this proposed work appears to cross a currently open FPL transmission line right-of-way where future facilities are to be located. Should the proposed project impact this right-of-way an agreement will need to be reached with FPL to address additional engineering and construction costs that may be incurred to accommodate bridges or elevated roadways within the right-of-way.	
Miccosukee Tribe - Dexter Lehtinen, Lehtinen, Vargas & Riedi, PA 7700 N. Kendall Drive, Suite 303 Miami, FL 33156	1	The Corps is well aware that when Congress passed WRDA 2000, it specifically required completion of the MWD Project prior to authorization of the CERP Decompartmentalization Project. WRDA 2000 mandates: "No appropriation shall be made to construct the Water Conservation Area 3 Decomp. and Sheetflow Enhancement Project (including...Raise and Bridge East Portion of Tamiami Trail...) until the completion of the project to improve water deliveries to ENP authorized by section 104 of the ENP Protection Act of 1989." Congress clearly prohibited exactly what the Park and Corps are now attempting to do. Building Tamiami Trail bridges as part of MWD will not stand up to a legal challenge.	
	2	The Tribe is disappointed that the Final RGRR/SEIS continues to fail to analyze the resonable alternative of clearing, enlarging and if necessary, constructing some additional culverts to allow the maximum projected flow of MWD of 4,000 cfs through Tamiami Trail. Under the 1989 Act which authorized MWD, the Secretary of the Army was only authorized to restore natural hydrologic conditions to the extent practicable. Thus, spending almost double the cost of the initially authorized cost of the entire project for a minor componenet is clearly not "practicable," especially when App. D, Annex A shows that the current culvert system has the hydraulic capacity to pass the 4,000 cfs maximum projected flow. Perhaps that is the reason that the Corps fails to emphasize the 4,000 cfs contained in the Final GRR/SEIS dated December 2003 in the 2005 Final RGRR/SEIS.	

	JDM: The referenced distribution line is located on the L-29 levee, and as such , is not within the project impact area and will not need to be relocated. However, there are service taps off this line extending across the Tamiami Canal to service businesses on the south side of the highway. Some of these will be affected where they cross one of the proposed bridges. This will be coordinated with FPL in advance of construction.
	JDM: The referenced FPL ROW is not within the footprint of the eastern bridge. The ROW may need to be expanded south a few feet to accommodate a slight southerly shift in the road centerline. Any change in the existing ROW agreement would need to be coordinated with FDOT.
	The 1989 Everglades National Park Protection and Expansion Act authorized the Secretary of the Army to improve water deliveries to the Park and restore natural hydrological conditions to the extent practicable. The Act did not prohibit the construction of bridges on Tamiami Trail as part of any recommended plan. BRIAN (BARB) We do not think the currently proposed alternative violates the constraints imposed under the Water Resources Development Act of 2000 ("WRDA 2000"). The description of the CERP Decompartmentalization project in the Central and Southern Florida Restudy is quite different from the 2 bridge alternative proposed here; it includes removal of additional levees, blockage of a major canal and other actions that cannot be accomplished at this time.
	TRENT (BARB): This comment was addressed in the comment/response Appendix of the Draft Report. We did analyze simply clearing and adding culverts. In fact, culvert cleaning has already been tried. The problem with this alternative is that it constricts flow under the Trail, causing water to rise in the L-29 borrow canal to the North. This would damage the road structure, as well as leading to scour under the culverts and continue the deposition of fans of sediment south of the road. TRENT: The Corps of Engineers does not concur that clearing, enlarging and if necessary, constructing some additional culverts will allow to the extent practicable the restoration of the natural hydrologic conditions within ENP. Appendix D Annex A Section 3 clarifies the COE's position that the culverts are not adequate. Figure 18, in Appendix D Annex A (Stage Differential between the L-29DC and Downstream Marsh), shows the impacts that different openings have to the stage in the L-29BC. (response continued below)

			(continuation of response) Openings ranged from the existing condition (current culvert configuration) to the 10.7 mile bridge. What this analysis shows is that to pass the same amount of water as the recommended plan, culverts only would result in a stage approximately 1 foot higher. The increased stage in the L-29BC would raise the Design High Water for the Tamiami Trail roadway design by an additional foot. With another foot of roadway elevation the foundation of the embankment might not be able to carry this additional load without total reconstruction, potentially further delaying this project.
	3	into believing this expensive white elephant is necessary under MWD. Although the projected MWD maximum flow is 4,000 cfs, the advisory group utilized by the Corps improperly used NSM 4.6.2 modeling which provides a volume of water greater than CERP to model alternatives and justify the bridge (i.e. 1372 acre feet of water is far more than the 921 acre feet of water authorized for CERP D13R in the Yellow Book adopted by Congress.) (Section 3.2 and Appendix D, Annex A, Table 3; See, Table 3 attached as Tribe's Exhibit A.) Clearly, the two bridge Recommended Plan is not necessary to pass MWD predicted flows, and Congress and the public are being asked to provide a huge sum of money to build an unnecessary two bridge alternative that could prejudge the ultimate CERP solution for Tamiami Trail. It will also delay the implementation of MWD causing continued destruction of the priceless Everglades.	TRENT (Barb) The Corps did not use an advisory group. The technical design group consisted of all federal and state government agency representatives assigned to the project. The only "ad-hoc" aspect of the meetings was that they began on a request from Everglades National Park based on their belief that new scientific papers provided support for better spreading the flow across Tamiami Trail. Since this report is final and is expected to be approved very soon, the comments on delay of the project do not appear. TRENT: The MWD project is not authorized a specific flowrate but to the extent practicable to take steps to restore the natural hydrological conditions within the park. The Tamiami Trail report used the predicted flows from Alternative 2 of the Combined Structural and Operational Study for the comparison of bridge alternatives not the Natural System Model (NSM). The NSM model was used (see Appendix D Annex A Section 6) however for the design of the Roadway Design High Water (DHW) and the Bridge Control Water Elevation (CWE), see Appendix D Annex A Sections 9 and 1
	4	The Tribe contends that the Hydrology and Hydraulics Report (Annex A) also shows that the inexpensive alternative of cleaning the existing culverts, and adding a few more where necessary, would allow MWD to move forward expeditiously so that we can move forward toward CERP. The Final RGRR/FEIS admits that the culverts under Tamiami Trail have the capacity to convey the MWD required volume of water of 4,000 cfs. Id. at ¶ 3 and Table 2). The Corps also admits in response to the Tribe's comments that the Hydrology and Hydraulics Report "demonstrates that the current culverts do have the capacity to move large volumes of water." (Appendix L, Page 37 at Comment 25.) Yet, rather than choose the simple and inexpensive culvert	TRENT: The COE does not concur with this statement. Cleaning out the culverts and possibly adding a few more culverts does not allow us to change the current Design High Water elevation for this portion of Tamiami Trail. Correspondence from the FDOT states that the DHW is elevation 7.5 feet. Any level above this elevation causes an increased deterioration of the driving surface. Without making modifications to the Tamiami Trail roadway this stage cannot be changed and increased flows to North East Shark River Slough (ENP) cannot be delivered.

	5	The modeling chicanery used in the Final RGRR/SEIS shows that the Park, not happy with MWD design volumes, has succeeded in getting the Corps to use a model that uses far more acre feet of water than Congress has even authorized for CERP to select the Tamiami Trail alternative.	TRENT: The COE does not concur with the statement. The COE uncertain of the recommended plan from the CSOP study, which is studying combining the Modified Water Deliveries (MWD) Project and the C-111 Project operations in a comprehensive manner to enhance water deliveries to ENP while maintaining the other authorized purposes of both projects, used the Natural System Model for the selection of the new Design High Water elevation for the reconstructed embankment. This model run was chosen because it represents our restoration stage and duration targets for the Greater Everglades System. To the extent practicable it was the COE charge from PL 101-229 to restore the natural hydrological conditions within the park. The selection of the DHW for the roadway reconstruction was fully coordinated with the FDOT, whose charge is the public safety of people traveling along this roadway. (response continued below)
			(continuation of response) To compare the different alternatives lengths, locations, and ability to convey water into North East Shark River Slough an RMA-2 analysis was performed. The boundary conditions for this model run were taken from the CSOP study Alternative 2 (West Bookend Run). Alternative 2 (West Bookend Run) was chosen because it was the most environmentally aggressive plan that put the largest volume of water into North East Shark River Slough. All variables within the model were held constant (flows, stages, roughness values, etc.) accept the length and location of the bridge opening. In this manner each alternative could be compared in an equal manner on its ability to restore the natural hydrologic conditions within ENP.
	6	The Tribe is also disturbed that the Corps continues to refuse to calculate the costs, both economic and environmental, that have occurred to the Everglades as a result of the delay of the MWD...Despite this, the Corps allowed an ad hoc advisory group to meet in secret and removed performance measures that had been derived in previous public meetings that would have looked at impacts and benefits to the Tribes's lands in WCA 3A.	BRAD (BARB) It would not make sense to calculate the cost of a project that is not yet authorized. The 2003 final RGRR/EIS proposed a plan that was not authorized for construction, therefore, we cannot discuss "delays" in implementing a plan that was not approved. The meetings of the technical evaluation team were not secret; but they were not public meetings. FACA does not apply as the staffers who met were all employees of Federal or State agencies assigned to the project.
		SPECIFIC COMMENTS ON THE FINAL RGRR/SEIS	
		A. ...Using Modeling Chicanery to Exceed Authority	
	7	even for CERP to justify bridging Tamiami Trail under MWD. Buried in a separate volume in Appendix D, Annex A, technical information not contained in Volume I shows that NSM Model Version 4.62, which provides 1372 acre feet of water greater than the 921 acre feet of water authorized under CERP, was used to assess impacts of alternatives on Tamiami Trail. (Appendix D, Annex A, page 4, ¶ 6 and Table 3; Section 3.21.) While the Hydrology and Hydraulics Report says this model run was chosen because it represents stage and duration target for the Greater Everglades System, it should be remembered that MWD was never intended to produce CERP volumes of water, let alone those that exceed CERP. Id. at Page 4, ¶ 6.	TRENT: See response to comment 5.

8	authorization, based on the future CERP which may never be authorized or built. While the Corps is quick to use Department of Transportation ("DOT") safety concerns as an excuse for reinitiating the Tamiami Trail process and choosing such an expensive fix, a review of Appendix D, Annex B shows that DOT was kept in the dark about the modeling assumptions used for many years. A March 22, 2004 letter from DOT to the Corps in Annex B shows that it had requested information on hydrologic modeling assumptions used by the Corps as early as September 29, 2000, but that this modeling information had not even been provided as late as March 5, 2004. Thus, it appears that the only modeling assumptions ever provided to DOT, if they ever were, used NSM 4.6.2 modeling assumptions with water volumes far in excess of what MWD would provide.	Hydrologic modeling information was never intentionally withheld from FDOT District 6. In Nov 04, modeling background and results were shared with District 6, followed by a Jul 05 workshop, in which District 6 staff received an in-person explanation of the NSM modeling performed.
	B. An Ad Hoc Advisory Team, Which Failed to Comply with FACA, Made Recommendations on Plan & Bridge Placement	BARB. The team was exempt from FACA and was not an advisory team. It was a working technical team made up of representatives from government agencies assigned to the Mod Waters project.
9	Final RGRR/SEIS. While the Corps attempts to paint this advisory group as a fact finding team, it is clear that it made policy recommendations and that the Corps improperly delegated their statutory authority to them. This advisory group not only deleted performance measures from the prior EIS process that had been devised in public meetings, it also created new ones, and revised and changed objectives of the project itself. Id. at page 3. Moreover, contrary to the National Environmental Policy Act ("NEPA"), the group failed to analyze all reasonable alternatives for Tamiami Trail. Thus, the Final RGRR/SEIS fails to analyze the viable culvert alternative. Instead,	The Corps complied with the Federal Advisory Committee Act. (Barb): Corps members were the core of this working team: no delegation of decisions was made. All team members reported directly to decision makers in the involved agencies. The recommended alternative was approved by the participating agencies. Deletion of preliminary performance measures is common when they result in ambiguous results or do not help to choose among alternatives. In any case performance measures are developed by a technical team, not by public vote.
10	topographic maps or satellite images. It would be logical and prudent to place the longer bridge in the east, so that it passes larger quantities of waters along historic flow lines. The current proposed location for the western bridge could force water to flow to the southeast, in an unnatural way, until it intersects the historic flow path and turns back to the southwest.	TRENT: Appendix F Draft Tamiami Trail Alternative Optimization Report pages x though xii prepared by the Everglades National Park describes the reasoning behind the placement of bridges.
11	In addition, the proposed location for the Recommended Plan forces the water to circumvent a good portion of NE Shark River Slough, thus losing restoration benefits and wasting the tens of millions of dollars spent to forcibly buy out many residences in the 8.5 Square Mile Area allegedly to permit the raising of water in this area. Placing the larger bridge to the east would also help abate any impacts to the Tiger Tail and Osceola Indian Camps, which is a Tribe priority. The Final RGRR/SEIS fails to conduct a modeling analysis of how the Recommended Plan would impact the Miccosukee Reserve Area (MRA). With the entire L-67 Extension removed, and most of the water being released much closer to the MRA, one can logically expect that water levels around and/or in the MRA will increase, thus potentially creating flooding problems for the Tribe. This was not analyzed in the Final RGRR/SEIS.	TRENT: The L-67Extension currently acts as a buffer preventing discharges from the S-12's from flowing towards the east and creates two distinct stages east and west of the levee with the west side higher. With the implementation of the Modified Water Deliveries project and the removal of the L-67 Extension a larger portion of flows will be distributed east of the levee location and away from the Miccosukee Reserve Area (MRA). The target flow volume split between east and west is 55/45, respectively.
	C. Final RGRR/SEIS Fails to Comply with NEPA	
12	Contrary to the conclusion in Section 1.4, the Tribe contends the Final RGRR/SEIS fails to comply with the National Environmental Policy Act ("NEPA"). The Tribe contends that the Corps has improperly segmented the MWD Project into separate components, such as the 8.5 Square Mile Area, Tamiami Trail, and Seepage Control components, contrary to the National Environmental Policy Act (NEPA). The 1992 General Design Memorandum ("GDM") and EIS	JDM: Do not concur. This is a comment on process, not a substantive one on the EIS that would need to be addressed in the document.
13	*of action shall be evaluated in a single impact statement.* When the Corps prepared its GDM for the MWD Project in 1992, it evaluated all aspects of this interrelated project in a single EIS. This improper segmentation has caused the Final RGRR/SEIS to fail to adequately assess impacts on Tribal lands and resources. Finally, contrary to NEPA, the Corps did not respond to the Tribe's comments on this improper segmentation in the Final RGRR/SEIS.	JDM: Do not concur. This is a comment on process, not a substantive one on the EIS content that would need to be addressed in the document.

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	14	The narrow purpose and scope in Section 1.3 of the Final RGRR/SEIS allows the impacts of delay, especially those to the Tribal lands in WCA-3A, to remain unassessed and skews the analysis of the alternatives. Due to the failure of the Corps to broaden the study area, and consider the serious environmental harm being caused by the failure to complete MWD, the Final RGRR/SEIS omits issues of vital importance, such as the impact of the project and project delays on Tribal Everglades and the endangered and threatened species that inhabit these areas. The Corps has admitted in the Final GRR/SEIS on the 8.5 Square Mile Area component of the MWD project that *the loss of tree islands has an impact on critical habitats and cultural resources in WCA 3A. delayed implementation of the MWD project will cause an estimated loss of 8.4 islands and 246 acres per year at an estimated cost of $50,000 to $500, 000 per acre.* (Final GRR/SEIS on the 8.5 Square Mile Area, Section 5.2.7, page 64 and Table 7.) In light of the serious environmental and economic costs of delay, the Corps's excuse in the Final RGRR/SEIS Appendix L at Comment 29 that "the true ecological costs of delay can not be determined" (so they didn't do it), is belied by the fact that they have done it before. Placing the blame for delay on CSOP shows how little the person answering the Tribe's comments knows about the MWD Project, which is part of CSOP.	JDM: The previous response is still relevant. The ecological cost of delay for one particular year would be dependent on the specific meteorological conditions that year. The alternative plan the Tribe proposes would likely take only one year less to constuct. It is not possible to quantify in any meaningful way what the ecological cost of the additional year would be. Furthermore, there will be no significant flooding relief in the WCAs until CSOP is approved and constructed. The schedule for that is likely to be congruent with the Tamiami schedule.
	15	NEPA in Section 3. Tamiami Trail modifications are not a Congressionally authorized project. The authorized project is Modified Water Deliveries. Thus, the *future without project condition* for the Modified Water Deliveries Project is NO MODIFIED WATER DELIVERIES PROJECT and not "the future of the study area as it would be expected to develop, if no improvements were made to Tamiami Trail." It violates NEPA to segment the MWD project. There is no Congressionally authorized "Tamiami Trail Project." If the Corps believes they have authorization to build the Tamiami Trail modifications under MWD, then it is a component of the MWD and the scoping should encompass the entire project area. The Corps' failure to do so merely supports the Tribe's position that the Corps has no authorization to construct a $159 two bridge Recommended Plan under MWD and will have to go back to Congress for funding an authorization. Indeed, the Corps' response to the Tribe's comments at Appendix L, Comment 21 proves the Tribe's point in that it states that MWD operations are not a Tamiami Trail feature. (Note: The Tribe will not	The 1989 Everglades National Park Protection and Expansion Act authorized the Secretary of the Army to improve water deliveries to the Park and restore natural hydrological conditions to the extent practicable. The Act did not prohibit the construction of bridges on Tamiami Trail as part of any recommended plan. The recommended plan is budgeted with authorized funding in the most recently submitted Department of Interior Capital Asset Plan.
	16	NEPA and its implementing regulations require that the cumulative impacts of past, present, and future actions be analyzed in the Final RGRR/SEIS. Section 7.18 of the Final RGRR/SEIS is woefully inadequate in that it only discusses the future impacts of CERP while it turns a blind eye to past and present actions....The Final RGRR/SEIS failed to analyze the cumulative impacts that at least five more years of IOP that will result from the Recommended Plan will have on the Everglades, endangered species, and Tribal lands.	JON
	17	The Final RGRR/SEIS fails to analyze the reasonable culvert alternative.	TRENT: The COE does not concur. The existing culvert structures were modeled as part of the alternative evaluation. The Manning's Coefficient that was used for the area immediately downstream of the culverts was the same as that used for the downstream marsh. It would be expected even with the removal of the exotic vegetation that the natural marsh species would re-establish and would influence the discharge of water from the culverts. This resistance would increase the stage in the L-29BC and have back water impacts into both WCA_3A and WCA-3B. See Figure 18, in Appendix D Annex A (Stage Differential between the L-29BC and Downstream Marsh), which shows the impacts that different openings have to the stage in the L-29BC including the existing conditions (culverts only).
	18	The Draft FWS CAR analysis of alternatives is Fundamentally flawed.	JDM: The CAR is a product of another agency (USFWS)and, as such, is not subject to comment and response by the Corps.

	19	The Tribe suggested inclusion of the WRDA 2000 const ngunge on the MWD Project in both the Draft and Final RGRR/SEIS. Even though the Corps included this language, it selected a Recommended Plan that ignores the Congressional directive in it. WRDA 2000 clearly prevents the two bridge Recommended Plan from being built as part of MWD. Moreover, there is no funding to build it. (See, Section 5.7.5 which says, "Construction of alternatives 10, 11, 12, or 14 would also be greater than the amount budgeted.") It is unfortunate that the Corps selected a	The 1989 Everglades National Park Protection and Expansion Act authorized the Secretary of the Army to improve water deliveries to the Park and restore natural hydrological conditions to the extent practicable. The Act did not prohibit the construction of bridges on Tamiami Trail as part of any recommended plan. The recommended plan is budgeted with authorized funding in the most recently submitted Department of Interior Capital Asset Plan.
	20	Performance Measures for alternatives failed to include the cost of delay. The cost of delay that will be caused to the Miccosukee Tribal lands and other parts of the Everglades should have been listed as a performance measure for analyzing the alternatives in the Final RGRR/SEIS.	BRAD: see response to earlier comment #
	21	The Draft RGRR/SEIS improperly excluded the Engineering Report on the design of the bridges and roadway reconstruction from Appendix D. This is contrary to NEPA, which requires that the public be given the opportunity to comment on these important engineering reports both in the draft and final report. The Tribe contends that it was imporper for the Corps to include the engineering report in the Final RGRR/SEIS for the first time.	An Engineering Appendix for the draft RGRR/SEIS was prepared and available upon request. Several stakeholders requested and received that appendix.
	22	The Corps failed to conduct an adequate analysis in the Final RGRR/SEIS on impacts of the Recommended Plan, and the high water that will be caused by the delay of constructing it, on archeological sites, including tree islands. Moreover, the Corps allowed the ad hoc advisory group to remove performance measures for reducing high water in WCA 3A that may have helped determined such impacts.	BARB The recommended plan will provide a conveyance of water southward across the trail, somewhat lessening the undesirable high stages in the Water Conservation Areas. We cannot evaluate the effects of delay in implementation of this recommended plan, as the intention is to achieve authorization and begin design immediately, followed by construction. However, reduction in overall stages and durations of high water in WCA 3-A will also require changes in the Water Control Plan of the south Dade Conveyance system and other parts of the C&SF project. These changes are now undergoing development as the Combined Structural and Operational Plan (CSOP). The Tribe is participating as part of an advisory committee (FACA authorized) in the collaborative development of the CSOP. This is not relevant to the Tamiami Trail report. The TT report recommends providing conveyance only. Operations are being handled under a separate process.
	23	There are numerous instances in App. L where the Copps listed, but failed to respond to the Tribe's comments or responded with comments that contradicted the information provided in the Report. (See, for example, Comment 16, 20, 27, 31, 34, 51.) The Corps has a duty under NEPA to respond fully to all the Tribe's comments.	BARB We believe we responded to all referenced comments that contained questions we could answer. Comment 16 was a statement that we should not delay the project or compromise the health and safety of the public or tribe. We so noted. Comment 20 was an accusation that the document failed to comply with NEPA. USEPA rated the Draft RGRR/DSEIS "No Objections"; therefore it is in compliance with NEPA. Our response to comment 27 was inadvertantly truncated in printing. However,in essence you commented that bridging the trail under MWD is illegal and a trick. We responded that we believed it was legal, but we cannot be expected to respond to accusations of trickery. We responded to comment 31. We responded to comment 34. (Any further questions must be referred to the Fish and Wildlife Service, which determines the scope and subject matter of FW CARs and Section 7 Consultations). We also responded to Comment 51.
	24	The project area assessed under the Endangered Species Act in the Final RGRR/SEIS in Section 5.6.5.6 is woefully inadequate. The FWS Section 7 consultation looked at Tamiami Trail construction impacts only.	JDM: There are no operations associated with the Tamiami project that would require evaluation under the ESA. Operational aspects of MWD will be considered under CSOP.

		E. SPECIFIC COMMENTS ON THE FINAL RGRR/SEIS	
	25	**1. Project Partners, Section 1.2:** The Corps has responded to the Tribe's comment that the Project Partners described in this report, SFWMD, DOI, FWS, ENP, FWC, FDOT and DERM are not all project partners and has named some participating agencies. The fact is that these were really members of an ad hoc advisory team consisting of non-federal entities and consultants that to provided recommendations on Tamiami Trail to the Corps without complying with the Federal Advisory Committee Act (FACA).	The Corps complied with the Federal Advisory Committee Act.
	26	**3. Biological Opinion and Interim Flow Targets:** The Tribe disagrees with the discussion of the interim flow targets from the Biological Opinion contained in section 3.3. This section fails to state that the closing of the S-12 structures was the option selected and has been going on for over eight years and has, and continues to be, enormously environmentally destructive to Tribal lands in WCA-3A. The Corps should not base interim flow targets on a faulty Biological Opinion that has never been subject to NEPA review, nor an Amended Biological Opinion, which arbitrarily and capriciously removed the requirement that the MWD Project be completed by December 31, 2003.	TRENT: ISOP and IOP were developed for the protection of the CSSS. The plan to close the S-12s (i.e. S-12A, B and C) on specific dates was to achieve target water levels in NWSRS in order to improve the probability of a successful breeding season for the CSSS sub population A, which is listed as an endangered species under the ESA. Acknowledging that the S-12s discharges were seasonally restricted, Zone E1 was developed to compensate for the closure of the WCA-3A main regulatory outlets. Zone E1 created flexibility by allowing maximum practicable discharges to the east via S-333, which normally would not have been permitted under Zone E. Biological Opinions developed by the Fish and Wildlife Service under the U.S. Endangered Species Act are not subject to NEPA review.
	27	4. **Cultural Resources:** Section 5.6.5.6 of the Final SEIS mentions the historical importance of the Coopertown Airboat rides, but continues to fail to mention the historical importance of the authentic Miccosukee Indian Village along old Tamiami Trail, because it claims these areas are outside the project boundary. The Tribe contends the project area is that of the MWD Project. Thus, the Village, which is an historic family camp and the cultural resources that could be impacted by this project, include the cultural resources of the Miccosukee Tribe and peoples, including the tree islands in WCA-3A and other parts of the Everglades. The Tribe is pleased to read that it is the Corps' intent not to impede access to the Osceola and Tiger Tail Camps and will monitor the situation to see that this commitment is met.	JDM: Do not concur. The project area for the Tamiami feature of the MWD project is a sub-set of that for the overall project. There would be impacts to the referenced Tribal properties that would be needed to be addressed under the cultural resources evaluation.
	28	**5. Tribal Lands:** The Final RGRR/SEIS states at Section 7.14 and in their reply to the Tribe's comments that there will be no "direct" impacts on Tribal lands. Section 5.6.14 also claims that "no Tribal lands will be affected." The Tribe is concerned that the Corps can not definitively make this statements because it has not conducted the analysis necessary to find any harm and has impeoperly narrowed the scope of its analysis to only the Tiger Tail and Osceola Camps.	JDM: The referenced statements are correct and proper for the Tamiami project. No additional analysis is needed, as discussed above.
	29	**6. Hurricane Evacuation:** Section 5.3.2 discusses hurricane evacuation. The Tribe has continuously told the Corps that even though the Trail may not be a DOT hurricane evacuation route, it is the only route out for the Tribal members who live along the Trail in a hurricane. This reality should have been contained in the Final RGRR/SEIS. However, as the Miccosukee Tribal members and others in the Service Area use Tamiami Trail to travel across the Everglades, the Tribe is pleased to see that the Corps has committed to not impeding the traffic flow during hurricane season. Evacuation access is vital to protect the health and safety of both Tribal members and the pub-c.	Need for use of the roadway during an emergency and evacuation is recognized in the proposed design.
	30	**7. Compatibility With CERP:** The Tribe supports the federal government's desire for compatibility with CERP in Section 5.7.8, but not in a manner that delays the implementation of the Pre-CERP MWD Project. The Tribe does not believe the Recommended Plan offers that compatibility in that it has a potential for political and bureaucratic mischief plus delay. The Corps	The 1989 Everglades National Park Protection and Expension Act authorized the Secretary of the Army to improve water deliveries to the Park and restore natural hydrological conditions to the extent practicable. The Act did not prohibit the construction of bridges on Tamiami Trail as part of any recommended plan.

	31	In the last EIC, the Corps had developed a performance measure to assess the impacts to the camps, including access, privacy and encroachment, both during and after the construction phase. The Tribe is concerned that the secret advisory team discarded this PM and cautions the Corps to keep its word that the access to the camps not be impeded. non-negotiable. Finally, the Tribe notes that this section mentions for the first time in the Final RGRR/SEIS that a reduction in visitors to the Miccosukee Indian Village, Airboats, Restaurant, and Gas station located west of the project area could be experienced but does not assess the economic impact. Buffalo Tiger and other Tribal members also have airboat concessions along the Trail and the impacts to these concessions have also not been analyzed. Failure to analyze this economic impact to the Tribe in the Final Report violates NEPA. It also fails to mention, or analyze, a reduction in visitors that could occur to the Miccosukee Resort.		JDM: The previous EIS considered a wider range of alternatives
	32	**9. Hydraulics and Hydrology:** In Section 5.3.4 of the Final Report, the Corps has changed its requirement from Section 5 of the 2003 GRR/FEIS, that the final alternative selected need only pass the MWD design volume of 4,000 cfs in favor of an NSM model that passes 1372 acre feet of water which is even greater than the 921 acre feet of CERP D13R. This section now substitutes language concerning the L-29 canal only. The Final RGRR/SEIS fails to contain a hydrological analysis of NE Shark River Slough to show whether the Recommended Plan is even necessary using 4,000 cfs. This is improper under NEPA which requires a full disclosure document.		TRENT: This section describes the design limitations of the L-29BC. For reference to the NSM model see response to Comment 5.
	33	**10. Costs and Section 902:** The initial GRR on Tamiami Trail contained a $20.215 million dollar cost constraint on the Tamiami Trail component of the MWD project. Section 5.7.5 of the Final RGRR/SEIS contains no cost constraint but refers to the DOI Capital Assets Plan. Moreover, this section provides evidence that the $159 million dollars for the Recommended Plan exceeds the amount in the DOI Capital Assets Plan. The Final RGRR/SEIS is supposed to be a full disclosure document and should include only the funding currently in hand as a cost constraint. The blank		The recommended plan is budgeted with authorized funding in the most recently submitted Department of Interior Capital Asset Plan. The overall cost of the MWD project has not increased.
	34	WRDA Constraint Language: Although the Final RGRR/SEIS contains the WRDA 2000 constraint language, the Corps ignored the language in selecting its Recommended Plan. Section 601(b)(2) of WRDA 2000 prevents CERP components from being funded until the MWD Project is completed...Moreover, the Corps appears to incorrectly think that raising and bridging Tamiami Trail is not contrary to WRDA 2000, as long as the L-29 levee is not removed.		The 1989 Everglades National Park Protection and Expansion Act authorized the Secretary of the Army to improve water deliveries to the Park and restore natural hydrological conditions to the extent practicable. The Act did not prohibit the construction of bridges on Tamiami Trail as part of any recommended plan. The recommended plan is budgeted with authorized funding in the most recently submitted Department of Interior Capital Asset Plan.
	35	Betterments: The Final RGRR/SEIS finds that betterments to protect and enhace wildlife are not part of the project purpose. The Tribe urges the Corps to make certain that any DOI or SFWMD decision to incorporate them does not delay MWD.		NR

	36	**Flood Damage to Road:** Section 4.3 of the Final Report raises concerns about saturation and overtopping of the road, but fails to contain an analysis that uses the 4,000 cfs predicted maximum MWD flow to show whether this would happen…It should be noted that Section 3.4 states that water would begin overtopping the highway at an event frequency of between 200 and 500 years, which is well above the 100 year frequency that is usually the design basis. Through the use of NSM Version 4.6.2, and an excessive design frequency, the Corps has exceeded its authority, over-designed the Trail component and will cost taxpayers to waste $159 million dollars.	TRENT: THe MWD project is not authorized a specific flowrate but to the extent practicable to restore natural hydrologic conditions in ENP. Figure 6 of Appendix D Annex A shows a stage frequency analysis comparing computed stages from the 2x2 for several modeled alternatives from the CSOP study as wells as CERP and the NSM. Due to uncertainties of which alternative the CSOP study will select, it was decided that the Natural System Model (NSM Version 4.6.2) would be used for the roadway design high water for the FDOT roadway reconstruction. This model run was chosen because it represents our restoration stage and duration targets for the Greater Everglades System. For comparison of the conveyance capacity of the differenet bridge options where compared based on flows from Alternative 2 from the CSOP study.
	37	**14. No Schedule or Project Implementation Date:** The Final RGRR/SEIS contains no schedule for completion for Alternative 14. The 2003 Final RGRR/SEIS stated in Section 6.12 stated that the duration of the construction of the Plan would be 24 months. The 2005 Final RGRR/SEIS says the construction of the Recommended Plan will take approximately 36 months. The Tribe contends that the date the project could be completed should have been a factor in screening alternatives and must be included in the Final EIS. Failure to obtain Congressional authorization or funding for the Recommended Plan could delay MWD and CSOP beyond the new 2010 completion date.	From Section 6.10, "If the recommended plan is approved, design and construction would be completed approximately four years following the signing of the ROD (Record of Decision). The duration of construction of the Recommended Plan is approximately 36 months."
	38	**15. Transportation:** Section 5 of the Final RGRR/SEIS states that Tamiami Trail will continue to be accessible during storms and hurricanes under the proposed Alternative 14. The Tribe reiterates that the Corps must take all precautions that both transportation and the safety of the Tribe and the public not be compromised during, or after, construction.	Need for use of the roadway during an emergency and evacuation is recognized in the proposed design.
	39	**16. Impact on Tribal Lands:** The statement in Sections 7.14 and 5.6.14 that no tribal lands would be affected and that there will be no direct impacts of any alternatives on Tribal lands is not supported by evidence in the record or the document itself. The Final RGRR/SEIS continues to fail	JON
	40	**17. Impact on Businesses:** The Final RGRR/SEIS fails to adequately assess the impact that would be caused to Tribal businesses by any alternative that delayed MWD or provided greater than CERP acre feet of water. While the Final RGRR/SEIS finally admits construction of the Recommended Plan could impact visitors to certain Tribal businesses, it fails to analyze the potential impacts, including economic, that it will have on the Miccosukee Resort and Gaming Facility, and the Tribe's Miccosukee Indian Village, Airboats, Restaurant, and Gas Station whose customers use Tamiami Trail.	JON
	41	**18. Osceola Camp:** The advisory team utilized by the Corps removed the analysis of impacts to the Osceola Camp as a Performance Measure. Without such a PM, the Tribe is concerned that the statement of no impact to the Osceola Camp may be inaccurate. The Final RGRR/SEIS does not analyze the impact that providing the greater than CERP acre feet of water will have on the Osceola Camp. While the Corps contends the large volume of water used to justify the bridge	TRENT: This performance measure was dropped because regardless of alternative selected the Osceola Camp would be adequately protected and all alternatives would have met this performance measure. Currently the Everglades National Park is in the process of designing a fix for the Osceola Camp. The design fix will utilize the same elevation constraints as that proposed for the Tamiami Trail (US41) Roadway and will meet all applicable design standards for the protection of the residents of the Osceola Camp
	42	**19. Tiger Tail Camp:** Ditto Osceola Camp.	TRENT: The Tigertail Camp was raised by the COE to elevation 14.5 feet in 1998 placing this area 4.4 feet above the NSM 100-year elevation.
	43	**20. Environmental Justice:** Ditto Osceola Camp ...The Corps also failed to analyze the disparate impacts to Tribal Everglades and its culture and way of life due to the failure to implement MWD Project in this section in the Final RGRR/SEIS.	BARB Osceola Camp will be raised, as was Tiger Tr Camp, above anticipated stages. No adverse impac anticipated.

	44	**21. Public Involvement:** Section 9.1 claims that the Corps complied with USACE and NEPA policies and sought public input. The Corps also claims in its response to the Tribe that it complied with FACA. (Appendix L at Comments 17 and 18.) In reality, the process conducted by the Corps was a secretive back door process which excluded the public. An ad hoc advisory group, which did not comply with FACA, met in private and invited the public in after the decisions were made to feign "public involvement." This is contrary to both FACA and NEPA. While the Corps contends the group did comply with FACA, this is incorrect. This group was never constituted under FACA, meetings were never published in the Federal Register, and other requirements of FACA were not met.	The Corps complied with the Federal Advisory Committee Act.
	45	**23. Water Quality:** The Final RGRR/SEIS fails to contain an analysis of the pollutants that will have to be cleaned up from these S-9 discharges before the project is implemented. The Corps contends that this will be done under CSOP.	JIM
	46	**25. Tamiami Trail List of Preparers:** NEPA requires an EIS to be a full disclosure document. The Tribe disputes that the list of preparers at page 145 is the full list of people who contributed to this document. NEPA requires this document to include the name of the advisory team and anybody else who worked on the RGRR/SEIS process.	BRAD
	47	**The RGRR/SEIS process was not consistent with the Corps' Trust Responsibility to the Tribe. The Tribe was asked to attend "interagency meetings" in the prior Tamiami Trail EIS process, which it insisted be public meetings. This time, despite the fact that the Tribe directly asked the Corps to be included in the process, it was excluded from the meetings which were secretly held without both the Tribe and the public. The Tribe only found out about these secret meetings, which discussed matters that had a direct impact on the Tribe, when documents were leaked.** Tribe. The Corps has a duty to conduct meaningful pre-decisional consultation. The Corps' response to the Tribe's comments that it was invited to attend all public meetings is insulting and does not meet this requirement. Appendix L at Page 58, Comment 62. The Corps has a solemn trust responsibility to choose a plan that will protect Tribal natural resources and Trust resources and should have rejected the Recommended Plan because it will cause further destruction of Tribal lands. The Corps' selection of Alternative 14 as the Recommended Plan in the Final RGRR/SEIS	BARB. The technical design meetings in which the alternatives were evaluated, ranked and scored, and the preferred alternative identified, were not public meetings. It is not customary for the technical plan formulation and evaluation meetings to be pub
Everglades Foundation - Betty J. Grizzle, D.Env. Wetland Scientist	1	It is disappointing to find that this EIS process has not resulted in the selection of an alternative that would not only best meet the stated project's objective, but also one that is cost effective. As noted by various resource agencies and voiced by the numerous public comment letters, Alt 17, the 10.7 mile bridge, represents the "environmentally preferred plan" that best meets the four objectives of restoring the wetland functions of Northeast Shark River Slough. The Everglades National Park Protection and Expansion Act of 1989 (PL 101-229), states: Construction of project modifications authorized in this subsection....are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the park in particular and shall not require further economic justification. (Section 104(a)(3)). ...	NR
	1 cont ...	The environmental benefits for Alt 17 are described in supporting documents from the U.S. FWS and Everglades National Park (App F) and the EIS document itself also stated that this alternative provides the "greatest potential" for restoration of ridge and slough habitat within Everglades National Park. However, the EIS concludes that the longer bridge alternative could not be recommended because its costs would greatly exceed the project budget, even though this alternative was demonstrated to be cost effective relative to habitat units provided (Table 25).	
	2	Given that the recommended plan selected presents an alternative that consists of two bridges as well as raising the crown elevation of the road from an average elevation of 11 feet to 12.3 feet, there is a concern that this alternative will create additional problems that were not addressed in the EIS. First, as noted by comments submitted to the draft document by the National Parks Conservation Association (letter dated October 11, 2005), the construction of these structures may preclude future modifications that may be proposed for the CERP Decompartmentalization Project. It will be more difficult and more expensive in the long run to construct a single bridge once the two separate bridges are in place should funds be available for this modification under additional funding authorizations.	Although the Recommended Plan for the Tamiami Trail Modifications Project certainly affects the future-without-project condition, it does not limit the alternative options for Decomp or any other CERP project.

	3	Additionally, the raising of the road is likely to result in an increase in road mortality not documented in the EIS. The Tamiami Trail has been described as an "avenue(s) of destruction for snakes" and represents a significant barrier to mass reptile and amphibian migration (as described by Tennant in *A Field Guide to Snakes of Florida*, 1997). By increasing the road elevation, wildlife will require longer crossing time thereby increasing the exposure time to road traffic and subsequent injury or mortality. This environmental impact has not been evaluated in the current EIS.	JON
	4	Recommendation: The Corps, *at minimum*, should consider an alternative that incorporates a single 4-mile bridge, as described within the *Draft Tamiami Trail Alternative Optimization Report*, prepared by Everglades National Park (Appendix F). This alternative appears to result in restoring similar historic flow volumes to Northeast Shark River Slough as the 10.7 mile bridge alternative. However, a four mile bridge will only provide 37% of the potential connectivity between Water Conservation Area 3B and Northeast Shark River Slough (EMP Report, p. vii). Therefore, the Corps and DOI should work as expeditiously as possible to secure funds that will allow the construction of an elevated roadway across the entire 10.7 mile portion of the Tamiami Trail between S-334 and S-333.	NR
National Parks Conservation Association - John Adornato, III Everglades Restoration Program Manager Sun Coast Regional Office	1	On behalf of National Parks Conservation Association (NPCA), I again urge the US Army Corps of Engineers (Corps) to select Alternative 17, the 10.7-mile, elevated "Skyway," as the best and viable alternative to restore water flow and ecological connection through America's Everglades into Everglades National Park and Florida Bay. NPCA is disappointed that the Corps's Final Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modification of MWD continues to recommend an alternative that does not deliver significant environmental benefits for Everglades National Park, and could preclude the construction of the Skyway in the future with other authorizations or appropriations.	NR
	2	We appreciate the Corps's attempts to address a number of issues NPCA raised in our previous comments, dated October 11, 2005. We understand the fiscal constraints presented by the Corps and the Department of Interior, however, we remain unconvinced of the benefits that the Corps's preferred plan provide for Everglades National Park and the greater Everglades ecosystem. Other alternatives are less costly and build a single span bridge, which would be more compatible with a possible future Skyway.	NR
	3	Without completely unimpeded flow, life-giving water will continue to flood the conservation areas and not travel naturally through Everglades National Park out to Florida Bay. Only a Skyway will truly reestablish unrestricted, free flowing water to the park, a critical component to a fully restored Everglades, on which South Florida's wildlife and its six million residents rely for drinking water, recreation, and other uses.	NR
DEP	1	In Reference to COE Comment 4 -Concur that changes to the document were made, however these changes were in Section 7.4, not Section 5.8.	JIM
	2	In Reference to COE Comment 8 -Concur that changes to the document were made, however these changes were in Section 7.65, not Section 7.20.	JIM
	3	In Reference to COE Comment 16 -Response to comment indicates that text will be revised; however no changes to this section were noted.	JIM
	4	In Reference to COE Comment 23 -Response to comment indicates that Appendix G has been revised; however no changes to this section were noted.	JIM
Sierra Club	1	The Sierra Club is disappointed that the report recommends Alt 14, a plan that often provides less than half of the environmental benefits and objectives of Alt 17 (10.7 mile bridge) and that cost was a major factor.	NR
	2	The Sierra Club is concern that Alt 14 will be inadequate to meet future restoration goals criteria.	NR

	3	The Sierra Club is concerned that, and assumes that there will be retro fitting of TT to accommodate DECOMP.		Although compatibility with the Comprehensive Everglades Restoration Plan (CERP) was certainly a consideration, the Tamiami Trail Modifications Recommended Plan is based primarily on the benefits and costs associated with the objectives of the overall Modified Water Deliveries Project. It was not appropriate or even possible to fully consider the potential alternative plans and the costs for future CERP projects.
	4	The Sierra Club states that the discussion of the 10.7 mile bridge alternative is inadequate given the level of interest from individuals, agencies, and environmental advocacy organizations.		JON
	5	The Sierra Club is not satisfied with the discussion of cumulative impacts.		BRAD
US Department of Interior - Terrence C. Salt	1	The Department supports the Recommended Plan, Alterantive 14, described in the report. The plan achieves in a cost effective manner the goal of restoring more natural flows of water to Everglades National Park ... as set forth in the lesgislation authorizing the Modified Water Deliveries to Everglades national Park Project.		NR
	2	We look forward to working with the Corps twoard the expeditious completion of the Modified Water Deliveries to Everglades National Park Project and the achievement of vital benefits for Everglades National Park and the region.		NR

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List #1 Commenters (FAX)

1 Anne Barker
2 Adam Ackerman
3 Diane Tabbott
4 Janice Gibson
5 Bert Taylor
6 Julie Bond
7 Kathy Sherrard
8 Diane Albert
9 Jacob Pounds
10 Roberta Richardson
11 Crystal Durham
12 Aleksandra Rebic
13 Kya Eckstrand
14 Nichole Long
15 Sharon Mullane
16 Azel Beckner
17 David Dunkleberger
18 Bryan Dolney
19 Erlene Jackson
20 Robin Rae Swanson
21 Marisa Rose Faraldo
22 Paul Rosenberger
23 Jelene Turk
24 Steven Aderhold
25 Catha Loomis
26 Matthew Davidson
27 Karen Photopulos
28 Kimberly Peterson
29 Carol Wagner
30 Abby Hunt
31 Wendy Walters
32 John Brinkman
33 Tim Duda
34 Richard W. Woerpel, DVM
35 Mark Mueller
36 Harriette Frank
37 Anne Ritchings
38 Darcy Struckman
39 David Randall
40 David Cayford
41 D Vasquez
42 Eileen Appolone
43 Appia
44 Roberth Wagner
45 Gavin Kramer
46 Deb Klein
47 Rema Comras
48 Nathanael Mooberry
49 Linda Cody

50 Dennis German

51 Vince Mendieta

52 Roz Eiler

List #2 Commenters (E-mail)

1 Anne Barker
2 Adam Ackerman
3 Diane Tabbott
4 Janice Gibson
5 Bert Taylor
6 Julie Bond
7 Kathy Sherrard
8 Diane Albert
9 Jacob Pounds
10 Roberta Richardson
11 Crystal Durham
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RECORD OF DECISION
CENTRAL AND SOUTH FLORIDA PROJECT
MODIFIED WATER DELIVERIES TO
EVERGLADES NATIONAL PARK
TAMIAMI TRAIL MODIFICATIONS

DECISION

The Final Revised General Reevaluation Report and 2nd Supplemental Environmental Impact Statement (RGRR/SEIS) for the Central and Southern Florida Project, Modified Water Deliveries to Everglades National Park, Tamiami Trail Modifications, in Dade County, Florida address the additional water conveyance needs across the Tamiami Trail. Based upon the RGRR/SEIS, views of other Federal, State, and local agencies, Native American Tribes, non-governmental organizations, the general public, and the review by my staff, I find the plan recommended by the District Engineer, Jacksonville District, U.S. Army Corps of Engineers to be technically feasible, environmental justified, cost effective, in accordance with environmental statutes, and in the public interest. The recommendation is to implement the plan identified in the RGRR/SEIS as Alternative 14. This alternative includes the construction of a bridge up to 2-miles long at the western end of the 10.7-mile project corridor, a bridge up to one-mile long at the eastern end, and raising the profile of the unbridged portions of Tamiami Trail.

ALTERNATIVES AND CONSIDERATIONS BALANCED IN MAKING THE DECISION

The project would provide necessary capacity through Tamiami Trail (U.S. Highway 41) for the modified water flows to the Everglades National Park (ENP) while avoiding unacceptable structural impacts on Tamiami Trail due to modified flow regime.

In addition to the no-action alternative, nine other alternatives with removal of portions of the road replaced by one or more bridges of various lengths were carried through the final alternative evaluation and selection process. These included the three different bridge lengths evaluated in the 2003 GRR/SEIS that were withdrawn pending additional analyses. The present document incorporates by reference all the alternatives that were analyzed in the late 1990's and in the 2003 GRR/SEIS, but have subsequently been eliminated from further consideration. The No-Action Alternative would involve making no improvements to the Tamiami Trail to increase the capacity to convey water flows from the north without damaging the Tamiami Trail roadbed. All action alternatives included elevating the unbridged portion of the highway to prevent roadbed deterioration from elevated water levels during high water flows expected after implementation of potential future water management plans, and providing vehicle access, as needed, for the private properties along the south side of the highway. The action alternatives differed in the length of road removal/bridge spans and location. Alternative 9 consisted of a 3000-foot bridge span located at the western portion of the project corridor. Alternative 10 consisted of a centrally located four-mile bridge.

Alternative 11 consisted of an easterly located four-mile bridge. Alternative 12 consisted of a westerly located three-mile bridge. Alternative 13 consisted of a westerly located two-mile bridge. Alternative 14 is described above as the Recommended Plan. Alternative 15 consists of a two bridges with lengths of 1.3 miles and 0.7 miles located to the west and east, respectively. Alternative 16 consists of three 3000-foot bridges located in the western, central, and easterly portions of the project corridor. Alternative 17 consists of a 10.7-mile bridge spanning the entire corridor.

The alternative plans were evaluated based on their potential performance in restoring the historic hydropatterns and functions of the downstream wetland ecosystem in the Northeast Shark River Slough portion of Everglades National Park. Specific efforts were made to avoid or minimize any adverse effects on historical and cultural resources, local businesses, and Native American facilities along Tamiami Trail. Overlaid on this was a fiscal consideration in the allowable cost of construction based on the project budget limit of the Department of Interior (USDOI). Based on the analysis prepared for the RGRR/SEIS, input from other agencies, and public input, the environmentally preferable alternative is the 10.7-mile bridge designated as Alternative 17. Alternative 17 was not recommended because of its extremely high cost and significant adverse cultural and socio-economic impacts. Cognizant of the USDOI budget considerations, the Recommended Plan (Alternative 14) would best meet the ecosystem restoration objectives of the project, while minimizing cultural and socio-economic impacts and adverse effects to the private properties along the highway.

MEANS TO AVOID OR MINIMIZE ADVERSE EFFECTS

All practicable means to avoid or minimize adverse effects have been incorporated into the Recommended Plan. The road removal/bridges have been sited where they will allow significant restoration of the downstream wetlands and minimize, as much as possible, impacts to private development and to two wading bird nesting colonies along the highway. Vehicle access will be provided to all businesses during and after construction. Impacts to traffic flow will be minimized by designing the highway construction corridor to allow two-way traffic during non-construction hours in accordance with Florida Department of Transportation (FDOT) standards. The design of the bridges and remaining highway fully meets all FDOT standards for public safety and durability.

Conditions to stringently control turbidity and erosion during construction will be placed into the construction specifications to minimize any impacts to downstream resources. A storm water collection system will be designed into each bridge to treat runoff in order to meet State water quality requirements.

Consultation with the U.S. Fish and Wildlife Service (USFWS) under provisions of the Endangered Species Act on listed species under their jurisdiction has been completed. Formal consultation on the Florida panther resulted in a USFWS Biological Opinion concluding that implementation of the Recommended Plan is not likely to jeopardize the continued existence of the Florida panther. For all other listed species in

the project area, the USFWS agreed with the Corps' determination that the Recommended Plan may affect, but would not be likely to adversely affect, the indigo snake, West Indian manatee, Cape Sable seaside sparrow, and Everglade snail kite.

A cultural resources survey has been conducted and concluded that two properties and the Tamiami Trail and Canal are eligible for listing on the National Register of Historic Places for their historical significance. The State Historic Preservation Officer has concurred with these determinations and will participate in an MOA on appropriate mitigation for impacts to these features.

Government to Government consultation with the Micosukee Tribe of Indians of Florida will continue throughout the project implementation process in fulfillment of the Army's trust responsibilities to the Tribe.

PUBLIC /AGENCY COMMENTS IN THE FINAL EIS

All public comments received on the Final EIS have been addressed and incorporated into the recommended plan, as appropriate. The Miccosukee Tribe of Indians continues to oppose any bridge, preferring that the existing culverts be cleared out and augmented as needed to pass the maximum practicable flows. Non-governmental environmental organizations and their members continue to express a preference for bridging the full 10.7 mile length of the project corridor. The Florida State Clearinghouse determined that the Recommended Plan was consistent with the Florida Coastal Zone Management Program at this stage. The FDOT and the Florida Department of Environmental Protection provided documents supporting the project. No other State agencies had any further comments. The USDOI provided a letter of support for the Recommended Plan. The U.S. Environmental Protection Agency rated the Plan as LO, Lack of Objection.

COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

The Recommended Plan is in compliance with all applicable environmental laws and requirements including but not limited to the National Environmental Policy Act, Endangered Species Act, Fish and Wildlife Coordination Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, Coastal Zone Management Act, and Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations." Recommendations from the USFWS under the Fish and Wildlife Coordination Act have been incorporated into the recommended plan. The Draft and Final EISs were distributed for public comment, and all comments were incorporated and considered. The U. S. Fish and Wildlife Service transmitted the final Biological Opinion to the Jacksonville District on January 12, 2006. The Biological Opinion completes compliance with Section 7 of the Endangered Species Act for this phase of the project. As between the Federal Government and the Non-Federal Sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction,

operation, maintenance, repair or replacement of the project for lands for which the Non-Federal Sponsor has received a land compensation payment. In no event will the Federal Government assume any financial responsibility for cleanup and response costs of any CERCLA regulated materials for any lands associated with the project.

SUMMARY

Technical, environmental and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's *Principles and Guideline*. All applicable laws, executive orders, regulations, and local plans were considered in evaluating the alternatives. The recommend plan is not the environmentally preferable plan, but is the one that delivers substantial benefits in a cost effective manner while meeting the overall Federal and State objectives and incorporates features to avoid, minimize, or mitigate adverse environmental and social effects. Based on review of these evaluations, I find that the benefits gained by implementation of the recommended plan far outweigh any adverse impacts and the overall public interest will best be served. This Record of Decision completes the National Environmental Policy Act process.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Date: January 25, 2006

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SUMMARY

Technical, environmental and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's *Principles and Guideline*. All applicable laws, executive orders, regulations, and local plans were considered in evaluating the alternatives. The recommend plan is not the environmentally preferable plan, but is the one that delivers substantial benefits in a cost effective manner while meeting the overall Federal and State objectives and incorporates features to avoid, minimize, or mitigate adverse environmental and social effects. Based on review of these evaluations, I find that the benefits gained by implementation of the recommended plan far outweigh any adverse impacts and the overall public interest will best be served. This Record of Decision completes the National Environmental Policy Act process.

John Paul Woodley, Jr.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Date: January 25, 2006

Appendix I

FHWA 4f EXEMPTION

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US Department of Transportation
Federal Highway Administration

545 John Knox Road, Suite 200
Tallahassee, Florida 32303

(850) 942-9650

OCT 25 2006

October 20, 2006

In Reply Refer To HPR-FL

Mr. Dan B. Kimball
Superintendent
US Department of Interior
Everglades and Dry Tortugas National Parks
40001 State Road 9336
Homestead, Florida 33034-6733

Dear Mr. Kimball:

Subject: Modified Water Distribution to Everglades National Park - Tamiami Trail Modifications

This letter is in response to your letter of October 10, 2006 and serves as verification of information provided in conversations and emails between our respective staffs. Section 4(f) of the Department of Transportation (DOT) Act does not apply to the transfer of Everglades National Park (ENP) property to Florida DOT for implementation of the Modified Water Deliveries (MWD) project. The proposed project is an environmental restoration project and the Federal Highway Administration's involvement in the transfer of property between another Federal Agency and the Florida DOT would not trigger the applicability of Section 4(f).

Should you have any further questions, please contact Mr. George Hadley at (850) 942 9650, extension 3011.

Sincerely,

George Hadley

For: David C. Gibbs
Division Administrator

cc: Ms. Alice Bravo, FDOT (District 6)

United States Department of the Interior
NATIONAL PARK SERVICE

Everglades and Dry Tortugas National Parks
40001 State Road 9336
Homestead, Florida 33034-6733

In Reply Refer to:

L54

October 10, 2006

Mr. David Gibbs
Division Administrator
Federal Highway Administration - Florida Division
ATTN: Mr. George Hadley
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Subject: Modified Water Deliveries to Everglades National Park - Tamiami Trail Modifications

Dear Mr. Gibbs:

Everglades National Park (ENP), through the U.S. Army Corps of Engineers (Corps), is currently implementing the Modified Water Deliveries (MWD) project. The 1989 Everglades National Park Protection and Expansion Act authorized the project in order to construct structural features with the intent to restore water conveyance between the state-owned Water Conservation Areas and the Shark River Slough within ENP. One of the components of the MWD project is the modifications to Tamiami Trail (State Road 90). The purpose of this component is to remove barriers to flow between the aforementioned areas.

The conceptual design for the modifications to Tamiami Trail consists of providing two hydraulic openings by removing portions of the existing road and embankment. Bridges would be constructed over the openings to replace the removed sections of road and maintain motor vehicle traffic. The remaining road sections would be reconstructed with an asphalt overlay to raise their elevation. The construction of these structures will necessitate shifting the Florida Department of Transportation's (FDOT) current right-of-way south into Everglades National Park (ENP) lands. The Corps estimated that ENP would need to transfer 35 acres of its lands to the FDOT for roadway operation and maintenance purposes. This action was recommended in the November 2005 Final Revised General Reevaluation Report/ Second Environmental Impact Statement for the Tamiami Trail Modifications. The Record of Decision was signed in January 2006. The Corps is currently preparing a third EIS which addresses, among other topics, an increase of 14 acres in the amount of land (for a total acreage of 49 acres) to be transferred to the FDOT.

The Department of the Interior's Office of the Solicitor has advised us that if the Tamiami Trail is part of the Federal-aid highway system, then the statutory provision of 23 U.S.C. 317 could be used to develop a highway easement deed to provide for the construction of the new roadway structures, including bridges, on park lands. ENP is supportive of using this approach to

implement the beneficial aspects of relocation and modification of the road in order to promote the increased flow of water into the park. Therefore, ENP is ready to collaborate with FHWA in preparing the highway easement deed and transferring administrative jurisdiction in order to facilitate this work.

The outstanding issue is the applicability of section 4(f) of the DOT Act to the MWD project. Since the purpose of this congressionally authorized project is the environmental restoration of ENP and project funding is from DOI and Corps appropriations, we do not believe that section 4(f) applies to this project. In other words, this is not a transportation program or project that is subject to FHWA approval and therefore, does not require a section 4(f) evaluation. We request your opinion on whether the use of the highway easement deed for the MWD project involving the relocation of Tamiami Trail requires compliance with the section 4(f) evaluation process.

Should you have any questions, please contact Mark Wolff, MWD Project Manager (904-232-1125).

Sincerely,

Dan B. Kimball
Superintendent

cc:
U.S. Army Corps of Engineers - Jacksonville District (Mark Wolff, Brice McKoy, Cem Goral, Esq.)
Federal Highway Administration - Florida Division (Brian Telfair)
Florida Department of Transportation (Barbara Culhane)
Lewis, Longman & Walker, P.A. (Dan Richardson, Esq.)
National Park Service - Southeast Region (Keny Slay)
Department of Interior - Office of the Solicitor (Michael Tiernan, Esq.)

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Appendix J

Draft Limited Reevaluation Report
Agency and Public Coordination

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FEDERAL
US Department of the Interior
US Environmental Protection Agency

STATE
Florida Department of Environmental Protection
Florida Department of Transportation
Florida Fish and Wildlife Conservation Commission
Florida Department of State, Division of Historical Resources
South Florida Regional Planning Council

TRIBES
Miccosukee Tribe

LOCAL
City of Sanibel

ORGANIZATIONS
Blanco Environmental Groups Sign on Letter
Florida Coastal Everglades LTER, Florida International University
Naples Pathways Coalition, River of Grass Greenway
S.A.F.E.R., Rick Persson, Vice President
Sierra Club, Miami Group
Sierra Club, Johnathan Ullman, South Florida/Everglades Senior Representative
Nicholas School of the Environment and Earth Sciences, Duke University

GENERAL PUBLIC
Deb Arnason
Michelle Avola
Sydney T. Bacchus, Ph.D., Hydroecologist
K Bernabei
Stan Carlin
Guy Hackett
Deux42
JORGEMF
William Loftus
Sean R Melvin
Martha Musgrove
Robbie Siemon
Andrew Stearns, of Stearns, Weaver, Miller, Weissler, Alhadeff & Sitterson, PA
Dewey Steele
Mario Yanez

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	Comment	Response
	Federal Agencies	
	US Environmental Protection Agency, Heinz Mueller, Chief NEPA Program Office, Office of Policy and Management, May 8, 2008	
EPA 1	Overall, EPA believes that the proposed plan clearly improves the southward flows, distribution and timing of WCA-3B waters and should benefit Everglades restoration. However, while we understand funding constraints, the 2005 plan was superior in terms of ecological benefits since more culverts would be replaced by the two bridges (total of 3 miles spanned) compared to the proposed one bridge (1 mile spanned). Specifically, the former 2005 plan would have further increased ENP rehydration and associated creation of downstream wetlands, wetland-upland habitat and foraging areas for wading birds, as well as resulted in less need for water management upstream in WCA-3B (i.e., conveying excess water eastward to tide). Nevertheless, given the funding constraints and Congressional directive as well as the benefits of this revised bridging proposal, EPA supports the tentatively selected plan to construct one 1 – mile bridge along Tamiami Trail and to elevate the Trail consistent with Florida DOT standards.	Thank you for expressing your support for the TSP.
EPA 2	The Final EA (FEA), or potential Finding of No Significant Impact (FONSI), should verify if additional culverts in combination with the 1 - mile bridge would be cost-effective.	This is a new alternative that was not analyzed by the team, included in the draft Limited Reevaluation Report, or coordinated with the public. We are not in a position to determine whether it is cost effective relative to the alternatives that were analyzed. We anticipate that there would be some increase in benefits and there would be an increase of cost.
EPA 3	Because of downstream environmental needs and escalating costs, EPA recommends expedited implementation of the tentatively selected plan. We also recommend that flows and downstream effects be monitored in the Everglades to ensure project success.	Concur. In response to environmental needs and escalating costs, this planning process is on an accelerated schedule and will be submitted to Congress in July, 2008. Flows and their effects will be monitored by ENP.
EPA 4	The swale pilot project, to the extent that it is foreseeable, should also be added to the EA's cumulative impacts matrix (Table 5-5) listing the "past, present and reasonably foreseeable actions and plans affecting the study area". In addition, we recommend that the expected impacts, both positive and negative, of all the projects listed in this matrix also be at least qualitatively documented in the matrix.	Since all agencies do not agree that the spreader swales pilot can be characterized as a reasonably forseeable action, this will not be added to the cumulative impacts table. Swales were split out of the LRR for separate NEPA analysis due to disagreement over their potential benefits and adverse impacts. The NEPA decision document (FONSI or ROD) for the pilot project will determine whether or not pilot swales would be authorized and implemented.
EPA 5	That is, while the EA discusses the general effects of these projects on common resources (ENP, Northeast Shark River Slough, water quality), the document could be improved if the expected impacts (e.g., increased turbidity and sedimentation) and improvements (increased southward flows and nutrient reduction) of each project was also listed.	Table 5-5 has been expanded to include expected project impacts.
	US Department of the Interior, Everglades National Park, Terrance Salt, Director of Everglades Restoration Initiatives, May 9, 2008	

DOI 1	The DOI supports the Tentatively Selected Plan, Alternative 3.2.2a	Thank you for expressing your support for the TSP.
	State Agencies	
	Florida Department of Transportation, Stephanie C. Kopelousos, Secretary; Florida Department of Environmental Protection, Michael W. Sole, Secretary; South Florida Water Management District, Carol Ann Wehle, Executive Director May 12, 2008	
STATE 1	We support the Tentatively Selected Plan identified in the Report. While the "plan" is not and cannot be perfect, the ability to almost double the annual average volume of water delivered into Everglades National Park is a significant step. We understand the fiscal concerns identified by the Appropriations Committees. We believe the tentatively selected plan is the minimal alternative for addressing Tamiami Trail and is worthy of the investment by the federal government.	Thank you for expressing your support for the TSP.
	Florida State Clearinghouse: May 19, 2008 The Florida State Clearinghouse received State agency comment letters and collectively forwarded them to the Corps. These letters are referenced below from Florida DEP Department of Environmental Protection, Department of Agriculture and Consumer Services, Fish and Wildlife Commission, Department of Transportation, , South Florida Regional Planning Council, Department of State, Division of Historical Resources Bureau of Historic Preservation, and SFWMD	
FL CLHS 1	...the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). The concerns identified by our reviewing agencies must be addressed, however, prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.	Comment noted
	Florida Department of Agriculture and Commerce Services, W. Ray Scott, May 19, 2008	
FDAC 1	...notes that the potential for negative impacts on the Homestead agricultural community is FDACS' area of interest. The FDACS has expressed concerns that a rise in water elevations in North East Shark River Slough will result in the diversion of more seepage from the Park to south Miami Dade County through the L-31N and C-lll canals unless this proposal includes a firm commitment to operate the S-356 pump station as recommended in the CSOP process.	The LRR/EA has stated that future operations will be discussed and developed when the CSOP team is re-activated later this summer. The S-356 pump station is part of the authorized Modified Waters project. Along with the S-357 pump station at the southern end of the 8.5 SMA, there will be capacity to move seepage out of the L-31N canal, either into L-29, or through the S-357 pump station and STA into the C-111 impoundments and eventually into Taylor Slough. The purpose of the LRR is to receive authorization to build the Tamiami Trail component of Mod Waters. Initially, the system will operate under the Interim Operational Plan (IOP), as modified to incorporate operations of S-357.

FDAC 2	...the G-3273 constraint on operating S-333 must not be removed until all the permits needed to operate S-356 per the operational protocol proposed in the Combined Structural and Operational Plan (CSOP) are obtained and the Corps' Water Control Plan is updated to show the use of S-356.	The system is operating under the Interim Operational Plan. There is as yet no "CSOP" Operational Plan. Its development was temporarily halted in early 2007 due to the need to evaluate effects on the Cape Sable seaside sparrow. CSOP planning is scheduled to begin again in July 2008. Currently modifications to operations would include operating the new S-357 pump station at the south end of the 8.5 Square Mile Area to handle additional seepage if the G-3273 constraint is lifted.
	Florida Department of State, Division of Historical Resources, Frederick P. Gaske, Director and State Historic Preservation Officer April 17, 2008	
FDOS 1	...raising the elevation of the Tamiami Trail roadway on an elevated bridge structure will have an adverse effect on the integrity of an historic property that has been determined eligible for listing on the *National Register of Historic Places* (Site No. 8DA651O).	The one-mile segment proposed for the elevated roadway does not contain any identified historic resources other than the road itself. Currently the proponent agencies are developing a Memorandum of Agreement with the State Historic Preservation Officer regarding mitigation for effects on identified cultural resources.
FDOS 2	In addition, the Airboat Association of Florida headquarters (8DA6768) and the Coopertown Airboat Rides and Restaurant property (8DA6767) are eligible for listing in the *National Register*.	The footprint of the proposed project will not affect properties of the Airboat Association of Florida or Coopertown Airboat Rides and Restaurant.
FDOS 3	Although the Tamiami Canal (8DA6766) was previously determined to be eligible for listing, staff questions that finding since the canal is no longer a roadway ditch and since ca. 1960 has become a major water control and movement structure.	In recent talks with the SHPO's office, it was determined that the Tamiami Canal has been modified many times since its original construction as a roadway ditch. As such, it has lost its integrity and is no longer considered eligible.
FDOS 4	Lastly, there are several cultural resources that may be within the area of potential effect of the proposed project that may be affected directly or indirectly. The resources are the Osceola and Tigertail Camps (likely traditional cultural properties) and 52 prehistoric sites in the Shark Valley Archeological District south of Tamiami Trail in the Everglades National Park.	The camps will most likely require cultural resource surveys. They are within the boundaries of the Park and the agencies are currently discussing how to handle responsibility of the surveys. The indirect effects on any cultural resources would be a result of increased water levels in the Park. Phone consultations with the SHPO and the Park Archeologist have determined that the Corps will not be able to assess those effects until monitoring of water levels begins after project completion.
	FDEP, South Florida Restoration Section, Stacey Feken May 15, 2008	
DEP 1	...staff strongly supports implementation of Alternative 3.2.2.a without further delay. Given cost constraints imposed in WRDA 2007, the tentatively selected plan offers the best incremental approach to reconnect the Everglades and restore more natural flows to Everglades National Park and Florida Bay.	Thank you for expressing your support for the TSP, Alternative 3.2.2a.
DEP 2	DEP reiterates its previous comments supporting moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project and including NEPA coverage of tile pilot swale project within the subject LRR.	Since the swales would be constructed completely within the boundaries of Everglades National Park and the Park's hydrologists are uncomfortable with building swales until first conducting a pilot test to show if they would be effective, this option (covering the road improvements in the same NEPA document as potential spreader swales) is not practicable. There is disagreement among interpretations of the results of models used to predict the swales' effectiveness;

		therefore the agencies have proposed pilot tests. The agencies must report to Congress July 2008 on their recommendations to improve conveyance through the Trail, and cannot wait to see the results of a pilot test.
DEP 3	The improved conveyance and the associated benefits of the TSP are dependent upon the increased water elevations in the L-29 canal. The LRR states that the Department of Interior is responsible for securing real estate rights on seven privately owned properties along Tamiami Trail necessary to implement the TSP. The Department requests that the Department of Interior expedite securing such rights in order to ensure that project benefits can be realized as soon as possible.	The Department of the Interior and Everglades National Park are aware that the real estate rights must be obtained before water levels are raised and are working so that the timing of acquisition of these rights does not delay achieving ecosystem benefits.
DEP 4	1. P1-10. First paragraph makes reference to graphics in figure 4-10 for describing high levels, which this figure does not display.	Concur. Text has been corrected.
DEP 5	2. Section 1 Introduction. Since the 1992 General Design Memorandum, it has been evident that there is a need to raise the Osceola Camp in order to increase water levels in the L-29 canal. The LRR indicates that ENP is still negotiating with the Osceola family regarding how to implement mitigation for increased water levels. As with the other real estate issues surrounding the Mod Waters project, a timeframe and general plan for implementing such activities should be provided.	The progress and results of negotiations are difficult to predict. Both the Corps and ENP recognize that the Osceola Camp must be modified prior to increasing the water levels in the L-29 canal.
DEP 6	3. P 1-13. Third paragraph makes reference to WCA No 3B.	This was a typographical error. The corrected reference is "3A."
DEP 7	4. P-1-16, section 1.8. Second bullet makes reference to 2002, 2006. Not sure where or what the 2006 refers to (perhaps the correct reference is 2007?).	The Interim Operational Plan had two EISs: 2002 was the FEIS and due to a court case the Corps supplemented the original 2002 FEIS with the 2006 FSEIS. The text has been amended to state 2002 and 2006.
DEP 8	5. P 3-5, third paragraph. Please provide the supporting documentation for the statement that water stages in WCA 3B are generally lower than in the L-29 canal.	In order to clarify, language was added into the LRR main body section 3 discussing historical water stage data to support the text.
DEP 9	6. Section 3.4. Water quality section contains old data and references that were presented in the 2003 GRR and are no longer applicable. Department staff worked with the Corps to revise this section for the 2005 GRR. We request that future revisions to the LRR include the most recent information.	The LRR has been modified to include the most recent and relevant water quality information. The 2004-2005 SFWMD WQ data from culvert sampling has been added to section 3.4.
DEP 10	7. Section 3, page 3-7: A Site Specific Alternative Criterion for Dissolved Oxygen in the Everglades Protection Area was adopted by the Department and subsequently approved by the U.S. Environmental Protection Agency in 2005.	This has been reflected in section 3.4 of the document.
DEP 11	8. Section 3, page 3-9, and Appendix F, page F-20. The LRR states that the Hazardous, Toxic, and Radioactive Waste (HTRW) site assessment identified four potential contamination sites. If the TSP results in impacts to these sites, the Environmental Assessment should include information on remediation. Any HTRW cleanup should be closely coordinated with the Department's Waste Cleanup Section in the Southeast District Office in West Palm Beach.	The project implementation for the TSP will first require the construction of the bridge and the road reinforcement work. Per the analysis of the project area with a Phase I&II HTRW investigation, there is no HTRW within the construction footprint. Construction is expected to last about 3.5 years. The next sequence of the TSP implementation will involve application to the FDEP to raise the L29 canal stage. In the operational WQ permit application, the Corps will fully address any potential HTRW issues that could be linked to raising

		the canal stage and will coordinate any HTRW issues with the SE FDEP cleanup section. The information derived from the Phase I&II investigations indicate that there are no significant problems on the areas offsite of the construction footprint for the TSP and the Corps believes the minor level of contaminants identified from those investigations can be fully dealt with to the satisfaction of all parties.
DEP 12	9. Page 3-11. Second paragraph indicates that Figure 3-1 shows ENP in south Florida, yet ENP is not identified in the figure, only the location of the project.	The corrected figure reference is "Figure 1-1."
DEP 13	10. Section 3.11 Noise environment. Please provide some type of conclusion with respect to the implications regarding the peak hour noise levels presented.	A sentence was added to clarify the table. However, the table was simply included to demonstrate the existing peak noise levels. No implications are intended.
DEP 14	11 Section 5.7.5. Impacts to State listed threatened and endangered species are not discussed.	Impacts to state listed species are discussed on page 5-22 under "Other Protected Species." No adverse impacts are expected.
DEP 15	12. Annex A, 2.6.1. A mixing zone has not yet been granted. This section should be revised to state that a mixing zone will be requested as part of the permit application.	Annex A, 404(b)(1) section 2.6.1 was revised to reflect that the Corps will request a mixing zone variance from FDEP. ENP supports this request.
DEP 16	13. Annex A, 3.3 The determination of whether the TSP will violate any applicable state water quality standards will be made after an adequate permit application has been received and reviewed by Department staff.	Comment noted.
DEP 17	14. Appendix F. d. Operation and Maintenance requirements. Details of the "research" that is referred to should be provided. This statement is misleading and should be revised.	The first sentence was revised to remove "Research has revealed that".
DEP 18	15. Appendix G. The Department's comments are not included in the summary of scoping comments. Please refer to our March 2008 letter submitted through the State Clearinghouse, also enclosed again for reference	The comments were added to the summary of scoping comments.
	FDOT District Director of Transportation Development, Alice N. Bravo, P.E., District Director of Transportation Development, May 9, 2008	
FDOT 1	(1.) In Section 7.0, Recommendations, you have expressly reserved the right to compensate FDOT with a payment rather than actually constructing the substitute facility. FDOT is strongly opposed to that option and will require an express waiver of that option in the Relocation Agreement. The FDOT has been extremely consistent on this point. We expect the Corps to build the bridge and raise the road as two equal parts of the same project, prior to raising the water levels.	Section 7 was revised to state that road reinforcement is part of the Tamiami Trail Modifications and will be paid for by the Modified Water Deliveries project. Florida Department of Transportation will contribute $4,500,000 to the road reinforcement as part of their normal maintenance program.
FDOT 2	(2.) Currently the LRR embraces the 8.5' water level. This level is described as a "canal stage elevation" or "operational elevation". ... It does not appear to equate to a design high water (DHW) using the 20 year, 24-hour stage. The clearance guidance provided to you by the FDOT earlier this year assumed that you would still honor the traditional design high water concept with a 20 year, 24-hour stage restriction. Otherwise, the road could be potentially undermined, which is, of course, unacceptable. ... The	As discussed at the May 14, 2008 meeting between the FDOT, COE, and SFWMD, the Corps will follow FDOT design criteria in establishing the Design High Water (DHW). Per FDOT Drainage Manual this is based on a storm with a 10-Year return frequency applied to the average October surface water elevation. The Corps will look at three different durations (1, 8, and 24 hours) of a storm event and pick the worse case to set the DHW. After applying the FDOT

	Department is currently in a dialogue with the Corps regarding this important issue which may require reduced operating levels during the rainy season and future adjustments of that level as a result of pavement monitoring.	design criteria and utilizing the Combined Structural and Operational Plan (CSOP) Tentatively Selected Plan (TSP) Alternative 5R (Alt5R) which combines the operations of the MWD and C-111 Projects into a cohesive operating plan that works with the rest of the C&SF system. This model run however did not have a stage constraint placed on Tamiami Trail which results in a slightly higher average October water level than what will be produced once the CSOP Team reconvenes to develop the new operational plan based on a stage constraint of 8.5 ft in the L-29 BC. The FDOT and COE jointly prepared a set of criteria for short term stoppage of inflows to L-29 Canal, 2-3 days in advance of named storms and predicted large rainfall events, to reduce the likelihood and/or duration of exceeding 8.5 ft in the canal. See Section 6.1.3 of the Final LRR. These criteria would be considered when the CSOP Team reconvenes.
FDOT 3	(3.) The LRR is silent as to the timing for raising water levels. Water levels should not be raised until the bridge is fully constructed, the road raised, and the existing road north of the bridge removed.	The estimated construction period is 3.5 years. The water will not be raised until the bridge is constructed, the road is reinforced, and the existing road north of the bridge is removed.
FDOT 4	(4.) The LRR is silent as to the current timeline(s) for design and construction of the bridge and the raising of the balance of the roadway. If the roadway design work is lagging, then the benefits of the project will lag.	Bridge and road reinforcement will be awarded as one contract. Target award date is 26 September 2008. Construction duration for both the bridge and road reinforcement is estimated around 3 ½ years. Please see the amended text in Section 6.2.8 of the final LRR.
FDOT 5	(5.) The statement on page 1-10 regarding the withdrawal of the 2003 report and EIS should be elaborated upon. The way the statement reads currently is that it seems to imply that the 2003 report and EIS were withdrawn solely because no agreement could be reached with FDOT regarding the flowage easement and compensation. That report was withdrawn for a multitude of reasons.	The report was withdrawn because the project did not receive concurrence or support from cooperating State agencies including FDOT, DEP and SFWMD. However, it is true that FDOT's comments were a major reason for non-approval of the report by these State agencies, and for rejection by higher level reviewers in the Corps of Engineers. At that time the Corps proposed establishing a trust fund to compensate FDOT for any road repairs that would become necessary due to establishing higher stages in the L-29 Canal. FDOT rejected this idea, stating its opinion that the Project should elevate or repair the affected section of the roadway. This is consistent with FDOT's current position.
FDOT 6	(6.) We have a concern with the language used in the report that describes the Perpetual Flowage Easement. That easement is surely intended to extend only to the land beneath the one mile bridge and, perhaps, the culverts and not "the entire expanse of the roadway within the project limits" as indicated on p. 6-7 or "over the full length of the project lands" as indicated on p. 6-3. FDOT does not anticipate granting authority to otherwise pass water over or under the Tamiami Trail since that could damage the integrity of the roadway. The language of the Flowage Easement will need to contain that clarification and limitation.	The perpetual flowage easement is an easement that is limited to a certain elevation and will necessarily extend for the full length of the roadway within the project area since the Corps is unable to contain the water only to the bridge and culverts areas. In addition, the LRR seeks to raise low portions of the roadway to mitigate future impacts of the project's water levels. If the Corps limited the flowage easement only to those areas where the bridge and culverts are located, then we would similarly have to limit the roadway raising to those areas as well. As such, it is very likely that low areas of the roadway would exist where there are no culverts, hence the FDOT would then be responsible for the raising of those portions. In order to avoid that type of situation, the

		Corps must obtain a flowage easement for the entire length of the project area. Further, the Corps will seek to have FDOT maintain the existing culverts and culvert capacity to ensure conveyance for the project.
	Florida Fish and Wildlife Conservation Commission, Mary Ann Poole, Director, Office of Policy and Stakeholder Coordination	
FWC 1	Although the draft LRR mentions that conveyance over the remainder of Tamiami Trail would also be provided through improvements of existing culverts, it includes no details. As previously stated (see our letter to Lauren Milligan dated March 4, 2008), we believe that the strategic placement of box culverts at historic sloughs and/or aligned with the S-355 and other existing or planned water conveyance structures in the L-29 levee, in conjunction with downstream spreader swales, would greatly augment hydraulic and ecological connectivity.	The Recommended Plan or TSP does not include the box culverts or spreader swales mentioned in this comment; reasons include cost and delay factors as well as engineering questions regarding swale efficiency, as explained elsewhere in response to other comments. The eastern bridge will provide significant conveyance through the eastern historic slough. Providing box culvert or bridge conveyance over the western sloughs would require significant design work and real estate requirements leading to further delay of the project, due to this area's proximity to existing private properties.
FWC 2	Although some scientific uncertainties remain, we are encouraged by the COE's most recent modeling results, which predict that the addition of spreader swales below each set of Tamiami Trail culverts would result in an increase in the conveyance capacity of these culverts by approximately 12% at stage of 8.0 feet NGVD in the an L-29 canal. Even greater flows would be realized when the L-29 canal stage reaches 8.5 feet. ....Furthermore, in order to facilitate the continuity of flows through the Tamiami Trail into the future, we request that a maintenance agreement be formulated between the COE and ENP whereby conveyance features associated with the culverts receive routine maintenance.	Spreader swales are not a part of the TSP or preferred plan. The effectiveness of spreader swales will be tested, as described in the National Park Service's scoping documentation for the Spreader Swale Pilot Project. NPS will take the lead on this report and EA. The Corps and Park cooperatively determined that resolving doubts about spreader swale effectiveness would unduly delay completion of the Tamiami Trail Modifications LRR and broke out the spreader swale study for separate evaluation. A Land Management Agreement is being drafted among ENP, SFWMD, and USACE to address maintenance of the area downstream from the culverts. FDOT currently maintains the culverts. After completion of the project, SFWMD will be responsible for conveyance. Coordination on this issue is ongoing.
FWC 3	In the Evaluation Report of Annex A, the COE states that restrictions would be in place during construction to minimize impacts to the two wood stork rookeries and snail kite management areas. We request that the COE also take appropriate precautions to avoid disrupting the nesting efforts of the state-listed species of wading birds mentioned above that also use these same rookeries. The FWC has developed set-back distances to protect nesting bird colonies from human disturbance (Rogers and Smith 1994).	The Agencies are aware that these are mixed rookeries. We believe that precautions to be applied to protect Federally endangered wood storks will equally protect other species of colonial nesting wading birds.
FWC 4	Everglades minks are known to have used such upland areas as den sites on the Tamiami Trail in the past (Smith 1980). A survey by an experienced biologist should be conducted in areas with suitable potential habitat prior to the initiation of construction activity to help determine whether any mink are present in the study area, and if any den areas may be present.	The Corps will request the Park and FWC assist and cooperate in conducting the survey. However, we cannot commit to protecting mink denning habitat if it falls in the required highway or bridge right of way. The USACE also has concerns regarding the Everglade mink and will cooperate in preparing pre-briefing materials.
FWC 5	To reduce road-related mortality of the Everglades mink and other riparian wildlife, we recommend that underpass shelves be incorporated into bridge and culvert designs.	The two bridge abutments (right and left) are not designed as vertical walls; rather, the rip-rap protected ramps up to the bridge terminate in a 1:2 side slope. This would provide dry passage, above the average

		water line. The L-29 Canal itself is probably a greater impediment to passage of terrestrial animals.
FWC 6	The draft LRR states that the one-mile bridge would provide for the movement of small animals beneath it and reduce road-related wildlife mortality by about nine percent. Although not described adequately in the draft LRR, it is our understanding that the COE plans to remove the peat soils down to bedrock beneath the bridge footprint, presumably to improve the conveyance of flows from the L-29 canal into ENP… a water depth of two feet in the marsh would equate to a water depth of three to five feet in the scraped area beneath the bridge. Absent wildlife shelves or other elevated passage features, the deeper water below the bridged expanse would not provide for the safe passage of terrestrial and semi-aquatic animals, as is assumed in the draft LRR. We recommend that those areas beneath the bridge where terrestrial wildlife are most likely to occur retain their peat soil and the additional elevation and vegetative cover that it provides. Such areas should include, at a minimum, the east and west ends of the bridge and the location where the agricultural canal would intersect the proposed bridge.	The passage would be across via the bridge abutments. L-29 Canal is up to fifteen feet deep. Leaving a peat layer over bedrock under the bridge deck would likely not make a difference, and is not good practice, because the peat would likely provide substrate for invasive exotic vegetation.
	South Florida Regional Planning Council	
SFRP 1	Council staff generally agrees that recommended Alternative 3.2.2.a will benefit the South Florida region and will further our goals for a more livable, sustainable, and competitive South Florida. The goal of restoring the natural hydrologic conditions to Everglades National Park is generally consistent with the *Strategic Regional Policy Plan for South Florida*…	Thank you for expressing your support for the TSP of a 1-mile bridge and L-29 Canal constraint of 8.5 feet.
	Local Governments	
	City of Sanibel, Vice Mayor Kevin Ruane May 9, 2008	
SAN1	The City endorses the Corps' decision to take immediate action under the tentatively selected plan to increase annual flow volume, increase marsh connectivity, and rehabilitate slough vegetation habitat by building a one-mile bridge on the Tamiami Trail adjacent to S-334 and raising the L-29 Canal headwater stage constraint to 8.5 feet NGVD.	Thank you for expressing your support for the TSP of a 1-mile bridge and L-29 Canal constraint of 8.5 feet.
SAN2	Although the MWD project will provide notable improvements over the status quo, the City urges the Corps to undertake these modifications with the understanding that this should only represent the first phase of a much needed larger project. The City supports creating a second longer passageway (or series of larger passageways to replace the inadequate existing culverts) along the Tamiami Trail. The City encourages the Corps to make this a planning priority going forward.	After approval of a plan for Tamiami Trail Modifications under the Modified Water Deliveries (MWD) project, we will complete the planning and approval process for the remaining features of the MWD project – openings in the L-67A and L-67C levees, additional removal of the L-67 Extension levee, flood mitigation measures for Osceola Camp, and a new operations plan. Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are

		available.
	Tribal	
	Lehtinen, Vargas & Riedi, Attorneys at Law, Dexter Lehtinen, May 9, 2008 MICCOSUKEE TRIBE	
Micc 1	1. The Corps is Required to Conduct an EIS or SEIS Under NEPA… The Corps attempts to get around this NEPA requirement by relying on the 2005 RGRR/SEIS, which does not even analyze this alternative… For instance, the 2005 RGRR states that Alt. 14 will be on the "existing alignment". In contrast, the LRR/EA states that "most of the land on which the bridge would be located is federally owned land that is part of ENP…"… There are significant differences between Alt 3.2.2a in the LRR/EA and Alt. 14 in the 2005 GRR/SEIS… It is improper for the Corps to rely on a segment of a totally different alternative in the 2005 RGRR/SEIS, which never analyzed building only a one mile eastern bridge, to attempt to bypass NEPA requirements. An EA, and Finding of No Significant Impact, will not suffice here. NEPA requires that an EIS, or SEIS be conducted on the TSP.	An EA may be prepared to comply with NEPA. If it is determined that significant impacts would result from a project, an EIS would be required. If no significant impacts would result, a Finding of No Significant Impacts (FONSI) would be prepared. In addition, this EA is tiered from the 2005 RGRR/ SEIS and includes the recommended plan from the 2005 report as one of the alternatives.
Micc 2	2. The Corps' NEPA Process Was Pre-Decisional… The TSP was selected by, and recommended by, an LRR advisory group that met outside the public process… The Corps and others in the group held a meeting with the DEP to discuss water quality certification for construction of the one mile eastern bridge on 1/25/08, three months before the LRR/EA was issued. At this meeting, the only alternative discussed in detail was the construction of the eastern one mile bridge.	The selection of the recommended plan was made on the basis of comparing objectives, constraints and performance measures of all alternative actions. In addition, this EA is tiered from the 2005 RGRR/SEIS and includes the recommended plan from the 2005 report as one of the alternatives.
Micc 3	3. The LRR/EA Fails to Analyze, and Improperly Rejects, Reasonable Alternatives… For instance, Alt. 3.2.1 was improperly rejected from consideration by the advisory group even though the matrix shows it approaches the flows and volumes of the TSP at a lower cost… The advisory team used an arbitrary and capricious "velocity" performance measure to improperly reject the lower cost Alt. 3.2.1 from consideration.	Twenty-six alternatives were developed and evaluated on the basis of objectives, constraints and performance measures. Alternatives that failed to meet objectives were rejected; the remainder received more detailed consideration.
Micc 4	4. The LRR/EA Fails to Assess the Cost of Delay As a Performance Measure… Based on Attachment D of the Final GRR/SEIS on the 8.5 Square Mile Area, for each year of delay of MWD, the cost to restore tree islands lost by delay is $23-$123 million dollars a year, if they can ever even be restored.	Comment noted. The cost of future delays is built into the cost estimate as "escalation." Therefore, the plans which take longer to build would rate lower on the CEICA evaluation due to the higher cost as a result of escalation. The study included a full suite of performance measures that were considered to be those of greatest importance to the project. It is anticipated that construction of Tamiami Trail modifications would begin in 2008.
Micc 5	5. The LRR/EA Improperly Segments the MWD Project. The 1992 GDM and EIS for the MWD Project… included Tribal lands in WCA 3A but are excluded from the analysis in the LRR/EA. NEPA requires that connected projects should be evaluated in a single EIS… Improper segmentation has caused the LRR/EA to inadequately assess impacts on Tribal lands and resources.	Although NEPA guidance from CEQ prefers discussion of all elements of a proposed Federal action in a single NEPA document, for very large projects where details have to be developed in stages, this is often not practical. The Environmental Protection Agency has the legal mandate, along with CEQ, to review NEPA documents for adequacy and conformance with established policy. Since the re-evaluation of the Tamiami Trail modification was mandated by Congress, it is doubtful

		that this NEPA document is an "improper segmentation." It was written to respond to Congressional requirements. EPA has not indicated concerns with segmentation of the NEPA process.
Micc 6	6. The LRR/EA Improperly Narrows the Purpose, Scope and Study Area... Section 5.20 of the LRR/EA improperly limits the scope and study area to ENP and NESS... the 1992 GDM for the MWD Project states "when fully operational the MWD project will benefit the ecosystem function and habitat value of appx. 100,000 acres of wetlands in NESRS, 600,000 acres of wetlands in WCA-3A and 200,000 acres of wetlands within the Shark River Slough basin of ENP." Thus, the LRR/EA scope and study area should have included all the areas that comprise 900,000 acres of Everglades wetlands.	The purpose of the LRR/EA is to "answer directives from the Managers' language cited in Section 1.1" and no narrowing of the purpose or scope of the MWD project or its component studies is intended or stated in the LRR/EA. The LRR/EA tiers off the 2005 RGRR/SEIS.
Micc 7	7. The Future Without Project Condition Is Improperly Defined... The document states in Section 5.4 that: "The No Action alternative would maintain the existing capacity for conveying water from the L-29 canal, under Tamiami Trail, to ENP without causing deterioration of the road way". There is no Congressionally authorized Tamiami Trail project.	The Future Without Project Condition is defined in Section 3.1 as "the conditions expected in the project area if no project is implemented." This is a reasonable characterization of the "No Action Alternative."
Micc 8	8. The Cumulative Impacts Analysis is Woefully Inadequate... It leaves... WCA-3A out of the discussion of "target resources", and focuses only on ENP. It lists actions, such as the IOP, in Table 5.5 but makes no attempt to analyze IOP's past, present, and future impacts. The geographic scope is improperly limited to 63,915 acres below Tamiami Trail... The Corps must conduct an EIS that analyzes the combined impacts of the delay of the MWD Project, coupled with the impacts that the last ten years of operational plans for the sparrow, have had on Tribal lands, endangered species in 3A, and other areas of the Everglades.	The cumulative impacts analysis was prepared in accordance with the guidance provided in the 1997 Council on Environmental Quality publication, "Considering Cumulative Impacts under the National Environmental Policy Act." The LRR proposes a construction project that would facilitate flexibility in the operational management of water flows. IOP is an operational plan, the impacts of which were described in the 2006 FSEIS, Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow. The modifications to the Tamiami Trail described in the LRR would not affect the operations described in IOP and therefore not affect the water levels in or the flows from WCA-3A. The Tamiami Trail modifications would allow the flows to NESRS to be increased – more water could be passed through S-333 (which could operate at full capacity) and less through the S-12 structures to meet the target flow of 55% of the flow into NESRS and 45% to NWSRS. In addition to increased flows benefiting NESRS, redistributing 55% of the current water budget would benefit NWSRS by reducing S-12 A, B, and C discharges during the early wet season. In addition, decreased total S-12 wet season discharges could reduce wet season water depths and possibly decrease hydroperiods to be more consistent with species and habitat needs.
Micc 9	9. WRDA 2000 Constraints and Congressional Cost Constraints Are Not Divulged... The LRR/EA ignores the WRDA 2000 constraint language that prohibits Tamiami Trail until the MWD Project is complete. Moreover, it	WRDA 2000 does not constrain the MWD project. Rather, it constrains selected components of CERP. Congress did not provide specific cost constraints other than that the updated cost of Alternative

	contains no mention of Congress' guidance that $150 million dollars should be adequate to complete the MWD Project.	14 from the 2005 report was too high.
Micc 10	10. Alternatives Must be Assessed With and Without Alleged Cost Savings,.. The analysis admits in Appendix C that not all cost savings are applicable to all alternatives. It is also true that not all cost savings listed by the Corps are certain.	The cost savings described in the draft LRR are reasonable and, while not guaranteed at the time of the draft LRR, have a strong likelihood of being realized/achieved. The team applied the cost savings similarly to all of the final alternatives.
Micc 11	11. The LRR/EA Improperly Modifies the MWD Project Purpose... The purpose of the MWD Project is to improve water deliveries into the Park and, "to the extent practicable" take steps to restore the natural hydrologic conditions... While it appears the advisory group relied on a series of new modeling exercises to assess impacts and environmental benefits, the process is incomprehensible... and cannot be reviewed for independent verification... The Tribe contends that the one mile bridge that was selected is not necessary to improve water deliveries "to the extent practicable" and suspects that the "modeling" was used to support a predetermined conclusion for Tamiami Trail.	The purpose of the LRR/EA is stated in Section 1.4 to "answer directives from the Managers' language cited in Section 1.1". No changes to the MWD project purpose are inferred.
Micc 12	12. The LRR/EA Does Not Detail What Will Be Done to Modify the Road...While raising the road is defined as part of the TSP, the LRR/EA defines it in other sections as road mitigation and/or modifications. Details on how the Corps envisions this will be done, or if it will be done at all, are scant.	The LRR/EA tiers off the 2005 RGRR/SEIS as stated in Section 1.0. The road will be reinforced to FDOT current standards. Because the stage constraint in the LRR recommended plan is raised only 1', the road base will not require widening, as was the case for the RGRR Recommended Plan, which had an unconstrained stage up to 9.7'.
Micc 13	13. The LRR/EA Contains a Skewed Environmental Benefits Analysis... Under NEPA, the Corps is only required to analyze *reasonable alternatives*. The *skyway* alternative 17 is not reasonable under MWD Project statutory authority and funding constraints, and should not be used as a benchmark... The skewed analysis used by the LRR advisory group resulted in the screening out of all non-bridge alternatives. The Tribe contends that the lower cost culvert/swale/road raising alternative is the environmentally preferred alternative.	Do not concur. The benefits analysis was conducted by an inter-agency team of scientists which included ENP, SFWMD, UCACE, and USFWS. It is similar to the analysis completed in the 2005 RGRR/SEIS.
Micc 14	14. The LRR/EA Does Not Contain An Adequate Analysis of Water Quality... The LRR/EA merely states that "the State of Florida requires the treatment of stormwater runoff to be included as a component of the highway and bridge construction projects." It does not define the level of treatment, how it will be done, or how much it will cost. There is no support for the Corps' contention in Section 5.5 that the bridge could provide an incremental benefit to water quality by treating a one-mile section of highway runoff. Nor does the LRR/EA mention the fact that the S-9 pump could discharge water to ENP under the MWD project, which could have an impact on water quality.	The LRR/EA tiers off the 2005 RGRR/SEIS as stated in Section 1.0. Greater detail on water quality may be found in that document. The bridge is not expected to change the composition of the water flowing into the ENP. Any flow changes into the ENP will be captured by the Settlement Agreement required monitoring for inflow structures into the NESRS. The stormwater treatment system for the bridge will be coordinated with the FDEP for approval and will be designed to meet the state and federal requirements for runoff treatment. The existing level of runoff treatment is limited in the footprint of the bridge. It is the Corps technical staff's opinion that the planned stormwater treatment system will slightly improve the water quality in that section of the roadway due to the increase of grassed shoulders on the bridge approaches and the treatment system for the bridge runoff.

		We agree that this opinion cannot be conclusively proved at this time. The S9 structure is not within the scope of this project and the construction of the TTM Bridge is not expected to have any changes on the operation of the S9 pump station. Any flows through the S9 structure are monitored, analyzed and reported to the public.
Micc 15	A SECTION 4(f) REVIEW IS REQUIRED FOR A BRIDGE IN THE PARK. Section 4(f) of the Department of Transportation Act of 1966... prohibits the DOT from approving any program that uses publicly owned land unless: 1) there is no feasible and prudent alternative, and 2) such use includes all possible planning to minimize harm. While the LRR/EA states at Section 4.3.3 that "This project is not a transportation project", the reality is that it involves building a bridge to transport people. This is recognized at page 5-38 of the LRR where it discusses "the conversion of parklands to transportation conveyances," and that "the proposed project would convert parklands to highway right-of-way." Moreover, the LRR states that "most of the land on which the bridge would be located is federally owned land that is part of the ENP...". It further states that transfer of these Park lands to the State to construct the bridge will involve U.S. DOT. ...Rather than conduct the required Section 4(f) review, the Corps improperly relied on a short letter, not based on the TSP, to incorrectly claim in Appendix F that a Section 4(f) is not required. The Tribe contends that a Section 4(f) review is required here, because the federal government plans to build a bridge on national park lands, and suspects the Corps knows that such a review would show that there are feasible and prudent alternatives to constructing a bridge.	As the Tribe states the Corps looked to other feasible and prudent alternatives than to using property owned by the park and sought to minimize harm. Due to the location of the project area, very few alternatives are available to the Corps. In addition, though the project itself is not a transportation project, it is virtually impossible to flow water under Tamiami Trail without impacting the roadway due to the road acting as a levee between Miami and Naples. Regarding the Section 4(f) review, the Corps and NPS consulted with the Federal Highway Administration (FHWA), a federal agency under the U.S. Department of Transportation (USDOT). FHWA has deemed Section 4(f) review inapplicable to this project for the following reasons: 1. Section 4(f) only applies to USDOT projects. Even though this project is a federal government project, the USDOT is not the lead agency. The Corps, in conjunction with the DOI/NPS, are the project proponents. USDOT/FHWA only have tangential involvement in the project; 2. There are no USDOT funds that are involved in the project. All project funds emanate from Public Law 101-229, its amendments, and related appropriation bills. Neither the USDOT nor FHWA will be contributing any funds towards the completion of this project; 3. This project does not require any USDOT or FHWA technical approvals for roadway or bridge construction. Neither USDOT nor FHWA are providing any project oversight before, during or after construction and will not be involved in the operation or maintenance of the project; 4. FHWA is only acting in the capacity of a land transfer agent. By law, the FHWA is the agency that is authorized to transfer park lands in this situation. As such, with the exception of this involvement through the Highway Easement Deed, neither the USDOT nor FHWA is a participant in the project at all; 5. The project is not a USDOT or FHWA sponsored transportation project. The actual construction of the bridge and elevation of the roadway are merely real estate transactions incidental to the major purpose of the project which is the conveyance of water from north of Tamiami Trail to the south

		into the Everglades National Park. Since the existing Tamiami Trail acts as a dam or levee inhibiting the flow of water, the Corps and the park seek to modify the existing structures to induce flows back to their natural levels, to the extent practicable. In order to construct these features, the Corps and the park must obtain the real estate interests from all third party owners within the project area and vicinity necessary to generate those flows. The government must acquire real estate interests where the project impacts will negatively impact those owners. Therefore, in addition to the private owners south of Tamiami Trail, the Corps must also obtain both a flowage easement and channel easement from the Florida Department of Transportation (FDOT). FDOT's status as a state agency does not obviate the need for this acquisition. Currently, neither the Corps nor the park have the legal right to remove an existing portion of the road and replace it with a bridge to increase water conveyance. The fact that there is a transportation facility at this location is merely coincidental and is not the purpose of the project; and 6. The Congressional mandate under Public Law 101-229 is to convey water into the Everglades National Park to rehydrate the park to the extent practicable. Therefore, it is clear that the intent of Congress is restore the park environmentally. Clearly, the fundamental purpose of this environmental restoration project is not to provide the public with a better transportation facility. It is for these reasons that the government believes that the project is exempt from Section 4(f). Copies of the agency correspondence confirming this position will be included with the ENP/NPS FONSI for the project.
Mice 16	THE CORPS FAILED TO COMPLY WITH THE ESA. …the Corps failed to conduct Section 7 consultation with the FWS prior to issuing the LRR/EA… The March 6, 2008 Planning Aid Letter from the FWS does not substitute for the required Section 7 consultation and a Biological Opinion. The Corps is required to analyze any potential adverse impacts to endangered species…that have been caused, and will continue to be caused, by the delay of the MWD Project resulting from the TSP…Neither the LRR/EA, nor the FWS PAL, mention the alarming 50% decline in the endangered Snail Kite population that has occurred under ISP and IOP, nor analyze whether more delay will jeopardize this endangered species. Finally, the Corps must conduct Section 7 consultation on how the TSP will impact Sparrow populations…, and Snail Kites nesting in ENP.	The Corps received a BO concurring with our determination of May Affect, Not Likely to Adversely Affect for all species in the TTM area in January 2006 for the RGRR/FSEIS, covering Alternative 14. Our current TSP or preferred plan is a sub-set of Alternative 14. We have formally re-initiated Section 7 consultation with FWS and expect to receive a revised BO from FWS prior to construction for the LRR TSP. We note that the timetable for compliance under ESA is not the same as that for NEPA compliance. We expect to be in full compliance prior to scheduled construction of the TSP.

Mice 17	THE CORPS FAILED TO COMPLY WITH FACA. ...The advisory group included non-federal entities, who developed performance measures and screened alternatives at secret meetings... While the Corps attempts to paint this advisory group as a fact finding team, it is clear that the group made policy recommendations to a federal agency.	The LRR team met with both federal and state agency employees for purposes of exchanging information on the project. The team did not and cannot set policy which is only implemented by higher governmental authority. It is our contention that there was no violation of FACA rules.
Mice 18	THE CORPS DID NOT MEET ITS TRUST RESPONSIBILITY TO THE TRIBE. ... The Corps failed to analze the culvert/swale alternative in its final array of alternatives... and allowed an LRR advisory group to select the TSP behind closed doors... the advisory group held secret meetings, which the Tribe and the public could not attend. The Tribe only found out about these meeting indirectly or when documents were inadvertently released, even though they had a direct impact on its natural resources.	The Corps met and consulted with the Tribe and even invited the Tribe to certain meetings which the Tribe chose not attend. There were no secret meetings. Meetings held from October-January, prior to the January 25, 2008 scoping and pre-application meeting for the WQC, which the tribe's representatives attended, were Federal agency working meetings, attended by representatives of the US Department of the Interior and the Corps of Engineers. Stu Appelbaum of the Corps presented the preliminary alternatives analysis of this Federal Government Team at the December Task Force and Working Group meetings. This was the first presentation of the re-evaluation to other agency and public representatives. The Corps opened scoping for the LRR/EA in late January, and coordinated the NEPA document and LRR beginning in early March. During scoping, Corps representatives met with representatives of the Tribe to present the screening process and receive comments. There was an April public meeting to discuss and receive comments on the LRR/EA. Therefore, it is the Corps' contention that there was no violation of the government's Trust Responsibility to the Tribe.
Mice 19	**Study Authority: ...**Unfortunately, the Corps continues to conduct skewed analyses that result in the selection of unnecessary and expensive alternatives for Tamiami Trail that go beyond MWD Project authority	The Corps contends that the project is fully within its authority as prescribed by Congress. DOI and the U.S. Environmental Protection Agency have expressed support for this analysis in their comments included here.
Mice 20	**Manager's Language:** The LRR/EA at page iv says alternatives were compared against the targets set by the Manager's language, and cost constraints. ... It does not explain, however, why alternative 3.2.1 (culvert/swale/road raising) was eliminated from analysis. ... This section also makes no mention that Congress clearly stated that it felt the MWD Project could be completed for $150 million dollars. ... selected a TSP that exceeds the $150 million dollar cost target.	Page iv is part of the Executive Summary. The study team did not attempt to present in the Executive Summary all of the details of all of its analyses. The screening of Alternative 3.2.1 and other alternatives is presented in Section 4.4.3 of the draft LRR. The WRDA 2007 Managers' Language does not contain a dollar cost cap for Tamiami Trail. The discussion of alternative screening in Section 4 of the report has been expanded to explain why culvert-only alternatives were not selected. They were within cost limits but were not as effective as bridge alternatives in providing favorable stage-duration results in ENP marshes or in reducing adverse velocity changes in the benefit zone immediately south of the road, extending into the Park about 1 mile.
Mice 21	**Tribal Lands:** Section 3.12 contains a woefully inadequate analysis of Tribal lands that could be impacted by the proposed project. The scope of Tribal lands that can be impacted includes a vast area of the Everglades	Benefits to WCA-3A will depend on future operations of the system. The LRR covers a proposed structural (construction) project, not a change in operations of the whole C-111/Mod Waters system. When

	(WCA 3A) that is not discussed here. ...the Corps has ignored these land interests and narrowed the scope of "Tribal lands" to the Tiger Tail and Osceola Camps. Even with this narrow scope, the Corps fails to adequately analyze the impacts. The statement that, "The living facilities of the Tiger Tail Camp were recently elevated above the flow levels anticipated for MWD" is not based on any analysis of the volumes and flow levels of the TSP. Moreover, this section provides no analysis whatsoever of the impact on the Osceola Camp. Under NEPA, the impacts on both these camps must be analyzed, along with the direct and indirect and cumulative impacts to Tribal Reservation and lease lands in WCA 3A, and the Miccosukee Reserved Area. These Tribal lands will all be either adversely or beneficially impacted by the selection of a Tamiami Trail alternative. The Tribe will not accept adverse impacts to Tribal lands. Nor will the Tribe accept any adverse impacts to the Osceola and Tiger Tail camps or any interference with their traditional practices.	the TTM project is completed these would only be potential benefits. Real improvement in flows is expected to reduce ponding in southern WCA-3A, as it will be possible to pass greater volumes of water southward through L-29 Canal into NESRS. We did not use the 2x2 model to select an alternative in the LRR, as it is not sensitive enough to distinguish widespread impacts by alternative. However, when the CSOP (operational modifications) project starts up again in July, 2008, the 2x2 and MODBRANCH model outputs will be used to look at benefits and adverse effects in a broader area, including WCA-3s. We have added potential benefits to WCA 3 and effects in southern Miami-Dade agricultural areas east of L-31 N in the "secondary impacts" section of the revised EA. We do not anticipate adverse effects upon Tribal lands inside ENP, or in Tiger Tail or Osceola camps.
Micc 22	**Hurricane Evacuation:** The LRR/EA states without any analysis that hurricane evacuation will not be impeded. The Tribe has continuously told the Corps that Tamiami Trail is the only hurricane evacuation route for Tribal members who live along it. As the Miccosukee Tribal members and others in the Service Area use Tamiami Trail to travel across the Everglades, it is vital that the Corps conduct an analysis of the impact that one lane travel would have on hurricane evacuation capability in an EIS. Access must be maintained to protect the health and safety of both Tribal members and the public.	A lane closure analysis as required by FDOT would be performed during design. The road would not be one lane during evacuations or at night. During daylight hours the road would be manned by flagmen in the working area. The area at the bridge location would have two-lane traffic except for when the final tie to the existing road is made then flagmen will be utilized.
Micc 23	**Compatibility With CERP:** As stated previously, the Tribe supports the federal government's desire for compatibility with CERP, but that desire must not delay the implementation of the MWD Project. The Tribe does not believe that the TSP offers that compatibility, and reiterates that building a bridge in Everglades National Park has a great potential for political and bureaucratic delay. On the other hand, the culvert/swale/road raising alternative would allow the MWD Project to be expeditiously completed so that CERP decompartmentalization could proceed. It appears that the advisory group once again used a skewed modeling and environmental benefits analysis to attempt to fool Congress into wasting vast sums of money on building an unnecessary bridge in a national park.	The TSP in the 2008 LRR is compatible with CERP. If modifications are not made to the Tamiami Trail embankment then no increase in flows above existing conditions is possible. Without raising the embankment elevation and the stage constraints there will not be alleviation of high water events in WCA-3A or reconnection of WCA-3B to NESRS/ENP. As CERP projects move forward re-evaluation of the impacts future projects will have on the embankment and a determination as to additional necessary openings (whether bridges, culverts, swales, etc.) and increased road elevations for this portion of Tamiami Trail will be made.
Micc 24	**Socioeconomic Factors:** In reference to the socioeconomic factors outlined in Section 3.13, the Corps has discarded the performance measure ("PM") used in the previous Tamiami Trail EIS to avoid and minimize impacts to the Tiger Tail and Osceola Camps as a constraint in evaluating the alternatives. In the past, the Corps had developed a performance measure to assess the impacts to the camps, including access, privacy and encroachment, both during and after the construction phase. The advisory team did not use this PM in the LRR/EA. The Tribe reiterates that it will not	Access to the Tiger Tail and Osceola Camps will be maintained throughout the construction period. The footprint of Tamiami Trail will not expand onto the land of these two Camps. We did not use this PM because it became clear at an early stage that most of the adverse impacts on Tiger Tail or Osceola camps would occur in relation to the longer western bridge alternative evaluated in the RGRR/SEIS of 2005-6, which was incorporated by reference into

	accept any adverse impacts to either the Tiger Tail or Osceola Camps and that any interference with the traditional use of these camps is non-negotiable.	the EA evaluations. Long western bridges were not part of any alternative that survived preliminary screening; therefore these impacts were not discussed.
Micc 25	**Hydraulics and Hydrology:** Again, the Corps appears to have changed its requirement from Section 5 of the 2003 GRR/FEIS, that the final alternative selected need only pass MWD flows, in favor of a new model that passes much greater volumes and flows. The section on hydraulics and hydrology contains language concerning the L-29 canal only.	The 1992 GDM did not specify a required flow volume to be delivered to NESRS, but the total structure capacity of all features that were capable of discharging water into NESRS was approximately 4,000 cfs. In the 2005 RGRR, for the reconstruction of the roadway embankment target water levels from the Natural System Model were used. The NSM target was chosen for the re-construction of the roadway embankment were chosen to make the project compatible with MWD and future restoration projects. As part of the 2008 LRR the COE incrementally examined the effect of raising the canal stage within the L-29 BC. A spreadsheet analysis was developed that analyzed the historical delivery of flows to ENP and then redistributed those flows in a target distribution of 55% to the east and 45% to the west as long as stages were below the L-29BC stage constraint. This inflow volume was then used in a mass balance approach to compute potential increase in stage within North East Shark River Slough if we could have re-distributed inflows into ENP.
Micc 26	**Costs and Section 902:** The LRR/EA at C-6 incorrectly states that the MWD Project is not subject to Section 902 limits. This misrepresentation has caused the Corps and DOI to have a blank check mentality that has caused the MWD cost to sky rocket!	Modified Waters was authorized under 1989 Everglades Protection and Expansion Act and was funded 100% by Department of Interior through FY 2006. Public Law 109-275 provided for Corps funding in FY 2006 for this project, to be cost shared 50/50 with the DoI from FY 2006 forward. The authorizations did not cite a dollar amount, therefore the 902 limit is not applicable.
Micc 27	**WRDA Constraint Language:** The LRR/EA cleverly paraphrases the WRDA constraint language to omit the prohibition against bridging Tamiami Trail under Mod Waters. (Page 1-8.) Perhaps the Corps did so, because it knows the selection of the eastern bridge alternative defies Congress's mandate. Section 601 (b)(2) of WRDA 2000 prevents the authorization of Tamiami Trail bridging until the MWD Project is completed. … It appears that the Corps thinks bridging Tamiami Trail is not contrary to WRDA 2000, as long as the L-29 levee is not removed. …Congress will be even more incensed to learn that precious tax dollars are being wasted on a white elephant bridge that will do little for flow with the levee still in place.	See replies to Micc 9 WRDA 2000 (Section 601 (b)(2)(D)(iv)) does not prevent construction of bridges under MWD or provide any direction to MWD. Rather, the WRDA 2000 language says that there will be no CERP funds appropriated for construction of the CERP Tamiami Trail bridges (and several other CERP components) until MWD is complete. We understand the WRDA 2000 constraint is a direct reference to the CERP element called "WCA-3 Decompartmentalization and Sheet Flow" This CERP component includes 10 short bridges, and its CONSTRUCTION was prohibited until after completion of the Mod Waters project. We do not think the WRDA clause prohibits consideration of any bridge under Mod Waters.
Micc 28	**Flooding and Flowage Easements:** Section 5.14.2 states that real estate will be required from private landowners impacted by project operation and that operation of the project would not be implemented until the necessary real estate interests have been acquired. Section 6.2.6 states that the Corps	The Corps will obtain a perpetual flowage easement from FDOT by way of the Relocation Contract. The compensation for the easement will be for the Corps to make certain modifications to the existing roadway to mitigate for the effects of higher water elevations in

	intends to obtain a perpetual flowage easement from FDOT for 10.7 miles of Tamiami Trail. The LRR/EA does not contain any analysis of whether, and when, the road will be modified and whether Florida DOT has agreed to not seek any additional compensation for the 10.7 mile flowage easement. The Corps is required to conduct an EIS that fully analyzes flooding impacts and assesses the full costs for any flowage easements.	exchange for receiving a perpetual flowage easement. The required modifications will be determined during the design phase of the project. The Corps intends to contract road improvements and bridge construction under a single contract.
Micc 29	**Real Estate Costs Are Not Adequately Assessed:** The LRR/EA does not adequately assess all real estate costs that will result from the TSP. For instance, the costs for the modifications to the Osceola Camp discussed at F-20 are not assessed in the LRR/EA. It is also unclear from the LRR/EA whether there will be additional real estate costs associated with obtaining a perpetual flowage easement for 10.7 miles of Tamiami Trail from FDOT or whether costs (or a land swap) will be involved in transferring fee title from Everglades National Park lands to the State. Any such costs related to these matters must be analyzed in an EIS.	The real estate costs included in the total project costs for the LRR are for construction only, no real estate costs for operations. Any costs associated with modifications to the Osceola Camp would be for operations and is not considered a real estate cost as the lands are owned by DOI. The Corps will obtain a perpetual flowage easement from FDOT by way of the Relocation Contract. The compensation for the easement will be for the Corps to make certain modifications to the existing roadway to mitigate for the effects of higher water elevations in exchange for receiving a perpetual flowage easement. The required modifications will be determined during the design phase of the project. Administrative costs for DOI to grant necessary interests to FDOT are included in the real estate cost estimate; however, there are no land costs for DOI lands included in the estimate. As stated elsewhere in response to comments, the next stage of planning will be detailed planning of the remaining structures and operations needed to achieve full benefits. Revised operations will require an EIS.
Micc 30	**No Realistic Project Schedule:** The LRR/EA contains no realistic project schedule for the bridge building and road modifications associated with the TSP. The LRR/EA merely makes the broad generalization that if bridge construction starts in 2008, it would take three years, and be completed at the end of 2011. There is no construction time estimate for the road modifications. The Tribe contends that the amount of time necessary to complete the project should have been a factor in screening alternatives. It is clear from the admission in the LRR/EA that Congressional approval will be required to transfer federal national park lands to the State of Florida and that a 2008 construction date is overly optimistic. ...	Bridge and road reinforcement will be awarded as one contract. Target award date is 26 September 2008. Construction duration for both the bridge and road reinforcement is estimated around 3 ½ years. Construction duration does play an important part in screening alternatives. In general, the alternatives that require a longer time to construct would cost more because of higher uncertainty and more escalation. Road modifications are expected to have a shorter duration than bridge construction and are expected to be complete within the cited 3 years.
Micc 31	**Transportation:** In reference to Section 6.1.8, the LRR/EA contains no analysis of the impact that one lane travel during paving would have on hurricane evacuation capability. The Tribe reiterates that the Corps must take all precautions that both transportation and the safety of the Tribe and the public not be compromised during, or after, construction.	See response to Micc 22.
Micc 32	**Impact on Tribal Lands:** The LRR/EA contains no analysis of the impact	See replies to Micc 21 for 3A.

	that the TSP will have on Tribal lands. The Corps must conduct an EIS that shows the impact that all alternatives, including the cost of delay, will have on the Tribal Everglades in WCA 3A. Moreover, the use of greater than CERP flows must also be analyzed for impacts to the MRA, and other Tribal properties, and to the Tiger Tail and Osceola Camps.	See replies to Mice 21 and Mice 24 for Tiger Tail and Osceola. The LRR/EA explains that we must calculate the maximum possible stages and flows under reasonably foreseeable meteorological conditions to design road improvements. What the Tribe characterizes as "greater than CERP flows" are not additional planned flows but the cumulative effect of high planned flows with a natural storm of a given frequency added.
Mice 33	**Impact on Businesses:** Section 5.14 of the LRR/EA does not assess the impact that the TSP would have on Tribal businesses, such as the Miccosukee Resort and Gaming Facility, and the Tribe's Miccosukee Indian Village, Airboats, Restaurant, and Gas Station along Tamiami Trail.	Section 5.14 addresses effects on businesses. No impacts from either construction of the Tamiami Trail modifications or flooding that would result from operations of the MWD project would affect tribal businesses. The Miccosukee Resort is outside the area of road modifications. Driveways into existing facilities along Tamiami Trail will be graded up to the raised road.
Mice 34	**Osceola and Tiger Tail Camps:** Section 5.17 of the LRR/EA contains no modeling to show the impact that the TSP will have on the Osceola Camp and Tiger Tail camps. … The LRR/EA contains no modeling of the impacts that the greater flows and volumes of the TSP will have on the Tiger Tail Camp. Thus, there is no basis for the Corps' statement of no impact. … The Corps must conduct an analysis of impacts on the Tiger Tail and Osceola camps in an EIS. …	This modeling was conducted during previous phases of the CSOP study as well as during the Restudy that led to the CERP plan. The Tiger Tail camp was raised to be well above the stages generated by CERP. The plan under consideration reaches stages well below the CERP unconstrained stages of up to 9.7' in L-29; therefore the document correctly anticipates no adverse impacts.
Mice 35	**Environmental Justice:** Section 5.19.1 claims, without the requisite analysis, that no long term impacts would be created for the residents of the Tiger Tail and Osceola Camps. The Corps is required to conduct such an analysis under NEPA. The Tribe is especially concerned that the advisory team did not use the previous Performance Measure that analyzed potential adverse impacts of alternatives on the Tiger Tail and Osceola Camps. The Tribe contends that the Corps must ensure that the project is not likely to affect the environmental health or safety, and traditional way of life, of either the Tiger Tail or Osceola Camps. The Tribe also contends that the disparate impacts to Tribal Everglades and its culture and way of life due to the failure to implement the MWD Project, should also be analyzed in an EIS. The TSP will further delay the MWD Project, and will adversely and disproportionately impact the Miccosukee Tribe. Those impacts must be assessed in an EIS.	Construction of a bridge and raising of the highway are expected to have no impacts on the Tigertail or Osceola Camps. Because of the raising of the Tigertail Camp, no impacts from flooding are expected. The previous constraint (not a performance measure) of avoiding adverse impacts to the Tiger Tail and Osceola Camps (in the 2005 RGRR) was also a factor in selection of the TSP, but since more extensive alternatives were screened out due to cost limitations, none of the final alternative array would have generated such impacts. Negotiations between the Osceola Camp and ENP are underway to raise the Osceola Camp. Because no impacts would result from the project, no disproportionate impacts would result.
Mice 36	**Public Involvement:** Section 9.1 claims that the Corps complied with USACE and NEPA policies and sought public input. In reality, the process conducted by the Corps was a secretive back door process that was pre-decisional and excluded the public. An LRR advisory group, which did not comply with FACA and met in private, selected the alternatives and the TSP. The public was brought in after the decisions were made to feign "public involvement," contrary to both FACA and NEPA.	A general public scoping letter was mailed on January 28, 2008, and was closed on March 7, 2008 inviting all concerned agencies and citizens who provided previous comments to provide information on their ongoing issues, concerns and recommendations for this study. Additionally, the planning and public scoping process for Tamiami Trail Modifications, which this EA aims to finalize, has commenced for years and has involved two previous planning studies that underwent

		considerable public and agency coordination. This LRR began as an intra-agency effort but has since been coordinated with stakeholders and the public, with that input a large consideration in plan selection.
Micc 37	**Modeling Chicanery:** In the 2005 GRR/EIS, the advisory group relied on a Natural System Model (NSM), which used greater than CERP acre feet of water, to predict water levels in WCA3B and the L-29 canal to determine the potential impacts to Tamiami Trail. The discussion of modeling in the LRR/EA is so confusing, it is difficult to determine exactly which models were used and whether the results from the 2005 RGRR/SEIS were relied on here. The LRR/EA also does not contain the modeling spread sheet used by the advisory group, so that the public can review it. Moreover, it appears that different models were used to assess different performance measures. This section is so incomprehensible that a Tribal representative called the Corps to attempt to decipher the modeling used. The Tribe was told the advisory group did not use the 2x2 model, which has been used in past EIS processes. It should not be necessary for the Tribe to attempt to make sense out of a NEPA document. A NEPA document is supposed to be understandable. While the Tribe continues to be uncertain as to the exact models used, it appears that the advisory group modeled arbitrary performance measures to rubber stamp an unnecessary and expensive bridge alternative. ...NEPA is required to be comprehensible to the public and to be a full disclosure document. The Corps should conduct an EIS that adequately explains the modeling used and contains the actual model results for independent verification and analysis.	As part of the 2008 LRR the COE incrementally examined the effect of raising the canal stage within the L-29 BC. A spreadsheet analysis was developed that analyzed the historical delivery of flows to ENP and then redistributed those flows in a target distribution of 55% to the east and 45% to the west as long as stages were below the L-29BC stage constraint. This inflow volume was then used in a mass balance approach to compute potential increase in stage within North East Shark River Slough if we could have re-distributed inflows into ENP. As documented in Appendix D section 5 provides the conceptual layout of the spreadsheet analysis. This analysis is based upon a mass balance approach to compute the increase in stage within NESRS as flows are increased. The Appendix was written to step the reader through development of the model. Section 5. Conceptual Model Layout Section 6. Calibration Section 7. Alternative Modeling Strategy The 2005 GRR/EIS and the 2008 EA both reference NSM levels only as an outside boundary on the highest water stages and greatest wet season flows thought to be attainable. NSM models theoretical hydrology of a pre-development Everglades system without any man-made features, including levees, gates, canals, pump stations or reservoirs, without a Herbert Hoover Dike encircling Lake Okeechobee, and with regular overflow of Lake Okeechobee into the northern part of the 'River of Grass' flow-way. NSM is useful only as a comparison of the wettest conditions imaginable, not as a target. The 2008 EA did not use a whole-Everglades model. It did look (see Fig. 4-15) at the distribution of high flows under current operations, compared to CERP (2050) flows, and put the NSM flows as an upper limit for comparison. It did this because Congress asked the agencies to look at forward compatibility with the CERP projects.
Micc 38	**Safety:** The Tribe insists that Tribal and public health and safety must be strictly maintained both during, and after, construction of the Tamiami Trail modifications. The Corps should conduct an EIS that analyzes the road modifications in sufficient detail, so that the Tribe can ascertain whether public safety will be maintained.	See response to Micc 22. The Corps has determined that the proposed road modifications will not adversely affect public health and safety. Again, this analysis was explicit in the 2005 GRR/SEIS, and incorporated into the 2008 EA by reference. The 2008 TSP proposes a lower road surface (corresponding to a lower canal stage) and a narrower road footprint, than the 2005 RGRR/FSEIS.

Mice 39	Highway Easement Deed and Congressional Approval: Section 6.2.5 discusses the use of a Highway Easement Deed ("HED") as a legal mechanism for DOI to convey the Park lands needed for the one mile bridge to FDOT through the Federal Highway Administration. The LRR/EA says this is merely a "temporary solution" for transferring the lands to the state, and it is the overall intention of DOI to seek specific legislation from Congress to convey the lands to the state in fee. It is unclear from the LRR/EA whether the Corps intends to use the HED to begin construction prior to DOI obtaining Congressional approval to essentially give away national park lands to the State. This section is indicative of the challenging, and uncertain, process that building a bridge in a National Park will entail. The Tribe contends that Congressional approval is needed prior to construction, and that a Section 4(f) review would result in such approval not being given. There are reasonable and prudent alternatives to building a bridge in the Park that would not require transferring fee title to national park land.	The HED is the real estate mechanism that would allow the Corps, following execution of a relocation agreement with the FDOT, to construct the bridge on the land prior to enactment of legislation transferring the lands to the state in fee simple title. Again, the project was deemed to be exempt from Section 4(f). The Corps contends that due to the location of the Tamiami Trail, use of a very small portion of park lands is reasonable and prudent, especially in light of the increased benefits to the park overall.
	Non-Government Organizations	
	Rick Persson, Vice President, S.A.F.E.R., Inc **rpet1117@bellsouth.net**	
PER 1	As Vice President of S.A.F.E.R., Inc I would like to repeat our views on the Tamiami Trail Project. We have for years presented the idea of just Maintaining the culverts or rebuilding them to allow water to flow freely under the Tamiami Trial. By removing the cattail reeds to the South of the Trail, you will allow water to flow without backing up against the road. Sky or other bridges are not necessary, and are too great of an expense. There still does not seem to be an answer to the question "How much is enough water for the Park?"	Removing the vegetation south of Tamiami Trail does not provide for the restoration of NESRS because of the current stage constraint along Tamiami Trail for the protection of the embankment. To restore NESRS not only flows but stages in the canal/marsh need to be raised. The increased stages will allow for a more natural hydroperiod and the restoration of the proper flora and fauna within the area.
	Maureen Bonness, Naples Pathways Coalition, River of Grass Greenway **maureenb@everglades ROGG.org**	
BON 1	Please accept the enclosed public comments concerning the Limited Reevaluation Report and Environmental Assessment (LRR/EA). The Tamiami Trail is the ONLY road that cyclists can use to get across southern Florida. It is very important that your road design consider cyclists. Additionally, please consider the proposed River of Grass Greenway (brochure enclosed) and how it can be coordinated with your bridge/road design. I would like to discuss the River of Grass Greenway with you.	The shoulder for the proposed bridge would be 10 feet wide and the shoulder for the rest of the road would be 5 feet paved plus 5 feet of grass. We do not plan to construct raised reflectors or rumble strips in the shoulder. Drainage features for the bridge would be located on the outermost edge of the shoulder and would not be expected to be in the travel path for bicycles.
	Florida Coastal Everglades LTER **Florida International University, Miami, FL 33199, May 9, 2008**	
LTER 1	We feel that the revised plan does not address the goal of improving hydrologic conditions in SRS, and does virtually nothing to support the re-hydration of the marl prairies. We also feel the scientific rigor of the evaluations of the environmental benefits of potential alternatives has been compromised, which effectively weakens their support. The proposal to	The LRR's TSP provides an increment of restoration to NESRS. The benefits analysis was conducted by an inter-agency team of scientists which included ENP, SFWMD, USACE, and USFWS. It is similar to the analysis completed in the 2005 RGRR/SEIS. The

	build a 1 mile bridge along the eastern edge of Tamiami Trail that allows an 8.5 ft maximum stage in the L29 canal will have limited effectiveness in restoring natural conditions in Everglades National Park, due to the short length of the bridge, its' location and the flow allowance. We discuss problems associated with each of these factors below and provide alternative solutions that would meet the long-term goals of modified water deliveries (MWD).	document has undergone external peer review as well as agency and public review.
LTER 2	Distance: The proposal to further reduce to the extent of the bridge was considerably disappointing. Aside from understandable cost inflation during the years of delay, it appears that alternatives supporting longer and/or multiple bridges were also devalued for short-term political and economic reasons that appeared to outweigh their obvious long-term environmental benefits. A 1-mile bridge along a 10.7-mile flow blockade is not an effective plan for restoring sheet-flow to Everglades National Park. *Solution:* Build into the LRR a plan and schedule for long-term implementation of multiple and extended bridges recommended in prior plans. Further delays will only increase the costs of necessary construction but more importantly, will allow further deterioration of the ecosystem that will cause restoration to become increasingly difficult.	Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
LTER 3	Location: We found one of the more confusing aspects of the proposal was the selection of the eastern corner of northeast SRS for the proposed 1 mile bridge. The LRR provided little or no scientific support for resultant improvement of (1) hydrological conditions in northeast SRS or (2) ecological consequences that would result from constructing a bridge to the east rather than west.... Solution: Reconsider option of western bridge. Otherwise, the hydrological and ecological grounds for the eastern alternative need to be more clearly defined. If the eastern bridge remains the preferred alternative, build a program of hydrological and ecological monitoring in impacted areas to address its effectiveness and facilitate adaptive management. This monitoring should take place both downstream of construction but also in areas where water and flows may be depleted during implementation (i.e., downstream of existing flow ways – S-12 structures).	A full analysis of eastern and western bridges was performed. The western bridge was found to be less cost effective when considering cost versus ecological benefits. See Section 4.5.3. The location of the bridge was based on the recommendations from the 2005 RGRR. The goal is to restore NESRS to the extent practicable. If one analyzes historical stage data (NESRS-1, NESRS-2, and NESRS-3) within NESRS one would see that during wet conditions the stage in the area is very consistent (almost a flat pool). Seepage losses are typically calculated based on a head differential. Just because the flow enters the system closer to the levee does not mean it will create more seepage; the seepage is related to the stage differential on both sides of the levee. It is expected as stages increase so will the seepage, but the stage in NESRS will increase regardless of where the bridge is located. In addition, the only culverts proposed to be removed are within the bridge footprint. While a majority of the water will be delivered through the bridge, the culverts will also aid in the spatial distribution of flows into NESRS.
LTER 4	Stage: Restoration of this system cannot occur with adjustments to only the maximum wet season water depths. Dry season conditions must also be	Comparison of alternative plans to a No Action alternative is a fundamental requirement of Federal water resources planning. It provides information to the decision-makers on how the Nation would

	considered. The LRR evaluation promoted a 8.5 ft stage over 8 ft height in L-29 but it was disappointing to find only a superficial evaluation of the previously proposed 9.7 ft stage height. By comparing 8.0 and 8.5 ft stages against a "do nothing" alternative, the selection process is biased toward a weakly effective result. Instead, the impact of a full suite of stage heights should be evaluated and compared. Again, the ecological effectiveness of the two compromised alternatives (8 vs. 8.5 ft) seem to have been 'copied and pasted' from one column to another rather than resulting from a systematic understanding of the consequences of these two different hydrologic settings. Although the natural Everglades water movement was characterized by long durations of sheet flow there is increasing evidence that catastrophic events helped shape this ecosystem (e.g. fires, hurricanes, etc.). Allowing a greater variation in maximum stage (and larger bridge openings properly located) would allow more heterogeneity in flow volumes. A major problem across the Everglades is that large portions of the compartmentalized system are subjected to regulation schedules which are not linked to rainfall causing entire areas to be either too wet or too dry. Designs should allow for heterogeneous flows (including occasional very high water scouring events) which reflect trends in rainfall amounts and which will in turn support ridge and slough development. Solution: Allow the maximum stage values (and thus hydraulic head) driving water into SRS respond to rainfall naturally to allow heterogeneous flow patterns and ridge and slough habitat to develop.	benefit in return for the investment of Federal funds in each of the alternative plans. Full restoration of NESRS is ideal and would require greater fluctuation within the system. However, full restoration is not possible at this time due to funding constraints and the Corps was tasked to the extent practicable to take steps to restore the natural hydrologic conditions within the ENP. The LRR TSP is an increment of restoration of NESRS.
LTER 5	We are especially concerned that effective restorative plans are being perpetually delayed causing further deterioration of the system and escalation in implementation costs. We hope the LRR includes a time-line that shows a schedule of completion for not only this small first step but also specifies when the overall long-term objectives will be met.	Tentatively selected plan for the Tamiami Trail Modifications includes building a bridge and reinforcing U.S. 41. Bridge and road reinforcement will be awarded as one contract. Target award date is 26 September 2008. Construction duration for both the bridge and road reinforcement is estimated to take around 3 ½ years. After approval of a plan for Tamiami Trail Modifications under the Modified Water Deliveries (MWD) project, we will complete the planning and approval process for the remaining features of the MWD project – opening in the L-67A and L-67C levees, additional removal of the L-67 extension levee, flood mitigation measures for Osceola Camp, and a new operations plan. Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
	Sierra Club, South Florida/Everglades Office 2700 SW 3rd Ave, Ste. 2F, Miami, FL 33129, May 9, 2008	

SC 1	There are only two possible ways to restore natural flow into Shark River Slough. One is to eliminate the road. The other is to elevate it. (please see Sierra Club original comments for more details)	Comment noted.
SC 2	We have repeatedly supported elevation of an 11-mile stretch of Tamiami Trail widely referred to as the "Everglades Skyway". In numerous press statement, reports and documents, the Corps of Engineers has identified the Skyway as the environmentally-preferred alternative as well as a "Best Buy." The National Park service and the U.S. Fish and Wildlife Service have also identified the Skyway as the best environmental solution for the Modified Waters delivery project. The Science Coordination Team to the South Florida Ecosystem Restoration Task Force also wrote in 2001 that the Skyway was the best alternative. While no agency disputes the environmental supremacy of the Skyway, the Corps has consistently ruled it out for one reason – cost. ... Sierra Club's preferred alternative continues to be the Skyway as it has in every Mod Waters decision.	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. However, the total cost of the 11-mile bridge alternative prevents its approval and funding.
SC 3	The Sierra Club's main objective is to see Shark River Slough restored. If that can be done timely and cost effectively in one project, we would lend our support. If we believed that it could be achieved timely and cost effectively in two consecutive projects, part in Mod Waters and part in another, we could support that as well. But we must see some verifiable commitment to a second project before we can give our support to a first. We must know that the first project will not stand for a decade while a second project becomes too expensive and ultimately abandoned.	After approval of a plan for Tamiami Trail Modifications under the Modified Water Deliveries (MWD) project, we will complete the planning and approval process for the remaining features of the MWD project – openings in the L-67A and L-67C levees, additional removal of the L-67 Extension levee, flood mitigation measures for Osceola Camp, and a new operations plan. Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
SC 4	What are the concrete steps that will follow the TSP leading to restoration of Shark River Slough?	Please see the response to the previous comment. The remaining features of MWD will be completed. A workshop is being planned tentatively for July or August 2008.
SC 5	How long will it take until more bridging can take place? That is unclear; however, the laying of asphalt appears to be cost-effective only if there is a 10 year delay between the TSP's completion and the completion of more bridging. The remainder of the bridging should start immediately after the first project or be simultaneously constructed.	The timing of future construction that would be in addition to the TSP is not known.
SC 6	What are the cost increases expected for the next phase of bridging as a result of choosing this alternative?	Before we can prepare a cost estimate, we would need to establish the features, locations, and dimensions of this yet-to-be-specified next phase.
SC 7	We are very disappointed in the way that the Corps calculates its costs. The plan that we felt had the most merit in the LRR and one we supported was the Blue Shanty plan developed by Everglades National Park. The plan restored natural flow to a corner of WCA 3 and Shark River Slough.	The Blue Shanty plan cost more because of: additional structures needed to obtain the high water elevations; requisite road raising to elevation 13.0'; and levees must maintain the current flood protection for the road.

	Although it entailed only a one mile bridge, it provided the greatest environmental benefit per dollar and transitioned easily into the Skyway. The plan should have been comparable to the TSP in cost as it involved the same length of bridge and required only temporary fill on the Blue Shanty Canal. Instead the Corps estimated the cost far above prevailing bridge and fill transport costs and ruled it out.	Raising water levels in the canal with an opening raises water levels in the marsh to the same elevation. Without the remainder of the road raised the levees to the north and south would have to be the height of the existing L-67 levees. They would also have to the length of the L-67 extension to protect the road. A structure was necessary in the L-67 canal that could pass the same flows as S-333 to maintain flood protection on the road. These differences are what drives up the cost.
SC 9	We believe that in order to achieve an October 2008 ground breaking date the LRR may not have follow the standard procedures normally required by the EIS process. The scoping process seemed squeezed-in, almost presented as an afterthought, after decisions were already made. The Corps only met with environmental groups days before a presentation to the Task Force and one day before the LRR was released. Opportunities for input were limited. State negotiations to change the plan significantly from an 8.0 canal stage to an 8.5 (and thus requiring 10 miles of asphalt) in the last three weeks before the LRR release seemed contrary to the public process we had expected. We are especially concerned that effective restorative plans are being perpetually delayed causing further deterioration of the system and escalation in implementation costs. We hope the LRR includes a time-line that shows a schedule of completion for not only this small first step but also specifies when the overall long-term objectives will be met.	A general public scoping letter was mailed on January 28, 2008, and scoping was closed on March 7, 2008 inviting all concerned agencies and citizens who provided previous comments to provide information on their ongoing issues, concerns and recommendations for this study. Additionally, the planning and public scoping process for Tamiami Trail Modifications, which this EA aims to finalize, has been ongoing for years and has involved two previous planning studies that underwent considerable public and agency coordination. This project is on an accelerated schedule to the benefit of restoration goals. The change in canal stage from 8.0 to 8.5 occurred during the cost estimating phase of the planning process, when it was found that ecological benefits could be maximized considerably with only an incremental increase in cost and concomitant increase in canal stage. As directed in the Conference Report for WRDA 2007, the cooperating federal agencies must recommend a plan for modifying Tamiami Trail to Congress by 1 July 2008 to provide immediate steps to increase flows to the Park. Once the plan for modifying Tamiami Trail has been approved, other efforts will be coordinated with agencies and the public to determine the next steps in bringing greater conveyance to NESRS.
SC 10	LRR presented no analyses on the swales, yet by their mention, it seems to imply that the culvert spreader swales remain part of Mod Waters. We believe that this action or any pilot project requires an EIS. We do not feel that constructing more than 60 football fields of swales in a national park will make culverts any more viable as a solution for restoring flow Shark River Slough. The only solution is to remove the road as a barrier.	Swales are not components of any of the four final alternatives in the LRR. Everglades National Park is the lead agency studying and preparing a report to decide whether to construct a Pilot Project for swales at the culverts. This would be a separate action from the LRR. The LRR acknowledges that this separate Pilot study is ongoing.
SC 11	Part of the government's plan for saving the Cape Sable Seaside Sparrow, the Snail Kite and the Wood Stork, and complying with the Endangered Species Act, was the removal of, in significant measure, constraints to flows under Tamiami Trial. That provides more reason why significant bridging must commence immediately.	It is anticipated that construction of the bridge would begin in late 2008. This bridge would reduce the impediment to flows created by the Tamiami Trail highway embankment.
SC 12	Congress indicated in WRDA 2007 that it wanted to see 4,000 cfs in Mod Waters. The only plan that comes close to achieving that goal is the Blue Shanty Plan or the Skyway.	Congress originally under The Everglades National Park Protection and Expansion Act (PL 101-229) Sec 104(a) (1) did not authorize a specific flow rate but states:

		"Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park." The goal of MWD is to the extent practicable take steps to restore the natural hydrologic conditions within the park. The restoration of NESRS is not based on any specific flow rate but rather having the ability to reproduce a natural hydroperiod within NESRS. See Section 4 of Appendix D.
SC 13	The next phase of bridging could be part of the CERP if it were moved up on the schedule to immediately follow the TSP. Right now it is not.	Thank you for your suggestion. CERP is one existing authority that could be used to study and construct additional conveyance through Tamiami Trail.
SC 14	The TSP should have considered what the predicted timelines are for sea level rise and done an analysis of how much fresh water flow might be needed and by when to counter the salt water. Sea level rise is the greatest short term threat to the Everglades and one that should guide every decision the Corps makes, especially those will affect the timeliness of delivering restored flow to through Shark River Slough to Florida Bay. The massive economic and social cost of losing the Everglades, western urban areas of South Florida and the water supply to sea level rise must be factored in when determining if the project is cost effective.	The intent of MWD project is not to counteract sea level rise but to take steps to the extent practicable to restore the natural hydrologic condition within WCA-3B and NESRS.
	Ann Blanco, May 9, 2008, on behalf of: David Anderson, Executive Director, Audubon of Florida E. Thom Rumberger, Chairman, Everglades Trust Marti Daltry, President, Caloosahatchee River Citizens Association/Riverwatch Sara E. Fain, Everglades Restoration Program Manager, National Parks Conservation Association Kathleen Aterno, Managing and Florida Director, Clean Water Fund Bradford H. Sewell, Senior Attorney, Natural Resources Defense Council Kirk Fordham, Chief Executive Officer, Everglades Foundation Rae Ann Wessel, Natural Resource Policy Director, Sanibel Captiva Conservation Foundation Laura Reynolds, Executive Director, Tropical Audubon Society Debra Harrison, Director, South Florida Program, World Wildlife Fund	
BLA 1	The tentatively selected plan begins the process of bridging, and is a necessary first step on the road to providing essential environmental benefits to Everglades National Park and the restoration of historic, natural unimpeded water flow through the Everglades, particularly the	Thank you for expressing your support for the TSP of a 1-mile bridge and L-29 Canal constraint of 8.5 feet.

	reestablishment of sheetflow into the Northeast Shark River Slough and into Florida Bay. However, this initial modest step must be followed by bridging capable of reestablishing the previously authorized critical natural flow. Clearly the tentatively selected plan alone will not remove Tamiami Trail as a barrier to flow.	
BLA 2	While the Modified Water Deliveries project is a necessary first step on the road to full restoration, the only way we can ever hope to restore the Park is to allow maximum connectivity between Water Conservation Area 3 ("WCA 3") and Everglades National Park through many miles of elevated roadway. Indeed, the Corps of Engineers has acknowledged that a 10.7 mile bridge spanning Shark River Slough is the environmentally preferred alternative. While we acknowledge that the plan before us is a modest first step, we are disappointed that the project does not achieve those benefits as originally envisioned by Congress when it passed the Everglades National Park Protection and Expansion Act of 1989. While we know that the Mod Waters project was not going to achieve full restoration of Northeast Shark River Slough and Everglades National Park, the current proposed project falls short of our expectations.	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. However, the total cost of the 11-mile bridge alternative prevents its approval and funding.
BLA 4	We urge you to incorporate the following language into Section 6.8: "The U.S. Army Corps of Engineers and the Department of the Interior recognize that this project must not be the only project for modifying Tamiami Trail, and much additional work is needed to adequately restore flows into Northeast Shark River Slough, and ultimately reestablish connectivity through the great Everglades ecosystem and into Florida Bay. Congress understood that the Modified Water Deliveries project alone would not restore the Everglades, and approved further restoration for Everglades National Park in the Comprehensive Everglades Restoration Plan of 2000. The tentatively selected plan constitutes a step in achieving the goals and direction given in the Statement of Managers for the Conference Report of the Water Resources Delivery Act of 2007. It achieves the immediate goal to increase flows to Everglades National Park by 1,400 cubic feet per second. The Federal government is committed to reaching those goals set out in the Conference Report to achieve flows to the Park that "have a minimum target of 4,000 cubic feet per second so as to address the restoration envisioned in the 1989 Act… [and] initiate an evaluation of the Tamiami Trail project component of the Comprehensive Everglades Restoration Plan authorized by section 601 (b)(2)(C)(viii) of the Water Resources Development Act of 2000, or other appropriate authorities, as soon as practicable." The Federal government commits to working with the state of Florida to begin these next steps to achieve the higher flows immediately upon the release of a Record of Decision for the Preferred Alternative."	We are unable to use your statement as it is written. Like most parties familiar with Tamiami Trail, we recognize that the TSP, even together with the rest of the MWD features, would not fully restore NESRS and the Everglades ecosystem. We recognize that CERP or other authorities would be needed to achieve higher restoration goals. The Jacksonville District through its planning report makes recommendations to the Administration and Congress. Congress then must issue authority to the Corps to implement the recommendation. This report does not have the authority to commit the Federal government to specific future studies or to numerical performance targets beyond those expected to be achieved by the TSP of this report. The Jacksonville District is continuing to work with the state of Florida to explore next steps for realizing additional benefits in the southern Everglades. Please also see the response to the next comment that an initial workshop is being planned for later in 2008.

BLA 5	We urge you to not delay planning for future Tamiami Trail modifications until data from studying the effects of either the preferred alternative or a pilot project for swales (if one is approved) are collected and analyzed. It is inappropriate to delay future progress in order to research these matters further. The federal agencies have already justified and explained the fact that the environmentally preferred alternative is a 10.7 mile bridge. .	Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
BLA 6	In previous comments submitted by several environmental groups to the Corps, concerns about the construction of culvert spreader swales in Everglades National Park were addressed. This LRR presented no analyses on that issue, yet by their mention, it seems to imply that the swales remain part of Mod Waters. We would like specific clarification as to whether the swales are a feature of Mod Waters, under the authority of the Secretary of the Army and part of the C & SF Project when completed. Regardless of whether the authority lies with the Corps or the National Park Service, we believe that, under Federal law and policy, the construction of swales, or a pilot project to test the swales concept, may require an EIS.	Swales at the south ends of culverts were considered early during the development of alternatives for Tamiami Trail. Swales are not components of any of the final array of four alternatives that passed through the screening analysis. Swales are not a component of the TSP. Everglades National Park is the lead agency for a separate NEPA analysis of a proposed Pilot Study for swales. Scoping of issues for the Pilot Study is ongoing. ENP has not completed NEPA and has not decided whether to implement the Pilot Project. If the decision is made to construct the Pilot Project, construction may be funded by the Modified Water Delivery project.
BLA 7	There is another reason to move forward immediately with significant Tamiami Trail bridging: to ensure the continued survival of several of the Everglades' most imperiled species. As you know, the current water management regime, the Interim Operational Plan (IOP), was intended to be temporary, to provide a few years of relief for the highly-imperiled Cape Sable Seaside Sparrow. The IOP does not provide a long-term solution for the Sparrow, and provides little to no benefit for the Snail Kite and Wood Stork. Rather, for almost a decade, the responsible agencies have stressed to the public and to the federal courts that these species will only be saved, as well as the Park restored, if water flows from WCA 3A into WCA 3B and into Northeast Shark River Slough are significantly restored. Part of the government's plan for saving these species, and complying with the Endangered Species Act, was the removal of, in significant measure, constraints to flows under Tamiami Trial.	Concur. The tentatively selected plan is the first step in increasing water conveyance to NESRS. Once the plan for modifying Tamiami Trail has been approved, other efforts will be coordinated with agencies and the public to determine the next steps in bringing greater conveyance to NESRS.
BLA 8	Because subsequent steps to the tentatively selected plan are essential, we urge the Corps to give high priority to those projects under the Comprehensive Everglades Restoration Plan ("CERP") that would build upon restoring sheetflow through the central and southern Everglades, including Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement and Everglades National Park Seepage Management to take the next steps to increase flows through the Everglades and reconnect the lower portions of WCA3A and 3B to Everglades National Park and Florida Bay.	Comment noted.
BLA 9	We repeat our previous suggestions that another entity beyond the Corps, such as the Department of Transportation or Federal Highway Administration, may be better suited to design and build a more elevated roadway along Tamiami Trail. We urge the Corps to consider other	After approval of a plan for Tamiami Trail Modifications under the Modified Water Deliveries (MWD) project, we will complete the planning and approval process for the remaining features of the MWD project – opening in the L-67A and L-67C levees, additional removal of

	possibilities now for immediate future restoration planning. At this time of limited resources, innovation is essential. The Corps should work with these and other agencies to develop the most efficient means of achieving the goals of Everglades restoration.	the L-67 extension levee, flood mitigation measures for Osceola Camp, and a new operations plan. Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available
	Andrew E. Stearns, representing Airboat Association of Florida Museum Tower, Suite 2200, 150 West Flagler Street, Miami, FL 33130	
AAF 1	The AAoF objects to the LRR/EA to the extent it delineates the taking of the AAoF's property by the USACE (through a proposed flowage easement) where a taking of AAoF property was explicitly precluded under the Everglades National Park Protection and Expansion Act of 1989. The USACE's contends that real estate interests in the AAoF's property must be taken by the USACE without providing the legal justification for the purchase of such an interest. If, as the USACE claims, their authority to implement MWD emanates from the Expansion Act, then the project must preserve the AAoF's private property rights, as provided by the Expansion Act.	The 1989 Expansion Act incorporated a map by reference demonstrating the location of the park expansion and what lands the park was authorized to acquire. In that map, the Airboat Association of Florida was excluded from the park boundary; however, the Corps' mandate is to improve water deliveries into the park. The Corps' authorization is not limited by the park's boundary map.
AAF 2	(LRR/EA, F-6). The USACE, within the LRR/EA, fails to propose the preferred and reasonable alternative to the taking of AAoF property: the raising of the elevation of the AAoF's property to a height above the estimated 100 year flood height. The raising of the elevation of property is an alternative that the USACE extended to other stakeholders similarly affected by the USACE's actions with regards to the Modified Water Deliveries to Everglades National Park ("MWD") Project. The raising of the AAoF's property is the preferred alternative to mitigate the prospective damage to the AAoF's property that the USACE contends will occur with the implementation of the MWD Project.	Under an acquisition of a flowage easement, the landowner is paid compensation whereby the landowner may choose to enact a cost to cure solution for his property, though this option is not required. The raising of the site by the government is not an option that is mandated due to the Airboat Association of Florida's status of being excluded from the park boundary map.
AAF 3	The Expansion Act contemplates the taking of property in two circumstances, first, for properties located within the Expansion Area (§ 102(c)(1)), and second, for properties located partially within and partially outside of the Expansion Area (§ 102(d)). Nowhere does the Expansion Act authorize the taking of land wholly outside of the Expansion Area; rather, it unarguably specifically precludes such a taking.	The 1989 Act authorizes the lands slated for acquisition as part of the park's 107,600 acres of lands within the park. The Corps' authorization in that Act was two-fold, 1.) legislation relating to the lands in the 8.5 Square Mile Area, and to 2.) improve water deliveries to the Everglades National Park to the extent practicable. By increasing flows into the park through the Tamiami Trail project, the Corps will necessarily be adding water to those lands south of the Trail. Therefore, it is anticipated that the Airboat Association tract will experience water levels above the existing stages and quantities. In order to avoid an inverse condemnation action in the future, the Corps must obtain the minimum real estate interest required for the project.

AAF 4	Authority of USACE to Take Private Real Property Army Regulation 405-10, Acquisition of Real Property and Interests Therein, outlines the circumstances in which the USACE may acquire real property:	The Airboat Association of Florida specifically cites Section 1-3 of Army Regulation 405-10 as the basis for why the Corps cannot acquire an interest in real estate over the Airboat Association tract since that regulation states that "No military department may acquire real property not owned by the United States unless the acquisition is expressly authorized by law." It should be noted that Section 1-1 of that same regulation sets forth the scope of the regulation. Specifically, that section states: 1–1. Scope This regulation sets forth the authority, policy, responsibility, and procedures for the acquisition of real property and interests therein, for military purposes by the Department of the Army. It implements Department of Defense Directives 4165.6, 4165.12, and 4165.16. This regulation does not apply to Civil Works Projects, which are under the supervision of the Chief of Engineers. As cited above, the regulation is specifically for military projects. The Modified Water Deliveries to Everglades National Park Project is a civil works project operating under separate real estate acquisition authority. The specific authority for this project emanate from the following public laws: River and Harbor and Flood Control Projects. a. River and Harbor Projects. The Act of Congress approved 24 April 1888 (33 U.S.C. 591) authorizes acquisition of land for river and harbor purposes. These include the construction, operation, maintenance and improvement of both natural and artificial waterways, the construction of locks and dams, dikes, bulkheads, jetties, revetment and other bank protection works, and spoil disposal dikes and retaining structures for construction and maintenance; and b. Flood Control Projects. The Act of Congress approved 1 March 1917 [33 U.S.C. 701) authorizes acquisition of land for flood control purposes, and Section 2 of the Act of Congress approved 28 June 1938, as amended (33 U.S.C. 701c-1), authorizes the acquisition of land and interests therein for dam and reservoir projects, channel improvements, and rectification projects for flood control at Federal expense. Dam, reservoir and lake projects are generally constructed entirely at the expense of the United States and are maintained and operated with the use of Federal funds. Local interests are not required to furnish lands, easements and rights-of-way for dam and reservoir projects, unless specifically authorized by law for small reservoirs which provide

		localized flood protection (EM 1120-2-101). For local flood protection projects except channel improvement or channel rectification projects authorized by the Flood Control Acts of 1936, 1937 and 1938, local interests must provide, without cost to the United States, all necessary lands, easements, and rights-of-way. They must also hold and save the United States free from damages due to the construction, operation and maintenance of the project, except where such damages are due to the fault or negligence of the United States or its contractors, and maintain and operate all the works after completion, in accordance with regulations prescribed by the Secretary of the Army. Channel improvement and channel rectification projects authorized by the Acts of 1936, 1937 and 1938 are built entirely at Federal expense and no local cooperation is required. Exceptions to these rules are provided by law in the case of certain specific projects such as hurricane protection, shore protection, beach erosion control or other purposes. As in river and harbor projects, a cash contribution may also be required if enhancement of land values results from disposal of spoil dredged from project areas (ER 1150-2-301 and EM 1120-2-101).
AAF 5	The AAoF's Property Was "Carved Out" of the Expansion Area by the Expansion Act	Again, the Airboat Association of Florida is correct in that their 10 acre parcel of land was excluded from the National Park Service (NPS) Boundary Map, hence the NPS is not authorized to acquire that property; however, the fact that Congress did not intend for that property to be incorporated within the park's boundary is not a permanent prohibition for any or all federal agency acquisition of that land.
AAF 6	In summary, the USACE's proposed easement provides that the AAoF is to abandon practically all of its rights to its property situated below 9.0 feet NGVD. Such a "flowage easement" is in reality equivalent to a fee simple interest in property, whereby AAoF would be asked to abandon practically all of its rights of possession, use, and enjoyment of its property. The LRR/EA elevation exhibit of the AAoF's property clearly shows how the proposed a "flowage easement" would actually be a taking of nearly the entire property.	The current average water level on the properties south of Tamiami Trail is roughly 7.5 feet over the period of record while in post-project conditions, it is anticipated that portions of the southern half of the subject property may experience water levels in the 7.5 to 8.5 levels with extreme high water levels for a 100 year event equating to a 9.0 foot level. Due to the fact that the Airboat Association of Florida was excluded from the park boundary, the Corps sought to allow usage of the property in post-project conditions, even though it is understood that a large portion of the property will be negatively impacted in high water situations. Accordingly, the Corps will pay just compensation for those impacts, mainly a perpetual and occasional flowage easement; however, should the landowner consider their ownership to be so severely impacted that they will not retain any usage of the property in post-project conditions, the Corps is willing (and authorized) to acquire the property in fee simple title.
AAF 7	Contrary to the assertion by the USACE in the LRR/EA, the USACE and AAoF have never negotiated terms of a flowage easement relating to the AAoF's property. The AAoF contends the USACE estimate of the ten acre	The LRR/EA mischaracterized the negotiations involved with the Airboat Association of Florida. The Corps has not negotiated the terms of a flowage easement. The LRR/EA has been edited to state that the

	property of $1,625,000 is significantly lower than the actual value. The AAoF refuses to accept the terms of the USACE's March 3, 2005 proposal.	Jacksonville District has been negotiating the acquisition of a flowage easement with the Airboat Association of Florida, rather than actually negotiating the terms of the flowage easement. The estimate of value is currently more than two years old and took into consideration the then planned water levels of 9.7 feet under the RGRR. Due to the lower water levels under the current LRR/EA, the Corps will have to reevaluate the estimated value of the real estate interest that the Corps requires prior to any new negotiations with the property owner. The Corps understands the Airboat Association of Florida's rejection of our prior offer to acquire a flowage easement. Upon approval of the LRR/EA, the Corps will seek new appraisals to determine the value of the site under the LRR/EA plan and begin negotiations with the landowner thereafter.
	Sydney T. Bacchus, Ph.D., Hydroecologist, Applied Environmental Services, LLC PO Box 174 Athens, GA 30603, May 11, 2008	
BAC 1	On March 21, 2004 and March 5, 2008 I provided comments on the proposed elevation of the Tamiami Trail, purportedly promoted as a form of Everglades restoration. ... there is no evidence that your agency even considered the alternatives or impacts described in my previous comment letters. Specifically, there is no scientific evidence that elevating the Tamiami Trail will result in an increase in flow through the Everglades.	A large suite of 26 alternatives was considered and screened. We feel this covered all reasonable and feasible paths of action. All previous comments have been considered.
BAC 2	Your agency failed to consider alternatives that are known to increase flows of both surface and groundwaters. Those alternatives include reductions in existing groundwater and surfacewater withdrawals from the Everglades Basin by agricultural, municipal and industrial users. Those withdrawls are not confined to mechanical pumping (e.g., supply wells and dewatering pumps). They include nonmechanical dewatering of the aquifer system by excavations (e.g., mine pits) throughout the Everglades, due to increased evaporative loss and volumetric displacement of groundwater into excavated areas.	The MWD project has no regulatory authority to require agricultural, municipal or industrial reductions in groundwater or surface water withdrawals.
BAC 3	Failure to Conduct a Comprehensive Cumulative Impacts Analysis The Environmental Analysis (EA), Environmental Impact Statement (EIS) and Cumulative Impacts Analysis conducted by your agency and the FWS all failed to consider the cumulative adverse impacts associated with your proposed agency action for this project, as well as your past and proposed approvals of other mining and construction projects in the Everglades Basin. Because both your agency and the FWS failed to consider all of the cumulative impacts of the proposed project, your agency's conclusions by Mr. Woodley, Jr. on January 25,2006 regarding the "Means to Avoid or Minimize Adverse Effects" also failed to account for cumulative impacts. For example, in Table 6 of the FWS's "Florida Panther Habitat Matrix" only the "Project Footprint" was considered, rather than the additional	The cumulative impacts analysis was prepared in accordance with the guidance provided in the 1997 Council on Environmental Quality publication, Considering Cumulative Impacts under the National Environmental Policy Act.

	dewatering and destructive wildfires that the proposed alternative would cause in the Everglades.	
BAC 4	I concur with the conclusion stated by Dexter W. Lehtinen in his letter dated January 9, 2006, that the proposed alternative (and considered alternatives) is not consistent with the purpose in PL 101-229 WRDA 2000. The estimated cost of approximately $255 million in tax dollars for the proposed large-scale construction project ignores the fact that adequate water could be supplied to the entire Everglades Basin, at no cost to the tax payers, if your agency and FWS would identify all related cumulative impacts, issue no additional permits in the Everglades that would reduce water availability to the Everglades ecosystems and require mandatory avoidance and minimization of groundwater use and dewatering associated with existing permits you have issued in the Everglades basin.	Comment noted.
	Individual/Private Citizens or Businesses	
	Guy Hackett, 405 NE 23rd AVE, Cape Coral, Florida ghackett@comcast.net	
HAC 1	Please keep this road bicycle friendly. No obstructions in the shoulder, such as rumble strips, raised reflectors, or drainage grates. If any of these obstructions are required please keep them as far to the right as possible. Keep most of the 10 foot shoulder smooth and clear for skinny tire road bikes.	The shoulder for the proposed bridge would 10 feet wide and the shoulder for the rest of the road would be 5 feet paved plus 5 feet of grass. We do not plan to construct raised reflectors or rumble strips in the shoulder. Drainage features for the bridge would be located on the outermost edge of the shoulder and would not be expected to be in the travel path for bicycles.
	Sean R. Melvin, Partner, Island Bike Shop, Naples, FL seanrmelvin@mac.com	
MEL 1	On this project keep the needs of cyclists in mind.. from the mom and dad to the guy putting in 400 miles a week we need a safe way to get around and putt in miles as well	The shoulder for the proposed bridge would 10 feet wide and the shoulder for the rest of the road would be 5 feet paved plus 5 feet of grass. We do not plan to construct raised reflectors or rumble strips in the shoulder. Drainage features for the bridge would be located on the outermost edge of the shoulder and would not be expected to be in the travel path for bicycles.
	JORGEMF@comcast.net	
JOR 1	Would the public meetings be an appropriate place to request that a bike/nature trail be instituted as part of this project?	Paved shoulders along this segment of Tamiami Trail will be 5 feet wide for most of the length and 10 feet wide on the proposed bridge.
	Mario Yanez, 8201 SW 99 Court, Miami, FL 33173 mario@earth-learning.org	
YAN 1	The 1-mile bridge is so insufficient and is not the intent of the CERP. As you may remember, CERP's original intent was to restore the functionality of the Greater Everglades system. Please reconsider the implementing 11-mile SkyWay. Nothing short of that will suffice. Dare to make your work relevant to the health of the Greater Everglades.	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. However, the total cost of the 11-mile bridge alternative prevents its approval and funding.
	Dewey Steele, 22320 SW 256 Street, Homestead FL 33031 steel9190@bellsouth.net	

STE 1	In the past half century I have witnessed: * water being blocked by the Tamiami Trail resulting in flooding of tree islands to the north and death and destruction of wildlife and habitat. * reduced water flow to the south resulting in destruction of habitat and algae build up in Florida Bay * polluted water being dumped into Biscayne and Manatee Bays destroying wildlife I am totally opposed to beginning any project, such as a one mile bridge, that does not incorporate the idea of fully restoring water flow to the southern Everglades.	We concur that the TSP does not provide as many ecosystem benefits as alternatives with longer bridges. However, the total costs of the 2-mile + 1-mile bridges alternative and the 11-mile bridge alternative prevent their approval and funding.
STE 2	I am all for beginning a project immediately aimed at restoring historical water flow funded, in part, by Defense Department allocations, tourist taxes, rock mining per ton fees and development impact fees.	The Corps and the Everglades National Park also want construction to begin as soon as possible. The Corps of Engineers does not have authority to use these alternative sources of funds for the MWD project.
	williamlofius@bellsouth.net	
LOF 1	While the proposed alternative may provide incremental benefit for the southern Everglades, it does not provide nearly the amount of flow across a wide-enough cross-section of Tamiami Trail to restore the hydrological conditions of Shark River Slough. Neither will it allow enough water to pass the western area of the cross-section near S-333 to alleviate flood conditions in WCA-3A during high rainfall years. Why throw good money after bad? It makes more sense to do this project correctly by elevating as much of the cross-section as possible, rather than spending millions doing an inadequate job. Only by eliminating this hydrological barrier will Shark River Slough begin its recovery.	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits as alternatives with longer bridges. However, the total cost of the longer bridge alternative prevents their approval and funding under MWD.
LOF 2	Although the document states that the project is in compliance with EE 13112, it addresses only exotic plants. There are at least a dozen species of exotic fishes and several non-native snails in the canals that are not addresses in the document. How will the swales and any spreader canals affect populations of these animals and prevent their entry into the ENP?	Because technical disagreements exist regarding the ability to adequately simulate spreader swale performance, the NPS is taking the lead on a separate planning and NEPA process to consider a spreader swale pilot project and evaluate the potential effects of spreader swales along the Tamiami Trail.
	Deb Arnason, 12 Dill St, Alva, FL 33920 DiamondtielDeb@aol.com	
ARN 1	I urge the Army Corps to focus on the big picture in the Everglades, especially since we are spending $billions to restore the Everglades, both within the State of Florida and Nationally to try to preserve our unique River of Grass. Please, do not put in a quick, cheap fix of a 1-mile bridge when the whole 11-mile Skyway is needed to solve the underlying problem to restore sheet flow in the Everglades.	We concur that the 11-mile bridge alternative would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. However, the total cost of the 11-mile bridge alternative prevents its approval and funding.
ARN 2	Since the Federal Government is spending half of the $11 Billion budgeted to restore the Everglades, I encourage you, as a Federal Agency, to coordinate with Everglades Restoration to find the funds there to build the 11-mile skyway for the best solution, not just a quick fix. Half measures	We are continuing to coordinate with teams working on the Comprehensive Everglades Restoration Plan (CERP). The Water Resources Development Act of 2000 requires a separation of construction funds between MWD and CERP.

	will avail us nothing.	
ARN 3	Please review the comments by Dr Wanless, an expert on Florida and sea level rise, also a keynote speaker at the Everglades Coalition I attended on Sanibel with Governor Crist and other prominent political and environmental leaders in the State: * The science chair of Miami-Dade County's Global Warming Task Force and University of Miami Geology Chair, Dr. Harold Wanless, predicts a 3 to 5 foot sea level rise by 2100. He said that restoring natural historic flows may be pivotal to saving the Everglades. This week marks the 80th Anniversary of the completion of Tamiami Trail. In another 80 years, the road and much if not all the Everglades could be underwater if we don't make the right choices now. We hope State and Federal officials agree on a post-Mod Waters bridging plan by July to address these predictions.	The intent of MWD project is not to counteract sea level rise but to take steps to the extent practicable to restore the natural hydrologic condition within WCA-3B and NESRS.
ARN 4	Independent experts have said the bridge could be built in 4 years or less. The Skyway Coalition is investigating creative financing arrangements from state and federal governments and public/private partnerships. Tolling revenues from new and existing sources could be tapped for this effort. Please do not let monetary concerns prevent the Corps from doing the right thing for our Everglades. That would be "penny-wise and dollar-foolish"	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. However, the total cost of the 11-mile bridge alternative prevents its approval and funding through the MWD authority. We are not authorized to use these alternate funding methods at this time.
	Robbie Sienson, 208 Ashworth St, West Palm Beach, FL 33405 rsienson@hgdomain.net	
SIE 1	I support finishing the original Mod Waters Act of 1989 (nine years ago!!!!) so that we can start restoration. We need to act not deliberate endlessly while the ecosystem dies. We can try to fund the bridge at a later time but let's get started.	Since 1989 the Corps' understanding of restoring NESRS has advanced and it is now understood that the culverts cannot pass sufficient water needed to restore, to the extent practical, NESRS without also addressing the safety of the Tamiami Trail.
	Michelle Avola, michelle@naplespathways.org	
AVO 1	PLEASE do not to allow your project to prevent, impede or delay construction of the "River of Grass Greenway". Also, cyclists should be considered in bridge designs (e.g., shoulders should be free of obstructions such as rumble strips, raised reflectors, and drainage grates).	The shoulder for the proposed bridge would 10 feet wide and the shoulder for the rest of the road would be 5 feet paved plus 5 feet of grass. We do not plan to construct raised reflectors or rumble strips in the shoulder. Drainage features for the bridge would be located on the outermost edge of the shoulder and would not be expected to be in the travel path for bicycles.
	Deiv42@aol.com	
DEI 1	Access for sportsman, and airboat is not avail., north or south, of Trail and should be. Access to area 3a, for airboat in case of plane crash is not avail., and should be. Flowage easement to Airboat Association of Florida, should NOT change day to day operations, or recreation access. The bridge, is too expensive, the 55 curvets will flow enough with higher water level in L-29	No effects on boat ramps or non-commercial airboating and related activities would occur. Even during high-water events, the bridge would provide enough clearance for small airboats to access ENP and the L-29 Canal under the Trail. WCA 3A is not in the project area and would not be impacted by the tentatively selected plan. Obtaining a flowage easement from the Airboat Association would not change day-to-day operations or recreation access.

		Flowing more water through the 55 culverts is not feasible. Studies subsequent to the 1992 General Design Memorandum showed that while the design volumes of water could indeed be passed through the culverts into NESRS, this flow rate through the culverts would only occur after water levels on the north side of the road increased enough to force water through. Such high levels would exceed a stage of 7.5 feet in L-29 canal, the level considered safe by Florida Department of Transportation (FDOT) standards. If levels higher than 7.5 feet were to occur regularly or persist for longer periods, they would make the road vulnerable to structural damage.
	Martha Musgrove, 2432 Edgewater Dr., West Palm Beach, FL 33406, malmusgrove@yahoo.com, May 11, 2008	
MUS 1	I support your proposed plan to build a Tamiami Trail bridge to complete the Modified Waters Delivery Project. This will allow more water to flow into the Northeast Shark River Slough section of Everglades National Park, and it will clear the way to implement additional Everglades Restoration projects (known locally as decompartmentalization and sheetflow enhancement) to restore sheetflow through Conservation Area 3. Completion of the Modified Water Deliveries Project has been too long delayed.	Thank you for expressing your support for the TSP.
MUS 2	Ultimately Tamiami Trail will have to become a series of bridges to pass all the water needed to ensure the viability of Everglades National Park. That goal begins with construction of the first bridge, for which I hope Congress will appropriate what is necessary.	Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
MUS 3	I have followed these issues for many years. It is my considered opinion that there is nothing the COE or Congress could do this year that would provide more direct benefits to Everglades National Park. Those of us committed to saving and restoring the Everglades recognize that it is irresponsible to let our pursuit of perfection trample the good.	Thank you for expressing your support for the TSP. We recognize that there are alternatives in the LRR that would provide more ecosystem benefits than the TSP. However, the total costs of these alternatives prevent their approval and funding at this time under MWD.
	Stan Carlin, Gator Park P. O. Box 517, Melbourne Fl 32902-0517; 321-729-8387 * 305-559-4136	
CAR 1	In 1992 and 1993 White Construction repaved roadway and extended 8' to 10' south, and extended culverts one length south. White Construction said 80% or more of existing culverts were clogged with mud and trash. We asked if they were cleaning out the culverts so water could flow 100%. White Construction said "no" because it was not in their contract. There has also been no maintenance on the water distribution canals that run south of the culverts. A clean out/maintenance contract should be issued now for all clogged culverts and canals so 100% of even water flow would be restored this year. This could be done rapidly and would be cost effective.	In recent years, the culverts have been maintained by Florida Department of Transportation and are clean. The areas south of the existing culverts are owned by and maintained by Everglades National Park. The vegetation that is blocking the downstream flow from the culverts will be addressed under a separate project.

	Catherine Bernabei, 1713 SW 103 Pl., Miami, FL 33165	
BER 1	Please build the one-mile bridge ASAP!! And let's keep the hope alive for a 10.7 mile skyway! We need to do what is right by the creatures of the Glades, return to them a healthy home, their habitat. The world is watching what we do with this precious Heritage Site! A workforce of volunteers (similar to Baynanza, or prison-force – not far from Evergl. N. P. is a prison) can keep the culverts clean, and also water flowing under the bridge. Money can come from selling plaques to attach to bridge (or bricks) with donors' names. Many billionaires in America. Thank you for what you are doing, but hurry!	Thank you for your support for the TSP. We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. The MWD project is not authorized at this time to use these sources of labor and funds.
	Public Meeting (22Apr2008) Comments	
	Joe Holland	
HOL 1	I feel unencumbered in urging you to look at funding while expanding traffic and getting somewhere. I am encouraging continuity in phasing from 1-mile to 10-mile projects, because costs will only increase. Also look at efficiencies in mobilization. Let's do everything we can to go from 1-mile to 10-mile.	Planning for future conveyance under Tamiami Trail will continue as soon as this study is complete. A workshop or meeting is being planned tentatively for July or August 2008. The public will be notified as soon as details become available.
	Julie Hill, Audubon of Florida	
HIL 1	We know that this is not the perfect plan. We hope to see more than a 1-mile plan. Hope to see a formal statement indicating the next steps to get more. We will not be satisfied with this twenty years from now.	Future conveyance under Tamiami Trail will be considered at a workshop or meeting planned tentatively for July or August 2008. The public will be advised of the workshop/meeting as soon as additional details are available.
	Larry Morrison	
MOR 1	Miami Beach will probably underwater in the future because we are not doing what is right --- build the long bridge. Sorry to hear that it can't be done.	Comment noted.
	Charles Radner, Trust	
RAD 1	I have a question about the location of the bridge. It looks as if it is on the south side of the Tamiami Trail. How was the location selected, who owns that land, and what was the cost to secure it?	It is south of the trail for 2 reasons. We do not have to stop traffic during construction. Also, ENP owns most of it, so it is cheaper in the long run.
	Mr. Riedi, Miccosukee Tribe	
RIE 1	The Miccosukee Tribe is opposed to the bridge. The bridge does not complete MWD, which needs to be completed.	Tamiami Trail modification is not the only feature of MWD that remains to be completed. Additional work is needed for L-67A, L-67C, L-67 Extension, Osceola Camp, and a new operations plan.
RIE 2	The road bed needs to be raised. There are no concrete plans to raise the road.	After the road reinforcement described in the LRR is complete, the road will be higher.
RIE 3	In order to increase water to the park you must increase the water available.	Concur. In order to increase the water delivered to Northeast Shark River Slough of ENP, there must be more water available in the L-29 Canal.
RIE 4	We are concerned about the excessive costs of this plan. We believe that it will be more expensive. I am confident that it will cost more.	The cost estimates presented in the draft LRR include risk analysis procedures and represent the 90 percent confidence not likely to exceed level.

RIE 5	The first thing that needs to happen is to clean out the culverts. Pictures show that they are clogged. Flow efficiency has dropped since they have been built. The flow is impeded by Brazilian pepper and sediment build up. We hope that you will consider clean out.	In part due to substantial differences of opinion among agencies on the effectiveness of vegetation and sediment removal for improving flow through the culverts, a Pilot Study has been proposed. ENP has initiated a separate NEPA analysis on whether to implement the Pilot Study.
	Sara Fain, National Parks Conservation Association	
FAI 1	This plan falls short. The plan is a only a first step which will provide more water flow into ENP. I am glad that you have the bridge, which does help with the connectivity. But it is just a step. We need to get LRR done and we desire a commitment from Corps and DOI on what the next steps are. Let's move decompartmentalization forward. What are the next steps to truly restore the Everglades?	The study team recognizes that some of the alternatives in the draft LRR would provide more ecosystem benefits than the TSP. The decompartmentalization study in CERP is one of the major efforts toward future steps for restoration of the Everglades.
	Dr. Thomas Van Lent, Everglades Foundation	
LEN 1	MWD project needs to move forward. I am glad there is a bridge and support and glad that stage targets moved from 8.0 feet to 8.5 feet. I would like to see the Corps get out of the bridge building business and see FDOT get more involved and help solve the TTM. We were expecting more. I am looking forward to a clear way forward in the short term and the long term. Let's remove obstacles that are slowing us down – L30 and DECOMP of CERP. I would like to see this project implemented.	Thank you for expressing your support for the TSP. We recognize that there are alternatives in the LRR that would provide more ecosystem benefits than the TSP. However, the total costs of these alternatives prevent their approval and funding at this time under MWD. Studies of further openings in Tamiami Trail are expected to begin soon. An initial workshop or meeting for future conveyance through Tamiami Trail is being planned tentatively for July or August 2008. Additional details on this event will be made public as soon as they are available.
LEN 2	I want to be sure reinforcement includes pavement to support 8.5 foot stage.	The plan does include reinforcement to support 8.5 foot stage.
	Rick Persson, SAFER	
PER 1	I oppose any alternatives that adversely impact the business south of the Trail. It is the least expensive way.	Although acquisition of a construction easement from FP&L would be needed, none of the airboat touring businesses would be directly affected by construction activities. However, the project provides the opportunity for increased water levels south of the highway, which would increase the potential for the businesses to be impacted by flooding. The Real Estate Plan (Appendix F) concluded that perpetual and occasional flowage easements from businesses would be required to provide compensation for flooding potential.
	Albert Bryan, President of Conservation Club	
BRY 1	We have asked to have airboat access from the north to the south. At some point, will we need this access for emergencies.	Airboat access would not be changed by the tentatively selected plan.
BRY 2	There is a need to have ground access for bank fishing, rest stops, or parking for recreation. There should be access for hunting or fishing.	We anticipate that Florida Department of Transportation would prohibit fishing from the proposed bridge and approaches. Bank fishing from the unbridged road would remain similar to current conditions. Due to wetlands and water along each side of the road, no additional rest areas or parking areas are planned at this time.

BRY 3	What is the level in 3B going to be? How high is the water going to be? What is the normal hydroperiod?	The objective of the MWD Project is not only to restore the natural hydrologic conditions within NESRS but to reconnect WCA-3B as an integral part of the Everglades system. As flows are passed from WCA-3A to WCA-3B to ENP the stages will decrease from area to area. For example if the L-29 BC was being held at 8.5 ft the stage in the southern part of WCA-3B would be slightly higher dependent upon the flow volume going through the structures in the L-29 levee and the resistance of the marsh within WCA-3B to pass that volume to the structure. This would increase the stage approximately 0.1-0.5 feet or more dependent on stages and volume of flow.
BRY 4	Target is on the high side. Are you aware that we are going to wipe out all of the fur bearing animals if we add 15 inches or more, which is a waste land?	Very good point. We need to work on this point during the operations.
	Unknown Meeting Attendee	
UNK 1	The money that was spent so far probably could have built the project already. Has Dade County put any money into this project? Why aren't they?	Dade County has not contributed funds.
UNK 2	Has the culture been studied? Are we making provisions for Everglades Safari, Cooperstown, etc.?	We are looking at cultural resources
	Unknown Meeting Attendee	
UKN 1	You should be working with the community and I would be happy to serve on a Task Force. Has any one asked us about our culture? I would like my kids to see it the way it is and was.	We are looking at cultural resources.
UKN 2	Should these bridges be tied into the sloughs? It seems like common sense.	All valid points.
	Dr. Tom Lodge, author of the Everglades Handbook	
LOD 1	We still do not know what is all needed to promote ridge and slough, but we are fairly certain that it has to do with the extremes – catastrophic events. In communication with Fred Dayton, enormous amounts of water flow over the trail during two catastrophic hurricanes in 1947. WCA 3B was probably 6 ft deep during 1947 hurricane. It is a mistake not bridging the entire area for accommodating the flows that we are hoping to reattain. I advocate for allowance massive flows.	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits. Future conveyance under Tamiami Trail will be considered at a workshop or meeting planned tentatively for July or August 2008. The public will be advised of the workshop/meeting as soon as additional details are available.
	Frank Denninger	
DEN 1	On page B-1: reinforcement – 8.0 foot versus 8.5 foot. Lowest portions of road to clear for 8.0 foot not 8.5 foot.	We will definitely correct it.
	Bruce Rowlett	
ROW 1	In 2005, Alternative 14 was selected and recommended, because 55 culverts were not moving water through Shark Valley. An 11-mile bridge would allow sheet flow, which seems most logical. A 2-mile and 1-mile bridge total only 5,000 – 10,000 feet. Why only these small openings for the water to flow to the Everglades? Let the water flow freely. There are 10 egresses for the 11 miles for the business. Just tell congress to appropriate the	We concur that the 11-mile bridge is the environmentally preferred plan that would provide maximum benefits, and that the TSP does not provide as many ecosystem benefits.

	money. There should be a bridge from Krome to 30-mile bend to allow sheet flow. I've been out there 50 years. Get the money from congress.	
	Bill Hutchinson	??
HUT 1	We cannot always afford what we want. Thank you for selecting a reasonable alternative. It is reasonably scoped and has a positive benefit/cost ratio.	Thank you for expressing your support.
HUT 2	Have you all engaged in a futurist, or what would you like or dislike about the project 50 years from now? Are there things that you will have to undo? Have you looked way out in the future for adverse impacts?	We are trying to keep the project compatible with CERP and the future. We do not want to build something only to have to rip it out later. We wanted to minimize having to redo projects. The team made sure that there is compatibility with future projects.
HUT 3	Please use fewer abbreviations. I need to reconstruct the acronym.	We will try to do better in not using acronyms.
	Catherine Bumabei, Sierra Club leader	
BER 1	Can we build with recycled materials? Other countries do it (Yangtze River Bridge in China, bridge in Germany). This would bring the costs down.	This will be an option that the contractor may consider. The Corps, FDOT and FDEP have regulations regarding which materials may and/or may not be suitable for use or recycle, and the construction will be strictly according to Corps, State of Florida DOT and environmental regulations.
BER 2	Can prisoners be put to work?	We do not have authority to use this source of labor.
BER 3	I heard and agree with Miccosukee – why is there not a plan to keep the 55 culverts clean.	Culverts are inspected regularly, and monitored by USGS with photo cameras. The interiors are clean. Downstream they have concerns.
	Fred ?, 8.5SMA	
FRD 1	On the south side of Tamiami there is a spoil bank. Wildlife use it. Is there some mitigation opportunity for introduction of tree islands?	They are very natural tree islands. The tree island is on the embankment of the road and that is not going to change. We are only changing the approaches to the bridge.
	Unknown Meeting Attendee	
UKA 1	I support the two bridges.	
	Aren't we trying to deliver 5500 cfs? Will you have the capacity to move the MWD target? Will you still need an increase in stage? Don't we want some kind of weir so that we do not dry out?	Congress originally under The Everglades National Park Protection and Expansion Act (PL 101-229) Sec 104(a) (1) did not authorize a specific flow rate but states: "Upon completion of a final report by the Chief of the Army Corps of Engineers, the Secretary of the Army, in consultation with the Secretary, is authorized and directed to construct modifications to the Central and Southern Florida Project to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrological conditions within the park." The goal of MWD is to the extent practicable take steps to restore the natural hydrologic conditions within the park. The restoration of NESRS is not based on any specific flow rate but rather having the ability to reproduce a natural hydroperiod within NESRS. See Section 4 of Appendix D.

		Yes, an increase in stage is required for restoration of NESRS. Cost and stage constraints have limitations on what can flow.
	Keith Price	
PRI 1	I work at the SFWMD. I have personally flown the camera through each one and had to wrestle one of the cameras from an alligator.	Comment noted. Thank you.
PRI 2	I work on Sundays as president of Airboat Association. Every alternative has been okay but they all run into cost concerns. Governors have only stepped in to cut taxes. Projects are reduced, and we are having to do more with less.	We have worked to make the tentatively selected plan meet cost requirements set by Congress. We hope that the plan will be funded.

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

May 9, 2008

Colonel Paul Grosskruger
Commander
United States Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Colonel Grosskruger:

Thank you for the opportunity to review and provide comments on the April 2008 *Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification Limited Reevaluation Report and Environmental Assessment (LRR/EA), Miami-Dade County, Florida.* We appreciate the collaborative approach employed in producing the LRR/EA through the joint efforts of your staff and staff from the National Park Service and U.S. Fish and Wildlife Service.

The Department of Interior supports the Tentatively Selected Plan, Alternative 3.2.2a, which combines the installation of a 1 mile bridge in the eastern location along Tamiami Trail (U.S. 41) with raising the stage constraint at L-29 Canal by one foot, to 8.5 feet, and providing road mitigation to this level. As stated in the LRR/EA, the project provides water flow benefits consistent with the congressional direction, increases the ecosystem performance outputs, and is compatible with future Comprehensive Everglades Restoration Plan improvements.

We look forward to our continued coordination with you on the completion of this important document. We have additional clarifying comments which we will provide separately.. We are committed to working towards the completion of the remaining features of the overall Modified Water Deliveries Project, especially the conveyance and seepage plans and the revised Operating Plan. In addition, we look forward to the start up and participation in the development of Phase 2 for the Tamiami Trail.

Sincerely,

Terrence C. Salt
Director of Everglades Restoration Initiatives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 8, 2008

Dr. Rebecca S. Griffith
Chief, Planning Division
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Subject: EPA NEPA Comments on the COE's "Modified Water Deliveries to Everglades National Park, Tamiami Trail Modifications, Limited Reevaluation Report and Environmental Assessment"; Broward and Monroe Counties, FL

Dear Dr. Griffith:

Consistent with our responsibilities under Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the subject U.S. Army Corps of Engineers' (COE) Environmental Assessment (EA) for improvements to a section of Tamiami Trail (US 41). These structural improvements would increase water flows to the Everglades consistent with the COE's 1992 Modified Water Deliveries ("Mod Waters") memorandum and plan.

The proposed project includes both bridging portions of the Tamiami Trail and raising the elevation of the roadway. Specifically, a 1-mile bridge is proposed to replace an eastern portion of the roadway to increase flows from Water Conservation Area (WCA) 3B and the L-29 Canal above the Tamiami Trail to the Northeast Shark River Slough, the historic primary flow-way in the Everglades below the Trail. The project would be constructed on a 10.7-mile section of Tamiami Trail between S-333 to the west and S-334 to the east. Flows are currently conveyed through culverts under the Trail roadbed, which are inadequate to deliver ecologically beneficial volumes to the Everglades (specifically the Everglades National Park: ENP), cannot accommodate flooding volumes and restrict flows to discrete points. Flows of at least 1,400 cfs would benefit the rehydration of the Everglades by increasing water flows and distribution southward, while flows of 4,000 cfs would need to be accommodated during the rainy season to prevent the flooding of the roadbed and drowning of tree islands in WCA 3B backwaters.

Although compatible with the Comprehensive Everglades Restoration Plan (CERP), this project has a long history that pre-dates CERP and has been significantly modified over the years. In 2005, an COE EIS was completed that proposed (Alternative 14) two bridges along this stretch of Tamiami Trail – a 1-mile bridge in the eastern portion (similar to the present proposal) plus a second 2-mile bridge in the western

portion. This COE-approved proposal was submitted to Congress for approval; however, due to high costs ($144M escalating to $452M), this project was not funded by Congress. Instead, the Congressional managers directed the COE to identify and resubmit a lower-cost plan that was still consistent with Mod Waters. The present EA constitutes that resubmittal. The preferred alternative (tentatively selected plan) for the present proposal (Alternative 3.2.2.a) provides an eastern 1-mile bridge and elevates the roadbed and the L-29 Levee by one foot to an 8.5-ft elevation at a cost of $244M.

Overall, EPA believes that the proposed plan clearly improves the southward flows, distribution and timing of WCA-3B waters and should benefit Everglades restoration. However, while we understand funding constraints, the 2005 plan was superior in terms of ecological benefits since more culverts would be replaced by the two bridges (total of 3 miles spanned) compared to the proposed one bridge (1 mile spanned). Specifically, the former 2005 plan would have further increased ENP rehydration and associated creation of downstream wetlands, wetland-upland habitat and foraging areas for wading birds, as well as resulted in less need for water management upstream in WCA-3B (i.e., conveying excess water eastward to tide). Nevertheless, given the funding constraints and Congressional directive as well as the benefits of this revised bridging proposal, EPA supports the tentatively selected plan to construct one 1-mile bridge along Tamiami Trail and to elevate the Trail consistent with Florida DOT standards.

Notwithstanding our project support, a hybrid alternative may exist of one bridge in combination with an increased number of culverts in the unbridged portion of the Trail to further increase the ecological performance downstream. However, based on page iv of the EA, we understand that "...doubling the number of culverts alone..." was more costly than Alternative 14 selected in the 2005 EIS. The Final EA (FEA), or potential Finding of No Significant Impact (FONSI), should verify if additional culverts in combination with the 1-mile bridge would be cost-effective.

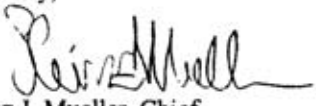
Because of downstream environmental needs and escalating costs, EPA recommends expedited implementation of the tentatively selected plan. We also recommend that flows and downstream effects be monitored in the Everglades to ensure project success. In this regard, we understand that a follow-on project is proposed for the near future (i.e., Tamiami Trail Swale pilot project: National Park Service/COE co-lead). This swale pilot project would propose the construction of 1,000-ft long swales on the south side of Tamiami Trail at two locations. The project would help determine whether the swales, in addition to the proposed 1-mile bridging and upstream canal increase to 8.5 feet in L-29, will significantly improve flows south into the ENP.

The swale pilot project, to the extent that it is foreseeable, should also be added to the EA's cumulative impacts matrix (Table 5-5) listing the "past, present and reasonably foreseeable actions and plans affecting the study area". In addition, we recommend that the expected impacts, both positive and negative, of all the projects listed in this matrix also be at least qualitatively documented in the matrix. That is, while the EA discusses

the general effects of these projects on common resources (ENP, Northeast Shark River Slough, water quality), the document could be improved if the expected impacts (e.g., increased turbidity and sedimentation) and improvements (increased southward flows and nutrient reduction) of each project was also listed. Likewise, the pending NEPA document for the swale project should include discussion of the present Tamiami Trail bridging project (if approved) in its cumulative impacts section.

We appreciate the opportunity to review the EA. Should you have questions regarding our comments, feel free to contact Chris Hoberg of my staff for NEPA-related issues (404/562-9619 or hoberg.chris@epa.gov) or Eric Hughes in our EPA Water Management Division (located in your Jacksonville District office) for technical issues (904/232-2464 or hughes.eric@epa.gov).

Sincerely,



Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

May 19, 2008

Mr. Bradley A. Foster
Jacksonville District, Planning Division
U. S. Army Corps of Engineers
P. O. Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers – Draft Limited Reevaluation Report and Environmental Assessment (LRR/EA) on the Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification – Miami-Dade County, Florida.
SAI # FL200804154170C (Reference SAI # FL200802053982C)

Dear Mr. Foster:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the Draft Limited Reevaluation Report and Environmental Assessment (LRR/EA).

The Florida Department of Environmental Protection (DEP) notes that, since the Water Resource Development Act (WRDA) of 2000 requires construction of Modified Water Deliveries to Everglades National Park prior to implementing significant components of the Comprehensive Everglades Restoration Plan, staff strongly supports implementation of Alternative 3.2.2.a without further delay. Given cost constraints imposed in WRDA 2007, the tentatively selected plan offers the best incremental approach to reconnect the Everglades and restore more natural flows to Everglades National Park and Florida Bay. Although reduced from the previously recommended alternative which consisted of two bridges, the one-mile bridge continues to provide significant ecological benefits by improving connectivity and conveyance between the waters north of the Trail and the downstream wetlands and sloughs within Everglades National Park. DEP reiterates its previous comments supporting moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project and including NEPA coverage of the pilot swale project within the subject LRR. Please see the attached DEP memorandum for further details and specific comments on the Draft LRR/EA.

The Florida Department of Transportation (FDOT) has expressed serious concerns regarding the USACE's plans to compensate FDOT with funds rather than constructing the substitute facility. Discrepancies between the 20-year, 24-hour stage design high water elevation versus the canal stage or operational elevation are also unresolved at this time. Please continue to consult with FDOT staff to resolve these and other water level, roadway design, scheduling and easement concerns as soon as possible. Please refer to the enclosed FDOT letter for additional information.

The Florida Fish and Wildlife Conservation Commission (FWC) notes that the detailed comments, concerns and recommendations provided on the project over the years since 2000 remain valid. Staff supports Alternative 3.2.2.a, which raises the lower section of roadway one foot above the existing operating stage and adds the one-mile bridge, as the tentatively selected plan. Although the draft LRR/EA mentions that conveyance over the remainder of Tamiami Trail would be provided through culvert improvements, it included no details. Strategic placement of box culverts at historic sloughs and/or aligned with the S-355 and other water conveyance structures in the L-29 levee, in conjunction with downstream spreader swales, would greatly augment hydraulic and ecological connectivity. Though the FWC fully supports the ecological benefits expected from the proposed project and will continue to work closely with the Corps of Engineers through the project's implementation, staff requests that the concerns and recommendations contained in the enclosed FWC letter and previous letters conveyed over the past eight years be addressed.

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide comments on the Draft LRR/EA and notes that the potential for negative impacts on the Homestead agricultural community is FDACS' area of interest. The FDACS has expressed concerns that a rise in water elevations in Northeast Shark River Slough will result in the diversion of more seepage from the Park to south Miami-Dade County through the L-31N and C-111 canals unless this proposal includes a firm commitment to operate the S-356 pump station as recommended in the CSOP process. This diversion of unwanted seepage has been a significant problem for the last 20 years and the S-356 structure was authorized, designed and built specifically to address the problem. Unfortunately, the Corps of Engineers has not been able to operate the pump, even though it was constructed years ago. In addition, the G-3273 constraint on operating S-333 must not be removed until all the permits needed to operate S-356 per the operational protocol proposed in the Combined Structural and Operational Plan (CSOP) are obtained and the Corps' Water Control Plan is updated to show the use of S-356. For further information and assistance, please contact Mr. W. Ray Scott at (850) 410-6714.

The Florida Department of State (DOS) indicates that raising the elevation of the Tamiami Trail roadway on an elevated bridge structure will have an adverse effect on the integrity of an historic property that has been determined eligible for listing on the *National Register*

of Historic Places (Site No. 8DA6510). In addition, the Airboat Association of Florida headquarters (8DA6768) and the Coopertown Airboat Rides and Restaurant property (8DA6767) are eligible for listing in the *National Register*. Although the Tamiami Canal (8DA6766) was previously determined to be eligible for listing, staff questions that finding since the canal has become a major water control and movement structure. As there are several cultural resources within the area of potential effect, staff looks forward to continued consultation and coordination with the Corps of Engineers to complete the environmental and historic preservation documents in fulfillment of all requirements. Please see the enclosed DOS letter for additional information.

Based on the information contained in the Draft LRR/EA and the enclosed state agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). The concerns identified by our reviewing agencies must be addressed, however, prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Mr. Chris Stahl at (850) 245-2169.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/cjs
Enclosures

cc: John Outland, DEP, MS 45
Stacey Feken, DEP, MS 3560
Tim Gray, DEP, Southeast District
Lisa Stone, FDOT
Marjorie Bixby, FDOT, District VI
Mary Ann Poole, FWC
Forrest Watson, FDACS
Ray Scott, FDACS
Laura Kammerer, DOS

Florida
Department of Environmental Protection

"More Protection, Less Process"

Project Information	
Project:	FL200804154170C
Comments Due:	05/15/2008
Letter Due:	05/28/2008
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT LIMITED REEVALUATION REPORT AND ENVIRONMENTAL ASSESSMENT (LRR/EA) ON THE MODIFIED WATER DELIVERIES TO EVERGLADES NATIONAL PARK, TAMIAMI TRAIL MODIFICATION - MIAMI-DADE COUNTY, FLORIDA.
Keywords:	ACOE - LRR/EA MOD WATER DELIVERIES, TAMIAMI TRAIL MODIFICATION - MIAMI-DADE CO.
CFDA #:	99.997

Agency Comments:

SOUTH FL RPC - SOUTH FLORIDA REGIONAL PLANNING COUNCIL

The South Florida Regional Planning Council generally agrees that recommended Alternative 3.2.2.a will benefit the South Florida region and will further their goals for a more livable, sustainable and competitive South Florida. The goal of restoring the natural hydrologic conditions to Everglades National Park is generally consistent with the "Strategic Regional Policy Plan for SOuth Florida."

MIAMI-DADE -

AGRICULTURE - FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

The Florida Department of Agriculture and Consumer Services (FDACS) appreciates the opportunity to provide comments on the Draft Limited Reevaluation Report and Environmental Assessment (LRR/EA) for the Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification - Miami-Dade County, Florida. The potential for negative impacts on the Homestead agricultural community is our area of interest. FDACS is concerned that a rise in water elevations in Northeast Shark River Slough will result in the diversion of more seepage from the Park to south Miami-Dade County through the L-31N and C-111 canals unless this proposal includes a firm commitment to operate the S-356 pump station as recommended in the CSOP process. This diversion of unwanted seepage has been a significant problem for the last 20 years and the S-356 structure was authorized, designed and built specifically to address the problem. Unfortunately, the Corps has not been able to operate the pump, even though it was constructed years ago. In addition, the G-3273 constraint on operating S-333 must not be removed until all the permits needed to operate S-356 per the operational protocol proposed in the Combined Structural and Operational Plan (CSOP) are obtained and the Corps' Water Control Plan is updated to show the use of S-356. FDACS appreciates the opportunity to provide comments on the Draft Limited Reevaluation Report and Environmental Assessment (LRR/EA) for the Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification - Miami-Dade County, Florida. If you have questions regarding FDACS' comments, please contact Mr. W. Ray Scott at (850) 410-6714.

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

The Florida Fish and Wildlife Conservation Commission (FWC) notes that the detailed comments, concerns and recommendations provided on the project over the years since 2000 remain valid. Staff supports Alternative 3.2.2a, which raises the unbridged roadway one foot above the existing operating stage and adds the one-mile bridge, as the tentatively selected plan. Although the draft LRR mentions that conveyance over the remainder of Tamiami Trail would be provided through culvert improvements, it included no details. Strategic placement of box culverts at historic sloughs and/or aligned with the S-355 and other water conveyance structures in the L-29 levee, in conjunction with downstream spreader swales,

would greatly augment hydraulic and ecological connectivity. Though the FWC fully supports the ecological benefits expected from the proposed project and will continue to work closely with the Corps of Engineers through the project's implementation, staff requests that the concerns and recommendations contained in the enclosed FWC letter and previous letters conveyed over the past eight years be addressed.
STATE - FLORIDA DEPARTMENT OF STATE
The DOS indicates that raising the elevation of the Tamiami Trail roadway on an elevated bridge structure will have an adverse effect on the integrity of an historic property that has been determined eligible for listing on the National Register of Historic Places (Site No. 8DA6510). In addition, the Airboat Association of Florida headquarters (8DA6768) and the Coopertown Airboat Rides and Restaurant property (8DA6767) are eligible for listing in the National Register. Although the Tamiami Canal (8DA6766) was previously determined to be eligible for listing, staff questions that finding since the canal has become a major water control and movement structure. As there are several cultural resources within the area of potential effect, staff looks forward to continued consultation and coordination with the Corps of Engineers to complete the environmental and historic preservation documents in fulfillment of all requirements.
TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION
The FDOT has expressed serious concerns regarding the USACE's plans to compensate FDOT with funds rather than constructing the substitute facility. Discrepancies between the 20-year, 24-hour stage design high water elevation versus the canal stage or operational elevation are also unresolved at this time. Please continue to consult with FDOT staff to resolve these and other water level, roadway design, scheduling and easement concerns as soon as possible.
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
The DEP notes that, since the Water Resource Development Act (WRDA) of 2000 requires construction of Modified Water Deliveries to Everglades National Park prior to implementing significant components of the Comprehensive Everglades Restoration Plan, staff strongly supports implementation of Alternative 3.2.2.a without further delay. Given cost constraints imposed in WRDA 2007, the tentatively selected plan offers the best incremental approach to reconnect the Everglades and restore more natural flows to Everglades National Park and Florida Bay. Although reduced from the previously recommended alternative which consisted of two bridges, the one-mile bridge continues to provide significant ecological benefits by improving connectivity and conveyance between the waters north of the Trail and the downstream wetlands and sloughs within Everglades National Park. DEP reiterates its previous comments supporting moving forward with maintenance/flow way equalization swales as part of the Tamiami Trail project and including NEPA coverage of the pilot swale project within the subject LRR. Please see the attached DEP memorandum for further details and specific comments on the Draft LRR/EA.
SOUTH FLORIDA WMD - SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Released Without Comment

For more information or to submit comments, please contact the Clearinghouse Office at

3900 COMMONWEALTH BOULEVARD, M.S. 47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

Visit the Clearinghouse Home Page to query other projects.

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Memorandum

TO: Florida State Clearinghouse

THROUGH: Stacey Feken
South Florida Restoration Section

FROM: John Outland and Inger Hansen

DATE: May 15, 2008

SUBJECT: Draft Limited Reevaluation Report and Environmental Assessment for the Tamiami Trail Modification, Modified Water Deliveries to Everglades National Park, Miami-Dade County, Florida

SAI #: FL08-4170

The Florida Department of Environmental Protection (Department) has reviewed the Tamiami Trail Limited Reevaluation Report (LRR) dated April 2008. Department staff has actively participated in the plan formulation process and has provided extensive comments on previous proposals. Please refer to the consolidated comments from prior document reviews associated with the project included as an attachment to our March 5, 2008 letter on the scoping notice for the LRR.

Background: The U.S. Army Corps of Engineers (Corps), National Park Service and U.S. Fish and Wildlife Service, have reevaluated alternatives to restore Everglades National Park (ENP) by redistributing and providing additional water conveyance into the Park through U.S. 41, Tamiami Trail. The tentatively selected plan (TSP), Alternative 3.2.2.a., consists of two actions: 1) build a one-mile long bridge in the project area's eastern segment, 2) raise the headwater stage constraint in the L-29 borrow Canal by 1 foot to 8.5 feet; which will require road mitigation on parts of U.S. 41, located between S-333 on the west and S-334 on the east. Additional conveyance over the remainder of Tamiami Trail would be provided through the use of the existing and improved culverts.

General Comments:

- The Water Resource Development Act (WRDA) of 2000 requires construction of Modified Water Deliveries to Everglades National Park (Mod Waters) prior to implementing significant components of the Comprehensive Everglades Restoration Plan (CERP) including WCA-3 Decompartmentalization. These projects are critical to the restoration of the greater Everglades and the Department strongly supports implementation of Alternative 3.2.2.a without further delay.

- Given cost constraints imposed in WRDA 2007, the tentatively selected plan (TSP) offers the best incremental approach to reconnect the Everglades and restore more natural flows to Everglades National Park and Florida Bay. The proposed one-mile bridge, raising the headwater stage constraint in the L-29 borrow Canal by 1 foot to 8.5 feet with associated road mitigation is also compatible with anticipated stages of 9.7 feet associated with future Everglades restoration project implementation.

- Though reduced from the previously recommended alternative which consisted of two bridges, the one bridge (Alternative 3.2.2.a) continues to provide significant ecological benefits by improving connectivity and conveyance between the waters north of the Trail and the downstream wetlands and sloughs within Everglades National Park. The TSP will provide a 92 percent increase in flows to ENP, a 47 percent increase in peak flows to Everglades National Park, providing a corridor for wildlife passage, and treatment of stormwater runoff from the bridge. In the long term, the project has the potential of increasing habitat connectivity between the park and remnant Everglades wetlands to the north when modifications to the L-29 levee have been completed.

- The improved conveyance and the associated benefits of the TSP are dependent upon the increased water elevations in the L-29 canal. The LRR states that the Department of Interior is responsible for securing real estate rights on seven privately owned properties along Tamiami Trail necessary to implement the TSP. The Department requests that the Department of Interior expedite securing such rights in order to ensure that project benefits can be realized as soon as possible.

- The Department would like to reiterate our previous comments that we are supportive of moving forward with maintenance / flow way equalization swales as part of the Tamiami Trail project and including NEPA coverage of the pilot swale project within the LRR.

Specific Comments:

1. P1-10. First paragraph makes reference to graphics in figure 4-10 for describing high levels, which this figure does not display.
2. Section 1, introduction. Since the 1992 General Design Memorandum, it has been evident that there is a need to raise the Osceola Camp in order to increase water levels in the L-29 canal. The LRR indicates that ENP is still negotiating with the Osceola family regarding how to implement mitigation for increased water levels. As with the other real estate issues surrounding the Mod Waters project, a timeframe and general plan for implementing such activities should be provided.
3. P 1-13. Third paragraph makes reference to WCA No 38.
4. P-1-16, section 1.8. Second bullet makes reference to 2002, 2006. Not sure where or what the 2006 refers to (perhaps the correct reference is 2007?).

5. P 3-5, third paragraph. Please provide the supporting documentation for the statement that water stages in WCA 3B are generally lower than in the L-29 canal.
6. Section 3.4. Water quality section contains old data and references that were presented in the 2003 GRR and are no longer applicable. Department staff worked with the Corps to revise this section for the 2005 GRR. We request that future revisions to the LRR include the most recent information.
7. Section 3, page 3-7: A Site Specific Alternative Criterion for Dissolved Oxygen in the Everglades Protection Area was adopted by the Department and subsequently approved by the U.S. Environmental Protection Agency in 2005.
8. Section 3, page 3-9, and Appendix F, page F-20. The LRR states that the Hazardous, Toxic, and Radioactive Waste (HTRW) site assessment identified four potential contamination sites. If the TSP results in impacts to these sites, the Environmental Assessment should include information on remediation. Any HTRW cleanup should be closely coordinated with the Department's Waste Cleanup Section in the Southeast District Office in West Palm Beach.
9. Page 3-11. Second paragraph indicates that Figure 3-1 shows ENP in south Florida, yet ENP is not identified in the figure, only the location of the project.
10. Section 3.11 Noise environment. Please provide some type of conclusion with respect to the implications regarding the peak hour noise levels presented.
11. Section 5.7.5. Impacts to State listed threatened and endangered species are not discussed.
12. Annex A, 2.6.1. A mixing zone has not yet been granted. This section should be revised to state that a mixing zone will be requested as part of the permit application.
13. Annex A, 3.3 The determination of whether the TSP will violate any applicable state water quality standards will be made after an adequate permit application has been received and reviewed by Department staff.
14. Appendix F. d. Operation and Maintenance requirements. Details of the "research" that is referred to should be provided. This statement is misleading and should be revised.
15. Appendix G. The Department's comments are not included in the summary of scoping comments. Please refer to our March 2008 letter submitted through the State Clearinghouse, also enclosed again for reference.

As commented previously, the Modified Waters Delivery project, which includes the Tamiami Trail Modifications, is a foundation project that should be fully implemented prior moving forward with Comprehensive Everglades Restoration Plan (CERP) projects in the region. Moving this project forward is critical to the restoration of the greater Everglades, as certain future CERP projects that will further restore flow to ENP cannot move forward prior to Modified Waters Deliveries being completed. We look forward to continuing to coordinate with

the USACE and the South Florida Water Management District in order to achieve the goal of initiating construction in October 2008. If you have any questions regarding these comments, please contact Stacey Feken at 850-245-8421.

Electronic copies to:

John Outland
Stacey Feken
Ernie Marks
Chad Kennedy
Inger Hansen
Tim Gray
Annet Forkink

Florida Department of Transportation

CHARLIE CRIST
GOVERNOR

DISTRICT SIX
1000 NW 111th Avenue
Miami, Florida 33172-5800

STEPHANIE C. KOPELOUSOS
SECRETARY

May 9, 2008

Rebecca S. Griffith, Ph.D., PMP
Chief Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Draft LRR/EA
Modified Water Deliveries to Everglades National Park
Tamiami Trail Modification

Dear Ms. Griffith:

We have reviewed your April 11 draft Limited Reevaluation Report ("LRR") for the Tamiami Trail Modifications for Modified Water Deliveries to the Everglades National Park. We reserve our specific engineering comments to a later time, after your submittal of detailed engineering documents and ultimately signed and sealed cross sections and other specific design drawings. Also, please keep in mind that we still have not completed discussions regarding the Relocation Agreement and the Highway Easement Deed. For ease of review, I have numbered our comments:

(1.) In Section 7.0, Recommendations, you have expressly reserved the right to compensate FDOT with a payment rather than actually constructing the substitute facility. FDOT is strongly opposed to that option and will require an express waiver of that option in the Relocation Agreement. The FDOT has been extremely consistent on this point. We expect the Corps to build the bridge and raise the road as two equal parts of the same project, prior to raising the water levels.

(2.) In recent meetings between our staffs, an important terminology conflict has been identified and preliminarily discussed. When our agencies were talking about a 9.7' water elevation in L-29, we had the following assurance: "based on our collaboration and subsequent recommendations from the FDOT staff, the COE intends to use the 20 year, 24-hour stage (9.7 feet, NGVD 1929) as the DHW for the pavement design." Reference Col. Carpenter's letter to Jose Abreu, April 5, 2005. Currently, the LRR embraces the 8.5' water level. This level is described as a "canal stage elevation" or "operational elevation." This level does not account for higher water levels resulting from rainfall. It does not appear to equate to a design high water

(DHW) using the 20 year, 24-hour stage. The clearance guidance provided to you by the FDOT earlier this year assumed that you would still honor the traditional design high water concept with a 20 year, 24-hour stage restriction. Otherwise, the road could be potentially undermined, which is, of course, unacceptable. The Department is currently in a dialogue with the Corps regarding this important issue which may require reduced operating levels during the rainy season and future adjustments of that level as a result of pavement monitoring. There are still several deliverables from the Corps in that regard.

(3.) The LRR is silent as to the timing for raising water levels. Water levels should not be raised until the bridge is fully constructed, the road raised, and the existing road north of bridge removed.

(4.) The LRR is silent as to the current timeline(s) for design and construction of the bridge and the raising of the balance of the roadway. If the roadway design work is lagging, then the benefits of the project will lag.

(5.) The statement on page 1-10 regarding the withdrawal of the 2003 report and EIS should be elaborated upon. The way the statement reads currently is that it seems to imply that the 2003 report and EIS were withdrawn solely because no agreement could be reached with FDOT regarding the flowage easement and compensation. That report was withdrawn for a multitude of reasons.

(6.) We have a concern with the language used in the report that describes the Perpetual Flowage Easement. That easement is surely intended to extend only to the land beneath the one mile bridge and, perhaps, the culverts and not "the entire expanse of the roadway within the project limits" as indicated on p. 6-7 or "over the full length of the project lands" as indicated on p. 6-3. FDOT does not anticipate granting authority to otherwise pass water over or under the Tamiami Trail since that could damage the integrity of the roadway. The language of the Flowage Easement will need to contain that clarification and limitation.

We look forward to working with you toward the resolution of these concerns.

Sincerely,

Alice N. Bravo, P.E.
District Director of Transportation Development

cc: Stephanie Kopelousos, Secretary, Florida Department of Transportation
Debbie Hunt, Assistant Secretary, Florida Department of Transportation
Gus Pego, District Six Secretary, Florida Department of Transportation
Col. Grossgruker, Commander, U.S. Army Corps of Engineers Jacksonville District
Mike Sole, Secretary, Florida Department of Environmental Protection
Carol Wehle, Executive Director, South Florida Water Management District

Florida Fish and Wildlife Conservation Commission

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Victor J. Heller
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Karen Ventimiglia
Deputy Chief of Staff

Office of Policy and Stakeholder Coordination
Mary Ann Poole
Director
(850) 410-5272
(850) 922-5679 FAX

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May 14, 2008

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Ms. Lauren Milligan
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000

Re: SAI #FL200804154170C, U.S. Army Corps of Engineers (COE), Draft Limited Reevaluation Report and Environmental Assessment (LRR/EA) on the Modified Water Deliveries to Everglades National Park, Tamiami Trail Modification, Miami-Dade County

Dear Ms. Milligan:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated agency review for the referenced project, and reiterates the following concerns that we would like to see addressed prior to the release of the Final Limited Reevaluation Report and Environmental Assessment (EA).

Project Description

The Tamiami Trail is one of the four major components of the COE's 1992 General Design Memorandum of the Modified Water Deliveries to Everglades National Park project ("Mod Waters"). The purpose of this project is to increase flows to Northeast Shark River Slough and to help restore the ecosystem of the park. This EA addresses a modification to the features authorized for Tamiami Trail by the 1992 General Design Memorandum and the 2005 Revised General Reevaluation Report/Supplemental Environmental Impact Statement (RGRR/SEIS). A total of 27 alternatives have been developed to examine the effects of variations of water stages in the L-29 canal together with several options for conveyance of water through the road from the L-29 canal into Northeast Shark River Slough. Conveyance options include spreader swales, additional culverts, pump stations, and various configurations of bridges. The selected plan from the 2005 RGRR/SEIS consisted of a two-mile and a one-mile bridge, and raising the remaining roadway to a height capable of withstanding water levels in the L-29 canal of up to 9.7 feet National Vertical Geodetic Datum (NGVD).

Project delays and funding constraints have necessitated the development of additional cost-saving alternatives that would limit the extent to which the Tamiami Trail would be raised and further reduce the length of the roadway that would be bridged. This limited reevaluation has resulted in Alternative 3.2.2a being chosen as the tentatively selected plan. This plan would raise the roadway to a height sufficient to withstand an L-29 canal stage of 8.5 feet NGVD, and construct a one-mile bridge opening near the eastern end of the project area. The bridge would begin approximately 1.5 miles west of the L-31 N levee and extend to the west for 1 mile, capturing an old north-south agricultural canal. The bridge would be located 40 feet south of the existing highway alignment, and require the construction of transitions from the existing highway alignment, resulting in the loss of 2.3 acres of wetlands. A 50-foot wide construction easement needed for the operation of cranes and other heavy equipment to construct the bridge would involve the removal

of existing vegetation on approximately 6.6 acres of wetlands, including 2.7 acres of forested wetlands.

Potentially Affected Resources

Wading birds

The one-mile bridge would lie between, and equidistant from, two wading bird rookeries (Tamiami East and Tamiami West) located immediately south of the Tamiami Trail. Several listed species of wading birds, including the white ibis (*Eudocimus albus*), tricolored heron (*Egretta tricolor*), little blue heron (*Egretta caerulea*), and snowy egret (*Egretta thula*) (all state-listed as species of special concern); and the wood stork (*Mycteria americana*) (state- and federally listed as endangered) are known to nest in these colonies (Frederick 1995, Gawlik 1999). The U.S. Fish and Wildlife Service (USFWS) conducted a road-kill survey in 2002-2003 (USFWS 2004) and documented the mortality of a wood stork and a snowy egret along the current roadway. With an elevated bridge, wading birds departing from the two rookeries or from foraging sites in the nearby marsh would be required to gain additional altitude to avoid passing traffic. This situation could lead to a slight increase in the risk of wading birds being struck by passing traffic.

Snail kite

A number of snail kites (*Rostrhamus sociabilis*) (state- and federally listed as endangered) have also been documented as nesting within the Francis S. Taylor Wildlife Management Area (Water Conservation Area 3B) during the past six years. At least five of these nests were located along the old agricultural canal directly north of where the one-mile bridge is being proposed (Marsha Ward, FWC, pers. comm.).

Everglades mink

The Everglades mink (*Mustela vison evergladensis*) is listed as threatened by the FWC, and approaches the eastern limits of its distribution in the project area. It is secretive and seldom seen even where common (Humphrey 1992). The Everglades mink is known to use all types of shallow wetland habitats, but exhibits a decided preference for swamp forest habitat. Smith (1980) found Everglades mink to be most abundant around old agricultural canals, levees, and the Tamiami Trail roadway. Although road-kill data indicate that minks historically occurred along the entire length of the ten-mile roadway, a higher incidence of mortality tended to occur where old agricultural canals and/or spoil areas intersected the Tamiami Trail (Smith 1980). Consequently, these man-made upland habitats are more likely to be used by the Everglades mink for hunting and den placement. We note that the one-mile bridge traverses an old agricultural canal that may be affected by road removal and/or bridge construction.

Florida panther

Based on telemetry data, five Florida panthers (*Felis concolor coryi*) have been recorded within five miles of the project area on 117 occasions since 1989, with a large cluster of data points located immediately south of the footprint for the proposed one-mile bridge (USFWS 2006). No panthers have been documented north of the Tamiami Trail in this area, however, suggesting that the roadway and/or L-29 canal act as a barrier to panther movements here.

Concerns and Recommendations

Our original concerns on raising the Tamiami Trail were conveyed previously to the COE in a letter (enclosed) dated June 13, 2000, to James C. Duck, and these concerns remain relevant. Subsequently, we have relayed additional detailed comments, concerns, and recommendations on the various Tamiami Trail features directly to the COE through several Fish and Wildlife Coordination Act Report (FWCAR) documents as well as through the Florida State Clearinghouse. This correspondence includes a preliminary supplemental FWCAR (enclosed) dated August 11, 2005; a letter (enclosed) dated March 17, 2004, to James C. Duck; a preliminary FWCAR (enclosed) dated June 24, 2003, on the preliminary draft GRR/SEIS; a Planning Aid Letter (PAL; enclosed) dated February 26, 2001; a letter (enclosed) dated September 14, 2001, to Col. James G. May; and letters (enclosed) via the Florida State Clearinghouse dated March 4, 2008, to Lauren Milligan, and another dated January 16, 2002, to Jasmine Raffington. Due to our thorough evaluation of the previous alternatives examined in the above-referenced documents, the following comments will pertain to Alternative 3.3.2a, the current tentatively selected plan for the Tamiami Trail.

Conveyance improvements

We applaud the COE in their choice of Alternative 3.2.2a as the tentatively selected plan. This alternative would raise the unbridged roadway sufficiently to allow the stage in the L-29 canal to reach a height of 8.5 feet NGVD, one foot above the existing operating stage. This action in combination with a one-mile bridge is expected to increase the conveyance capacity under this portion of the Tamiami Trail from 1,250 to 1,848 cubic feet per second (cfs) and to increase flow volumes to Northeast Shark River Slough of Everglades National Park (ENP) by 92%.

Although the draft LRR mentions that conveyance over the remainder of Tamiami Trail would also be provided through improvements of existing culverts, it includes no details. As previously stated (see our letter to Lauren Milligan dated March 4, 2008), we believe that the strategic placement of box culverts at historic sloughs and/or aligned with the S-355 and other existing or planned water conveyance structures in the L-29 levee, in conjunction with downstream spreader swales, would greatly augment hydraulic and ecological connectivity. Additional culverts would be particularly beneficial in the western portion of the project corridor where the COE's environmental benefits analysis predicts enhanced ecological benefits with more openings that would improve flows into downstream slough communities of ENP while at the same time helping to further reduce high water impacts in Water Conservation Area 3 (the Everglades and Francis S. Taylor Wildlife Management Area, or EWMA) located north of the roadway.

Although some scientific uncertainties remain, we are encouraged by the COE's most recent modeling results, which predict that the addition of spreader swales below each set of Tamiami Trail culverts would result in an increase in the conveyance capacity of these culverts by approximately 12% at stage of 8.0 feet NGVD in the L-29 canal. Even greater flows would be realized when the L-29 canal stage reaches 8.5 feet. This and any other similar additional measures that would significantly increase depths and hydroperiods over thousands of acres in Northeast Shark River Slough would help enhance and restore the ecological functions of ENP as envisioned by the ENP Protection and Expansion Act of 1989. Such improvements in conveyance through the Tamiami

Trail also reduce the severity of flood-induced impacts to Everglades vegetative and wildlife communities located upstream in the EWMA. Furthermore, in order to facilitate the continuity of flows through the Tamiami Trail into the future, we request that a maintenance agreement be formulated between the COE and ENP whereby conveyance features associated with the culverts receive routine maintenance.

Listed species concerns

In the Evaluation Report of Annex A, the COE states that restrictions would be in place during construction to minimize impacts to the two wood stork rookeries and snail kite management areas. We request that the COE also take appropriate precautions to avoid disrupting the nesting efforts of the state-listed species of wading birds mentioned above that also use these same rookeries. The FWC has developed set-back distances to protect nesting bird colonies from human disturbance (Rogers and Smith 1994). These guidelines establish a 100-meter recommended set-back distance around mixed wading bird colonies where human disturbance should be restricted during the nesting season and during periods where wading birds are roosting at the colony site.

The COE does not mention what measures would be taken to avoid or minimize potential impacts to the state-threatened Everglades mink that may occur on old fill pads adjacent to the roadway, forested spoil areas associated with the agricultural canals, forested wetlands, and/or in the highway embankment. Everglades minks are known to have used such upland areas as den sites on the Tamiami Trail in the past (Smith 1980). A survey by an experienced biologist should be conducted in areas with suitable potential habitat prior to the initiation of construction activity to help determine whether any mink are present in the study area, and if any den areas may be present. Ideally, the survey should be done during the mink mating season, which extends from September through November. Although chalk-dusted trackboards and anal scent attractant has proven effective in detecting the Everglades mink (Humphrey and Zinn 1982), camera traps are another option, and are currently being tested as an alternate survey method in the Fakahatchee Strand (David Shindle, The Conservancy of Southwest Florida, pers. comm.). Ecotone areas between swamp forest habitats and the marsh, including the agricultural canal within the footprint of the one-mile bridge, would be preferred sampling locations. We recommend that the COE conduct a survey, and if Everglades minks are detected, we ask that the COE take appropriate precautionary measures to avoid or minimize impacts during construction-related activities.

Wildlife passage improvements

The Tamiami Trail road-kill survey conducted by the FWS in 2002-03 documented 991 road-killed vertebrates along two miles of selected transects over 13 monthly sampling periods (USFWS 2004). It is worth noting that the two transects with the highest amount of road-killed animals (66% of the total when combined) were located on either side of the proposed one-mile bridge. The transect associated with the agricultural canal at Coopertown located approximately two miles west of the proposed one-mile bridge possessed the highest proportion of roadkills (47% of the total; USFWS 2004). These data suggest that these north-south agricultural canals serve as travel corridors for wildlife in this portion of the Everglades. Everglades minks, which have been documented from roadkills along this section of the Tamiami Trail (Smith 1980), are

particularly vulnerable to highway-related mortality (Humphrey 1992). To reduce road-related mortality of the Everglades mink and other riparian wildlife, we recommend that underpass shelves be incorporated into bridge and culvert designs. Wildlife underpass shelves have proven to be effective in promoting the safe passage of three mustelid species in The Netherlands (Veenbaas and Brandjes 1999). The installation of wildlife crossing shelves on the bridge abutments of the eastern one-mile bridge would create a safe passage corridor for large mammals (including the endangered Florida panther [*Puma concolor coryi*]), medium-sized mammals, and other wildlife that use the L-31 levee and the tree-lined agricultural canal that traverses the Tamiami Trail here. A shelf width of 10 to 15 feet placed at an elevation slightly above the mean high water line would accommodate the larger animals as well as the small. A shelf width of 2 to 3 feet would be sufficient to accommodate the Everglades mink. Please refer to our preliminary FWCAR dated June 24, 2003, for further details concerning features for reducing road related wildlife mortality.

The draft LRR states that the one-mile bridge would provide for the movement of small animals beneath it and reduce road-related wildlife mortality by about nine percent. Although not described adequately in the draft LRR, it is our understanding that the COE plans to remove the peat soils down to bedrock beneath the bridge footprint, presumably to improve the conveyance of flows from the L-29 canal into ENP. Soil depths in the vicinity of the Tamiami Trail here are reported to range from one to three feet (Scheidt 2000). Consequently, a water depth of two feet in the marsh would equate to a water depth of three to five feet in the scraped area beneath the bridge. Absent wildlife shelves or other elevated passage features, the deeper water below the bridged expanse would not provide for the safe passage of terrestrial and semi-aquatic animals, as is assumed in the draft LRR. We recommend that those areas beneath the bridge where terrestrial wildlife are most likely to occur retain their peat soil and the additional elevation and vegetative cover that it provides. Such areas should include, at a minimum, the east and west ends of the bridge and the location where the agricultural canal would intersect the proposed bridge.

Summary

We fully support the ecological benefits expected from this project, and will continue to work closely with the COE through the project's implementation. In order to realize the ecological benefits of constructing the features described in the draft LRR to both the EWMA and ENP, it is imperative that the remaining conveyance structures for Mod Waters be constructed and the accompanying Combined Structural and Operational Plan (CSOP) be completed and implemented upon completion of the Tamiami Trail component. Although we continue to believe that the placement of additional culverts at key locations in the western portion of the project corridor would provide further ecological benefits to both the EWMA and ENP, we realize that budget constraints exist. We asked that the COE give strong consideration to additional conveyance along this sector of the Tamiami Trail in upcoming CERP projects such as Decompartmentalization of WCA-3. Although we do not find this project to be inconsistent with Chapters 370 or 372, Florida Statutes, under the Florida Coastal Management Plan, we ask that the COE address our concerns and recommendations contained in this letter as well as prior ones that have been conveyed to them over the course of the last eight years to ensure that any

unintentional adverse impacts to the area's natural resources, particularly to state-listed wildlife species, are either avoided or minimized.

If you or your staff would like to coordinate further on the recommendations contained in this report, please contact me at (850) 410-5272 or email me at maryann.poole@MyFWC.com, and I will be glad to help make the necessary arrangements. If you or your staff has any specific questions regarding our comments, I encourage them to contact Tim Towles at (772) 778-6354; email tim.towles@myFWC.com. If you or your staff would like to coordinate further on our recommendations for surveying for the presence of state-listed species along the project corridor, I encourage them to contact Marsha Ward at (954) 746-1789; email marsha.ward@myFWC.com.

Sincerely,

Mary Ann Poole

Mary Ann Poole, Director
Office of Policy and Stakeholder Coordination

map/dtt/tr
ENV 1-3-2
Tamiami Trail_1253
Enclosures
cc: Pauline Smith, COE, Jacksonville
Marie Burns, COE, Jacksonville
Greg Knecht, DEP, Tallahassee
Inger Hansen, DEP, West Palm Beach
Paul Linton, SFWMD, West Palm Beach
Paul Souza, FWS, Vero Beach
Kevin Palmer, FWS, Vero Beach
Dan Kimball, ENP, Homestead
Chuck Collins, FWC, West Palm Beach
Marsha Ward, FWC, Sunrise

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FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

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April 17, 2008

Ms. Marie G. Burns
Acting Chief, Planning Division
Jacksonville District Corps of Engineers
Planning Division
Post Office Box 4970
Jacksonville, Florida 32232-0019

Re: SHPO/DHR Project File No.: 2008-425
Received: February 8, 2008
SAI#: FL200802053982C
Environmental Assessment – Tamiami Trail Modifications Limited Reevaluation Report
Miami- Dade County

Dear Ms. Burns:

This agency received a copy of your January 28, 2008 letter regarding the preparation of an environmental assessment for the Tamiami Trail modifications submitted to the Florida State Clearinghouse. However, we did not respond to the Clearinghouse within their timeframe, but reviewed the referenced project in accordance with Section 106 of the National Historic Preservation Act as amended, and the National Environmental Policy Act as amended. It is the responsibility of this office to advise and assist, as appropriate, the U.S. Army Corps of Engineers in carrying out historic preservation responsibilities. We cooperate with your agency to ensure that historic properties are taken into consideration at all levels of planning and development. This office consults with the your office on undertakings that may affect historic properties, and provides guidance to ensure the content and sufficiency of environmental documentation and project plans identify and protect, minimize or mitigate harm to such properties.

As you are already aware, raising the elevation of the Tamiami Trail roadway on an elevated bridge structure will have an adverse effect on the integrity of a historic property that has been determined eligible for listing in the National Register of Historic Places (8DA6510). In addition, the Airboat Association of Florida headquarters (8DA6768), and the Coopertown Airboat Rides and Restaurant property (8DA6767), are eligible for listing in the National Register.

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☐ South Regional Office (561) 416-2115 • FAX: 416-2149
☐ North Regional Office (850) 245-6445 • FAX: 245-6435
☐ Central Regional Office (813) 272-3843 • FAX: 272-2340

The Tamiami Canal (8DA6766) was previously determined to be eligible for inclusion in the National Register; however, we question that finding upon further evaluation of that property by this office. That 10-mile segment of the canal is no longer a roadway ditch and since ca. 1960 has become a major water control and movement structure.

Lastly, there are several cultural resources that may be within the area of potential effect of the proposed project that may be affected directly or indirectly. The resources are the Osceola and Tigertail Camps (likely traditional cultural properties) and 52 prehistoric sites in the Shark Valley Archeological District south of Tamiami Trail in the Everglades National Park.

We look forward to continued consultation and coordination with your agency and other interested parties in completion of environmental, historic preservation documents in fulfillment of all requirements, including Coastal Zone Consistency. If you have any questions concerning the brochure, or need any assistance, please contact Laura Kammerer, Deputy State Historic Preservation Officer for Review and Compliance, at 850-245-6333 or lkammerer@dos.state.fl.us.

Sincerely,

Frederick P. Gaske

Frederick P. Gaske, Director, and
State Historic Preservation Officer

Xc: Lauren Milligan, Florida State Clearinghouse
Melissa Memory, Everglades National Park

South Florida Regional Planning Council

April 30, 2008

Ms. Lauren P. Milligan
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Blvd, Mail Station 47
Tallahassee, Florida 32399-3000

RE: SFRPC#08-0418, SAI#FL200804154170C, Department of the Army, Jacksonville District Corps of Engineers, Limited Reevaluation Report and Environmental Assessment (LRR/EA) for Modified Water Deliveries to Everglades National Park and Tamiami Trail Modification, Miami-Dade County, Florida.

Dear Ms. Milligan:

We have reviewed the above-referenced LRR/EA detailing the recommended Tentatively Selected Plan Alternative 3.2.2.a to help restore natural hydrologic conditions within the Everglades National Park. We understand that Alternative 3.2.2.a was chosen as the best alternative of 27 in regards to hydrologic and ecologic performance, targets, cost and time. We have the following comments:

- Council staff generally agrees that recommended Alternative 3.2.2.a will benefit the South Florida region and will further our goals for a more livable, sustainable, and competitive South Florida. The goal of restoring the natural hydrologic conditions to Everglades National Park is generally consistent with the *Strategic Regional Policy Plan for South Florida (SRPP)*, specifically the following goals and policies:

Goal 14 **Preserve, protect, and restore Natural Resources of Regional Significance.**

Policy 14.1 Address environmental issues, including the health of our air, water, habitats, and other natural resources, that affect quality of life and sustainability of our Region.

Policy 14.2 Improve the quality and connectedness of Natural Resources of Regional Significance by eliminating inappropriate uses of land, improving land use designations, and utilizing land acquisition where necessary.

Goal 15 **Restore and protect the ecological values and functions of the Everglades Ecosystem by increasing habitat area, increasing regional water storage, and restoring water quality.**

Policy 15.2 Restore natural volume, timing, quality, and distribution of water to the Everglades, Florida Bay, Biscayne Bay, other estuaries, and the Atlantic Ocean by:

a. implementing structural and operational modifications to the Central and Southern Florida Project including Modified Water Deliveries to Everglades National Park, the C-111 Project, and the Comprehensive Everglades Restoration Plan;
b. implementing the East Coast Buffer/Water Preserve Areas; and
c. implementing the Lower East Coast Water Supply Plan so that the needs of the natural system are met consistent with ecosystem restoration.

Thank you for the opportunity to comment. If you require further information, please contact me at 954-985-4416.

Sincerely,

Rachel M. Kalin
Planning Technician

RMK/kal

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cc: Subrata Basu, Interim Director, Planning and Zoning, Miami-Dade County
Lee Hefty, Chief, Environmental Regulation Division, Miami-Dade County DERM

3440 Hollywood Boulevard, Suite 140, Hollywood, Florida 33021
Broward (954) 985-4416, State (800) 985-4416
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Tim Towles

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FAX (850)922-5679

August 11, 2005

Colonel Robert M. Carpenter
District Engineer
U.S. Army Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Re: Supporting documents for the Draft Revised General Reevaluation Report/Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail, Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Colonel Carpenter:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated agency review of the supporting documents being used to craft the Draft Revised General Reevaluation Report/Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park (MWD). These documents include the MWD Tamiami Trail Modifications Benefits Analysis, results from RMA-2 modeling of bridge lengths in Tamiami Trail, an Alternative Optimization Report prepared by Everglades National Park (ENP Report), and a Tamiami Trail Road-kill Survey report prepared by the U.S. Fish and Wildlife Service (FWS). Our comments and concerns on the Tamiami Trail Project are included in the following preliminary supplemental Fish and Wildlife Coordination Act Report (FWCAR), which is being submitted under the authority of the Fish and Wildlife Coordination Act of 1958.

Background

This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5 Square Mile Area residential development along the eastern side of Northeast Shark River Slough (NESRS); conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B, and NESRS; and an overall operational plan for the newly constructed water control structures.

RECD AUG 15 2005

Project Description

The reason that the 2003 GRR/SEIS is being revised is that new information regarding probable damage to the Tamiami Trail was raised during and subsequent to the public and agency review of the final report, leading to a determination by the U.S. Army Corps of Engineers (COE) that the recommended plan did not contain all of the features necessary for implementation. Recent modeling indicates that an increase in the design high-water stage for the L-29 canal from 9.3 ft to 9.7 ft would be necessary, accompanied by the need for a different, and potentially more costly, method such as raising the road to mitigate effects to the Tamiami Trail. Compounding this added expense, worldwide cost of construction materials increased greatly, resulting in substantial increases in cost estimates for the alternatives. Due to these cumulative increases in costs, the tradeoffs between benefits and costs were reanalyzed for the purpose of determining whether a different alternative might make better use of limited funds.

Of the nine basic alternatives previously addressed by our FWCAR dated June 24, 2003, three have been retained for re-evaluation, and a new alignment has been proposed for one of these. Those retained for further evaluation include: Alternative 9, the 3,000-foot bridge located east of the Blue Shanty Canal (the previous Tentatively Selected Plan) with a higher roadway elevation; Alternative 10, a centrally located 4-mile bridge with a higher roadway elevation ("central 4-mile bridge"); Alternative 11, an eastern 4-mile bridge with a higher roadway elevation ("east 4-mile bridge"); and Alternative 17, a 10-mile bridge. The central 4-mile bridge is a slight realignment of Alternative 6a from the 2003 GRR/SEIS, and had been considered by Everglades National Park (ENP) and the COE as a strong contender for the new tentatively selected plan. However, further increases in construction cost estimates led the COE once again into alternative formulation to take into consideration shorter bridge lengths at various locations. Six additional alternatives were identified and are as follows: Alternative 12, a centrally located 3-mile bridge ("central 3-mile bridge"); Alternative 13, a centrally located 2-mile bridge ("central 2-mile bridge"); Alternative 14, a 2-mile bridge on the west end of the project area and a 1-mile bridge on the east end ("2-mile west/1-mile east bridges"); Alternative 15, a 1.3-mile bridge on the west end of the project area and a 0.7-mile bridge on the east end ("1.3-mile west/0.7-mile east bridges") ; and Alternative 16, three 3,000-foot bridges in the central portion of NESRS (Figure 1). We understand that the COE is now proposing the 2-mile west/1-mile east bridge (Alternative14) as the new Tentatively Selected Plan. The western 2-mile bridge would begin approximately 1.5 miles west of the L-67 Levee and extend to the east of the Blue Shanty Canal, requiring one access ramp to the Everglades Safari airboat concession located on the Blue Shanty Canal. The eastern 1-mile bridge would begin approximately 1.5 miles west of the L-31 N levee and extend to the west for 1 mile, capturing an old north-south agricultural canal. This bridge would lie between, and equidistant from, the two wading bird rookeries located immediately south of the Tamiami Trail. For our comments concerning Alternative 17, the 10-mile bridge (previously known as Alternative 5), please refer to our previous FWCAR dated June 24, 2003.

Our three major areas of concern with regard to the potential impacts of this project remain as follows: (1) impacts to existing recreational facilities and access points of the Francis S. Taylor Wildlife Management Area (WCA-3B), (2) impacts to fish and wildlife resources, and (3) potential loss or degradation of Everglades marsh. Many of our comments and concerns on the

Tamiami Trail feature have been conveyed previously to the COE in a letter dated March 17, 2004 (attached), to James C. Duck; in a review of a preliminary draft GRR/SEIS via a preliminary FWCAR (attached) dated June 24, 2003; through a Planning Aid Letter (PAL) dated February 26, 2001; and via the Florida State Clearinghouse in a letter dated January 16, 2002, to Ms. Jasmin Raffington. Our comments in this current letter focus on Alternatives 10 through 16, as well as the ecological benefits to be expected from each. We have already reviewed the design for the 10-mile bridge in our FWCAR dated June 24, 2003.

ENP Report and Benefits Analysis Procedures

The MWD Tamiami Trail Modifications Benefits Analysis was constructed largely from the ENP Report through two collaborative interagency workshops held by the COE in May and July, 2005. Although the ENP report integrated a great deal of historical and ecological information, its direct applicability to the Tamiami Trail RGRR is limited by a number of its assumptions. A screening process was therefore conducted by the interagency team whereby the number of performance measures (PMs) in the ENP Report was reduced from 33 to 12 PMs. The remaining 12 PMs address four important characteristics of ENP: hydrology, ridge and slough processes, vegetation, and fish and wildlife resources. An additional hydrologic PM for restoring water deliveries to ENP was added during the July workshop, resulting in a total of 13 PMs. The quantitative and qualitative values for the PMs were converted into scores (0 to 7) for each of the PMs. These scores were added together to produce an index of the quality of restoration for each alternative. Average annual habitat unit benefits were then calculated for each of the alternatives for relative comparison. The details of the above processes are explained in the COE document entitled "MWD Tamiami Trail Modification Benefits Analysis Procedures August 2005."

Although we support the overall objectives upon which the 13 performance measures for calculating benefits are based, we do not necessarily agree with all the hypotheses that the ENP Report used to justify the selected PMs. For example, we agree that the restoration of ridge and slough processes is an appropriate objective, and that the performance measure to reverse filling in of sloughs is appropriate. However, we do not believe that there is sufficient scientific evidence to support the higher water depths that the report suggests would be necessary to re-create ridge and slough habitat. The report states that the 100% restoration goal for the area downstream of the 4-mile centrally located bridge would require water depths greater than 2 feet for 80 - 100% of the time in the sloughs. On the contrary, we have supporting evidence from the current Everglades system that extreme high water depths of relatively long duration lead to a deterioration of ridge and slough landscape features and to declines in their associated wildlife populations. Southern WCA-3A has experienced severe degradation of its ridge components (sawgrass ridges and tree islands) due to excessive depths and durations during the past 40 years (Heisler et al. 2002, McPherson 1973, Patterson and Finck 1999). The Heisler et al. study found that marsh water levels exceeding 2.0 feet led to tree island flooding impacts demonstrated by a statistically significant ($P < 0.0001$) reduction in tree and shrub species richness. If we agree that tree islands, ridges, and sloughs are all defining components of a restored Everglades, then clearly more work needs to be done to reconcile the recommendation for a hydroperiod that promotes ridge and slough maintenance while also supporting tree islands.

The other objectives being used to calculate habitat units for alternative comparisons include restoring water deliveries to ENP, restoring vegetative communities, and restoring fish and wildlife resources. There appear to be credible sources of both historical and ecological information presented in the ENP Report that could be used to help evaluate the ecological benefits of the five remaining alternatives for conveying flows through the Tamiami Trail. These include hydrologic connectivity, velocity distributions downstream of the bridges, ground elevation, historic flow information, and historic slough locations based on an unpublished 1917 survey by J. W. King.

Comparison of the 4-Mile Bridge Alternatives (Alternatives 10 and 11) to a 3,000-Foot Bridge (Alternative 9)

The implementation of a 4-mile bridge alternative would provide for greater compatibility between MWD and the proposed Comprehensive Everglades Restoration Plan (CERP) Decompartmentalization ("Decomp") project by reducing the amount of retrofitting needed for the Tamiami Trail in that project. Information contained in the COE's Benefits Analysis determined that the central 4-mile bridge (Alternative 10) would produce 32,674 average annual habitat unit benefits and the east 4-mile bridge (Alternative 11) would produce 28,549 unit benefits. In contrast, the 3,000-foot bridge would only produce 12,453 average annual habitat unit benefits. Unfortunately, the COE has indicated that there are no longer sufficient funds to construct a 4-mile bridge.

The greater bridge lengths in Alternatives 10 and 11 would have augmented the hydrologic connectivity between the L-29 canal and ENP marshes to the south, facilitating the movement of aquatic biota between these two areas. As stated in the ENP Report, this enhanced connectivity may lead to improvements in micro-topography in the ridge and slough system in the long term by creating a larger area with open water or sparse vegetation. When water depths are shallow, such habitats are known to harbor greater fish densities and to be more productive foraging sites for wading birds (J.A. Surdick 1998). Improved foraging habitat should benefit the wading bird rookeries located in the vicinity of the Tamiami Trail. For additional comments on connectivity effects, please refer to our previous letter dated June 24, 2003.

The Tamiami Trail road-kill survey conducted by the FWS in 2002-03 documented 991 road-killed vertebrates along two miles of selected transects over 13 monthly sampling periods. Reptiles including turtles, snakes, and alligators were the most commonly found carcasses, constituting 84% of the total, while mammals, birds, and amphibians comprised the remaining 14% of the road-killed animals. Based on the two miles of transects surveyed in the FWS Tamiami Trail road-kill survey, there was an average of 262 road-kills/mile/year. An extrapolation of this data to a 4-mile bridge alternative may reduce the risk of wildlife mortality by seven-fold, resulting in 900 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. Both the central and the east 4-mile bridge alternatives would result in a reduction of present road-related wildlife mortality by approximately 37% compared to only 5% reduction by the 3,000-foot alternative. If additional box culverts in these alternatives are strategically placed, further reductions in wildlife mortality could be realized. The FWS survey also reinforces the need for placement of a wildlife crossing at the juncture of

the L-30 and L-31 levees. For more details of our suggestions for reducing road-related mortality, please refer to our previous letter dated June 24, 2003.

Analysis by the COE using the RMA-2 hydrologic model was conducted to evaluate the velocity distribution of flows south of the Tamiami Trail for the different bridge configurations. The COE estimated that velocities in excess of 0.1 feet/second (ft/sec) would be excessive and destructive to the maintenance of the ridge and slough habitat. The RMA-2 modeling results predicted that 411 acres of marsh would be negatively affected by the 3,000-foot bridge, compared to only 98 acres by the central 4-mile bridge and 105 acres by the east 4-mile bridge. The ENP Report identified a lower velocity threshold of 0.045 ft/sec to evaluate differences between alternatives. Using this criterion, velocities greater than 0.045 ft/sec were estimated to negatively affect 1,649 acres under the east 4-mile bridge alternative and 438 acres under the central 4-mile bridge alternative. Although it is assumed that more natural flow velocities would provide greater benefits to aquatic biota, the appropriate target flow velocities, as well as the extent of benefits and their relative importance to wildlife populations is difficult to ascertain.

Another potential issue concerning the greater bridge lengths under Alternatives 10 and 11 is the longer construction time required. Under Alternative 7a (the 3,000-foot bridge) in the 2003 GRR, the construction period was estimated to last 24 months, whereas the length of time for completing construction of any one of the new alternatives is estimated to take 36 months. We hope that any additional time needed to complete the Tamiami Trail modifications does not delay the COE's ability to implement the portion of MWD that will be addressed under the Combined Structural and Operational Plan.

Comparison of central 4-mile (Alternatives 10) and east 4-mile bridge (Alternative 11)

Future plans under Decomp would remove the southern portion of the L-67A levee and the L-29 levee, facilitating sheetflow through the western portion of WCA-3B into NESRS. Alternative 10, with its more centrally located bridge, would provide the most direct routing for these future flows, and, we are hopeful, would reduce potential flooding impacts to WCA-3B.

According to the ENP Report, the average ground elevation at the central 4-mile bridge location is somewhat lower than it is at the east 4-mile bridge location. Culvert flow data during the peak of the 1947 flood were used to demonstrate that 51% of the flows across the Tamiami Trail occurred at the central location, while only 37% of the flows occurred at the eastern location. Information compiled by the COE using recent USGS survey data for ground surface elevations in NESRS 1,000 feet south of the Tamiami Trail confirms the more general ground elevation information contained in the ENP Report. A graphical presentation of this survey data depicts two "deep" sloughs at ground surface elevations less than 6.0 feet NGVD at both the east 4-mile bridge location and the west 4-mile bridge location (Figure 1). The ENP Report likewise analyzes historic photographs from 1917 in the project area and determines that a greater number of "deep" sloughs historically occurred at the central location than at the eastern location. We believe that further benefits could be accrued by placing additional box culverts at historic slough locations, particularly in the deep centrally located slough at Frog City.

The east 4-mile bridge could lead to greater impacts to the Tamiami East and Tamiami West rookery sites located immediately south of the roadway. Several listed species of wading birds, including the white ibis (*Eudocimus albus*), tricolored heron (*Egretta tricolor*), little blue heron (*Egretta caerulea*), and snowy egret (*Egretta thula*) (all state-listed as species of special concern), and the wood stork (*Mycteria americana*) (state- and federally listed as endangered) are known to nest in these colonies (T. Towles, FWC, personal observation, 1997). The FWS roadkill survey documented the mortality of wood storks and snowy egrets along the current roadway. An elevated bridge could lead to an increased risk of wading bird strikes by passing traffic, and reduce productivity through the visual disturbance created by traffic passing within the sight of canopy-nesting wading birds.

The Everglades mink (*Mustela vison evergladensis*) is listed as threatened by the FWC, and approaches the eastern limits of its distribution in the project area. The greatest number of historic Everglades mink roadkills documented for this portion of the Tamiami Trail was in the western portion of the project area, and specifically centered at the Blue Shanty Canal (Smith 1980). Consequently, the central location of Alternative 10, spanning the Blue Shanty Canal, may reduce the risk of Everglades mink road-related mortality to a greater extent than would the more easterly alignment of Alternative 11.

According to the RMA-2 analysis conducted by the COE, the central 4-mile bridge would result in fewer acres being negatively affected by relatively high flow velocities than would occur with the east 4-mile bridge. Using the COE's criterion of 0.1 ft/sec, an additional 187 acres of marsh would be affected by higher velocities in the central bridge alignment than in the eastern bridge alignment. No velocity estimates were calculated for Alternative 11 in the ENP Report.

Comparison of 2-mile west/1-mile east bridges (Alternative 14), a 3-mile central bridge (Alternatives 12), a 2-mile central bridge (Alternative 13), and a 3,000-foot bridge (Alternative 9)

Results of the Benefits Analysis demonstrated that the combined hydrologic and ecologic average annual lift of the 2-mile west/1-mile east alternative (28,371 habitat units [hu]) was slightly greater than the 3-mile central bridge alternative (27,973 hu), but the 2-mile central bridge alternative also demonstrated a considerable amount of lift (22,422 hu). All of these alternatives exceeded the performance of the 3,000-foot bridge (12,453 hu) by quite a margin. The 2-mile west/1-mile bridge design was shown to provide slightly greater hydrologic average lift (24,522 hu) than a single 3-mile bridge (23,998 hu). Improvements in hydrologic connectivity between the L-29 Canal and NESRS and in the distribution of flows from west to east along the Tamiami Trail in the 2-mile west/1-mile east bridges alternative were the primary contributors to this lift. The 2-mile west/1-mile east bridges alternative, with a connectivity value of 34%, offers greater connectivity than does a single central 3-mile bridge, with a value of 30%. As stated in the ENP Report, such enhanced connectivity may lead to improvements in micro-topography in the ridge and slough system in the long term by creating a larger area with open water or sparse vegetation. When water depths are shallow, such habitats are known to harbor greater fish densities and to be more productive foraging sites for wading birds (J.A. Surdick 1998). The creation of such habitat improvements at the eastern bridge location of

Alternative 14 may be of particular benefit to wading birds due to the two rookeries that would be situated at both the east and west ends of this bridge. The 2-mile west/1-mile east bridge alternative was also more effective in re-creating the normal east to west distribution of flows that would occur if the Tamiami Trail did not exist. This alternative matched 59% of the natural east to west distribution, whereas both the 3,000-foot bridge and the central 3-mile bridge matched 57% of the east to west distribution, and the single 2-mile bridge matched only 51% of this distribution. The redistribution of flows is important since it is a primary overarching objective of the MWD project.

We also learned from engineering staff of the South Florida Water Management District (SFWMD) that additional bridge capacity along the eastern reach of the L-29 canal may facilitate the transfer of greater quantities of water from WCA-3B into the L-29 canal and NESRS, which may help reduce the severity of extreme high water predicted to occur in eastern WCA-3B under the Combined Structural and Operational Plan. Flows from the L-29 canal under a 1-mile bridge into the three relatively deep sloughs in the east during dry conditions would also provide for a more uniform and gradual recession rate and reduce unnatural dry downs, possibly enhancing wading bird nesting success. There may also be a greater capacity in the eastern than in the western portion of NESRS for receiving flows due to the greater amount of subsidence that has occurred in the east since 1946 (from 2 to 3 feet) than in the west (none to 2 feet) (Scheidt et al. 2000). Such physical and hydrological characteristics that act to increase the conveyance of flows from the L-29 canal to the south, and augment the capacity of the L-29 canal to receive flows from WCA-3, would be considered as beneficial to Everglades habitat in both WCA-3 and in NESRS.

Both the 2-mile west/1-mile east bridge and the central 3-mile bridge alternatives would result in a reduction of present road-related wildlife mortality by approximately 29% compared to 19% for the central 2-mile bridge, and only 5% reduction by the 3,000-foot alternative. If additional box culverts in these alternatives are strategically placed, further reductions in wildlife mortality could be realized. Based on the two miles of transects on the Tamiami Trail roadway surveyed in the FWS Tamiami Trail road-kill survey, there was an average of 262 road-kills/mile/year. An extrapolation of this data to a three-mile bridge alternative may reduce the risk of wildlife related mortality by more than five-fold, resulting in 635 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. The 2-mile bridge alternative may reduce the risk of wildlife related mortality by more than three-fold, resulting in 374 fewer road-killed animals per year than would occur with the 3,000-foot bridge alternative. For more details of our suggestions for reducing road-related mortality, please refer to our previous letter dated June 24, 2003.

The 2-mile west/1-mile east bridges, central 3-mile bridge, and central 2-mile bridge alternatives would not be expected to have any adverse effects on the two Tamiami Trail wading bird rookeries. The 2-mile west/1-mile east bridge alternative avoids potential impacts by locating the eastern 1-mile bridge in between the two wading bird rookeries. The increased flows and hydroperiods to be expected by this bridge alignment may improve foraging habitat for wading birds nesting in these colonies.

The greatest number of historic Everglades mink road-kills documented for the eastern portion of the Tamiami Trail was centered at the Blue Shanty Canal (Smith 1980). Since the western 2-mile bridge of Alternative 14 spans the Blue Shanty Canal, the risk of Everglades mink road-related mortality may be reduced. The reconnection of the linear and natural "upland" and aquatic features associated with the Blue Shanty may also facilitate safe passage for other terrestrial and aquatic wildlife that utilize the Blue Shanty as a travel corridor.

Information contained in the COE's Benefits Analysis determined that the RMA-2 modeling results predicted that 295 acres of marsh would be negatively affected by velocities > 0.1 ft/s under the 2-mile west/1-mile east alternative, compared to 411 acres affected by the 3,000-foot bridge alternative. The 3-mile and 2-mile bridge alternatives would affect somewhat fewer acres than the 2-mile west/1-mile east bridge. Since the ecological significance of these higher velocities is difficult to define and the acreage affected is relatively minor considering the larger benefits to be derived through lengthening inundation periods over much of NESRS, these relatively minor effects would be acceptable for any of the alternatives presently being considered.

Although the implementation of a 2-mile west/1-mile east bridge alternative would not provide as many benefits as a 4-mile bridge, it is believed to offer a sufficient amount of compatibility between MWD and future restoration under the Decomp project, and would reduce the amount of retrofitting needed for the Tamiami Trail under Decomp. We also understand that the central 3-mile bridge and 2-mile west/1-mile east bridge alternatives, as it now stands, both exceed the cost limitations for the project. In the event that construction costs further limit the length of bridge than can be built, we believe that the results obtained from the Benefits Analysis would support as a minimum either the 1.3-mile west/ 0.7-mile east bridge alternative or the 2-mile central bridge alternative as being adequate to convey and distribute MWD flows to ENP. We furthermore believe that the additional benefits identified in the split bridge alternatives warrant maintaining this design and that at least one-third of the total bridge length should be apportioned to the east portion of NESRS. This ratio would improve the redistribution of flows to the full breadth of NESRS, and would improve connectivity between the L-29 canal and ENP to a greater extent than would be afforded by a single bridge span.

Recreation concerns

Those concerns that were previously addressed pertaining to potential impacts to FWC recreational facilities and access points under Alternatives 1 through 8 (see attached June 24, 2003 preliminary FWCAR) remain. The only public recreational access that is anticipated to be lost under either Alternatives 12 or 14 would be the permanent loss of access to three miles of the south side of the L-29 canal and to culvert outfall sites on the south side of the Tamiami Trail for bank anglers. It is assumed that there would also be a temporary loss of access to the south bank of the remaining seven miles of the roadway during the construction period. Perhaps the reduced access to the south bank of the L-29 canal could be compensated for by providing scenic view pull-offs on the two bridges that could also serve as fishing platforms. The increase in connectivity between the L-29 canal and ENP marshes under either three-mile bridge alternative may enhance the recreational fishery value of the L-29 canal to a greater extent than would the

connectivity created by a 3,000-foot bridge. We further understand that Alternatives 12 and 14 would not affect vehicular access to the L-29 Levee or boat access to the L-29 canal.

Other related issues

We understand that water quality treatment for the roadway will probably not be required at this time since the impervious surface of the highway is not expected to significantly increase. On the other hand, we understand that an expensive water quality treatment system is being incorporated into the construction design for the bridge spans. We would support best management practices, such as using stormceptors or similar technologies for improving water quality of stormwater being discharged while minimizing wetland impacts. We encourage further investigation into cost effective treatment technologies for reducing bridge stormwater runoff, so that the bridge lengths and associated ecological benefits can be maximized.

We recognize that some private property issues related to increasing flood stages and possibly to rights of ways south of the Tamiami Trail are under resolution at the present time. We hope that these issues can be satisfactorily resolved such that the ecological benefits of project implementation can be realized in a timely manner.

Concerns and Recommendations

The stated authority limitations of the COE and the financial limitations of ENP will likely preclude them from implementing the more ecologically preferred alternatives, such as Alternatives 10 or 17 for the Tamiami Trail portion of the MWD project. Therefore, Alternative 14, or a derivative thereof, would appear to be the most reasonable interim alternative to implement prior to the approval of a more permanent solution under CERP. In our preliminary FWCAR for the GRR, dated June 24, 2003, we had previously agreed that a 3,000-foot bridge length would suffice due to fiscal constraints at that time. Should budget shortfalls for this project occur, we would continue to support the construction of one or more bridges intermediate in combined length between two and three miles, in order to avoid any further delays in completing the Tamiami Trail, and ultimately the MWD project. In summary, we offer the following recommendations concerning the alternatives under consideration.

1. We continue to support the idea of selecting an alternative that would be as compatible as possible with the upcoming CERP Decomp project, and reduce costly retrofitting of the Tamiami Trail in the future. Contingent on funding commitments from the Department of the Interior, we believe that Alternative 14 best addresses this compatibility.

2. Of the two most promising alternatives now being considered for this project, Alternative 14 would appear to offer the most benefits for fish and wildlife resources while avoiding potential impacts. This alternative would reduce the risk of wildlife mortality at the Blue Shanty Canal, particularly that of the threatened Everglades mink, since this canal would

bridge. This alternative would also avoid possible impacts to two important wading bird bridge between them.

3. Although Alternative 14 is expected to eliminate three miles of bank access along the south bank of the L-29 canal and cause a temporary loss of access to the remainder of the south bank during construction, we consider these impacts to be minimal when compared to some other alternatives. However, special attention will need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4, the boat ramp and parking facility at Recreation Site No. 1, or to the boat ramp facility located west of the S-12D structure.

4. Wading bird and snail kite nesting patterns, as well as Everglades mink territories, may vary with the prevailing hydrological conditions, during the multiple years that construction will likely be occurring. Therefore, surveys should be conducted by qualified biologists on an annual basis over the period of active construction to determine whether any mink territories or nesting efforts of state- and federally protected bird species would potentially be affected.

If you or your staff would like to coordinate further on the recommendations contained in this report, please contact me at 850-488-6661, or email me at maryann.poole@MyFWC.com, and I will be glad to help make the necessary arrangements. If your staff has any specific questions regarding our comments, I encourage them to contact Dr. Joseph Walsh at our office in Vero Beach (772-778-5094; email joe.walsh@MyFWC.com).

Sincerely,

Mary Ann Poole

Mary Ann Poole, Director
Office of Policy and Stakeholder Coord.

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ENV 1-3-2
Enclosures (2)
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CC: Mr. Jay Slack, USFWS, Vero Beach
Mr. Dan Kimball, ENP, Homestead
Ms. Tambour Eller, COE, Jacksonville
Mr. Chuck Collins, FWC, West Palm Beach
Mr. Larry Gerry, SFWMD, West Palm Beach

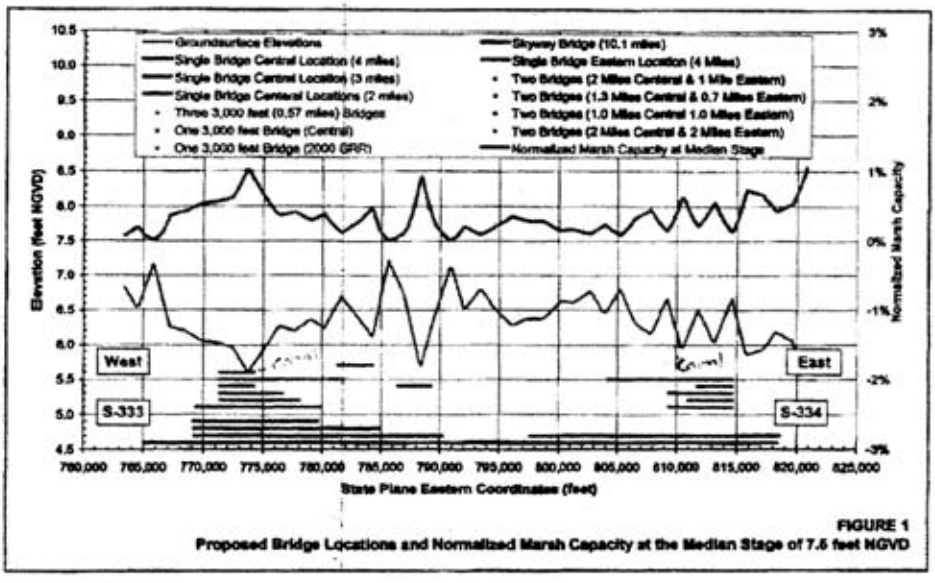

FIGURE 1
Proposed Bridge Locations and Normalized Marsh Capacity at the Median Stage of 7.5 feet NGVD

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FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

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VICTOR J. HELLER, Assistant Executive Director

BRIAN S. BARNETT, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(904)488-6661 TDD (904)488-9542
FAX (904)921-5679

June 24, 2003

Colonel James G. May
District Engineer
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: General Reevaluation Report/ Supplemental Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail, Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Colonel May:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the revised preliminary draft GRR/SEIS for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park ("Mod Waters"), dated June 2001. This project is one of four components that have arisen from the original 1992 Modified Water Deliveries General Design Memorandum. The other highly interrelated components include flood protection of the 8.5-square-mile area residential development along the eastern side of Northeast Shark River Slough (NESRS); conveyance of water between Water Conservation Area (WCA)-3A, WCA-3B, and NESRS; and an overall operational plan for the newly constructed water control structures. This report is being submitted following a hiatus in activity on the Tamiami Trail Project due to a legal challenge to the 8.5-square-mile flood protection project, which has since been satisfactorily resolved. Our comments and concerns on the Tamiami Trail Project component are included in the following preliminary Coordination Act Report (CAR), which is being submitted under the authority of the Fish and Wildlife Coordination Act of 1958.

Description of Alternatives

This GRR/SEIS is being developed because new information acquired since the project was approved in 1992 indicates that the original design would be insufficient to pass the volume of water that would need to be conveyed under the Tamiami Trail via Mod Waters. In addition to the six basic alternatives (nine, if water quality treatment options are considered separately) previously addressed in our Planning Aid Letter (PAL), dated February 23, 2001, two completely

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new alternatives (seven and eight) have been developed, a modification of Alternative 5 (5C) has been added, and Alternative 6 has now been formally accepted. Also, a new bridge alternative, "Alternative 9 ", with a 2.7-mile span length, intermediate between that of Alternatives 6 and 7, is being floated by the Department of the Interior as a possible compromise. Since we have previously been informed by your staff that any alternatives with bridge expanses much longer than what is deemed necessary to convey Mod Water flows are considered to be outside of your authority for this project, we have opted not to discuss the tentative "9a" and "9b" alternative options any further. For a short description of these 18 alternatives and their associated options, please refer to Table 1. Our three major areas of concern with regard to the potential impacts of this project remain as follows: (1) impacts to existing recreational facilities and access points of the Francis S. Taylor Wildlife Management Area (WCA-3B), (2) impacts to fish and wildlife resources, and (3) potential loss of Everglades marsh.

Impacts to Existing Recreational Facilities and Access Points

Those concerns that were previously addressed pertaining to potential impacts to FWC recreational facilities and access points under Alternatives 1 through 5 remain (please refer to our previous PAL [attached] dated February 23, 2001 and to our Florida State Clearinghouse letter to Ms. Jasmin Raffington dated January 16, 2002), and also apply to the three new alternatives (Alternatives 6, 7, and 8) added in this document. Since the PAL, we have learned of an additional boat ramp, and also now provide supplementary information on the identification numbers of FWC boat ramps within or adjacent to the project area. We know of three boat ramps in the project area that provide access to the marsh of Francis S. Taylor Wildlife Management Area (FSTWMA). The westernmost ramp (#135) is located immediately east of the S-333 structure on the L-29 Levee and has unimproved parking capable of accommodating about ten vehicles. A popular marsh access ramp owned by the South Florida Water Management District is located on the L-29 Levee at Recreation Site No. 1, immediately south of the S-334 structure, and has unimproved parking. A third concrete boat ramp of unknown origin, previously unidentified, is located in a swale on the L-29 Levee opposite the Airboat Association of Florida. Of the three FWC maintained boat ramps that provide access to the canal system within the project area, two are located at Recreation Site No. 4. One of these (#96), immediately north of the S-333 structure, provides access to the popular L-67A canal, while the other boat ramp (#161), at the juncture of the L-67A and L-67C levees, provides access both to the L-67C canal and to the marsh in the "pocket" of WCA-3B. The remaining boat ramp (#153), located at Recreation Site No.2, is the sole access point for the eastern 11-mile stretch of the L-29 Canal.

A cursory look at the recreational fishing pressure along much of the 11-mile stretch of the L-29 Canal that is being examined under this project suggests that use may be relatively low, except near the S-334 and S-333 structures (FWC, unpublished data). However, changes that are soon anticipated to occur with implementation of the conveyance features of the Mod Waters Project, as well as certain features of the Comprehensive Everglades Restoration Plan (CERP),

are likely to improve hydrological connections between the L-29 Canal and the marsh interface, as well as prolong adjacent marsh hydroperiods both to the north and to the south of the L-29 Canal. Consequently, such predicted hydrological changes combined with the addition of new water management structures (bridges, culverts, weirs, etc.) are likely to lead to an increase in local sport fish populations, followed by an increase in recreational fishing demand and concomitant changes in angler distribution patterns along this eastern stretch of the Tamiami Trail. It should be noted that prior to the construction of the L-67 and L-29 levees, this section of the Tamiami Canal (precursor to the L-29 Canal) was one of the premiere fishing areas in the Everglades. Creel surveys conducted during a study in 1960 (Game and Fresh Water Fish Commission [GFC], unpublished report) revealed that the first four miles of the Tamiami Canal west of the L-30 canal received an exceptional amount of use, and that the 11-mile stretch west of the L-30 canal received considerably more fishing pressure than the 9 miles of the Tamiami Canal west of the present-day L-67 Canal. The imminent decline of this great fishery, effected through a separation of the Tamiami Canal from the marsh with the completion of the L-29 Levee, was predicted in the aforementioned GFC report.

Besides recreational access for sport fishing purposes, the airboat ramps provide access to the natural resources of the Everglades marsh contained within the Francis S. Taylor Wildlife Management Area. Recreational frogging, airboating, and seasonal hunting are the primary activities pursued here. Recreational use of these access points may be relatively high during short hunting seasons, particularly when game population levels allow a liberal harvest. For instance, there were 140 airboat permits issued for an approximately 3-week deer season in the FSTWMA in 1984, and 156 permits issued the following year. Although deer population levels in WCA-3B are anticipated to decline under the projected deeper water regime that will occur with the implementation of Mod Waters and CERP, overall recreational use of the area for frogging, general airboating, duck hunting, and fishing is expected to increase. The potential impacts associated with each group of alternatives are listed as follows.

Alternatives 2a, 2b to 2b6, 4a, and 4b to 4b6. This document describes creative water quality treatment options b1 to b3 of Alternatives 2 and 4 as encroaching into the L-29 Canal. We understand from statements made by your staff that it will be necessary to maintain the water supply conveyance capacity of the L-29 Canal for some undefined period of time, which would necessitate maintaining deeper water conditions in this section of the canal. Nevertheless, the above-mentioned water quality treatment options would encroach into the south portion of the L-29 Canal and require widening of the canal to the north. This option would essentially eliminate any existing littoral zone on the south bank of the canal and would result in the loss of boat ramp #153 and impact Recreation Site No. 2 located on the north bank of the L-29 Canal. In the event that a boat ramp is impacted, the Army Corps of Engineers (COE) would be responsible for building a replacement ramp at a new location to be selected by the FWC.

Alternatives 3a and 3b. A reduction in available parking space for recreational users on the north side of the L-29 Canal would negatively impact recreational access to the canal.

Recreation Site No. 2 would probably be negatively affected or eliminated by this northerly road alignment.

Alternatives 5a, 5b, and 5c. The effects of the new subalternative 5c are essentially the same as for Alternatives 5a and 5b, in that recreational access to all sites on the north bank of the L-29 Canal will not be affected. However, the entire south bank of the L-29 Canal would be inaccessible during the 4-year construction period. Following completion of the bridge, only culvert outfalls located within the first mile on the east end and within the last one-half mile on the west end of the project would potentially be available for angler use. This loss of access to the south bank of the L-29 Canal from the Tamiami Trail could possibly be ameliorated by the provision of some degree of fishing access from the elevated bridge span.

Alternatives 6a and 6b. Although approximately 4 miles of the southern bank of the L-29 Canal would be unavailable to bank anglers, the remaining 6 miles should still be accessible, as well as the entire northern canal bank. However, the employment of creative water quality treatment options 6b1 to 6b3 could potentially impact the L-29 Canal, as described previously under Alternatives 2 and 4. As in Alternative 5, less opportunity would be lost if fishing access were possible from the bridge span. The feasibility of providing limited fishing access from designated portions of such extensive bridge spans should be explored as a means of reducing public fishing access losses. All existing boat ramps would remain accessible under this alternative. Culvert outfalls south of the roadway would not be accessible during highway construction (18-24 months) in Alternative 6a, and would be plugged under Alternative 6b. The addition of eight box culverts at designated low points in Alternatives 6a and 6b may provide additional angler opportunities.

Alternatives 7a and 7b. Recreational access to all boat ramps and the north bank of the L-29 Canal would remain intact, while fishing access to the south bank of the canal would be blocked during the 2-year construction period. Most of the culvert outfall structures would be accessible during and after construction in Alternative 7a, but all would be filled and eliminated in Alternative 7b. Although the preliminarily selected preferred alternative is Alternative 7a, the decision as to whether additional water quality treatment will be required has not yet been officially decided. Should Alternative 7b be selected, it is not known how the channeling of all water outflows through the single 3,000-foot gap will affect the L-29 Canal fishery. Also, special attention would need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4 that provides access to the L-67 canals and FSTWMA, or to the boat ramp facility (#90) located 200 yards west of the S-12D structure.

Alternatives 8a and 8b. Alternative 8a should not impact existing recreation access sites, and could provide new fishing opportunities at the 24 additional box culverts, particularly

if the culvert outfalls are scalloped out to improve the passage of water into northeast Shark River Slough. Alternative 8b would require filling the existing culverts, and could result in a loss of fishing opportunities unless the 40 new box culverts are constructed in a way that creates shallow collection basins at the outfalls.

Impacts to Fish and Wildlife Resources

Of particular concern are the impacts that an alternative could have on state-listed species of wildlife or important habitat components. There are three historic wading bird rookeries containing species listed by the state as endangered or species of special concern, recent records of endangered snail kite nests in southern WCA-3B, a number of records of the threatened Everglades mink along the highway corridor, and a single documented occurrence of the endangered West Indian manatee in the L-29 Canal. In addition, other listed species such as the limpkin and roseate spoonbill (both listed as species of special concern) utilize marsh areas, and the least tern (threatened) forages in canal habitats that could be impacted under certain alternatives. The potential impacts that could occur are listed by alternative groups as follows.

Alternatives 1 and 2a. The temporary road for detouring traffic while proposed bridge #3 is under construction would encroach into the pond apple forest at the Tamiami West wading bird colony, on the south side of the Tamiami Trail, that provides nesting substrate for white ibis, tricolored herons, little blue herons, snowy egrets, and wood storks. Consequently, a portion of this forested area would be eliminated as a nesting substrate for an unknown number of years. Any heavy construction activity that would be expected to occur within 600 meters of a known rookery location, including construction of the temporary road, should be conducted outside of the wading bird nesting season, which normally extends from early February to the onset of the rainy season.

Alternative 2b. This alternative encroaches to a greater extent (average of 51 feet) into the marsh south of the existing Tamiami Trail, with incursions of 5 to 6 additional feet at bridge approaches. Consequently, this alternative would have a greater permanent impact on the Tamiami East and Tamiami West wading bird colonies due to a greater permanent loss of nesting substrate as well as a decrease in the amount of buffer capacity available. The Everglades mink has been documented to use both natural and artificial upland areas for denning purposes; therefore, this alternative could potentially impact mink denning areas that may occur in either native upland areas or at the artificially created upland areas where the airboat concession and radio tower sites are located. Option 2b1, which shifts the alignment to the north, is only a slight improvement over Alternative 2b.

The 2b creative water quality treatment options of 2b2 to 2b6 (Table 1) result in much more modest incursions into the two Tamiami wading bird colonies; however options 2b2 and 2b3 would eliminate littoral zone elements on the south shore of the L-29 Canal, eliminate reptile oviposition and basking sites on the south shore of the canal, and could result in the entrapment of terrestrial animals attempting to cross the canal.

Alternatives 3a and 3b. Both of these alternatives and the various 3b options presented would result in the loss of a significant amount of high quality wildlife habitat. The woody vegetation supporting the Frog City wading bird colony, which has been documented to contain nesting tricolored and little blue herons (both species of special concern), would be either eliminated or severely impacted by the road alignment, which would encroach further into the marsh at this point in order to avoid the Tigertail Camp. This northerly diversion of the road around the Tigertail Camp would also impact a high quality tree island (WRAP score of 0.83) that may also have a special cultural value to the Tigertail family. The relocation of a high-speed highway to the north of the L-29 Levee would result in much greater wildlife mortality during high water episodes in WCA-3B than presently occurs. There could be dens of the Everglades mink in the L-29 Levee or on adjacent tree islands that are impacted, as well.

Alternatives 4a and 4b. Both of these alternatives would produce significant incursions into the Tamiami West and Tamiami East wading bird rookeries, as well as eliminate important swamp forest habitat along the remainder of the corridor. Although options 4b1-4b6 would reduce the amount of encroachment from Alternative 4b, they are only slightly better than Alternative 2b. The Everglades mink has been documented to use some of the man-made upland sites along this alignment for denning purposes, and could potentially be impacted by construction activity.

Alternatives 5a, 5b, and 5c. These alternatives are believed to be the most beneficial to wildlife, with little known impacts. These alternatives would leave important rookery vegetation intact on both sides of the Tamiami Trail and reduce potential impacts to mink denning areas. Road-related mortality of the Everglades mink, with at least 14 documented occurrences, would essentially be eliminated. However, the leaving in place of renovated sections of the old roadbed under Alternatives 5a and 5b could possibly provide suitable habitat for Everglades mink and oviposition sites for alligators and other egg-laying reptiles, as well as provide safe havens for terrestrial wildlife during high water periods.

Alternatives 6a and 6b. Alternative 6a would produce impacts to the two Tamiami rookeries as described for alternatives 1 and 2a, above. Alternative 6b and its various options would result in impacts to these rookeries and to the L-29 Canal identical to those

described under Alternative 2b, above. Road-related mortality of the Everglades mink and other wildlife would be eliminated at the four-mile bridge, and mink survival could be further enhanced by providing elevated wildlife crossing shelves under the east and west ends of the extended bridge. Mink denning areas could also be protected by avoiding the need to encroach upon the upland sites south of the existing road. Mink habitat could actually be improved by planting the abandoned upland sites south of the Trail with shrubs and trees so as to resemble native Everglades tree island communities.

Alternatives 7a and 7b. Alternative 7a would have negligible permanent impacts on the two Tamiami rookeries, but Alternative 7b would result in impacts as described above for Alternative 2b. However, we believe that greater ecological and wildlife benefits may be derived from these alternatives by a shift of the 3,000-foot bridge to the east of the Blue Shanty Canal. This would result in water discharges onto a land surface with a slightly lower average ground elevation and would be more centrally located in present day northeastern Shark River Slough. This location may likewise facilitate the safe passage of wildlife, especially if the bridge were equipped with a wildlife shelf.

Alternatives 8a and 8b. Alternative 8a would likewise have little effect on the two Tamiami rookeries, as long as new box culverts are not constructed at the rookery locations. Alternative 8b would produce impacts similar to those described for Alternative 2b. The additional box culverts under these alternatives, if placed at strategic locations, could improve the passage of aquatic and semiaquatic fauna across the roadway, especially if animal barriers were erected to deflect animals to the culvert crossings.

Potential loss of Everglades marsh and connectivity effects

In order to ascertain the potential impacts that each alternative iteration would pose to the functionality of wetlands, a multi-agency team was assembled to apply the Wetland Rapid Assessment Procedure (WRAP) to the various wetland plant communities in the Tamiami Trail corridor. The results of this assessment found that the functional value of wetland communities immediately north of the L-29 Levee in WCA-3B were of somewhat higher quality (average score of 0.74) than similar wetlands situated immediately south of the Tamiami Trail in the Everglades Expansion Area of Everglades National Park (average score of 0.62).

Alternatives 1, 2a, 2b to 2b6, 4a, and 4b to 4b6. The nine water quality treatment options of 4b through 4b6, 2b, and 2b1 were predicted to result in the loss of from 34 (2b1) to 64 (4b) wetland functional units in the Everglades Expansion Area, whereas Alternative 4a (without water quality treatment) was little better, with a predicted loss of 40 wetland functional units (Table 1). By comparison, Alternative 2a, using the existing

highway alignment and four new bridges, resulted in a relatively low loss of wetland function (10 units) at a substantially lower cost than the 2b2 to 2b6 water quality treatment options. Each of these alternatives physically connect the L-29 Canal to the marsh in Everglades National Park for only 2.5% of the entire project corridor length (i.e., create a 2.5% marsh-canal interface) by means of the four new bridges; however, creative water quality treatment options b1 to b3 of Alternatives 2, 4, and 6 would encroach into the L-29 Canal.

Alternatives 3a and 3b. The seven water quality treatment options of 3b through 3b6 presented for Alternative 3 were predicted to result in the loss of from 15 to 30 wetland functional units in WCA-3B, whereas Alternative 3a (without water quality treatment) was predicted to result in the loss of 19 functional units (Table 1). Although north-south connectivity for these alternatives is stated to be 10%, the primary purposes of the eight bridges that supposedly create this connectivity are to cross the L-29 Canal, and to span the two S-355 and three weir water conveyance structures on the L-29 Levee. Connectivity between the L-29 Canal and wetlands to the south would be no greater in Alternative 3 than under Alternatives 2 or 4, since no additional breaching of the Tamiami Trail is included under this alternative.

Alternatives 5a, 5b, and 5c. This suite of alternatives performs the best in that there is actually a net gain in functional units of wetlands (from 29 units in 5b to 45 units in 5c) compared to the base condition. Connectivity under Alternatives 5a (98%) and 5c (nearly 100%) are excellent, but if in situ water quality treatment is required (5b), connectivity would decrease markedly to 75% due to the need to leave sections of the old highway bed in place for dry retention. From a purely ecological perspective, without regard to cost or authority, Alternative 5 appears to exhibit the best overall performance.

Alternatives 6a and 6b. Alternative 6a would result in the loss of only 6.6 wetland functional units (< 10 acres) whereas Alternative 6b would result in significantly greater losses (22.8 functional units) due to the broad footprint necessary for water quality treatment. Alternative 6a is also estimated to result in about a 36% opening of the entire 10.7-mile length of the Tamiami Trail corridor, providing for a significant improvement in aquatic connectivity. Alternative 6b would provide a reduced level of connectivity (27%) due to the necessity to leave portions of the old Tamiami Trail for water quality treatment.

Alternatives 7a and 7b. Alternative 7a would result in a minimal loss of only 3.4 functional units (5 acres) of marsh. In contrast, the acreage demand for standard water quality treatment along 10 miles of roadway in Alternative 7b would result in wetland losses approaching 50 functional units (72 acres). Both of these alternatives would result in a 5% increase in the connectivity of the L-29 Canal to Everglades marshes in the south

near the western end of the project area. The ground elevation of the Everglades marsh at the western end of the project area appears to be slightly higher than at other locations to the east. If this is actually the case, the aquatic connectivity between the L-29 Canal and the marshes south of the Tamiami Trail would be severed sooner during low water conditions than would occur if such an opening were situated at a point east of the Blue Shanty Canal. Aquatic connectivity may even be reduced beyond current levels during periods of low water if Alternative 7b were selected, since the existing culverts would be filled in.

Alternatives 8a and 8b. Alternative 8a would likewise produce a minimal loss of only 3.5 wetland functional units, resembling Alternative 7a. However, wetland losses under Alternative 8b would be considerably greater (46.6 functional units). These alternatives rely on additional box culverts to convey Mod Waters flows, and would increase connectivity between the L-29 Canal and the marsh south of the roadway by a mere 0.4%. These alternatives are not compatible with the CERP concept of removing the Tamiami Trail as an impediment to flow by elevating portions of the roadway.

Features for reducing road-related wildlife mortality

In an effort to obtain some data that could be used for evaluating the need for highway features that could be employed to reduce road-related wildlife mortality, and that could be used as an aid in determining the placement of such features along the project corridor, biologists from the FWC, the U.S. Fish and Wildlife Service, and the COE conducted a preliminary survey of wildlife mortality along five miles of the Tamiami Trail corridor. Remains representing 411 individual animals were found during a walking survey of 3 miles of the Tamiami Trail on December 19-20, 2000 (Tables 2, 3, and 4) and of 2 miles on April 18, 2001 (Tables 5 and 6). During these single visit surveys, an average of 82 wildlife deaths were recorded per mile. If this same level of mortality is extrapolated for the entire 10.7 mile road corridor, the number of road-kill casualties observable on a given day would equal 880 individuals. However, since 60% of the survey length was surveyed during the coldest part of the year when reptile activity is at its lowest point, and since many carcasses are quickly scavenged from the road before they can be counted, we believe that the actual mortality would likely be several times greater than this. For example, during December, an average of 2 dead snakes and 1 alligator were documented per mile of highway; these numbers increased dramatically, following a marsh dry-down in April, to an average of 22 dead snakes and 7 alligators per mile. Recent data collected by FWS staff similarly suggests that there may be an increase in road-killed snakes during the autumn (Mike Abney, pers.comm.) An Arizona study (Kline and Swann 1998) attempting to quantify wildlife road mortality found that only 24% of road-killed animals recorded during all-night surveys were discovered on surveys the following day. Likewise, a daily walking survey of a section of central Florida secondary highway found that most road-killed snakes were present for only a

day or two, with few remains detectable for as long as two weeks (Kristin Wood, pers com.). During our study, aquatic turtles were the most commonly encountered taxa group, accounting for 66% of the total recorded mortality, followed by snakes (13%), birds (10%), mammals (5.5%), alligators (4.5%), and frogs (1%). A total of 21 species were identifiable from the remains, including 4 turtles, 7 snakes, the alligator, 4 birds, and 5 mammals. Due to the tendency for turtle shell fragments to persist for long periods of time along the road, their prevalence may have actually been less than suggested in our surveys. Aquatic or semiaquatic reptiles dominated the survey with only one terrestrial snake (*Elape guttata*) detected. Of the mammals found, only the river otter and the marsh rat were semiaquatic. The other road-killed mammals, requiring an upland habitat component, included the raccoon, the opossum, and the armadillo.

The construction of animal barriers along the Tamiami Trail corridor in between the bridges or culverts on both sides of the road could aid in reducing road-related wildlife mortality. Perhaps a barrier based on the design currently being used at Payne's Prairie State Preserve south of Gainesville, Florida would serve well here also. The review of an unpublished evaluation by Dick Franz (1996) on the effectiveness of different barrier heights ranging from one to four feet suggests that a 2-foot barrier would be sufficient for deterring all turtles, all small snakes and most large-bodied aquatic snakes, all ranid frogs, most alligators, and all rabbits. The addition of a six-inch overhang would further increase the effectiveness of this barrier. It would be difficult to exclude arboreal animals such as raccoons, opossums, treefrogs, and rat snakes, and potentially large alligators, even with the 4-foot barrier design. Furthermore, the 4-foot barriers would be a difficult obstacle for bank fishermen to traverse, especially if an over-hanging lip is present. The scenic vistas of the Everglades from the highway would likewise be greatly reduced by a 4-foot barrier. For these reasons, and the high cost ($124.24/ linear foot) associated with constructing the higher concrete barriers, we recommend that a 2-foot barrier height be considered in project design. Further cost reductions could be achieved by using alternate barrier materials such as a low field fence with aluminum flashing at the base.

Since most mammal mortality was documented in the first and last mile of the project corridor (Tables 3 and 4, Mike Abney pers. comm.), we believe that the use of wildlife underpasses and diversion fences to connect the L-30 to the L-31 Levee and the L-67A to the L-67 Extension Levee would help alleviate much of the mammalian mortality. A wildlife crossing at the L-30 Levee would be of most value since no crossing of the L-29 Canal currently exists here, and because the L-30 and L-31 levees must remain in place for flood protection. Neither would this location impede boat use of the L-29 Canal. A successful and economical design used on State Road 29 by the Florida Department of Transportation to allow safe passage for the Florida panther consists of a 50-foot concrete slab bridge placed in the highway alignment, providing a 24-foot-wide passageway with a clearance height of 8 feet. The diversion fences for channeling animals to the crossings should be of a small mesh design and extend for one-half mile on each side of the underpass. The only other section of road surveyed that exhibited a

trend of greater mammal mortality and where the greatest number of historic Everglades mink road-kills have been documented was the 1-mile section centered at the Blue Shanty Canal (Table 5). Consequently, if the western end of the bridge expanse were relocated to the vicinity of the Blue Shanty Canal, the installation of a bridge shelf there could create a safe passage corridor for large mammals (including the endangered Florida panther), medium-sized mammals and other wildlife that utilize this tree-lined agricultural canal that traverses the Tamiami Trail. A shelf width of 10 to 15 feet placed at an elevation slightly above the mean high water line would accommodate the larger animals as well as the small.

Furthermore, an improved highway design will most likely lead to faster driving speeds by motorists, which may necessitate strict enforcement of posted speed limits and stiff fines to insure that wildlife mortality does not increase.

Concerns and Recommendations

Given the stated authority limitations of the COE and the financial limitations of Everglades National Park to implement alternatives such as Alternative 5 or 6 for the Tamiami Trail portion of the Mod Waters project, Alternative 7a, or a derivative thereof, would appear to be the most reasonable interim alternative to implement prior to the approval of a more permanent solution under CERP. Although implementation of Alternative 7a will not entirely remedy all of the predrainage flow characteristics that existed prior to construction of the Tamiami Trail, it is anticipated to be capable of handling a shift in the bulk of Shark River flow volumes that will be channeled from the west side of the L-67 Levee to the east and into northeastern Shark River Slough.

Lacking in-house hydrological expertise, we must rely on the COE's modeling results, which indicate that a design high water level of 9.3 feet is sufficient for protecting the integrity of the Tamiami Trail road base, as the basis for our support of Alternative 7a. We note that the approved CERP conceptual plan, Alternative D-13R, as designed, is not expected to return the Everglades entirely to its historical flow regimes. The CERP plan may, in fact, need to be improved upon in order to reduce unnaturally high water levels and inundation periods that have been predicted under Alternative D-13R for WCA-3B. However, should any re-evaluation by the COE suggest that the design high water level of 9.3 feet would not be adequate to efficiently move flood water out of WCA-3B, then we would favor the adoption of a higher criterion to lessen the likelihood of deleterious flooding impacts upon the wildlife and vegetative communities of WCA-3B.

In summary, we offer the following recommendations concerning the alternatives under consideration, including possible improvements to Alternative 7a, the preliminary preferred alternative.

1 We support the idea of selecting an alternative that would be as compatible as possible with the upcoming CERP Decompartmentalization Project, and recommend that a real estate agreement between the COE and the Florida Department of Transportation for the Tamiami Trail be pursued in lieu of raising the profile of the roadway. We understand that such an agreement is expected to occur when the COE completes its design and specification plans for the project.

2. We understand that water quality treatment will probably not be required at this time since the impervious surface of the highway is not expected to significantly increase. Due to the potential for significant losses of high quality wetlands, impacts to important wildlife habitats, impacts to bank fishing, and possible incompatibility with CERP that would occur by including water quality treatment, we support the implementation of a water quality monitoring plan to ascertain whether treatment would be desirable in the future.

3. We are concerned about the potential reduction in public recreational access to the FSTWMA and fishing sites along the Tamiami Trail that could occur under Alternatives 3a, 3b, and the water quality treatment options b1 to b3 of Alternatives 2, 4, and 6, since such access is anticipated to decline as a result of restoration activities associated with both the Conveyance and Seepage component of Mod Waters and with the Decompartmentalization of WCA-3A Project of CERP. We are pleased to see at this time that, apart from a temporary lack of access to the south bank of the L-29 Canal during construction, Alternative 7a is expected to have minimal impacts on recreational use. However, special attention will need to be given to the siting of construction staging areas so that access is not blocked to the three boat ramps and parking facilities associated with the popular Recreation Site No. 4, the boat ramp and parking facility at Recreation Site No. 1, or to the boat ramp facility located west of the S-12D structure.

4. Of the viable alternatives being considered for this project, Alternative 7a would appear to have the least amount of impact on fish and wildlife resources. However, we believe that greater ecological and wildlife benefits may be derived from this alternative by a shift of the bridge from the proposed site one mile east of the L-67 Levee to a location east of the Blue Shanty Canal. If feasible, the placement of the western end of the bridge span, equipped with a wildlife crossing shelf beneath it, at a location immediately east of the Everglades Safari Airboat concession could aid in the reduction of wildlife mortality, particularly of the threatened Everglades mink.

5. Since wading bird and snail kite nesting patterns, as well as Everglades mink territories may vary with the prevailing hydrological conditions, surveys should be conducted on an annual basis by qualified biologists to determine whether any nesting efforts of state and federally protected bird species, or mink dens, would potentially be affected, prior to the commencement of construction activities. There is, in particular, a need for the COE to support a detailed study of the status and current distribution of the threatened Everglades mink along the Tamiami Trail corridor prior to the completion of the CERP Decompartmentalization Phase I project plan.

6. Alternatives 2b, 3a, 3b, 4a, 4b, 6b, 7b, and 8b produce an unacceptable amount of wetland functional loss, result in permanent impacts to wading bird rookeries, and have the potential to impact the threatened Everglades mink population; therefore, we recommend that they be removed from further consideration as ecologically viable alternatives.

7. Results from our preliminary wildlife mortality surveys and historical information suggest that there is a need for a more detailed wildlife mortality study on this portion of the Tamiami Trail prior to the completion of the Decompartmentalization Phase I project design plans. We are pleased that the COE is now supporting such a wildlife mortality study through the U.S. Fish and Wildlife Service, and hope that some nighttime surveys will be incorporated to document the potential effects of nocturnal or early morning scavengers on road-kill results.

8. Any reduction in recreational access or use of the Francis S. Taylor Wildlife Management Area that occurs in connection with this project would need to be compensated for on terms amenable to the FWC. We urge that the COE devise a program whereby the development of the recreational potential, adequate to meet anticipated public-use requirements, is more fully incorporated into project plans.

Sincerely,

Brian Barnett

Brian S. Barnett, Interim Director
Office of Environmental Services

BSB/DTT
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Enclosures

cc: Mr. Jay Slack, FWS, Vero Beach
Ms. Maureen Finnerty, ENP, Homestead
Ms. Tambour Ellis, COE, Jacksonville
Dr. Jon Moulding, COE, Jacksonville
Mr. Mark Robson, FWC, South Region

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Florida Game and Fresh Water Fish Commission. 1960. Recommended Program for Conservation Area 3. Vero Beach, Florida.

Kline, N.C. and D.E. Swann. 1998. Quantifying Wildlife Road Mortality in Saguaro National Park *in* Proceedings of the International Conference on Wildlife Ecology and Transportation FL-ER-69-98, Florida Department of Transportation, Tallahassee, Florida. 263 pp.

Table 1. Description of Alternatives being considered for the Tamiami Trail Project and their effects on wetland extent and function as determined by the Wetland Rapid Assessment Procedure.

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
1	Existing alignment and profile with 4 new bridges without water quality treatment	-1.6	-2.9
2a	Existing alignment with raised profile and 4 new bridges without water quality treatment	-11.8	-10.1
2b	Existing alignment with raised profile, 4 new bridges, with standard dry detention water quality treatment	-86.0	-37.5
2b Options	"Creative" water quality treatment options		
2b 1	Shift alignment to north and compress swale with wall elements/south side	-44.6	-33.6
2b 2	Shift alignment to north and compress swale with wall elements/north side	-8.0	-8.4
2b 3	Shift typical section north encroaching approximately 50 ft. into L-29 Canal	-8.0	-8.4
2b 4	Grass strips	-8.0	-8.4
2b 5	Exfiltration trenches with curb and gutter	-8.0	-8.4
2b 6	Exfiltration trenches with shoulder gutter	-7.9	-8.3
3a	New north alignment in WCA-3B with raised profile and 8 new bridges without water quality treatment	-14.3	-18.8
3b	New north alignment in WCA-3B with raised profile, 8 new bridges, and standard dry detention water quality treatment	-28.9	-30.2
3b Options	"Creative" water quality treatment options		
3b 1	Modified 2b 1 Option	-22.8	-25.4
3b 2	Modified 2b 2 Option	-10.6	-16.0
3b 3	Modified 2b 3 Option	-13.5	-18.2
3b 4	Grass strips	-9.6	-15.2
3b 5	Same as 2b 5	-10.3	-15.8
3b 6	Same as 2b 6	-10.4	-15.9

Alternative	Description	Acres Lost	Functional Units Lost (-) / Gained
4a	New south alignment with raised profile and 4 new bridges without water quality treatment	-68.4	-40.4
4b	New south alignment with raised profile, 4 new bridges, and standard dry detention water quality treatment	-103.9	-64.4
4b Options	"Creative" water quality treatment options		
4b 1	Modified 2b 1 Option	-62.6	-36.5
4b 3	Modified 2b 3 Option	-62.5	-36.5
4b 4	Grass strips	-61.3	-35.6
4b 5	Same as 2b 5	-62.6	-36.5
4b 6	Same as 2b 6	-62.5	-36.5
5a	Elevated roadway within existing right-of-way without water quality treatment	57.3	39.3
5b	Elevated roadway within existing right-of-way with water quality treatment	43.0	29.5
5c	Elevated roadway within existing right-of-way, without water quality treatment, with degradation of the existing highway embankment	65.9	45.3
6a	Existing alignment with raised profile, 4-mile bridge and 8 new box culverts without water quality treatment	-9.6	-6.6
6b	Same as alternative 6a with standard dry detention water quality treatment	-33.3	-22.8
6b Options	"Creative" water quality treatment options		
6b 1	Same as Option 2b 1 applied to remaining roadway	-30.4	-20.9
6b 2-6b 5	Same as Option 2b 2 - 2b 5 applied to remaining roadway	-4.8	-3.3

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
7a	Existing alignment with raised profile and 3000-foot bridge without water quality treatment	-5.0	-3.4
7b	Existing alignment with raised profile and 3000-foot bridge with standard dry detention water quality treatment	-72.4	-49.5
7b Options	"Creative" water quality treatment options		
7b 1	Same as Option 2b 1 applied to remaining roadway	-10.4	-7.2
7b 2	Same as Option 2b 2 applied to remaining roadway	-5.0	-3.4
7b 3	Same as Option 2b3 applied to remaining roadway	-10.4	-7.2
8a	Existing alignment with raised profile and 24 additional culverts without water quality treatment	-5.1	-3.5
8b	Existing alignment with raised profile and 40 additional culverts with standard dry detention water quality treatment	-68.0	-46.6
8b Options	"Creative" water quality treatment options		
8b 1& 8b3	Same as Options 2b1& 2b 3 applied to remaining roadway	-15.9	-7.5
8b2	Same as Option 2b2 applied to remaining roadway	-5.1	-3.5
"9a"	Existing alignment with raised profile, 2.7-mile bridge and 8 new box culverts without water quality treatment	-2.8	-1.9
"9b"	Existing alignment with raised profile, 2.7-mile bridge and 8 new box culverts with standard dry detention water quality treatment	-39.1	-33.4

Table 2. Wildlife remains identified along Tamiami Trail, one-half mile on each side of Agricultural Canal at Coopertown, located four miles west of S-334 (December 19, 2000).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	16	12	28
Snakes	1	2	3
Frogs	1	1	2
Alligators	0	0	0
Birds	0	0	0
Mammals	0	1	1
Unidentified	1	4	5
SOUTH SIDE OF TAMIAMI TRAIL			
	East ½ mile	West ½ mile	Total
Turtles	4	6	10
Snakes	0	3	3
Frogs	0	0	0
Alligators	0	1	1
Birds	4	1	5
Mammals	0	0	0
Unidentified	2	1	3

TOTAL: 61

Table 3. Wildlife remains identified along one mile of Tamiami Trail beginning at the Flight 592 Memorial adjacent to the L-67 Canals and ending ½ mile east of Osceola Camp (December 20, 2000).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	11	7	18
Snakes	0	0	0
Frogs	0	0	0
Alligators	0	0	0
Birds	3	0	3
Mammals	0	1	1
Unidentified	0	0	0

Table 3. Continued

SOUTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	5	4	9
Snakes	0	0	0
Frogs	0	0	0
Alligators	1	1	2
Birds	1	0	1
Mammals	2	4	6
Unidentified	2	2	4

TOTAL: 44

Table 4. Wildlife remains identified on December 20, 2000 along one mile of Tamiami Trail beginning at the L-30 Canal extending one mile west and ending at a bank of culverts (Begin: UTM 550299 N; 2849310 E End: 548615 N; 2849297 E).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	38	20	58
Snakes	0	0	0
Frogs	0	0	0
Alligators	0	0	0
Birds	3	0	3
Mammals	3	0	3
Unidentified	0	1	1
SOUTH SIDE OF TAMIAMI TRAIL			
	East ½ mile	West ½ mile	Total
Turtles	18	4	22
Snakes	0	0	0
Frogs	0	0	0
Alligators	1	1	2
Birds	1	2	3
Mammals	2	1	3
Snakes	1	1	2

TOTAL: 97

Table 5. Wildlife remains identified by FWC on April 18, 2001, along one mile of Tamiami Trail (between culverts #44 to #46 at the Blue Shanty Canal [culvert #45]).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	18	3	21
Snakes	1	0	1
Frogs	0	0	0
Alligators	2	2	4
Birds	0	0	0
Mammals	0	1	1
Unidentified	1	1	2
SOUTH SIDE OF TAMIAMI TRAIL			
Turtles	19	12	31
Snakes	4	2	6
Frogs	0	0	0
Alligators	2	1	3
Birds	3	3	6
Mammals	1	5	6
Unidentified	1	0	1

TOTAL: 82

Table 6. Wildlife remains identified by FWC on April 18, 2001, along one mile of Tamiami Trail (between culverts #56 to #54 at the Tamiami West woodstork colony [culvert #55]).

NORTH SIDE OF TAMIAMI TRAIL			
Class	East ½ mile	West ½ mile	Total
Turtles	16	20	36
Snakes	5	3	8
Frogs	2	1	3
Alligators	1	2	3
Birds	4	6	10
Mammals	0	0	0
Unidentified	1	1	2
SOUTH SIDE OF TAMIAMI TRAIL			
Turtles	9	15	24
Snakes	23	7	30
Frogs	0	0	0
Alligators	2	2	4
Birds	4	3	7
Mammals	0	0	0
Unidentified	0	0	0

TOTAL: 127

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FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

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OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DIRECTOR
(850)488-6661 TDD (850)488-9542
FAX (850)922-5679

February 26, 2001

Colonel James G. May
District Engineer
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: General Reevaluation Report/ Supplemental Environmental Impact Statement, Tamiami Trail Modifications Project, Modified Water Deliveries to Everglades National Park, Miami-Dade County

Dear Colonel May:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the draft Supplement to the 1992 General Design Memorandum and Final Environmental Impact Statement (GRR/SEIS) for the Tamiami Trail Project of Modified Water Deliveries to Everglades National Park ("Mod Waters"), dated December 22, 2000. This planning aid letter is submitted under the authority of the Fish and Wildlife Coordination Act of 1973.

Description of Alternatives

The reason that a GRR/SEIS is being developed is that new information acquired since the project was approved in 1992 indicates that the original design would be insufficient to pass the volume of water that would need to be conveyed under the Tamiami Trail via Mod Waters. Nine basic alternatives, four of which contain from one to six different water quality treatment options, are being considered. After the GRR/SEIS was distributed, the Department of Interior submitted an additional alternative, referred to here as alternative six. In addition, we have been told that another alternative utilizing box culverts has been evaluated by your staff in house, but has not yet been distributed for wider review. For a short description of these alternatives, please refer to Table 1. We have three major areas of concern with regard to the potential impacts of this project: (1) impacts to existing recreational facilities and access points, (2) impacts to fish and wildlife resources, and (3) potential loss of Everglades marsh.

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Impacts to Existing Recreational Facilities and Access Points

Consideration of impacts to recreation facilities developed by the Florida Game and Fresh Water Fish Commission under the authority of the Land and Water Conservation Fund Act (P.L. 88-578) and the Federal Water Project Recreation Act (P.L. 89-72) should be carefully examined. Within the project area, there exist at least six developed marsh or canal access points, of which at least four contain an FWC-maintained boat ramp permitted by the South Florida Water Management District, and all sites possess a limited amount of primitive parking space. Three of these boat ramp facilities provide access to the Francis S. Taylor Wildlife Management Area (Water Conservation Area [WCA]-3B), one (#153) is located approximately 3 miles west of the S-334 structure and provides access to the northern bank of the L-29 canal, while the other two, located at opposite ends of the project area, provide airboat access to the marsh. The boat ramp immediately north of the S-333 structure provides access to the popular L-67A canal, while another ramp at the juncture of the L-67A and L-67C levees provides access to the L-67C canal and to "the pocket" of WCA-3B. The last facility, located immediately west of the S-12D structure, provides access to the L-29 canal and adjacent marshes of WCA-3A, both portions of the Everglades Wildlife Management Area. Of the four established recreation sites, three are still present. Recreation site No. 1 is located on the L-29 levee immediately east of the S-334 structure. Recreation site No. 2 is located about 3 miles west of Site No. 1 and includes the only FWC boat ramp for access to this 11-mile stretch of the L-29 canal. Recreation site No. 4, located adjacent to the S-333 structure, harbors three boat ramps and is the most important access point on the Tamiami Trail for boaters.

It is probable that the enhanced connectivity created by the Seepage and Conveyance portion of the Mod Waters through employment of the two S-355 structures and the three weirs across the L-29 levee, combined with the accompanying greater water depths, will lead to an improved fishery along this eleven-mile stretch of the L-29 canal and at associated structures. Such an enhanced fishery would result a greater amount of use by the fishing public, and may warrant improved recreational access to the L-29 canal and its associated conveyance structures, particularly given the proximity of this area to greater Miami. Consequently, those aspects of the various alternatives that further enhance connectivity between the L-29 canal and the adjacent marsh habitats would have a positive effect on the L-29 canal fishery as well as improve compatibility with the Decompartmentalization Phase 1 Project of the Comprehensive Everglades Restoration Plan (CERP). Of course, all of the potential benefits that could be realized through increased connectivity between the L-29 canal and adjacent marshes are contingent on the maintenance of some deeper water habitat in the L-29 canal. The potential impacts associated with each group of alternatives are listed as follows.

1. Alternatives 1, 2a, 2b to 2b6, 4a, and 4b to 4b6. Each of these alternatives physically connect the L-29 canal to the marsh in Everglades National Park for only 2.5% of the entire project corridor length (i.e., create a 2.5% marsh-canal interface) by means of the four new bridges; however, creative water quality treatment options b1 to b3 of alternatives 2, 4, and 6 would encroach into the L-29 canal. We understand from

statements made by your staff that it will be necessary to maintain the water supply conveyance capacity of the L-29 canal for some undefined period of time, which would necessitate maintaining deeper water conditions in this section of the canal. Nevertheless, the above-mentioned water quality treatment options would encroach into the south portion of the L-29 canal, with a concomitant widening of the canal to the north. This option would essentially eliminate any existing littoral zone on the south bank of the canal and would result in the loss of the boat ramp located on the north bank of the L-29 canal.

2. Alternatives 3a and 3b. Each of these alternatives would provide a 10% marsh-canal interface along the project corridor through the addition of eight new bridges; however, a reduction in available parking space on the north side of the L-29 canal for recreational users in alternatives 3a and 3b would negatively impact recreational access. Recreation site No. 2 would also probably be negatively affected by this northerly road alignment.

3. Alternatives 5a and 5b. The ultimate increase in connectivity would be realized with alternative 5A, which would provide a 98% opening of the corridor, with alternative 5b providing a very beneficial 75% opening. Although access to the north bank of the L-29 canal would be reduced for bank anglers, fishing opportunities may still exist if fishing access is available to anglers from the elevated bridge span.

4. Alternatives 6a and 6b. This alternative is estimated to result in about a 35% opening of the entire length of the Tamiami Trail corridor. Although approximately 4 miles of the northern bank of the L-29 canal would be unavailable to bank anglers, the remaining 6 miles should still be accessible. As in alternative 5, less opportunity would be lost if fishing access is possible from the bridge span.

Impacts to Fish and Wildlife Resources

Of particular concern are the potential impacts that an alternative could have on state-listed species of wildlife or important habitat components. There are three historic wading bird rookeries containing species listed by the state as endangered or species of special concern, recent records of endangered snail kite nests in southern WCA-3B, a number of records of the threatened Everglades mink along the highway corridor, and the occasional occurrence of the endangered West Indian manatee in the L-29 canal. In addition, other listed species such as the limpkin and roseate spoonbill (both listed as species of special concern) utilize marsh areas, and the least tern (threatened) forages in canal habitats that could be impacted under certain alternatives. The potential impacts that could occur are listed by alternative groups as follows.

1 Alternatives 1 and 2a. The temporary road for detouring traffic while proposed bridge #3 is under construction would encroach into the pond apple forest at the Tamiami West colony, on the south side of the Tamiami Trail, that provides nesting substrate for white

ibis, tricolored herons, little blue herons, snowy egrets, and wood storks. Consequently, this forested area would be eliminated as a nesting substrate for an unknown number of years. Any heavy construction activity, including construction of the temporary road, should be conducted outside of the wading bird nesting season, which normally extends from early February to the onset of the rainy season.

2. Alternative 2b. This alternative encroaches to a greater extent (average of 51 feet) into the marsh south of the existing Tamiami Trail with incursions of 5 to 6 additional feet at bridge approaches. Consequently, this alternative would have a greater permanent impact on the Tamiami East and Tamiami West wading bird colonies due to a greater permanent loss of nesting substrate as well as a decrease in the amount of buffer capacity available. The Everglades mink has been documented to use both natural and artificial upland areas for denning purposes; therefore, this alternative could potentially impact mink denning areas that may occur in either native upland areas or at the artificially created upland areas where the airboat concession sites are located. Option 2b1, which shifts the alignment to the north, is only a slight improvement over alternative 2b.

The 2b creative water quality treatment options of 2b2 to 2b6 (Table 1) result in much more modest incursions into the two Tamiami wading bird colonies; however options 2b2 and 2b3 would eliminate littoral zone elements on the south shore of the L-29 canal, eliminate reptile oviposition and basking sites on the south shore of the canal, and could result in the entrapment of terrestrial animals attempting to cross the canal.

3. Alternatives 3a and 3b. Both of these alternatives and the various 3b options presented would result in the loss of a significant amount of high quality wildlife. The Frog City wading bird colony, which has been documented to contain nesting tricolored herons and great egrets, would be either eliminated or severely impacted by the road alignment, which encroaches further into the marsh at this point in order to avoid the Tigertail Camp. There could potentially be dens of the Everglades mink in the L-29 levee, as well.

4. Alternatives 4a and 4b. Both of these alternatives would produce significant incursions into the Tamiami West and Tamiami East wading bird rookeries, as well as eliminate important swamp forest habitat along the remainder of the corridor. Although options 4b1-4b6 would reduce the amount of encroachment from alternative 4b, they are only slightly better than alternative 2b. The Everglades mink has been documented to use some of the man-made upland sites along this alignment for denning purposes, and could potentially be impacted by construction activity.

5. Alternatives 5a and 5b. These alternatives are believed to be the most beneficial to wildlife, with no known impacts. These alternatives would leave important rookery vegetation intact on both sides of the Tamiami Trail and minimize potential impacts to mink denning areas. Road-related mortality of the Everglades mink, with at least 14

documented occurrences, would essentially be eliminated. Other mammals, reptiles, and amphibians would similarly benefit.

6. Alternatives 6a and 6b. Alternative 6a would produce impacts to the two Tamiami rookeries as described for alternatives 1 and 2a, above. Alternative 6b and its various options would result in impacts to these rookeries and to the L-29 canal identical to those described under alternative 2b, above. Road-related mortality of the Everglades mink and other wildlife would be eliminated at the four-mile bridge, and mink survival could be further enhanced by providing elevated wildlife crossing shelves under the east and west ends of the extended bridge. Mink denning areas could also be protected by avoiding the need to encroach upon the upland sites south of the existing road. Mink habitat could actually be improved by the planting of these upland sites to resemble native Everglades tree island communities.

Potential Loss of Everglades Marsh

In order to ascertain the potential impacts that each alternative iteration would pose to the functionality of wetlands, a multi-agency team was assembled and the Wetland Rapid Assessment Procedure (WRAP) applied to the various wetland plant communities in the Tamiami Trail corridor. The results of this assessment revealed that the functional value of wetland communities immediately north of the L-29 levee in WCA-3B were of somewhat higher quality (average score of 0.74) than similar wetlands situated immediately south of the Tamiami Trail in the Everglades Expansion Area of Everglades National Park (average score of 0.62). The seven water quality treatment options of 3b through 3b6 presented for alternative 3 were predicted to result in the loss of from 16 to 30 wetland functional units in WCA-3B, whereas alternative 3a (without water quality treatment) was predicted to result in the loss of 19 functional units (Table 1). Likewise, the nine water quality treatment options of 4b through 4b6, 2b, and 2b1 were predicted to result in the loss of from 34 to 65 wetland functional units in Everglades National Park, whereas alternative 4a (without water quality treatment) was predicted to result in the loss of 40 wetland functional units (Table 1). We believe that the amount of wetland function that would be lost under any of the above alternatives is unacceptable given the loss of native habitat that has already occurred in the Everglades. However, we would wholeheartedly support alternative 5 and its variations which actually results in gains of from 30 to 45 wetland functional units. The new four-mile bridge alternative (referred to in this document as alternative six) that has only recently been proposed to the Army Corps of Engineers by the U.S. Fish and Wildlife Service and Everglades National Park, with our support, would result in a minimal loss of wetland function. Alternatives 6b2 through 6b6 are predicted to result in the loss of only 3.3 wetland functional units. Alternatives 2b2 through 2b6, although not as desirable as alternative 5 or alternatives 6b2 through 6b6, would have relatively low impacts on wetlands, with only about 8 functional units lost (Table 1).

Summary and Recommendations

We are concerned about the potential loss of public recreational fishing and boating opportunities that could occur with this project, since such opportunities are anticipated to decline as a result of restoration activities associated with both the Conveyance and Seepage component of Mod Waters and the Decompartmentalization Project of CERP. Other upcoming components of CERP such as the Water Preserve Areas Feasibility Study are, as designed at this point, anticipated to offer little in terms of compensating for the recreational fishing opportunities that will be lost with the filling of internal canals in the Everglades and Francis S. Taylor Wildlife Management Areas. Consequently, in light of these anticipated losses, whenever an opportunity exists to maintain important recreational facilities and recreational opportunities that do not significantly impinge on the restoration of the greater Everglades ecosystem, we believe that the recreational value of such features to the local public should receive strong consideration in the decision-making process. In short, a program for the development of the recreational potential, adequate to meet anticipated public-use requirements, should be incorporated into project plans.

In terms of potential impacts to fish and wildlife, alternatives 5a and 5b appear to be the most desirable, since they would result in an increase in wetland function, avoid permanent impacts to wading bird rookeries, provide maximum connectivity across the Tamiami Trail, minimize wildlife road-related mortality, and could continue to provide recreational fishing and boating opportunities, provided that bank fishermen could access the L-29 canal from the bridge and boating access to the L-29 canal remains via public boat ramps. On the other hand, alternatives 2b, 3a, 3b, 4a, and 4b produce an unacceptable amount of wetland functional loss, result in permanent impacts to wading bird rookeries, and have the potential to impact the threatened Everglades mink population; therefore, we recommend that they be removed from further consideration as ecologically viable alternatives.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/DTT
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Enclosure
cc: Mr. Stephen Forsythe, FWS, Vero Beach
Ms. Maureen Finnerty, ENP, Homestead
Ms. Doris Marlin, COE, Jacksonville
Dr. Hanley "Bo" Smith, COE, Jacksonville

Table 1. Description of Alternatives being considered for the Tamiami Trail Project and their effects on wetland extent and function as determined by the Wetland Rapid Assessment Procedure.

Alternative	Description	Acres Lost	Functional Units Lost- / Gained+
1	Existing alignment and profile with 4 new bridges without water quality treatment	-1.6	-2.9
2a	Existing alignment with raised profile and 4 new bridges without water quality treatment	-1.6	-11.1
2b	Existing alignment with raised profile, 4 new bridges, with standard dry detention water quality treatment	-50.3	-37.5
2b Options	"Creative" water quality treatment options		
2b 1	Shift alignment to north and compress swale with wall elements/south side	-44.6	-33.6
2b 2	Shift alignment to north and compress swale with wall elements/north side	-8.0	-8.4
2b 3	Shift typical section north encroaching approximately 50ft. into L-29 Canal	-8.0	-8.4
2b 4	Grass strips	-8.0	8.4
2b 5	Exfiltration trenches with curb and gutter	-8.0	8.4
2b 6	Exfiltration trenches with shoulder gutter	-7.9	-8.3
3a	New north alignment in WCA-3B with raised profile and 8 new bridges without water quality treatment	-14.3	-18-8
3b	New north alignment in WCA-3B with raised profile, 8 new bridges, and standard dry detention water quality treatment	-28.9	-30.2
3b Options	"Creative" water quality treatment options		
3b 1	Modified 2b 1 Option	-22.8	-25.4
3b 2	Modified 2b 2 Option	-10.6	-16.0
3b 3	Modified 2b 3 Option	-13.5	-18.2
3b 4	Grass strips	-9.6	-15.2
3b 5	Same as 2b 5	-10.3	-15.8
3b 6	Same as 2b 6	-10.4	-15.9

Table 1 continued

Alternative	Description	Acres Lost	Functional Units Lost (-) / Gained
4a	New south alignment with raised profile and 4 new bridges without water quality treatment	-68.4	-40.4
4b	New south alignment with raised profile, 4 new bridges, and standard dry detention water quality treatment	-103.9	-64.6
4b Options	"Creative" water quality treatment options		
4b 1	Modified 2b 1 Option	-62.6	-36.5
4b 3	Modified 2b 3 Option	-62.5	-36.5
4b 4	Grass strips	-61.3	-35.6
4b 5	Same as 2b 5	-62.6	-36.5
4b 6	Same as 2b 6	-62.5	-36.5
5a	New alignment with an elevated bridge structure without water quality treatment	57.3	39.3
5b	New alignment with an elevated bridge span with water quality treatment	43.0	29.5
5c	New alignment with an elevated bridge span without water quality treatment and with L-29 levee removed	65.9	45.3
5d	New alignment with an elevated bridge span with water quality treatment and with L-29 levee removed	49.4	33.9
"6a"	New proposed FWS/ENP/FWC alternative on existing alignment with a 4-mile bridge between Cooper Town and the Blue Shanty Canal, and additional box culverts	N/A	-6.60
"6b"	Same as alternative 6a with standard dry detention water quality treatment	N/A	-22.8
6b Options	"Creative" water quality treatment options		
"6b 1"	Same as Option 2b 1 applied to remaining roadway	N/A	-20.9
"6b 2-6b 6	Same as Option 2b 2 - 2b 6 applied to remaining roadway	N/A	-3.3

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LEHTINEN VARGAS & RIEDI
ATTORNEYS AT LAW
A PROFESSIONAL ASSOCIATION

May 9, 2008

Colonel Paul Grosskruger
District Commander
Jacksonville District
Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, Florida 32207

Attention: Bradley A Foster

Via Fax, Regular Mail and e-mail (TTMComments@usace.army.mil)

Re: Miccosukee Tribe's Comments on the Modified Water Deliveries to Everglades National Park Tamiami Trail Modification Limited Reevaluation Report and Environmental Assessment dated April 2008

Dear Colonel Grosskruger,

I. INTRODUCTION

The Miccosukee Tribe of Indians of Florida ("Tribe") hereby provides comments on the U.S. Army Corps of Engineers' ("Corps") Modified Water Deliveries to Everglades National Park Tamiami Trail Modification Limited Reevaluation Report ("LRR") and Environmental Assessment ("EA") dated April 2008. The Tribe also incorporates by reference its comments concerning Tamiami Trail made at the April 22, 2008 public meeting and all comments made during the 2003 GRR/EIS process, and the 2005 Revised GRR/EIS process.

The Tribe strenuously objects to the Tentatively Selected Plan ("TSP") in the LRR/EA (Alternative 3.2.2a), which is the one mile east bridge with road raising to be built in Everglades National Park ("ENP" or "Park"). The Tribe further objects to the legally inadequate process that produced it. The Tribe contends that the Corps failed to conduct the Environmental Impact Statement ("EIS") required by the National Environmental Policy Act ("NEPA") on this major federal action; failed to conduct formal Section 7 consultation with the Fish and Wildlife Service before selecting the TSP; failed to follow the Federal Advisory Committee Act ("FACA") for the LRR advisory group; failed to conduct the Section 4(f) review required under the Department of

Transportation Act ("DOT") of 1966, as codified at 49 U.S.C. 303; and failed to meet its federal Trust responsibility to the Miccosukee Tribe.

The Tribe further contends that Alternative 3.2.2a, which is estimated to cost $225.4 million dollars, is not a viable option. The Corps has no authority to build the TSP under the Modified Water Deliveries Project ("MWD"). The Water Resources Development Act of 2000 ("WRDA 2000") required completion of the MWD Project prior to funding components of the Comprehensive Everglades Restoration Plan ("CERP") Decompartmentalization Project, including the bridging of Tamiami Trail. WRDA 2000 specifically mandates that: "No appropriation shall be made to construct the Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement Project (including . . . Raise and Bridge East Portion of Tamiami Trail . . .) until the completion of the project to improve water deliveries to Everglades National Park authorized by section 104 of the Everglades National Park Protection Act of 1989 (16 U.S.C. 410 r-8)." The Corps apparently thinks that despite this WRDA prohibition, it can bridge eastern Tamiami Trail as long as the L-29 levee remains in place. The WRDA 2000 prohibition against bridging the Trail makes no such distinction. Such quibling is merely an attempt to hoodwink Congress into wasting taxpayer money to build a bridge with the levee still in place.

Despite the Congressional mandate in WRDA 2000, the Corps refuses to recognize that it is incumbent on it to select an alternative that is within the funding constraints and statutory authority. The TSP in the LRR/EA, which proposes constructing a one mile bridge in the Park at a cost of at least $225.4 million dollars, is a dead end excursion that will never be funded. Building a bridge in the Park is totally unnecessary under the MWD Project. Under the provisions of the Everglades National Park Protection and Expansion Act of 1989 (Public Law 101-229), the Secretary of the Army is only authorized to take those steps necessary to restore natural hydrologic conditions to the extent practicable. A review of the matrix at page 4-21 of the LRR/EA shows that the culvert/swale/road raising Alternative 3.2.1 approaches the flow and volume of the TSP at a cost savings of $80 million of dollars. Yet, the Corps' LRR advisory group arbitrarily used a "velocity" performance measure to improperly eliminate this lower cost Alternative 3.2.1 from analysis in the array of final alternatives.

The TSP does nothing to improve conveyance of water through the other 9.7 miles of Tamiami Trail, where the area downstream of the culverts is blocked with sediment and heavy vegetation that built up on the discharge side. Interestingly, while Park staff have stubbornly refused to allow the sediment/vegetation blockage to be removed downstream of the culverts, they have agreed to allow a one mile bridge to be built on National Park land. Building a one mile bridge in the Park is not only unnecessary, since prudent alternatives exist, but wastes taxpayer money and violates the prohibition against bridging Tamiami Trail until the MWD is completed. The Tribe continues to contend that cleaning the blockages downstream of the discharge areas of the culverts would be far more economical and would maximize the effectiveness of the existing culverts. Maximizing the efficiency of the existing culverts, and constructing swales downstream, would also distribute and increase the flows across the entire 10.7 miles of Tamiami Trail. The Tribe contends that it would be more prudent, and environmentally beneficial, to 1) clear the area downstream of the culverts; 2) construct additional culverts and swales as necessary; 3) raise the road as necessary without widening it; and 4) wait for CERP Decompartmentalization to embark

on an expensive and challenging bridge project if proven necessary. Instead, the LRR/EA rejects prudence and economy and relies on a skewed analysis to select a predetermined plan to build a bridge in the Park, which was selected outside of the public process.

The Corps fails to acknowledge that there is an environmental cost to the Everglades for each year of delay of the MWD Project. The LRR/EA fails to calculate the cost of delay, in terms of economic and environmental costs to the Everglades as a result of the failure to complete the MWD Project. The MWD Project was supposed to be completed in 1997. The deadline has long passed. A good part of this delay can be attributed to the endless Tamiami Trail process, which has been going on since at least 2003. If the Corps cannot select and build a Tamiami Trail component in five years, what hope is there that the vital MWD Project will ever be completed. It is clear to everybody but the Corps that DOI's continued attempts to implement the entire multi-billion dollar CERP through the $81 million dollar Pre-CERP MWD Project has caused excessive delay and enormous cost overruns. This is of great concern to the Tribe, because the expeditious implementation of the long delayed MWD Project is vital to the Everglades that supports their culture and way of life. In the 2003 and 2005 Tamiami Trail GRR/EIS process, the Tribe provided "The Miccosukee Tribe's Ten Tamiami Trail Tenets," which are still applicable, although the deadline for project completion has long passed. **Attachment A.** The Tribe's goal was then, and is now, to help the Corps select a plan that is economical and within its statutory authority under PL 101-229, so that MWD will be implemented expeditiously.

Completion of the MWD Project is a prerequisite to CERP Decompartmentalization. Any delay in the MWD Project, or its Tamiami Trail component, will delay CERP. Unfortunately, both for the Tribe and the Everglades, the deadline for the completion of the MWD Project has long ago passed. Under Colonel Salt, the Corps told Congress in 1992 that the project would cost $81 million dollars and be completed by 1997. Under Colonel Rice, a Project Cooperation Agreement ("PCA") was signed to construct a MWD Project that had escalated to $114 million dollars. Under Colonel Miller, the MWD Project was to be completed by December 31, 2001. Colonel May set a new completion date of December 31, 2003, which was not met. When Colonel Carpenter took over, he pledged to complete the project by December 31, 2006. Under Colonel Grosskruger, the new deadline was 2010. According to the LRR, the projected project cost with the TSP has now escalated to at least $523.1 million dollars and the deadline has moved to 2011. It is clear to the Tribe, but apparently not to the Corps, that a 2011 deadline for building a bridge in a National Park is overly ambitious, and that this agency has embarked on another dead end excursion that will further delay both the MWD Project and Everglades Restoration.

II. GENERAL COMMENTS ON THE TAMIAMI TRAIL LRR/EA

A. NEPA REQUIRES AN EIS FOR THIS MAJOR FEDERAL ACTION

1. The Corps is Required to Conduct an EIS or SEIS Under NEPA

The National Environmental Policy Act ("NEPA") requires the Corps to conduct an EIS on the TSP (Alternative 3.2.2a), which is an eastern one mile bridge with road modifications, that is to be constructed in Everglades National Park ("ENP" or "Park"). The Corps attempts to get around this NEPA requirement by relying on the 2005 Tamiami Trail RGRR/SEIS, which does not even analyze this alternative. The LRR/EA states at page 4-11, "the eastern one-mile bridge would be the same location as the eastern bridge of the 2005 plan." Although the Corps insists the bridge will be in the same location, a review of both documents raises questions about this claim. For instance, the 2005 RGRR states that Alternative 14 will be on the "existing alignment." (*See* Section 6.6 2005 RGRR/SEIS). In contrast, the LRR/EA states that, "[m]ost of the land on which the bridge would be located is federally owned land that is part of ENP . . ." (LRR/EA at 5-7.) Even if the location of the eastern bridge segment is the same, it is clear that Alternative 3.2.2a was never analyzed in the 2005 RGRR/SEIS. Nor did the 2005 RGRR/SEIS analyze the significant issues involved in building a one mile bridge on national park land. Building a bridge in a national park is a challenging process that requires numerous interagency agreements and Congressional approval. (LRR/EA at 6-7). Congress made this land a national park for preservation purposes and may not look kindly on the language of the LRR/EA that: "the proposed project would convert parklands to highway right-of-way." The Corps is required to conduct an EIS to analyze the direst effects of the proposed project on ENP, including "the conversion of parklands to transportation conveyances in the form of bridges and bridge approaches," as discussed at 5-38 of the LRR/EA. For instance, while it is the Tribe's understanding that the Park may seek a land swap for transferring its land to the State, there is no discussion of this in the LRR/EA.

The statement in Section 4.7 that, "[t]he bridge of Alternative 3.2.2a is identical to the eastern bridge of the Selected Plan in the 2005 RGRR," is misleading. There are significant differences between Alternative 3.2.2a in the LRR/EA and Alternative 14 in the 2005 GRR/SEIS. The Selected Plan in the RGRR/SEIS (Alternative 14) was a two mile western bridge/one mile eastern bridge/road raising alternative. The TSP in the LRR/EA (Alternative 3.2.2a) is only a one mile eastern bridge alternative to be constructed in ENP with road mitigation. Alternative 3.2.2a was never analyzed in the 2005 RGRR. In addition, the L-29 canal levels in the alternatives were different (9.7 for Alt. 14 v 8.5 for Alt. 3.2.2a.) It is like comparing apples and oranges to rely on Alternative 14 in the 2005 RGRR to assess Alternative 3.2.2a in the LRR. It is improper for the Corps to rely on a segment of a totally different alternative in the 2005 RGRR/SEIS, which never analyzed building only a one mile eastern bridge, to attempt to bypass NEPA requirements. An EA, and Finding of No Significant Impact ("FONSI"), will not suffice here. NEPA requires that an EIS, or Supplemental EIS ("SEIS") be conducted on the TSP, which is a different plan that was not analyzed in the 2005 RGRR/SEIS.

2. The Corps' NEPA Process Was Pre-Decisional

Contrary to the Corps' contention that it is conducting a public process, its selection of the one mile eastern bridge as the TSP was pre-decisional and pre-determined. The one mile eastern bridge was selected by, and recommended by, an LRR advisory group that met outside the public process. The one mile eastern bridge alternative was selected well before the LRR/EA was issued. Indeed, the Corps and others in the group held a meeting with the Department of Environmental Protection ("DEP") to discuss water quality certification for construction of the one mile eastern bridge on January 25, 2008, three months before the LRR/EA was issued. **Attachment B.** At this meeting, the only alternative discussed in detail was the construction of the eastern one mile bridge. At the meeting, a Corps representative even stated, "There will be a groundbreaking in October." The road modifications, which are part of the TSP, were discussed as Phase II of the project at that meeting.

3. The LRR/EA Fails to Analyze, and Improperly Rejects, Reasonable Alternatives

Contrary to NEPA, the LRR/EA fails to conduct an analysis of all reasonable alternatives. For instance, the reasonable culvert/swale/road raising (Alternative 3.2.1) was improperly rejected from consideration by the advisory group even though the matrix shows it approaches the flows and volumes of the TSP (Alternative 3.2.2a) at a lower cost. **Attachment C.** Alternative 3.2.1 should have been analyzed in the final array of alternatives but was not. A review of the LRR (i.e. 4-29), shows that the advisory team used an arbitrary and capricious "velocity" performance measure to improperly reject the lower cost Alternative 3.2.1 from consideration. It is interesting to note that this arbitrary "velocity" performance measure was not used to screen alternatives in the 2005 GRR/SEIS process. The Tribe contends that Alternative 3.2.1 is a reasonable alternative that must be analyzed along with other reasonable culvert and swale alternatives in an EIS or SEIS. Indeed, Alternative 3.2.1 is one of the only reasonable alternatives, since the Corps has no authority to build a bridge under the MWD Project.

4. The LRR/EA Fails to Assess the Cost of Delay As a Performance Measure

Delay of the implementation of the Tamiami Trail component of the MWD Project will have an adverse impact on Miccosukee Tribal Everglades and other parts of the Everglades. However, the LRR/EA does not address this cost of delay. The cost of delay should have been listed as a performance measure to analyze the alternatives in the LRR/EA. The Corps' Final GRR/SEIS on the 8.5 Square Mile Area component of the MWD Project included delay as a performance measure in Table 7. It found that *"[t]he loss of tree islands has an impact on critical habitats and cultural resources" in WCA 3A and that delayed implementation of the MWD project will cause an estimated loss of 8.4 islands and 246 acres per year at an estimated cost of $50,000 to $500,000 per acre.* **Attachment D** (Final GRR/SEIS on the 8.5 Square Mile Area, Section 5.2.7, page 64 and Table 7). Thus, for each year of delay of MWD, the cost to restore tree islands lost by delay is $23-$123 million dollars a year, if they can ever even be restored. Delay of the MWD project also causes damage to Lake Okeechobee, the Caloosahatchee and St. Lucie estuaries and Everglades National Park. The Corps is required to assess these impacts and costs under NEPA. This cost of delay must be analyzed in an EIS.

5. The LRR/EA Improperly Segments the MWD Project

The 1992 General Design Memorandum ("GDM") and EIS for the MWD Project detailed the condition of the environment and resources within a much larger study area than is currently being analyzed in the LRR/EA. Tribal lands in WCA 3A, which is a 915 square mile area, were included in the impacted area in the 1992 GDM but are excluded from the analysis in the LRR/EA. NEPA requires that connected projects should be evaluated in a single Environmental Impact Statement (EIS). (40 C.F.R. § 1502.4). The Council on Environmental Quality ("CEQ") regulations governing NEPA state that, *"proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement."* When the Corps prepared its GDM for the MWD Project in 1992, it evaluated all aspects of this interrelated project in a single EIS. This improper segmentation has caused the LRR/EA to inadequately assess impacts on Tribal lands and resources.

6. The LRR/EA Improperly Narrows the Purpose, Scope and Study Area

The narrow purpose and scope of the LRR/EA allows the impacts of delay, especially those to Tribal lands in WCA-3A, to remain unassessed and skews the analysis of the alternatives. The LRR/EA contains the language from Section 104(3)(d) of PL. 101-229 that says that the *project modifications are justified by the environmental benefits to be derived by the Everglades ecosystem in general and by the Park in particular.* Thus, the purpose, scope, and study area of the LRR/EA should include the WCAs, Northeast Shark River Slough and the Shark River Slough Basin of Everglades National Park (ENP). Section 5.20 of the LRR/EA improperly limits the scope and study area to Everglades National Park and Northeast Shark River Slough. This is improper in light of the facts that the 1992 GDM for the MWD Project stated that: *when fully operational the MWD project will benefit the ecosystem function and habitat value of approximately 100,000 acres of wetlands in NESRS, 600,000 acres of wetlands in WCA-3A and 200,000 acres of wetlands within the Shark River Slough basin of ENP.* Thus, the LRR/EA scope and study area should have included all the areas that comprise 900,000 acres of Everglades wetlands. Instead, analysis of the benefits is narrowly focused on the Park. The narrow purpose and scope in the LRR/EA resulted in an incomplete analysis that omits issues of vital importance, such as the impact of the project and project delays on Tribal Everglades and the endangered and threatened species that inhabit these areas.

7. The Future Without Project Condition Is Improperly Defined

The LRR/EA improperly defines the future without project condition and states that it is synonymous with the No Action alternative under NEPA in Section 4.2.5. The document states in Section 5.4 that: "The No Action alternative would maintain the existing capacity for conveying water from the L-29 canal, under Tamiami Trail, to ENP without causing deterioration of the road way." There is no Congressionally authorized Tamiami Trail project. The Corps' failure to define the true without project condition as no MWD Project, as required by NEPA, has resulted in a skewed analysis of alternatives. The Corps must conduct an EIS that properly assesses the impact that the delay of the MWD project caused by the bridge alternative will have on hundreds of

thousands of acres of Tribal Everglades and the wildlife in WCA 3A, as well as on other areas of the Everglades.

8. The Cumulative Impacts Analysis is Woefully Inadequate

NEPA and its implementing regulations require that the cumulative impacts of past, present, and future actions be analyzed in an EIS. Section 5.20 of the LRR/EA contains a woefully inadequate section on cumulative impacts that does not amount to an analysis at all. This section merely reiterates NEPA requirements for a cumulative impacts analysis, and discusses the history of the Everglades. It leaves vast areas of the Everglades, such as Water Conservation Area 3A, out of the discussion of "target resources," and focuses only on Everglades National Park. It lists actions, such as the Interim Operational Plan ("IOP"), in Table 5.5 but makes no attempt to analyze IOP's past, present and future impacts. The geographic scope is improperly limited to 63,915 acres below Tamiami Trail, ignoring vast Everglades wetlands north of the Trail. While the Park and Northeast Shark River Slough are listed in Section 5.20.3 under "Determining the Environmental Consequences," Tribal lands in WCA 3A are improperly excluded, along with the endangered Snail Kite's critical habitat there. The Tribe contends that the "geographic scope" should encompass the areas of the Everglades in the 1992 MWD GDM. The Corps must conduct an EIS that analyzes the combined impacts that the delay of the MWD Project, coupled with the impacts that the last ten years of operational plans for the Sparrow (such as ISOP and IOP), have had on the Tribal lands and endangered species in WCA 3A and other areas of the Everglades. The endangered Snail Kite population has declined 50% during ISOP and IOP. The Corps must analyze the cumulative impacts that additional years of IOP resulting from the delay that will be caused by the TSP will have on the Everglades, endangered species, and Tribal lands.

9. WRDA 2000 Constraints and Congressional Cost Constraints Are Not Divulged

NEPA requires full disclosure. The LRR/EA ignores the WRDA 2000 constraint language that prohibits bridging Tamiami Trail until the MWD Project is complete. **Attachment D.** Moreover, it contains no mention of Congress' guidance that $150 million dollars should be adequate to complete the MWD Project. Contrary to this, Section 4 of the LRR/EA discusses how the Corps gave the LRR advisory group a $300 and $400 million cost cap, and that DOI gave NO cost cap. (4-32.) WRDA 2000 clearly prohibits the bridge alternative, and neither the Corps nor DOI have the funding to build it. Congress has clearly stated that it believes the MWD Project can be completed for $150 million dollars. Despite these constraints, the Corps selected a TSP that costs $225.4 million dollars, without divulging that there is approximately another $95 million dollars in MWD components to fund, which would bring the total remaining costs to at least $320.4 million dollars. This is well above the $150 million dollar cost estimate given by Congress. The Tribe contends that the *reasonable* culvert/swale road raising alternative, and other culvert alternatives, must be analyzed in the an EIS or SEIS. The bridge alternative is *unreasonable* and *unimplementable* under MWD and contrary to the explicit mandate of WRDA 2000, which requires that MWD be completed prior to raising and bridging Tamiami Trail.

10. Alternatives Must be Assessed With and Without Alleged Cost Savings

The cost for Alternative 3.2.2a when the Corps initially briefed the Task Force was $319 million dollars, which is the cost listed in the matrix in the LRR/EA. (*See* Table 4-3 at 4-21.) The Corps, however, apparently relied on purported cost savings options, which are uncertain, to attempt to lower the high cost of the bridge to $225.4 million dollars. Appendix C. The analysis admits at C-9 that not all cost savings are applicable to all alternatives. It is also true that not all cost savings listed by the Corps are certain. The Corps must conduct an analysis of all alternatives, including showing which savings apply to each, both with and without these uncertain costs savings measures, in an EIS.

11. The LRR/EA Improperly Modifies the MWD Project Purpose

The LRR/EA states that "the project purpose is to flow water north to south." This is not the authorized purpose of the MWD Project. The purpose of the MWD Project is to improve water deliveries into the Park and, "to the extent practicable," take steps to restore the natural hydrological conditions. Apparently ignoring the words "to the extent practicable," the LRR advisory group again used modeling chicanery to support a bridge alternative. The modeling discussion in the LRR/EA is so confusing that it is difficult to determine in what manner, or if, the group relied on the greater than CERP flows of NSM 4.6.2 that was used in the 2005 GRR/EIS to assess impacts and high water design. While it appears the advisory group relied on a series of new modeling exercises to assess impacts and environmental benefits, the process is incomprehensible. Moreover, it can not be reviewed for independent verification. Although the Tribe requested a copy of the modeling spread sheet used by the group, the Corps informed the Tribe it could not produce the sheet prior to the comment deadline. All modeling used to assess alternatives should have been included in the LRR/EA and should be included in an EIS. The Tribe further contends that the one mile bridge that was selected is not necessary to improve water deliveries "*to the extent practicable.*" and suspects that the "modeling" was used to support a predetermined conclusion for Tamiami Trail.

12. The LRR/EA Does Not Detail What Will Be Done to Modify the Road

Members of the Miccosukee Tribe live along Tamiami Trail, and its safety is of the utmost importance to them. The LRR/EA contains no details as to what will be done to ensure the safety of Tamiami Trail. While raising the road is defined as part of the TSP, the LRR/EA defines it in other sections as road mitigation and/or modifications. Details on how the Corps envisions this will be done, or if it will be done at all, are scant. It is unclear whether the Corps plans to implement the road modifications, or merely give the money to Florida Department of Transportation ("FDOT") in return for a perpetual flowage easement. It is also unclear why, if the Corps does plan to conduct road modifications, it deems it necessary to obtain a perpetual flowage easement for 10.7 miles of Tamiami Trail, as is stated in Section 6.1.9. If the Corps intends to implement the road modifications, the LRR/EA should contain a time line for doing so but does not. In addition, Appendix C shows that the Corps reduced the estimated cost for road modifications from $69.9 million to $33.1 million dollars. (*See* C-12 and C-13.) There is no detailed justification for this cost cutting measure in the LRR/EA. Nor is there a detailed engineering analysis of the road modifications and cost. The Corps is aware that the Tribe objected

to the Corps' initial proposal for a two phase project: Phase I - a one mile eastern bridge to be built and constructed by the Corps, and Phase 2 - road modifications to be conducted and paid for by a party yet to be determined. While the LRR/EA contains $33.1 million dollars for road modifications, it is unclear whether the Corps intends to construct them and if this amount will be sufficient. The Corps should conduct an EIS with a detailed analysis of the road modifications.

13. The LRR/EA Contains a Skewed Environmental Benefits Analysis

Appendix E of the LRR/EA contains a skewed environmental benefits analysis that uses an incomprehensible analysis to compare alternatives to the "unreasonable" *skyway* alternative, to which the LRR advisory group attaches 100% of the benefits. It was improper for the *skyway* to represent the maximum achievable benefit for this project. (*See* E-15.) It was also improper for the LRR/EA to identify this "unreasonable" *skyway* alternative as the environmentally preferred alternative in Section 4.8. Under NEPA, the Corps is only required to analyze *reasonable alternatives.* The *skyway* Alternative 17 is not reasonable under MWD Project statutory authority and funding constraints, and should not be used as a benchmark. It is improper to assess the environmental benefits of alternatives compared to the *skyway* to which the advisory group arbitrarily assigned 100% of the benefits. Instead, the environmental benefits of all reasonable alternatives should be assessed against the No Action Alternative, which should be No MWD Project. The skewed analysis used by the LRR advisory group resulted in the screening out of all non-bridge alternatives. The Tribe contends that the lower cost culvert/swale/road raising alternative is the environmentally preferred alternative, because it would allow the expeditious completion of a project that will benefit 900,000 acres of the Everglades.

14. The LRR/EA Does Not Contain An Adequate Analysis of Water Quality

The LRR/EA does not contain an adequate analysis of water quality impacts of the TSP. This is especially important, because the Corps now plans to build the bridge in Everglades National Park, which is an Outstanding Florida Water ("OFW"). Everglades National Park is also subject to the terms of the Settlement Agreement in the federal Everglades lawsuit, Case No. 88-1886-CIV-Moreno. Neither Section 3.4 or 5.5 of the LRR/EA contains an analysis of whether an expensive Stormwater Treatment Area ("STA") may be necessary to meet water quality requirements. The LRR/EA merely states that "the State of Florida requires the treatment of stormwater runoff to be included as a component of the highway and bridge construction projects." *See* page 3-7. It does not define the level of treatment, how it will be done, or how much it will cost. There is no support for the Corps' contention in Section 5.5 that the bridge could provide an incremental benefit to water quality by treating a one-mile section of highway runoff. Nor does the LRR/EA mention the fact, which was discussed in the prior 2005 Draft GRR/FEIS, that the S-9 pump could discharge water to Everglades National Park under the MWD Project. There is no discussion of the impact such discharges could have on water quality. The Corps must conduct a water quality analysis of the TSP being constructed in an OFW in an EIS.

B. A SECTION 4(f) REVIEW IS REQUIRED FOR A BRIDGE IN THE PARK

Section 4(f) of the Department of Transportation Act ("DOT") of 1966, which protects public lands and historic cites, was codified without substantive change as 49 U.S.C. 303 in 1983. Congress declared that it is a national policy to preserve public park lands and prohibits the Department of Transportation ("DOT") from approving any program that uses publicly owned lands unless: 1) there is no feasible and prudent alternative, and 2) such use includes all possible planning to minimize harm. While the LRR/EA states at Section 4.3.3 that "This project is not a transportation, project," the reality is that it involves building a bridge to transport people. This is recognized at page 5-38 of the LRR/EA where it discusses "the conversion of parklands to transportation conveyances," and that "the proposed project would convert parklands to highway right-of-way." Moreover, the LRR/EA states that "most of the land on which the bridge would be located is federally owned land that is part of ENP . . ." LRR/EA at 5-7. It further states that transfer of these Park lands to the State to construct the bridge will involve U.S. DOT.

It is clear that the TSP will use Section 4(f) lands, and a Section 4(f) review is required. Rather than conduct the required review, the Corps improperly relied on a short letter, which is not based on the TSP, to incorrectly claim in Appendix F of the LRR/EA that a Section 4(f) review is not required. The Tribe contends that a Section 4(f) review is required here, because the federal government plans to build a bridge on national park lands. The Tribe suspects that the Corps does not want to conduct a Section 4(f) review, because it knows that such a review would show that there are feasible and prudent alternatives to constructing a bridge on these federal park lands.

C. THE CORPS FAILED TO COMPLY WITH THE ESA

The LRR/EA fails to comply with the Endangered Species Act ("ESA") in that, among other things, the Corps failed to conduct Section 7 consultation with the Fish and Wildlife Service ("FWS") prior to issuing its LRR/EA. The statement in Section 5.25.7 that "The FWS informally concurred with the USACE 'not likely to adversely effect' determinations for all listed species except the Florida panther (USACE, 2003 GRR/SEIS)" does not fulfill the duty to consult under Section 7 of the ESA. The Corps has a duty to conduct Section 7 consultation with the FWS on the impacts that the TSP, and any delays it causes, will have on the entire area analyzed in the 1992 GDM/EIS. The March 6, 2008 Planning Aid Letter ("PAL") from the FWS does not substitute for the required Section 7 consultation and a Biological Opinion.

The Corps is required to analyze any potential adverse impacts to the endangered species on Tribal Everglades in WCA 3A, including the Snail Kite and the Wood Stork, that have been caused, and will continue to be caused, by the delay of the MWD Project resulting from the TSP, as part of its analysis. This should include the impacts of delay on hundreds of thousands of acres of critical habitat in WCA 3A. The delay caused by building this unnecessary, and problem prone, bridge in ENP is certain to cause IOP to be in place for many more years, and those impacts on endangered species must be assessed. Neither the LRR/EA, nor the FWS PAL, mention the alarming 50% decline in the endangered Snail Kite population that has occurred under ISOP and IOP, nor analyze whether more delay will jeopardize this endangered species. Finally, the Corps must conduct Section 7 consultation on how the TSP will impact Sparrow populations C, D and E in eastern ENP, and the Snail Kites nesting in ENP.

D. THE CORPS FAILED TO COMPLY WITH FACA

The so-called LRR Team discussed at Section 4 of the LRR/EA is a federal advisory group that screened alternatives, and recommended the TSP to the Corps, without complying with the Federal Advisory Committee Act ("FACA"). The advisory group included non-federal entities, who developed performance measures and screened alternatives at secret meetings. This same advisory group also held a private Tamiami Trail Modifications Benefits Workshop. Section 4.3.1 of the LRR/EA describes how this advisory group screened out all but four of twenty seven alternatives, and retained only four bridge alternatives for final analysis. The advisory group also selected the eastern one mile bridge, which was the TSP that was recommended to the Corps. (Pages 4 to 8.) While the Corps attempts to paint this advisory group as a fact finding team, it is clear that the group made policy recommendations to a federal agency. The Corps improperly delegated their statutory authority to this advisory group, and failed to follow the requirements of FACA.

E. THE CORPS DID NOT MEET ITS TRUST RESPONSIBILITY TO THE TRIBE

The Corps has a Trust responsibility to the Tribe. Contrary to this Trust responsibility, the Corps failed to analyze the culvert/swale alternative in its final array of alternatives in the LRR/EA. The Corps also allowed an LRR advisory group to select the TSP behind closed doors and then consulted with the Tribe about it afterwards. Even though the Tribe asked to be included in the LRR process, the advisory group held secret meetings, which the Tribe and the public could not attend. The Tribe only found out about these meetings indirectly or when documents were inadvertently released, even though they had a direct impact on its natural resources. This is contrary to the Corps' Trust responsibility to the Tribe. The Corps has a duty to conduct meaningful pre-decisional consultation. The Corps also has a solemn trust responsibility to choose a plan that will protect Tribal natural resources and Trust resources and should have rejected any alternative that will cause further destruction of Tribal lands.

III. ADDITIONAL SPECIFIC COMMENTS ON THE LRR/EA

1. Study Authority: The Corps correctly states that the study authority comes from PI 101-229 which *authorized the Secretary of the Army to undertake certain action to improve water deliveries to ENP and shall, to the extent practicable, to restore natural hydrologic conditions . . .* . Unfortunately, the Corps continues to conduct skewed analyses that result in the selection of unnecessary and expensive alternatives for Tamiami Trail that go beyond MWD Project authority.

2. Manager's Language: The LRR/EA at page iv says alternatives were compared against the targets set by the Manager's language, and cost constraints. This section also gives reasons why the advisory group eliminated culvert only, and road raising only, alternatives from consideration. It does not explain, however, why alternative 3.2.1 (culvert/swale/road raising) was eliminated from analysis. A review of this alternative shows that it increased average and peak flow delivery to the Park at a lower cost than the TSP. This section also makes no mention that Congress clearly stated that it felt the MWD Project could be completed for $150 million dollars. Rather than heed Congressional guidance, the Corps gave its advisory group a $300 million dollar cost cap, which it raised to $400 million, and selected a TSP that exceeds the $150 million dollar cost target.

3. Cultural Resources: Section 5.10 of the LRR/EA says that consultation with Native American Tribes is ongoing. The Tribe contends that the Corps must conduct an assessment of cultural resources in the project area in an EIS. This analysis should include impacts on Tribal cultural resources that could be impacted by this project and include the Miccosukee resources, including the tree islands in WCA-3A and other parts of the Everglades.

4. Tribal Lands: Section 3.12 contains a woefully inadequate analysis of Tribal lands that could be impacted by the proposed project. The scope of Tribal lands that can be impacted includes a vast area of the Everglades (WCA 3A) that is not discussed here. The Tribe has provided the Corps with a list of Tribal land interests many times in the past. For some reason, the Corps has ignored these land interests and narrowed the scope of "Tribal lands" to the Tiger Tail and Osceola Camps. Even with this narrow scope, the Corps fails to adequately analyze the impacts. The statement that, "The living facilities of the Tiger Tail Camp were recently elevated above the flow levels anticipated for MWD" is not based on any analysis of the volumes and flow levels of the TSP. Moreover, this section provides no analysis whatsoever of the impact on the Osceola Camp. Under NEPA, the impacts on both these camps must be analyzed, along with the direct and indirect and cumulative impacts to Tribal Reservation and lease lands in WCA 3A, and the Miccosukee Reserved Area. These Tribal lands will all be either adversely or beneficially impacted by the selection of a Tamiami Trail alternative. The Tribe will not accept adverse impacts to Tribal lands. Nor will the Tribe accept any adverse impacts to the Osceola and Tiger Tail camps or any interference with their traditional practices.

5. Hurricane Evacuation: The LRR/EA states without any analysis that hurricane evacuation will not be impeded. The Tribe has continuously told the Corps that Tamiami Trail is the only hurricane evacuation route for Tribal members who live along it. As the Miccosukee Tribal members and others in the Service Area use Tamiami Trail to travel across the Everglades, it is vital that the Corps conduct an analysis of the impact that one lane travel would have on hurricane evacuation capability in an EIS. Access must be maintained to protect the health and safety of both Tribal members and the public.

6. Compatibility With CERP: As stated previously, the Tribe supports the federal government's desire for compatibility with CERP, but that desire must not delay the implementation of the MWD Project. The Tribe does not believe that the TSP offers that compatibility, and reiterates that building a bridge in Everglades National Park has a great potential for political and bureaucratic delay. On the other hand, the culvert/swale/road raising alternative would allow the MWD Project to be expeditiously completed so that CERP decompartmentalization could proceed. It appears that the advisory group once again used a skewed modeling and environmental benefits analysis to attempt to fool Congress into wasting vast sums of money on building an unnecessary bridge in a national park.

7. Socioeconomic Factors: In reference to the socioeconomic factors outlined in Section 3.13, the Corps has discarded the performance measure ("PM") used in the previous Tamiami Trail EIS to avoid and minimize impacts to the Tiger Tail and Osceola Camps as a constraint in evaluating the alternatives. In the past, the Corps had developed a performance measure to assess the impacts to the camps, including access, privacy and encroachment, both during and after the construction phase. The advisory team did not use this PM in the LRR/EA. The Tribe reiterates that it will not

accept any adverse impacts to either the Tiger Tail or Osceola Camps and that any interference with the traditional use of these camps is non-negotiable.

8. Hydraulics and Hydrology: Again, the Corps appears to have changed its requirement from Section 5 of the 2003 GRR/FEIS, that the final alternative selected need only pass MWD flows, in favor of a new model that passes much greater volumes and flows. The section on hydraulics and hydrology contains language concerning the L-29 canal only.

9. Costs and Section 902: The LRR/EA at C-6 incorrectly states that the MWD Project is not subject to Section 902 limits. This misrepresentation has caused the Corps and DOI to have a blank check mentality that has caused the MWD cost to sky rocket! The MWD Project was initially estimated to cost $81 million dollars. In 1994 when the PCA was signed, the cost had escalated to $114 million. The LRR/EA now estimates the cost at $523.1 million dollars. It is astounding that the Corps would consider spending $225.4 million dollars for a minor component of the MWD, which was supposed to cost $81 million dollars in its entirety. Only through the application of Section 902 will this blank check mentality of the federal agencies be stopped.

10. WRDA Constraint Language: The LRR/EA cleverly paraphrases the WRDA constraint language to omit the prohibition against bridging Tamiami Trail under Mod Waters. (Page 1-8.) Perhaps the Corps did so, because it knows the selection of the eastern bridge alternative defies Congress's mandate. Section 601(b)(2) of WRDA 2000 prevents the authorization of Tamiami Trail bridging until the MWD Project is completed. Despite this Congressional mandate, the Corps refuses to recognize that it is incumbent on them to select an alternative that is within the funding constraints and its statutory authority. It appears that the Corps thinks bridging Tamiami Trail is not contrary to WRDA 2000, as long as the L-29 levee is not removed. This "quibbling" is dangerous and will not bode well if Congress discovers it is funding a bridge that WRDA 2000 prohibits. Congress will be even more incensed to learn that precious tax dollars are being wasted on a white elephant bridge that will do little for flow with the levee still in place.

11. Flooding and Flowage Easements: Section 5.14.2 states that real estate will be required from private landowners impacted by project operation and that operation of the project would not be implemented until the necessary real estate interests have been acquired. Section 6.2.6 states that the Corps intends to obtain a perpetual flowage easement from FDOT for 10.7 miles of Tamiami Trail. The LRR/EA does not contain any analysis of whether, and when, the road will be modified and whether Florida DOT has agreed to not seek any additional compensation for the 10.7 mile flowage easement. The Corps is required to conduct an EIS that fully analyzes flooding impacts and assesses the full costs for any flowage easements.

12. Real Estate Costs Are Not Adequately Assessed: The LRR/EA does not adequately assess all real estate costs that will result from the TSP. For instance, the costs for the modifications to the Osceola Camp discussed at F-20 are not assessed in the LRR/EA. It is also unclear from the LRR/EA whether there will be additional real estate costs associated with obtaining a perpetual flowage easement for 10.7 miles of Tamiami Trail from FDOT or whether costs (or a land swap) will be involved in transferring fee title from Everglades National Park lands to the State. Any such costs related to these matters must be analyzed in an EIS.

13. No Realistic Project Schedule: The LRR/EA contains no realistic project schedule for the bridge building and road modifications associated with the TSP. The LRR/EA merely makes the broad generalization that if bridge construction starts in 2008, it would take three years, and be completed at the end of 2011. There is no construction time estimate for the road modifications. The Tribe contends that the amount of time necessary to complete the project should have been a factor in screening alternatives. It is clear from the admission in the LRR/EA that Congressional approval will be required to transfer federal national park lands to the State of Florida and that a 2008 construction date is overly optimistic. The LRR/EA states that the cost is based on a contract award date of October 2008 and a three year construction duration. It also admits at 4-51 that "The timing of construction influences the costs of construction -the longer the time to construction - the greater the cost due to the effects of risk factors and escalation." The Corps must conduct an EIS that assesses the alternatives in relation to the costs associated with the best and worst case scenarios for construction start and completion dates.

14. Transportation: In reference to Section 6.1.8, the LRR/EA contains no analysis of the impact that one lane travel during paving would have on hurricane evacuation capability. The Tribe reiterates that the Corps must take all precautions that both transportation and the safety of the Tribe and the public not be compromised during, or after, construction.

15. Impact on Tribal Lands: The LRR/EA contains no analysis of the impact that the TSP will have on Tribal lands. The Corps must conduct an EIS that shows the impact that all alternatives, including the cost of delay, will have on the Tribal Everglades in WCA 3A. Moreover, the use of greater than CERP flows must also be analyzed for impacts to the MRA, and other Tribal properties, and to the Tiger Tail and Osceola Camps.

16. Impact on Businesses: Section 5.14 of the LRR/EA does not assess the impact that the TSP would have on Tribal businesses, such as the Miccosukee Resort and Gaming Facility, and the Tribe's Miccosukee Indian Village, Airboats, Restaurant, and Gas Station along Tamiami Trail.

17. Osceola and Tiger Tail Camps: Section 5.17 of the LRR/EA contains no modeling to show the impact that the TSP will have on the Osceola Camp and Tiger Tail camps. The LRR/EA merely states at Section 5.17 that: "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 Tiger Tail Camp, the impact of flooding has been addressed by raising the building and access. This is not yet the case for the Osceola Camp, which would be raised by the USACE pending the outcome of negotiations between the Osceola Family and ENP regarding how to implement the mitigation measures." The LRR/EA contains no modeling of the impacts that the greater flows and volumes of the TSP will have on the Tiger Tail Camp. Thus, there is no basis for the Corps' statement of no impact. In relation to the Osceola Camp, the LRR/EA contains no modeling of the impacts, details of the work, or cost estimate for performing it. The Corps must conduct an analysis of impacts on the Tiger Tail and Osceola camps in an EIS. As stated earlier, the Tribe will not accept adverse impacts on the Osceola camp, or any interference with their traditional practices.

18. Environmental Justice: Section 5.19.1 claims, without the requisite analysis, that no long term impacts would be created for the residents of the Tiger Tail and Osceola Camps. The Corps is

required to conduct such an analysis under NEPA. The Tribe is especially concerned that the advisory team did not use the previous Performance Measure that analyzed potential adverse impacts of alternatives on the Tiger Tail and Osceola Camps. The Tribe contends that the Corps must ensure that the project is not likely to affect the environmental health or safety, and traditional way of life, of either the Tiger Tail or Osceola Camps. The Tribe also contends that the disparate impacts to Tribal Everglades and its culture and way of life due to the failure to implement the MWD Project, should also be analyzed in an EIS. The TSP will further delay the MWD Project, and will adversely and disproportionately impact the Miccosukee Tribe. Those impacts must be assessed in an EIS.

19. Public Involvement: Section 9.1 claims that the Corps complied with USACE and NEPA policies and sought public input. In reality, the process conducted by the Corps was a secretive back door process that was pre-decisional and excluded the public. An LRR advisory group, which did not comply with FACA and met in private, selected the alternatives and the TSP. The public was brought in after the decisions were made to feign "public involvement," contrary to both FACA and NEPA.

20. Modeling Chicanery: In the 2005 GRR/EIS, the advisory group relied on a Natural System Model (NSM), which used greater than CERP acre feet of water, to predict water levels in WCA 3B and the L-29 canal to determine the potential impacts to Tamiami Trail. The discussion of modeling in the LRR/EA is so confusing, it is difficult to determine exactly which models were used and whether the results from the 2005 RGRR/SEIS were relied on here. The LRR/EA also does not contain the modeling spread sheet used by the advisory group, so that the public can review it. Moreover, it appears that different models were used to assess different performance measures. This section is so incomprehensible that a Tribal representative called the Corps to attempt to decipher the modeling used. The Tribe was told the advisory group did not use the 2x2 model, which has been used in past EIS processes. It should not be necessary for the Tribe to attempt to make sense out of a NEPA document. A NEPA document is supposed to be understandable. While the Tribe continues to be uncertain as to the exact models used, it appears that the advisory group modeled arbitrary performance measures to rubber stamp an unnecessary and expensive bridge alternative. For instance, the use of an arbitrary "velocity" performance measure resulted in reasonable alternatives, such as Alternative 3.2.1 (culvert/swale/road raising), being rejected from final consideration. It is interesting to note that Appendix H in the 2005 RGRR/SEIS contained an independent engineering analysis that showed the current culvert system has the hydraulic capacity to pass MWD flows and provides a hydraulic connection to the sloughs. There is no such independent engineering analysis in the LRR/EA. NEPA is required to be comprehensible to the public and to be a full disclosure document. The Corps should conduct an EIS that adequately explains the modeling used and contains the actual model results for independent verification and analysis.

21. Safety: The Tribe insists that Tribal and public health and safety must be strictly maintained both during, and after, construction of the Tamiami Trail modifications. The Corps should conduct an EIS that analyzes the road modifications in sufficient detail, so that the Tribe can ascertain whether public safety will be maintained.

22. Highway Easement Deed and Congressional Approval: Section 6.2.5 discusses the use of a Highway Easement Deed ("HED") as a legal mechanism for DOI to convey the Park lands needed for the one mile bridge to FDOT through the Federal Highway Administration. The LRR/EA says this is merely a "temporary solution" for transferring the lands to the state, and it is the overall intention of DOI to seek specific legislation from Congress to convey the lands to the state in fee. It is unclear from the LRR/EA whether the Corps intends to use the HED to begin construction prior to DOI obtaining Congressional approval to essentially give away national park lands to the State. This section is indicative of the challenging, and uncertain, process that building a bridge in a National Park will entail. The Tribe contends that Congressional approval is needed prior to construction, and that a Section 4(f) review would result in such approval not being given. There are reasonable and prudent alternatives to building a bridge in the Park that would not require transferring fee title to national park land.

III. CONCLUSION

The Tribe contends that the TSP selected in the LRR/EA is complicated, unnecessary, and too expensive to build. It also requires an EIS, or SEIS, under NEPA. The MWD Project was intended to be an interim restoration project designed to protect and preserve 900,000 acres of Everglades wetlands, including hundreds of thousands of acres of Tribal Everglades in WCA 3A. The project was to be completed by 1997. In 2008, the MWD Project is nowhere near completion, and the Tribe's Everglades homeland continues to die. Since at least 2003, the Corps has been conducting an endless series of NEPA documents on the Tamiami Trail component of the MWD Project. While the Tribe was hopeful that perhaps this time the Corps would select a "reasonable" alternative that could be implemented, a review of the faulty LRR/EA shows that it has embarked upon another "dead end excursion." Rather than analyze the reasonable culvert/swale/ road raising alternative, the Corps embraced construction of an unimplementable alternative recommended by an LRR advisory team. The result will be further delay of the MWD Project and CERP Decompartmentalization, and perhaps the death of Everglades Restoration itself.

Sincerely,

Dexter W. Lehtinen

cc Chairman Billy Cypress

THE MICCOSUKEE TRIBE'S TEN TAMIAMI TRAIL TENETS

1. The Tribe is opposed to all plans that will elevate Tamiami Trail before the Modified Water Deliveries Project is completed and implemented, including the protection for the 8.5 Square Mile Area mandated by PL101-229. (The Tribe opposes a *skyway*.) The Tribe believes that the Corps should take maximum advantage of existing infrastructure in place, and should only add new infrastructure that is absolutely essential to protect public health and safety and to meet the requirements of the Modified Water Deliveries Project, as directed by PL101-229.

2. The Corps' selected alternative must ensure that the Modified Water Deliveries Project is completed and operational on, or before, December 31, 2003. (Note: 2003 date has passed.)

3. Any alternatives that have no funding and would delay the Modified Water Deliveries Project beyond December 31, 2003, should be deemed "unreasonable" and removed from further consideration as the Tamiami Trail component of the Modified Water Deliveries Project Draft RGRR/SEIS. (Note: 2003 date has passed.)

4. Any plan recommended by the Corps for Tamiami Trail must be consistent with the requirements of PL101-229, the Water Resources and Development Act of 2000 (WRDA 2000), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA) and the Corps' trust responsibility to the Tribe.

5. The Tribe will oppose any plan to modify Tamiami Trail that has an adverse impact on the Tiger Tail and Osceola Camps. Any interference with the traditional use of these camps is non-negotiable.

6. The Tribe will oppose all plans to elevate Tamiami Trail until I-75 is also elevated.

7. The Tribe will oppose all plans to elevate Tamiami Trail until all the levees are pushed into the canals (e.g. the L-29 and Miami canal); and will oppose any plan that elevates Tamiami Trail that does not remove the levee that separates WCA-3A and WCA-3B from the L-29 canal, with any such decompartmentalization plans being contingent upon the provisions in Tenet 8.

8. Control of the water at Tamiami Trail must not be given up under any future CERP decompartmentalization plans until it is absolutely certain that the flow north and south of the Trail are compatible. This cannot be done until the component of the flow lost to Miami-Dade and Broward Counties has been reinstated via the Comprehensive Everglades Restoration Plan (CERP), which is based on technologies that are so suspect that each requires a pilot study prior to proceeding.(i.e. in ground reservoirs, wastewater reuse and L-31 North seepage control.)

9. The Corps must operate the water management system to ensure that the access and egress of the Miccosukee Tribe is not jeopardized until such time as Tamiami Trail is modified to the extent necessary to protect it from degradation due to higher water levels during those events which would threaten the stability of the road.

10. While attempting to make the Tamiami Trail component of the Modified Water Deliveries Project compatible with CERP is a noble goal, it must not delay this already seriously delayed project, which only authorizes those flows directed in PL101-229, or compromise the health and safety of the public or the Tribe. Source: Miccosukee Tribe Comments dated October 11, 2005 on the 2005 Tamiami Trail RGRR/SEIS, which were first submitted in 2003 GRR/SEIS process.

Attachment A

Modified Water Deliveries
Tamiami Trail Water Quality Certification
Pre-Application Meeting
DRAFT Agenda

Date: 25 January 2008
Time: 10:00 am - 3:00 pm
Location: Room 609 FDEP Offices, 2600 Blair Stone Road, Tallahassee FL 32399
Call-In Number: 877 633 2949 Participant Code: 1350061

Meeting Objectives:

- Update on Modified Water Deliveries Tamiami Trail Modifications project
- Update of agreements regarding above
- Determine what is required from the different agencies to allow a construction start in Oct 2008

Expected Outcome: All agencies understand the requirements and timeframes for the project to succeed

10:00 – 10:15	Introductions (Greg Knecht/Marie Burns) Purpose of Meeting
10:15 – 10:30	Overview of Project (Brice McKoy, USACE) Overview of Modified Water Deliveries to ENP Overall Construction Timeline for TTM
10:30 – 11:15	Update on TTM (bridge/road) Project (Gwen Nelson, USACE) Discussions with FDOT (including traffic flow plan) Current footprint and major features Construction access/ temporary impacts/permanent Impacts/staging Area Operator/Operations/Maintenance Information/Status Water Flow/Drainage (pre-, during, and post construction) Benefits Description
11:15 – 11:30	Overview of Real Estate Issues (Cem Goral, USACE) Timeline of agreements and schedule of meetings
11:30 – 12:30	Lunch
12:30 – 1:45	Discussion on Items Necessary for Successful/Timely Construction Start (All Agencies) Endangered Species/USFWS/FWC – time frames FDOT concurrence on design Other FDEP needs Department of State Requirements Other agency needs/requirements
1:45 – 2:00	Review of Timelines and Requirements for TTM
2:00 – 2:45	Discussion on Pilot Slough project (USACE) Agreements/Discussions Timeline – Geometry - Locations Affect on Tamiami Trail Modifications
2:45 – 3:00	Wrap-up and Action Items

Attachment B

B- (1)

The meeting on January 25, 2008 is being called to answer the following question
"What items or reasonable assurances does the Corps need to present to the regulatory agencies in order to move forward with construction of this project?"

Please be prepared to contribute to the answer of that question by bringing with you the names of the contact people (within the agencies) and timeframes by which that information needs to be presented.

There are several key dates to keep in mind:

- The day construction is anticipated to begin – ALL assurances/permit conditions for construction MUST be met BEFORE construction can begin.
- Fifteen days prior to bid opening for the construction contract –FINAL permit needed by Corps
- Fifteen days prior to the advertisement of the construction contract – The latest the Notice of Intent can be issued. In order to issue the Corps a permit (pending no 3rd party challenges), the Florida Department of Environmental Protection would need to go to Notice of Intent within 30 days of the date by which the Corps needs the permit (which is 15 days before bid opening).

As a point of reference, the following is a general description of the needs of the Florida Department of Environmental Protection: Assurances for the FDEP can be met in one of two ways:

1. Have documentation on file that gives FDEP such assurances, or
2. Include conditions to get FDEP those assurances.

The following statutory authority (from CERPRA, 373.1502 Florida Statutes) outlines the four major categories for which assurances are sought. [These are not all inclusive requirements, as FDEP has rules by which they need to operate.]

1. The project component will achieve the design objectives set forth in the detailed design documents submitted as part of the application.
2. State water quality standards, including water quality criteria and moderating provisions, will be met. Under no circumstances shall the project component cause or contribute to violation of state water quality standards.
3. Discharges from the project component will not pose a serious danger to public health, safety, or welfare.
4. Any impacts to wetlands or threatened or endangered species resulting from implementation of the project component will be avoided, minimized, and mitigated, as appropriate.

The timeframe in which documentation from the Corps and items from other agencies are received is imperative to establish, so FDEP can include the appropriate conditions in the permit (assuming that, as outlined above, there is a gap between issuance and initiation of construction). Here are the items FDEP would require the Corps to submit (from other agencies) as part of the application process:

- **FDOT concurrence** on the bridge design and reconstruction or repaving of the road.
- Documentation from USFWS/FFWCC that **impacts to Threatened & Endangered Species** have been assessed and any remedial measures identified (please include all documentation- BA, BO, and any other concurrence with project).

Documentation that requires coordination with other agencies includes:

- **Real estate information**- FDEP will need right-of-way documentation, ownership documentation, land agreements, etc. that authorize the construction of the project.
- **Operations and Maintenance**- If operation and maintenance are not clear at this time, the Corps should be applying for construction only. A statement of the ongoing process to determine the operator or operating agency should be provided in the absence of an executed agreement.

B - (2)

Other items that FDEP would require are:

- **BMP info**
- **Dewatering** - Please keep in mind that dewatering is a term that may have different meanings depending on who is using it. For example, if pumping of groundwater from an excavated site is needed for installation of pads or footing for the bridge, a separate NPDES permit is required.
- **Summary of project benefits**- assurances that the benefits of the project (please try to quantify) clearly outweigh the associated impacts.
- **Contamination**- Are there any contaminants on site? Will sediments be removed off-site? If so, what monitoring will occur to determine that the sediment is not contaminated?
- **Plans**- project plans should include the bridge, road improvements, stormwater treatment associated the proposed bridge and road improvements. The application should also include construction schedules for each phase of the construction.
- **Detailed project description**- description should include removal of road and any other attributes.

Modified Water Deliveries
to Everglades National Park
Tamiami Trail Limited Reevaluation Report
MWD Project
The Everglades National Park Protection
and Expansion Act of 1989
Authorized the acquisition of 109,000
acres
Authorized the Secretary of the Army to
make modifications to C&SF Project "to
improve water deliveries into the park
and shall, to the extent practicable, take
steps to restore the natural hydrological
conditions within the Park."

B-(4)

Tamiami Trail Re-Analysis

A re-analysis of alternatives is being conducted to:

- Address the WRDA 2007 language
- Document the cost increases for the previously approved plan
- Provide cost saving options
- Review alternatives for completing Tamiami Trail

Alternatives Considered

- 27 alternatives (including no-action) considered
- Organized into 5 groups:
  1. Constrain L-29 stage to 7.5 feet (No Roadway Improvement, No Stage Increase)
  2. Raise stage constraint to 8.0 feet (Minimum Roadway Improvement)
  3. Raise stage constraint to 8.5 feet (Moderate Roadway Improvement)
  4. Raise stage constraint to 9.7 feet (Major Roadway Modification)
  5. Other structural alternatives and roadway realignments
- Each category includes a suite of structural combinations
- Currently, alternative 2.2.2a, eastern bridge and 8' stage, appears the most favorable

B-5

2.2.2 a Alternative

- 1 – mile Eastern Bridge
- Reviewing road modification requirements for 8 ft NGVD in L-29 Canal
- Effects to other properties
  - Osceola Camp
  - Radio Tower
  - Private Property
- Wetland Impacts (less than Alternative 14 - both bridges)

Eastern Bridge Area

B - (16)

FDOT Road Design Criteria

- The criteria varies with elevation. With a 8' stage, the road footprint would not be expanded from current ROW (except for the bridge and approaches).

B- (17)

Proposed Footprint of Eastern Bridge

Real Estate

- Takings Analyses – Determination of potential impacts to private landowners from 8 foot water levels.
- Highway Easement Deed and Temporary Construction Easement from Everglades National Park
- FP&L Easements
  - Permanent Easement for Eastern Bridge
  - Temporary Construction Easement
- Relocation Agreement with FDOT
- PCA Amendment integrating a Land Management Agreement between ENP & SFWMD.

Timeline

- Target Construction Start: October 2008
- Updates to 60% P&S
- Permit Filed with FDEP
- Goal for completion of permit

TABLE 4-3: TAMIAMI TRAIL PLAN FORMULATION MATRIX

ALTERNATIVE			BENEFIT SUMMARY								COST INFORMATION			IMPLEMENTATION		
AR	ALTERNATIVES (note 1)	L-29 DESIGN STAGE (FEET)	BENEFIT AREA (ACRES)	PEAK FLOW (cfs)	AVERAGE ANNUAL VOLUME (acre-ft/year)	% VOLUME INCREASE	% CONNECTIVITY	RIDGE AND SLOUGH PROCESSES	SLOUGH VEGETATION SUITABILITY	AVG ANNUAL LIFT (AU)	AVG ANNUAL COST PER AU ($/AU)	TOTAL TTM COST ($K)	REAL ESTATE ($K)	NEPA / Report Coverage	CONSTRUCTION Start	CONSTRUCTION Finish
1	No roadway raising (note 2)															
1.1	no action (10 culvert sets)	7.5	0	1250	177	0.0%	0.0%	1.8%	2.4%	0	N/A	0	N/A	N/A	-	-
1.2	spreader swales (300' x 1000' - bottom dimensions)	7.5	62165	1271	185	4.5%	0.0%	2.5%	2.4%	167	5123	17	0	EA	Feb-10	Nov-10
1.3	add culvert sets (10 - 1x3ft dia) with swales (note 3)	7.5	62165	1271	188	6.4%	0.0%	3.2%	2.6%	236	14532	73	0	EA	Feb-10	Aug-11
1.4a	add 1-mile western bridge	7.5	62165	1410	253	12.2%	0.0%	26.0%	3.3%	3516	3775	219	0	EA	Aug-09	Aug-11
1.4b	add 1-mile western bridge	7.5	62165	1410	253	15.2%	0.0%	26.0%	3.3%	4209	2587	255	0	EA	Jul-10	Nov-12
1.5	raise western section of road to 12.75ft (cover) and add 1-mile western bridge	7.5	62165	1410	253	11.2%	0.0%	26.0%	3.3%	4230	>21571	>5691	0	EA	Aug-10	Feb-13
2	Roadway Improvements - Crown 13.00ft (2)															
2.1	raise road (low points only)	8.0	62165	1434	230	25.6%	0.0%	1.8%	11.2%	2544		144	1.1	EA	Feb-10	Feb-12
2.2.1	raise low points, add culvert sets with swales	8.0	62165	1506	251	42.2%	0.0%	1.8%	29.7%	3715	1979	151	1.1	EA	Feb-10	Feb-13
2.2.2a	raise road, add 1-mile western bridge	8.0	62165	1577	274	54.8%	0.0%	26.0%	46.7%	8539	1469	268	1.1	EA	Dec-09	Dec-12
2.2.2b	raise road, add 1-mile western bridge	8.0	62165	1577	274	54.8%	0.0%	26.0%	46.7%	8134	1388	254	1.1	EA	Aug-10	Dec-13
2.2.3	raise low points, add 2-mile + 1-mile bridges	8.0	62165	1577	283	61.7%	26.9%	65.5%	63.1%	10691	1111	529	1.1	EA	Dec-09	Jun-14
3	Roadway Improvements - Crown 11.31ft (note 4)															
3.1	raise road	8.5	63165	1577	323	71.7%	0.0%	1.8%	70.6%	8621		188	1.1	EA	Feb-10	Feb-12
3.2.1	raise road, add culvert sets with swales	8.5	62165	1577	318	70.1%	0.0%	1.8%	62.6%	8412	1020	236	1.1	EA	Feb-10	Feb-13
3.2.2a	raise road, add 1-mile western bridge	8.5	63165	1648	340	82.4%	0.0%	26.0%	84.3%	13103	985	319	1.1	EA	Dec-09	Dec-12
3.2.2b	raise road, add 1-mile western bridge	8.5	63165	1648	340	82.4%	0.0%	26.0%	84.3%	12735	1007	301	1.1	EA	Aug-10	Dec-13
3.2.3	raise road, add 2-mile + 1-mile bridges	8.5	63165	1668	355	101.1%	26.9%	65.5%	84.3%	16572	865	561	1.1	EA	Dec-09	Jun-14
4	Roadway Improvements - Crown 12.75ft (note 4)															
4.1	raise road	8.70	63165	2004	409	121.7%	0.0%	1.8%	84.4%	11542		261	1.1	EA	Apr-10	Oct-12
4.2.1	raise road, add culvert sets with swales	8.70	63165	2104	417	136.1%	0.0%	1.8%	84.4%	11674	884	346	1.1	EA	Apr-10	Oct-13
4.2.2a	raise road, add 1-mile western bridge (RSMR)	8.70	63165	2181	430	143.8%	0.0%	26.0%	84.4%	22165	885	426	1.1	EA	Apr-10	Oct-13
4.2.2b	raise road, add 1-mile western bridge (RSMR)	8.70	63165	2181	430	143.8%	0.0%	26.0%	84.4%	23184	709	455	1.1	EA	Aug-10	May-14
4.2.3	raise road, add 2-mile + 1-mile bridges (RSMR)	8.70	63165	2331	456	118.8%	26.0%	65.5%	84.4%	28361	709	557	1.1	Complete	Jan-09	Jun-14
4.2.4	12.7-mile bridge (RSMR)	8.70	63165	4026	472	167.1%	100.0%	100.0%	100.0%	53610		1648	1.1	EA	Feb-12	Feb-20
5	Structural alternatives applied next higher level (note 4)															
5.1	northern alignment of Alt 14	8.70	63165	2331	436	146.8%	26.0%	65.5%	84.4%	28361	869	1328	1.1	EIS/DRR	Apr-12	Apr-20
5.2	northern alignment with 1-mile bridge	8.70	63165	2181	430	143.8%	0.0%	26.0%	84.4%	23328	1183	1167	1.1	EIS/DRR	Apr-12	Apr-16
5.3	northern alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.50ft	8.70	17379	4036 (west) 955 (east)	472	167.1%	8.0%	13.0%	97.1%	4871	4483	751	1.1	EIS/DRR	Apr-13	Oct-16
5.4	current alignment with 1-mile bridge and relocation of L-67 levee - Crown 13.50ft	8.70	17379	4031 (west) 956 (east)	472	167.1%	8.0%	13.0%	97.1%	4871	4117	635	1.1	EIS/DRR	Aug-13	Feb-16
5.5	pump stations along L-29													EIS/DRR	Aug-13	Aug-21

Notes:
2 Existing road has 10 culvert sets resulting in an average culvert set spacing of ~3000 feet.
3 Reduces the average culvert set spacing to approximately 1500 feet.
4 All road improvements require 3.05 foot between road crest and L-29 design elevation.

Attachment C

962

Table 7 (continued)
Alternative Analysis Fact Sheets
This table presents the results of the alternatives analysis as outlined in Section 5.2

Objective 7: Analyze impacts and costs associated with time delays in implementation of alternatives.

Performance Measure:

PM7a: Environmental and Cultural Resources

Source of Data:

- Various research
- Restoration project data

Procedure:

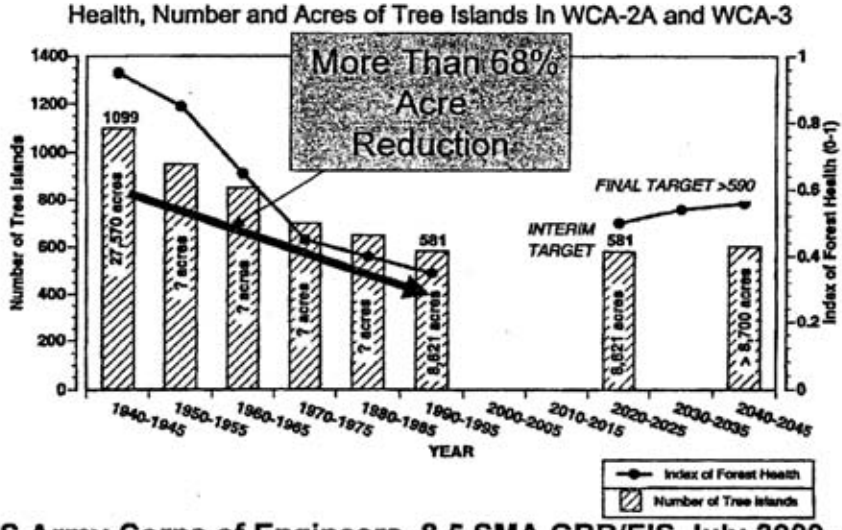
- The loss of tree islands has an impact on the critical habitats and cultural resources. SFWMD staff presented rates of degradation of tree islands in WCA-3 to the Federal Working Group Panel Discussion on September 1, 1999. The total number of tree islands as well as the spatial extent of the tree islands within WCA-3 has been determined from photographs dated 1940 and 1995.

Results:

- This data shows a total decrease in the number and acreage for the 55-year period as 45% and 61%, respectively. Assuming a linear relationship for the changes in tree islands, this is estimated as loss of 8.4 islands and 246 acres per year. Delayed implementation of MWD will prolong the restoration and recovery process for the tree islands in WCA-3. Estimated values for full restoration of tree islands may ranged from $50,000 to $500,000 per acre.

Cost of delay $12.3 - 123 million dollars a year

Tree Island Destruction 1940 to 1995



US Army Corps of Engineers–8.5 SMA GRR/EIS July 2000– cost of delay in implementing Mod Waters project:

- **"loss of tree islands has an impact on the critical habitats and cultural resources"**
- **"it is estimated as loss of 8.4 islands and 246 acres per year"**
- **"estimated values for full restoration of tree islands my range from $50,000 to $500,000 per acre"**

D-(1-1)

GAO REPORT

DEVELOP A UNIFIED APPROACH TO RESTORATION

Tree islands are key indicators of the health of the Everglades ecosystem because of their sensitivity to both flooding and drought conditions.

The Corps estimates that damage to tree islands resulting from current high water levels could be as much as 246 acres per year and the cost to restore the islands ranges from $12.3 million to $123 million per year.

The Department has not developed a clear unified position on its preferred restoration approaches. The Fish and Wildlife Service (FWS) and NPS have had different positions regarding fundamental planning and design issues. Specifically, they differ on methods for water control and the preferred options to ensure that water depths achieve restoration objectives. Such differing positions have contributed to the need for multiple Project feature re-designs. For example:

- **Water Control Methods:** To best achieve restoration, NPS believes water should move freely into the Park. However, FWS is concerned that if water flows are not adequately controlled, poor water quality could compromise species habitat and Park restoration. Conflicts surrounding this issue have contributed to the need for multiple re-designs of Project features that determine how water will flow into the Park. As of June 2005, a final design of these features had yet to be determined.

- **Water Depths:** FWS and NPS have been unable to agree on the optimal water depths for Project operations. NPS has decided that higher water depths than were originally designed are now necessary to achieve its restoration objectives. However, FWS believes that the higher water depths proposed by NPS may cause damage to the tree islands. NPS insists the tree islands can survive with higher water depths. This argument has persisted for many years without resolution.

The Department does not have an adequate method to ensure the timely resolution of such disputes. Specifically, the Department lacks a formal process for elevating and resolving planning and design related disputes between the agencies to arrive at a unified Departmental position. In fact, when a Departmental official was asked if there were any unresolved issues for the Project, the official was unaware of any ongoing contentious issues. Further, the Corps' Project Manager noted disconnect within the Department regarding restoration approaches and believes NPS' approach to restoration is a moving target. Because the Department has not formulated a unified approach to restoration, it has contributed to the Corps' need to re-design project features.

U.S. Department of the Interior Office of Inspector General Report No. C-IN-MOA-0006-2005 Modified Water Deliveries to ENP Audit Report

D- (1-3)

City of Sanibel

800 Dunlop Road
Sanibel, Florida 33957-0696

AREA CODE - 239

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ADMINISTRATIVE	472-3700
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May 9, 2008

Via Email to: TTMComments@usace.army.mil

Bradley A. Foster
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-8175

Dear Mr. Foster:

The City of Sanibel respectfully submits the following comments on the Tamiami Trail Modifications for Modified Water Deliveries to Everglades National Park LRR/EA ("MWD EA"), prepared in coordination with the City's Special Counsel, Beveridge & Diamond, P.C.

The MWD project represents a watershed moment in the efforts to improve water deliveries to Everglades National Park ("ENP") and restore its natural hydrologic conditions as Congress directed in the Everglades National Park Protection and Expansion Act ("ENPPEA"). The City fully supports the goals of the ENPPEA and is pleased that the Corps has taken the first step toward redressing decades of human-induced impacts to the Everglades and surrounding environment. As the Corps has explained, the construction and repeated renovation of the Tamiami Trail over the past 80 years have increasingly interrupted the natural timing, volume and distribution of flow into Shark River Slough and ENP, as well as historic ecological connectivity in the Everglades. *See generally*, MWD EA at § 3. Thus, the City endorses the

Corps' decision to take immediate action under the tentatively selected plan to increase annual flow volume, improve marsh connectivity, and rehabilitate slough vegetation habitat by building a one-mile bridge on the Tamiami Trail adjacent to S-334 and raising the L-29 Canal headwater stage constraint to 8.5 feet NGVD.

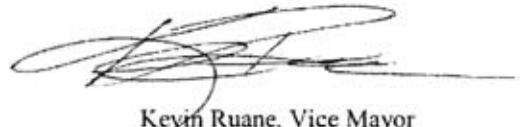
Although the MWD project will provide notable improvements over the *status quo*, the City urges the Corps to undertake these modifications with the understanding that this should only represent the first phase of a much needed larger project. Additional projects similar to the current MWD are necessary in the near future to achieve the goals of the ENPPEA. In particular, greater conveyance capacity and flow-through are still needed to achieve – or make significant progress towards – Congress' original 4,000 cfs flow target and to restore the historic "River of Grass" through Everglades National Park. *See* MWD EA at 1-6 to 1-14. Thus, while the City supports the MWD project, it further supports creating a second longer passageway (or series of larger passageways to replace the inadequate existing culverts) along the Tamiami Trail.

The Corps indicates that future construction of CERP projects and other infrastructure, such as storage reservoirs, seepage buffers and WCA-3 Decompartmentalization, might provide higher volume releases to Shark River Slough and ENP and that the MWD project is forward compatible with these projects. MWD EA at 1-14. While such additional flow, if it results, will further expedite ENP restoration, it is incumbent on the Corps to commit to future actions akin to the MWD project as soon as funding is available to

achieve this restoration. Indeed, the MWD EA acknowledges the need for this additional work, and the City encourages the Corps to make this a planning priority going forward. MWD EA at 6-11, 6-13 to 6-14.

Thank you for your consideration of these comments. If you have any questions, you may contact our City Attorney, Ken Cuyler, at (239) 472-4359.

Sincerely,



Kevin Ruane, Vice Mayor
City of Sanibel, Florida

Cc: Col. Paul L. Grosskruger, USACE,
Jacksonville District Commander
Sanibel City Council
Kenneth B. Cuyler, City Attorney
Richard S. Davis, Esq.
Fred R. Wagner, Esq.
Judith A. Zimomra, City Manager
Dr. Rob Loflin, Natural Resources Director
Carol Wehle, Executive Director, SFWMD
Dr. Peter Doering, SFWMD
Dennis Duke, Restoration Program Division Chief, USACE
Pete Milam, Project Manager, USACE
Erik Lindblad, Executive Director, SCCF
Patrick Martin, Deputy Refuge Manager, U.S. Fish & Wildlife

AUDUBON OF FLORIDA	EVERGLADES FOUNDATION	NATURAL RESOURCES DEFENSE COUNCIL
CALOOSAHATCHEE RIVER CITIZENS ASSOCIATION/ RIVERWATCH	EVERGLADES TRUST	SANIBEL CAPTIVA CONSERVATION FOUNDATION
CLEAN WATER FUND	NATIONAL PARKS CONSERVATION ASSOCIATION	TROPICAL AUDUBON SOCIETY
		WORLD WILDLIFE FUND

May 9, 2008

Bradley A. Foster
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-8175
TTMComments@usace.army.mil

Dear Mr. Foster:

On behalf of the undersigned organizations, we write to provide comments on the Draft Tamiami Trail Modification Limited Reevaluation Report and Environmental Assessment ("LRR"). Many of us have been working for years to ensure the Modified Water Deliveries to Everglades National Park ("Mod Waters") project provides meaningful environmental benefits to the Park and its precious wildlife.

The tentatively selected plan begins the process of bridging, and is a necessary first step on the road to providing essential environmental benefits to Everglades National Park and the restoration of historic, natural unimpeded water flow through the Everglades, particularly the reestablishment of sheetflow into the Northeast Shark River Slough and into Florida Bay. However, this initial modest step must be followed by bridging capable of reestablishing the previously authorized critical natural flow. Clearly the tentatively selected plan alone will not remove Tamiami Trail as a barrier to flow.

While the Modified Water Deliveries project is a necessary first step on the road to full restoration, the only way we can ever hope to restore the Park is to allow maximum connectivity between Water Conservation Area 3 ("WCA 3") and Everglades National Park through many miles of elevated roadway. Indeed, the Corps of Engineers has acknowledged that a 10.7 mile bridge spanning Shark River Slough is the environmentally preferred alternative.

While we acknowledge that the plan before us is a modest first step, we are disappointed that the project does not achieve those benefits as originally envisioned by Congress when it passed the Everglades National Park Protection and Expansion Act of 1989.

While we know that the Mod Waters project was not going to achieve full restoration of Northeast Shark River Slough and Everglades National Park, the current proposed project falls short of our expectations.

We acknowledge that raising the canal stage in L-29 to 8.5 feet from 8.0 feet will allow longer durations of 1350 cubic feet per second ("cfs"), thereby requiring additional asphalt along ten miles of Tamiami Trail, without widening the roadway. The analyses presented show significant environmental benefits for a reasonable cost, because there is no increase in roadway footprint and does not result in wetland destruction in Everglades National Park. However, the LRR is neither specific about the details of implementation, nor is it clear as to whether its implementation is contingent upon other actions by other agencies. We would like the final Record of Decision to make clear the Corps has no intention of delaying this component or transferring responsibility to other agencies. In our view, placing asphalt on the roadway is neither a long-term solution nor a viable alternative to additional bridging. Therefore, it is essential that the Corps immediately plan for the construction of more bridging along the Tamiami Trail, as specified in the Statement of Managers in the Conference Report of the Water Resources Development Act of 2007.

Unfortunately, the LRR provides scant information on what will ultimately provide the full restoration that the Park desperately needs, and Congress expects. Section 6.8 of the LRR, "Restoration Beyond the Modified Water Deliveries Project", barely touches on the essential subject of what to do next.

All involved agencies, including the U.S. Army Corps of Engineers (Corps), the Department of the Interior, the Florida Department of Environmental Protection, and the South Florida Water Management District, have publicly recognized that further steps toward restoration must be taken. This should be fully captured and explained in the LRR. We urge you to incorporate the following language into Section 6.8:

> The U.S. Army Corps of Engineers and the Department of the Interior recognize that this project must not be the only project for modifying Tamiami Trail, and much additional work is needed to adequately restore flows into Northeast Shark River Slough, and ultimately reestablish connectivity through the great Everglades ecosystem and into Florida Bay. Congress understood that the Modified Water Deliveries project alone would not restore the Everglades, and approved further restoration for Everglades National Park in the Comprehensive Everglades Restoration Plan of 2000.
>
> The tentatively selected plan constitutes a step in achieving the goals and direction given in the Statement of Managers for the Conference Report of the Water Resources Delivery Act of 2007. It achieves the immediate goal to increase flows to Everglades National Park by 1,400 cubic feet per second. The Federal government is committed to reaching those goals set out in the Conference Report to achieve flows to the Park that "have a minimum target of 4,000 cubic feet per second so as to address the restoration envisioned in the 1989 Act… [and] initiate an evaluation of

the Tamiami Trail project component of the Comprehensive Everglades Restoration Plan authorized by section 601 (b)(2)(C)(viii) of the Water Resources Development Act of 2000, or other appropriate authorities, as soon as practicable." The Federal government commits to working with the state of Florida to begin these next steps to achieve the higher flows immediately upon the release of a Record of Decision for the Preferred Alternative.

We urge you to *not* delay planning for future Tamiami Trail modifications until data from studying the effects of either the preferred alternative or a pilot project for swales (if one is approved) are collected and analyzed. It is inappropriate to delay future progress in order to research these matters further. The federal agencies have already justified and explained the fact that the environmentally preferred alternative is a 10.7 mile bridge. Therefore, while the 1 mile bridge can lead to limited restoration, there is general consensus that the preferred alternative will not provide significant benefits alone.

In previous comments submitted by several environmental groups to the Corps, concerns about the construction of culvert spreader swales in Everglades National Park were addressed. This LRR presented no analyses on that issue, yet by their mention, it seems to imply that the swales remain part of Mod Waters. We would like specific clarification as to whether the swales are a feature of Mod Waters, under the authority of the Secretary of the Army and part of the C & SF Project when completed. Regardless of whether the authority lies with the Corps or the National Park Service, we believe that, under Federal law and policy, the construction of swales, or a pilot project to test the swales concept, may require an EIS.

There is another reason to move forward immediately with significant Tamiami Trail bridging: to ensure the continued survival of several of the Everglades' most imperiled species. As you know, the current water management regime, the Interim Operational Plan (IOP), was intended to be temporary, to provide a few years of relief for the highly-imperiled Cape Sable Seaside Sparrow. The IOP does not provide a long-term solution for the Sparrow, and provides little to no benefit for the Snail Kite and Wood Stork. Rather, for almost a decade, the responsible agencies have stressed to the public and to the federal courts that these species will only be saved, as well as the Park restored, if water flows from WCA 3A into WCA 3B and into Northeast Shark River Slough are significantly restored. Part of the government's plan for saving these species, and complying with the Endangered Species Act, was the removal of, in significant measure, constraints to flows under Tamiami Trial. As we continue to find our way forward with restoring the Everglades, we must ensure the survival of its most vulnerable inhabitants in the meantime.

Because subsequent steps to the tentatively selected plan are essential, we urge the Corps to give high priority to those projects under the Comprehensive Everglades Restoration Plan ("CERP") that would build upon restoring sheetflow through the central and southern Everglades, including *Water Conservation Area 3 Decompartmentalization and Sheetflow Enhancement* and *Everglades National Park Seepage Management* to take the

next steps to increase flows through the Everglades and reconnect the lower portions of WCA3A and 3B to Everglades National Park and Florida Bay.

Both these projects were authorized as initial projects in WRDA 2000 and must be expedited and wholly integrated in order to achieve more benefits for the Everglades. In particular, without removing constraints on water levels in WCA 3B, it is physically impossible to achieve 4000 cfs into Everglades National Park even if Tamiami Trail is further modified beyond this TSP. These two CERP projects, along with additional storage and treatment, are critical to restoration of Everglades National Park, and the greater Everglades ecosystem.

We repeat our previous suggestions that another entity beyond the Corps, such as the Department of Transportation or Federal Highway Administration, may be better suited to design and build a more elevated roadway along Tamiami Trail. We urge the Corps to consider other possibilities *now* for immediate future restoration planning. At this time of limited resources, innovation is essential. The Corps should work with these and other agencies to develop the most efficient means of achieving the goals of Everglades restoration.

Thank you for your consideration.

Sincerely,

(Signatures waived in order to expedite delivery.)

David Anderson
Executive Director
Audubon of Florida

E. Thom Rumberger
Chairman
Everglades Trust

Marti Daltry, President
Caloosahatchee River Citizens Association/Riverwatch

Sara E. Fain
Everglades Restoration Program Manager
National Parks Conservation Association

Kathleen Aterno
Managing and Florida Director
Clean Water Fund

Bradford H. Sewell
Senior Attorney
Natural Resources Defense Council

Kirk Fordham
Chief Executive Officer
Everglades Foundation

Rae Ann Wessel
Natural Resource Policy Director
Sanibel Captiva Conservation Foundation

Laura Reynolds
Executive Director
Tropical Audubon Society

Debra Harrison
Director, South Florida Program
World Wildlife Fund

cc: Coby Dolan, Office of Congresswoman Debbie Wasserman-Schultz
Eve Lieberman, Office of Congressman Alcee Hastings
Susie Perez Quinn, Office of Senator Bill Nelson
Lauren Robitaille, Office of Congressman Mario Diaz-Balart
Brydon Ross, Office of Senator Mel Martinez
Colonel Paul Grosskruger, U.S. Army Corps of Engineers
Dan Kimball, Superintendent, Everglades National Park
Rock Salt, Department of Interior
Eric Buermann, Chair, Governing Board, SFWMD
Stephanie Kopelousos, Florida Department of Transportation
Mike Sole, Secretary, Department of Environmental Protection
Carol Wehle, Executive Director, South Florida Water Management District

FIU Florida International University
Hope. Knowledge. and Opportunity

FCE LTER
Florida Coastal Everglades
Long Term Ecological Research

May 9, 2008

Attn: Bradley A. Foster
U.S. Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, FL 32207-8175

Dear Mr. Foster:

We are writing to comment on the Tamiami Trail Modifications Draft Limited Reevaluation Report (LRR) and Environmental Assessment (EA). These comments reflect those of the Florida Coastal Everglades Long-Term Ecological Research program (FCE-LTER), a National Science Foundation-funded program based at Florida International University (FIU) that supports long-term ecological research in the Everglades. Our program is represented by 107 scientists from 27 institutions, including universities, federal, state and local agencies and NGOs. The viewpoints presented here are generated strictly from the science that we conduct and from our experiences in the Everglades and do not represent the institutions that employ us or support our work. These comments are directed towards the information provided in the LRR and EA presentations and discussion at the public forum held at FIU on April 21, 2008.

We start with the observation that water depths during both the dry and wet seasons in Everglades National Park (ENP) are far below what we would consider to occur in a healthy ecosystem. For example, dry season water levels are frequently below the soil surface across large swaths of Shark River Slough (SRS) – an area that should experience multi-year inundation periods. These frequent drying events have resulted in a loss of peat and a degradation of the landscape. Similarly, water levels in the eastern marl prairies in ENP adjacent to SRS have also experienced severe drought conditions over the last several decades. The hydrologic conditions in these prairies are inextricably linked to those in the Slough. These prairies once supported abundant wildlife, including extensive alligator nests, but are now depauperate. During the wet season, water levels in these regions are also considered well below those occurring during natural conditions. Moreover, the operations of the border canals and water management features along the Park's northern boundaries creates variable sheetflow patterns, which, in turn, cause further degradation in this system once characterized by large expanses of uninterrupted wilderness. Any plan to restore SRS within Everglades National Park that does not lead to improvements in all of these factors, including dry and wet season water depths, sheetflow directions, and flow volumes must be considered inadequate.

We feel that the revised plan does not address the goal of improving hydrologic conditions in SRS, and does virtually nothing to support the re-hydration of the marl prairies. We also feel the scientific rigor of the evaluations of the environmental benefits of potential alternatives has been compromised, which effectively weakens their support. The proposal to build a 1 mile bridge along the eastern edge of Tamiami Trail that allows an 8.5 ft maximum stage in the L29 canal will have limited effectiveness in restoring natural conditions in Everglades National Park, due to the short length of the bridge, its location and the flow allowance. We discuss problems associated with each of these factors below and provide alternative solutions that would meet the long-term goals of modified water deliveries (MWD).

Distance:
The proposal to further reduce to the extent of the bridge was considerably disappointing. Aside from understandable cost inflation during the years of delay, it appears that alternatives supporting longer and/or multiple bridges were also devalued for short-term political and economic reasons that appeared to outweigh their obvious long-term environmental benefits. A 1-mile bridge along a 10.7-mile flow blockade is not an effective plan for restoring sheet-flow to Everglades National Park.
Solution: Build into the LRR a plan and schedule for long-term implementation of multiple and extended bridges recommended in prior plans. Further delays will only increase the costs of necessary construction but more importantly, will allow further deterioration of the ecosystem that will cause restoration to become increasingly difficult.

Location:
We found one of the more confusing aspects of the proposal was the selection of the eastern corner of northeast SRS for the proposed 1 mile bridge. The LRR provided little or no scientific support for resultant improvement of (1) hydrological conditions in northeast SRS or (2) ecological consequences that would result from constructing a bridge to the east rather than west. Indeed, Table 5-1 suggests that the eastern and western bridges (with 8.5 ft stage) would have nearly identical effects on biological communities, ecological connectivity to Water Conservation Area 3 (WCA-3), ridge and slough processes and most of the endangered species that occupy these areas! Clearly this cannot have resulted from a scientific evaluation of either the current ecological setting in these two areas of SRS or of models that would predict ecological outcomes under certain hydrologic scenarios. Little hydrological modeling seemed to be incorporated into the evaluation. Based on existing understanding of flow-paths in this region, even with modifications in the L-67 extension, it is reasonable to expect that water delivered to the northeastern corner of SRS would simply flow back out to the L-31N, requiring additional pumping from control structures on the L-29 and L-31N. If successful re-hydration is dependent on this active re-circulation of water, was the cost of its implementation evaluated against the additional costs of roadbed modification associated with a western location where water flow would follow a more natural flow-path? There seems little about this eastern bridge location that would create more "natural" conditions in the marsh. Instead, the previously proposed western location would certainly not only re-hydrate areas of northeast SRS but have greater potential for hydrological and ecological restoration significantly downstream of construction. The 2005 Recommended Plan called for a 2-mile western bridge and a 1-mile eastern bridge seemingly because greater deliveries were needed into SRS at the western location. It seems logical that the reduced bridge-building would result in a 1-mile western bridge and elimination of the eastern bridge.
Solution: Reconsider option of western bridge. Otherwise, the hydrological and ecological grounds for the eastern alternative need to be more clearly defined. If the eastern bridge remains the preferred alternative, build a program of hydrological and ecological monitoring in impacted areas to address its effectiveness and facilitate adaptive management. This monitoring should take place both downstream of construction but also in areas where water and flows may be depleted during implementation (i.e., downstream of existing flow ways – S-12 structures).

Stage:
When compared to water levels that have occurred over the last several decades, an 8.5 ft limit will increase the maximum water levels by a ~ 1 ft. We consider that maximum water levels in the current system are more than 2 ft below natural conditions. Thus a 1 ft increase cannot be considered restoration. Also, a 1 ft increase is likely to result in only minor improvement across only small portions of the eastern marl prairies, most of which lie at ground surface elevations ~1.5 ft higher than those found in the Slough. Moreover, the LRR does not address how dry season water depths will be affected. As mentioned above, the dry season water levels across large portions of SRS are often below the soil surface. Restoration of this system cannot occur with adjustments to only the maximum wet season water depths. Dry season conditions must also be considered. The LRR evaluation promoted a 8.5 ft stage over 8 ft height in L-29 but it was disappointing to find only a superficial evaluation of the previously proposed 9.7 ft stage height. By comparing 8.0 and 8.5 ft stages against a "do nothing" alternative, the selection process is biased toward a weakly effective result. Instead, the impact of a full suite of stage heights should be evaluated and compared. Again, the ecological effectiveness of the two compromised alternatives (8 vs. 8.5 ft) seem to have been 'copied and pasted' from one column to another rather than resulting from a systematic understanding of the consequences of these two different hydrologic settings. Although the natural Everglades water movement was characterized by long durations of sheet flow there is increasing evidence that catastrophic events helped shape this ecosystem (e.g. fires, hurricanes, etc.). Allowing a greater variation in maximum stage (and larger bridge openings properly located) would allow more heterogeneity in flow volumes. A major problem across the Everglades is that large portions of the compartmentalized system are subjected to regulation schedules which are not linked to rainfall causing entire areas to be either too wet or too dry. Designs should allow for heterogeneous flows (including occasional very high water scouring events) which reflect trends in rainfall amounts and which will in turn support ridge and slough development.
Solution: Allow the maximum stage values (and thus hydraulic head) driving water into SRS respond to rainfall naturally to allow heterogeneous flow patterns and ridge and slough habitat to develop.

In conclusion, we hope that the LRR carefully considers the environmental consequences of alternative plans relative to the overall goals of Everglades restoration. We are especially concerned that effective restorative plans are being perpetually delayed causing further deterioration of the system and escalation in implementation costs. We hope the LRR includes a time-line that shows a schedule of completion for not only this small first step but also specifies when the overall long-term objectives will be met.

Thank you for soliciting public input to the plan.

Sincerely,

Evelyn E. Gaiser, Ph.D., René Price, Ph.D., Mike Ross, Ph.D., Len Scinto, Ph.D.
On Behalf of the Florida Coastal Everglades LTER
Florida International University, Miami, FL 33199

April 30, 2008

Bradley A. Foster
U.S. Army Corps of Engineers,
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-8175

Dear Mr. Foster,

Please accept the enclosed public comments concerning the Limited Reevaluation Report and Environmental Assessment (LRR/EA).

The Tamiami Trail is the ONLY road that cyclists can use to get across southern Florida. It is very important that your road design consider cyclists. Additionally, please consider the proposed River of Grass Greenway (brochure enclosed) and how it can be coordinated with your bridge/road design.

I would like to discuss the River of Grass Greenway with you.

Thank you for your consideration,

Maureen Bonness
Naples Pathways Coalition,
River of Grass Greenway
maureenb@evergladesROGG.org
7390 Rookery Ln
Naples, FL 34120
239-825-4811

SAVE THE RIVER OF GRASS GREENWAY April 26, 2008

My signature below indicates my support of the "River of Grass Greenway" (ROGG; www.evergladesrogg.org) project. It is with great hope that the Army Corps of Engineers support the ROGG project and eliminate alternative designs of the LRR/EA foundation project that would prevent, impede or delay construction of the "River of Grass Greenway". Hwy 41 is the only road open to bicycles across southern Florida, thus cyclists should be considered in bridge designs (e.g., shoulders should be free of obstructions such as rumble strips, raised reflectors, and drainage grates).

Printed Name	Signature	Address
ALAN Ryker		300 5TH ST South, Naples 34102
Dennis Zick		4325 Beechwood Lake Dr. Naples 34112
Larry Mutter		1786 Ribbon Fern Lane, Naples 34119
JOHN CHAPMAN		8431 IMMOKALEE RD. FT PIERCE FL
FERNANDO ALVAREZ		1100 W 46 PL HIALEAH FL 33012
Adrian Alvarez	Adrian Alvarez	1100 W. 45 Pl. HIALEAH FL. 33012
Lori Freeman	Lori L. Freeman	P.O. Box 152 Everglade City 34139
SHEILA PERRY	Sheila Perry	2565 ASPEN OAK LN. #101 NAPLES 34119
	Ashley Pennington	374 Edgewater Way N. 34103
BARBARA BROWN	Barbara Brown	629 10TH ST N NAPLES 34102
JACQUELINE CRUET		1024 NE 5TH STREET HALLANDALE BCH 33009
Diane Braithwaite		2772 Island Pond Ln Naples FL. 34119
	Richard Braithwaite	2772 ISLAND POND, NAPLES, FL 34119

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Printed Name	Signature	Address
Gloria Osgood	Gloria Osgood	52105 Tamiami Trail E Ochopee FL 34141
Diane Thompson	Diane Thompson	900 L'Ambiance #202 Naples, FL 34108
Stephen Kidd	Kidd	5149 Mabry Dr. Naples, FL 34112
Sharon SPECTOR	[illegible]	3348 TIMBERWOOD Circle, NAP 34105
ED HARBOLD	[illegible]	3245 TIMBERWOOD Cir 34115
Patricia A. Huff	[illegible]	PO Box 617, E City, FL 34139
Mary A. Altiere	[illegible]	9900 Calico Ct. Estero FL 33928
TAMARA LOUX	[illegible]	4443 KATHY AVE NAPLES FL 34104
DIANE CAMBLE	Diane C. Gamble	SAME ↑
HARRIET CONNOR	Harriet Connor	4243 Kathy Av, Naples, Fl 34104
Harriet Craig	Harriet Craig	4420 7th Ave SW, Naples, Fl 34119
SUE HAUBRICH	[illegible]	3628 Cottage Club Naples 34105
Niki Kelly	Niki Kelly	18044 Laurel Valley Ft Myers 33912

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Printed Name	Signature	Address
John Craig	[illegible]	4420 7th Ave SW Naples, FL 34119
Kelly Pantil	[illegible]	5355 Coralwood Dr, Naples FL 34119
Maurice Fitzsimmons	[illegible]	33 Tanner Xing Wethersfield CT 06109
Carolyn Magnon	[illegible]	33 Tanner Xing Wethersfield CT 06109
M. Castaldi	M. Castaldi	6824 Sterling Greens Pl. Naples 34104
J. Castaldi	[illegible]	6824 Sterling Greens Pl. Naples 34104
Dina Smith	Dina Smith	11153 Palmetto Rd Rd. Naples 3410
Tom Smith	[illegible]	11153 Palmetto Ridge. Naples 3411[illegible]
Charles Leo	Charles Leo	P.O. Box 398 Chokoloskee 34138
Gerry Mason	[illegible]	1100 Misty Pine Naples
Sandra Blackford	Sandra Blackford	251 Cypress Way W Naples 34110
Richard Haldeman	RR	20109 Saracena Dr. Estero 33928
Ginnie Haldeman	Ginnie Haldeman	20109 Saracena Dr. Estero 33928

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Printed Name	Signature	Address
Sami Kirkland	[illegible]	2090 Sunset Cir Sanibel FL 33957
Andrew Dgilvie	[illegible]	244 Maimé St Chomowukee
Robert Gonzalez	[illegible]	8871 NW 176 Lane Miami FL 33018
Wilfredo Blanco	[illegible]	1725 SW 83 CT Miami FL 33155
Rick Myerburg	[illegible]	5037 Timber Chase Way Sarasota, FL
Roy Keeling	Roy Keeling	32 Langdale Rd Sale England.
Hilary Keeling	Hilary Keeling	— " — —
Silvia Alvarez	[illegible]	6940 Seagrape Ter Miami Lake FL 33014
Adam Keeling	[illegible]	257 1st St, Hoboken, NJ 07030
Carmen Alvarez	Carmen T. Alvarez	5318 W 9 Ave. Hialeah Fl 33012
Fernando Alvarez	F. Alvarez	6940 Seagrape Terrace Miami Lake FL 330
Fernando Agudelo	[illegible]	15941 NW 4th st. Pembroke Pines FL 3302
Erik S. Gonzalez	[illegible]	7750 N.W 17 PL. Miami FL 33147

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Printed Name	Signature	Address
JOHN McCULLOUGH	John F. McCullough	285 STELLA MARIS DR S NAPLES FL 34114
JON RAYNER	Jon G. Rayner	280 S. COLLIER BLVD #1404 MARCO ISLAND FL 34145
J A McKher Sr	J. A. McKher Sr	274 Stella Maris Dr. So Naples, Fla 34114
EDNA MOKHER	Edna Mokher	274 Stella Maris Dr So Naples Fl. 34114
JOHN L. CZENCZ	[illegible]	11153 SW 112 Ter. Miami Fl 33176
Steve Sonsen	[illegible]	7930 Tuscaloosa Drive Fort Myers Beach, FL 33931
Mark Wylie	Mark H. Wylie	117 Cocohatchee St. Naples, FL 34110
Ronald J. Echols	[illegible]	911 11th St. N. Naples, FL 34102
Annette Thompson	Annette Thompson	PO Box 990597, Naples, FL 34116
DAVID WALSH	David Walsh	PO Box 990597 Naples FL. 34116
Mary Ann Leo Dickinson	[illegible]	ORA Chokoloskee, Fla
Reynolds L. Cavins	Reynolds L. Cavins	P.O. Box 348 Everglades City Fl 34139
KEN DILLMAN	[illegible]	1530 CLERMONT DR. UNIT 6-303 NAPLES FL 34105

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Printed Name	Signature	Address
William Weidenfeller	W.L. Weidenfeller	285 Charleston Ct, Naples, FL 34110
Joe Sowness	[illegible]	6850 Sandalwood Lane 34109
Mark Chamberlain	[illegible]	6610 Huntington Lkg Cir 34119
Joseph Gonzalez	[illegible]	14321 SW 156 Ter
Ivan Sanson	[illegible]	840 W 53 St Hialeah FL 33012
Maureen Sullivan-Hartung	[illegible]	4120 15th Ave SW Naples FL 34116-5230
Paul Altiere	[illegible]	9900 Palizo Rd. Estero FL 33928
Guillermo Reyes	[illegible]	5336 W 9 Ave FL 33012
Denise Scarniello	[illegible]	2561 SE 10 St. Pompano Beach FL 33062
Robert Cryor	[illegible]	Santa Maria CA 93455
Fernando Rodriguez	[illegible]	1177 Skylark Dr. Weston FL 33327
Jeanne M Cryor	Jeanne M. Cryor	4671 Marlene Dr, Santa Maria, CA 93455
Raakel Braun	Raakel Braun	1000 Manatee Rd. A304 Naples 34114

SAVE THE RIVER OF GRASS GREENWAY April 26, 2008

My signature below indicates my support of the "River of Grass Greenway" (ROGG; www.evergladesrogg.org) project. It is with great hope that the Army Corps of Engineers support the ROGG project and eliminate alternative designs of the LRR/EA foundation project that would prevent, impede or delay construction of the "River of Grass Greenway". Hwy 41 is the only road open to bicycles across southern Florida, thus cyclists should be considered in bridge designs (e.g., shoulders should be free of obstructions such as rumble strips, raised reflectors, and drainage grates).

Printed Name	Signature	Address
Bob McKelvey	R. McKelvey	4746 Via Carmen, Naples Fl, 34105
Audrey Paglicco	Audrey Paglicco	4746 Via Carmen Naples Fl 34105
Doris Smith	[illegible]	4980 Treasure Cay Bonita Spgs 34135
Leslie Paris	[illegible]	764 102nd Ave. N Naples 34108
Mel Jacobs	M Jacobs	1637B Spoonbill Lane Naples 34[illegible]
Patti Fatfield	[illegible]	2835 Orange Grove Trl Naples 34120
Steve Edmonston	Steve Edmonston	5844 Napa Woods Way, Naples 34116
Gisela Sabertschnig	Gisela Sabertschnig	1717 Gulf Shore Blvd N Naples 34102
Erica Reynolds	Erica Reynolds	11525 Woodmount Ln Estero, Fl 33928
Jack Taverna	Jack Taverna	2210 SW 19th Pl Cape Coral 33991
Horace Rackley	Horace C. Rackley	P.O. Box 263, Everglades City 34139
Joseph Gunkam	[illegible]	7112 Pelican Bay Naples 34108
Martha Cole	Martha Cole	8203 Wilshire Lakes Blvd., Naples 34109

04 SAFER_Persson.txt

From: rpbr1117 [rpbr1117@bellsouth.net]
Sent: Monday, April 14, 2008 1:52 PM
To: TTMComments SAJ
Subject: Tamiami Trail Project

As Vice President of S.A.F.E.R., Inc I would like to repeat our views on the Tamiami Trail Project. We have for years presented the idea of just Maintaining the culverts or rebuilding them to allow water to flow freely under the Tamiami Trial. By removing the cattail reeds to the South of the Trail, you will allow water to flow without backing up against the road. Sky or other bridges are not necessary, and are too great of an expense. There still does not seem to be an answer to the question " How much is enough water for the Park?"

Rick Persson
Vice President
S.A.F.E.R., Inc

SIERRA CLUB
FOUNDED 1892

South Florida/Everglades Office
2700 SW 3rd Ave, Ste. 2F, Miami, FL 33129
TEL: [305] 860-9888 FAX: [305] 860-9862

May 9, 2008

Bradley A. Foster
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-8175
TTMComments@saj.usace.army.mil

Dear Mr. Foster:

The Sierra Club, the country's oldest and largest grassroots environmental organization with more than 750,000 members nationwide and 30,000 in Florida, thanks you for the opportunity to comment on the Limited Reevaluation Report on Tamiami Trail.

The Sierra Club has been advocating for Everglades restoration for almost half a century. In 1968, we helped stop the largest airport in the world from being built off of the Tamiami Trail, and scuttle plans to turn the 1928 road into four-lane lane highway.

Since the 1989 Everglades Expansion Act, Sierra Club has sought the restoration of natural fresh water flow across Shark River Slough. Unimpeded fresh water flow is critical to maintaining the ridge and slough landscape. The water transports sediments and nourishment to plants and wildlife throughout Everglades National Park. This flow also prevents loss of organic peat and is critical to the health of wildlife in Florida Bay by preventing hyper salinity. Restoring the natural flow may also be crucial to the Everglades short term existence. Under the specter of global warming, restored flow may be the only chance to hold back salt water's northern march up the slough and sending the Everglades back into the sea.

There are only two possible ways to restore natural flow into Shark River Slough

One is to eliminate the road.

The other is to elevate it.

We have repeatedly supported elevation of an 11-mile stretch of Tamiami Trail widely referred to as the "Everglades Skyway". In numerous press statement, reports and documents, the Corps of Engineers has identified the Skyway as the environmentally-preferred alternative as well as a "Best Buy." The National Park service and the U.S. Fish and Wildlife Service have also identified the Skyway as the best environmental solution for the Modified Waters delivery project. The Science Coordination Team to the South Florida Ecosystem Restoration Task Force also wrote in 2001 that the Skyway was the best alternative. While no agency disputes the environmental supremacy of the Skyway, the Corps has consistently ruled it out for one reason – cost.

Unfortunately, for two decades, our government has looked at the Modified Waters Delivery project as a stand-alone project without planning for the full restoration of the Slough. That mindset has to change if we have any chance of saving the Everglades.

Sierra Club's preferred alternative continues to be the Skyway as it has in every Mod Waters decision. We have preferred to see the Skyway built under the Modified Waters Delivery Project for a few reasons:

- The Skyway is the only project that we believe fulfills the intent of the Everglades Expansion Act.
- There are no other federal or state plans on the table to restore Shark River Slough.
- Building the Skyway as one project would be the most efficient use of tax dollars.
- It would be completed faster than in two projects.

We had been willing on numerous occasions to consider Modified Waters the first of a two-step process, but the all plans presented had serious roadblocks:

- The plans usually required Florida DOT to place asphalt on the non-bridge roads increasing costs and lending permanence to the project,
- The plans were very costly per mile compared to the Skyway.
- The projects required elaborate plans for maintaining traffic
- The projects paved over substantial acreage in the Park
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The Sierra Club's main objective is to see Shark River Slough restored. If that can be done timely and cost effectively in one project, we would lend our support. If we believed that it could be achieved timely and cost effectively in two consecutive projects, part in Mod Waters and part in another, we could support that as well.

But we must see some verifiable commitment to a second project before we can give our support to a first. We must know that the first project will not stand for a decade while a second project becomes too expensive and ultimately abandoned.

These are some of the fundamental questions that must be answered by government in the coming months:

1) What are the concrete steps that will follow the TSP leading to restoration of Shark River Slough?

So far we know of none. Section 6.8 of the LRR, "Restoration Beyond the Modified Water Deliveries Project", barely touches on the essential subject of what to do next.

2) How long will it take until more bridging can take place?

That is unclear; however, the laying of asphalt appears to be cost-effective only if there is a 10 year delay between the TSP's completion and the completion of more bridging. The remainder of the bridging should start immediately after the first project or be simultaneously constructed.

3) What are the cost increases expected for the next phase of bridging as a result of choosing this alternative?

Based on the Corps' inflation and risk figures provided for the Skyway, just a four year delay could add nearly a billion dollars to the next phase of bridging. Time is money.

Cost:

We are very disappointed in the way that the Corps calculates its costs. The plan that we felt had the most merit in the LRR and one we supported was the Blue Shanty plan developed by Everglades National Park. The plan restored natural flow to a corner of WCA 3 and Shark River Slough. Although it entailed only a one mile bridge, it provided the greatest environmental benefit per dollar and transitioned easily into the Skyway. The plan should have been comparable to the TSP in cost as it involved the same length of bridge and required only temporary fill on the Blue Shanty Canal. Instead the Corps estimated the cost far above prevailing bridge and fill transport costs and ruled it out.

Similarly the Skyway was thrown out of contention based on it being estimated at $1.6 billion. This figure was presented to the press and to the South Florida Ecosystem Task Force in documents without a breakdown. The actual cost of the Skyway though was $600 million with $1 billion in inflation and risk costs based on the project starting in 2012 and ending in 2020. There is no reason it would

take four years to start the project and most contractors say the 11-mile Skyway could be built in four years or less, not eight. In fact in the 2005 SEIS, the Corps said it could be done in 3.

The TSP is roughly $250 million, almost half of the actual Skyway cost, yet it only provides 1/10 of the bridging. It also involves placing asphalt on 10 miles of roadway. Placing asphalt on the roadway is neither a long-term solution nor a viable alternative to additional bridging. By building the TSP, the Corps is also increasing the cost of building the rest of the Skyway by delaying the time the Skyway could be built.

Compressed schedule may have compromised process

We believe that in order to achieve an October 2008 ground breaking date the GRR may not have follow the standard procedures normally required by the EIS process. The scoping process seemed squeezed-in, almost presented as an afterthought, after decisions were already made. The Corps only met with environmental groups days before a presentation to the Task Force and one day before the LRR was released. Opportunities for input were limited. State negotiations to change the plan significantly from an 8.0 canal stage to an 8.5 (and thus requiring 10 miles of asphalt) in the last three weeks before the LRR release seemed contrary to the public process we had expected.

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LRR presented no analyses on that issue, yet by their mention, it seems to imply that the culvert spreader swales remain part of Mod Waters. We believe that this action or any pilot project requires an EIS. We do not feel that constructing more than 60 football fields of swales in a national park will make culverts any more viable as a solution for restoring flow Shark River Slough. The only solution is to remove the road as a barrier.

Endangered Species

Part of the government's plan for saving the Cape Sable Seaside Sparrow, the Snail Kite and the Wood Stork, and complying with the Endangered Species Act, was the removal of, in significant measure, constraints to flows under Tamiami Trial. That provides more reason why significant bridging must commence immediately

Congressional Intent

Congress indicated in WRDA 2007 that it wanted to see 4,000 cfs in Mod Waters. The only plan that comes close to achieving that goal is the Blue Shanty Plan or the Skyway.

CERP

The next phase of bridging could be part of the CERP if it were moved up on the schedule to immediately follow the TSP. Right now it is not.

Global Warming:

Both Everglades National Park and the Miami-Dade Global Warming Advisory Task force have issued dire warnings for the Everglades. Its predictions are predicated on salt water flowing north up and unrestored Shark River Slough.

The Miami-Dade predictions are at:
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Conclusion:

Most top scientists agree that an 11-mile elevated roadway or a close approximation will have to be built to restore Shark River Slough and connect the southern Everglades to the North. Without a restored flow Florida Bay will continue to decline and Everglades National Park will remain parched, while areas to the north flood. Restoration of the Slough may, in the case of sea level rise, be an important factor in determining if the Everglades will even exist and if much of South Florida can continue to be viable as a place to live. These are heavy stakes. Government must have a plan. The public has now been presented with the TSP, a one mile bridge and 10 miles of asphalt. Now is time for the federal government and the state of Florida to craft the plan for the rest. Government officials can find funds from alternate sources such as existing tolls and mitigation funds. They should seek federal and state transportation dollars meant to build bridges. They should collaborate with local governments, business, and civic organizations who want the Skyway to secure the remaining bridging, before asking for unconditional support for the TSP.

If this is indeed a two-step process, the state of Florida and the Federal Government must craft a consecutive second step or even a simultaneous project before the TSP Record of Decision is reached. Only that action can give the public confidence that this isn't the only step for a long time to come. If the two step process can't work, we should just find a different structure to get it all done at once.

Sincerely,

Jonathan Ullman
South Florida/Everglades Senior Representative
Sierra Club
Miami, FL

PDF Attachments:

Dec. 2005 Tamiami Tail SEIS Appendix L (Public involvement-- contains Sierra Club comments Pg. 138.

Dec. 2005 Tamiami Tail SEIS Appendix F (Coordination Act Report)

Dec. 2005 Tamiami Tail SEIS Main Document

National Academy of Sciences' CROGEE Flow Executive summary 2003

Task Force's Science Coordination Team letter to Corps endorsing Skyway, 2001

06 Sierra Club Ullman.txt

From: Jonathan Ullman [jonathan.ullman@sierraclub.org]
Sent: Friday, May 09, 2008 11:38 PM
To: TTMComments SAJ
Cc: 'Jonathan Ullman'
Subject: Sierra Club LRR Comments 4.9.08

Attachments: SC LRR Comments 4.9.08.doc

May 9, 2008

Bradley A. Foster
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
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TTMComments@usace.army.mil

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Sierra Club

Miami, FL

PDF Attachments in subsequent e-mail:

Dec. 2005 Tamiami Tail SEIS Appendix F (Coordination Act Report)

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Skyway, 2001

Following in text area of next e-mail:

Sierra Club Oct. 11, 2005 comments to Tamiami Trail SEIS

Dr. Stuart Pimm, October 5, 2005 comments to Tamiami Trail SEIS

SIERRA CLUB
FOUNDED 1892

October 11, 2005

Stuart J. Appelbaum
Chief, Planning Division
Attn: Jon Moulding
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: ***Draft Revised General Reevaluation Report / Second Supplemental Environmental Impact Statement (RGRR/SEIS) for Tamiami Trail Modifications***

Dear Mr. Appelbaum,

The Sierra Club appreciates the opportunity to comment upon the Draft Revised General Reevaluation Report / Second Supplemental Environmental Impact Statement ("RGRR/SEIS") for the Tamiami Trail Modification Project ("Project"). The Sierra Club is dedicated to exploring, enjoying and protecting wild places of the Earth; to practicing and promoting responsible uses of the Earth's resources and ecosystems; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry our these objectives.

One of the Sierra Club's priority national conservation campaigns is to protect and restore the Everglades. The Sierra Club and its Florida Chapter have been involved in the Everglades restoration effort for over two decades. The Sierra Club is a member of the Everglades Coalition, and the Sierra Club's Outings Program also leads trips (hiking, biking and canoeing) into the Everglades. The Florida Chapter's Everglades Committee operates a website concerning the Project at www.build-the-skyway.com. The Sierra Club thus has a strong interest in the Project and in the protection and restoration of the Everglades.

Congress authorized the Project under the Modified Water Deliveries ("MWD") component of the Everglades National Park Protection and Expansion Act of 1989, Pub. L. No. 101-229, 103 Stat. 1946. The statute aims to "increase the level of protection of the outstanding natural values of Everglades National Park and to enhance and restore the ecological values, natural hydrologic conditions ... of such area..." *id. at* § 101(b)(1). The Sierra Club strongly supports this goal.

85 Second Street, Second Floor San Francisco, CA 94105-3441 TEL: (415) 977-5500 FAX: (415) 977-5792 www.sierraclub.org

The Sierra Club strongly urges the U.S. Army Corps of Engineers ("Corps") to select Alternative 17 – the 10.7 mile Skyway proposal – as the best alternative to restore water flow and ecological connection through the Everglades. The analysis contained in the RGRR/SEIS strongly supports our view that the Skyway proposal is by far the most environmentally superior alternative identified in the RGRR/SEIS.

Sierra Club strongly opposes the proposal to implement Alternative 14 – the Tentatively Selected Plan ("TSP"). The TSP would not adequately restore natural hydrologic conditions to Everglades National Park. Sierra Club believes that implementation of the TSP would jeopardize the success of the $7.8 billion Comprehensive Everglades Restoration Plan (CERP). Pub. L. No. 106-541, 601 (2000).

As detailed below, the RGRR/SEIS fails to meet the requirements of the National Environmental Policy Act ("NEPA"), 42. U.S.C. § 4321 et seq., and its implementing regulations, in numerous respects. The Sierra Club is especially concerned that the RGRR/SEIS misleads the public and decisionmakers about the relative costs of the TSP and Skyway alternative. In addition, the RGRR/SEIS fails to sufficiently analyze and disclose the adverse environmental consequences of implementing the TSP, as well as ways of avoiding those impacts through the selection of environmentally superior alternatives, such as the Skyway proposal, and through appropriate and feasible mitigation measures. The RGRR/SEIS thus fails to provide an adequate environmental analysis that would support a decision by the Corps to implement the TSP in lieu of the environmentally superior Skyway alternative.

I. Overview of the National Environmental Policy Act

The National Environmental Protection Act (NEPA) "is our national charter for protection of the environment." 40 C.F.R. 1500.1(a). As the United States Supreme Court has explained: NEPA "ensures that the agency . . . will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger public audience." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). NEPA has been described as "an environmental full disclosure law... intended to make such decisionmaking more responsive and more responsible." *Environmental Defense Fund, Inc. v. Corps of Engineers of United States Army*, 325 F. Supp. 749, 759 (D. Ark. 1971). Full environmental disclosure is essential to give the public a meaningful opportunity to scrutinize and comment upon federal projects that may have significant environmental consequences. As federal courts have recognized: "It is without serious question that [NEPA], which requires the promulgation of environmental analyses and impact statements, was enacted for the primary benefit of the general public." *Public Service Co. v. Andrus*, 433 F. Supp. 144, 152 (D. Colo. 1977). Unfortunately, the RGRR/SEIS fails to satisfy the requirements of NEPA, as detailed below.

II. The RGRR/SEIS Fails To Explain How the TSP Would Fulfill the Purpose and Need for the Project.

The stated purpose of the RGRR/SEIS is to "identify a means to enable the conveyance of the authorized flow of water from WCA-3B and the L-29 Canal north of the Tamiami Trail to NESS

and ENP south of the Tamiami Trail..." The Project aims to implement certain provisions of the Everglades National Park Protection and Expansion Act of 1989 ("Everglades Protection Act"), Pub. L. No. 101-229, 103 Stat. 1946. The Everglades Protect Act mandates: 1) improved delivery of water into Everglades National Park; and 2) to the extent practicable, restoration of the natural hydrologic conditions within the Everglades.

To meet the objectives of the Everglades Protection Act, the Project must do more than merely convey a specified amount of water from the north side of the Tamiami Trail to the south; the conveyance must be designed so that the flow of water resembles its natural state to the extent practicable. The SEIS fails to explain how implementation of the TSP would achieve this goal.

The Tamiami Trail roadbed currently creates a physical barrier that effectively dams a hydrologic feature called the Northeast Shark River Slough ("NESS"). The most important characteristics of NESS are its wide, shallow channel and its slow velocity. The engineering data illustrate that, with a 4-mile bridge, the ratio of the water's velocity at the road to its velocity at the marsh is 1.8:1. (As explained below, a critical defect in the RGRR/SEIS is that engineering data were not produced for Alternative 14. Apparently, the Corps only has flow velocity data for a 3,000-foot span, a 4-mile span, and a 10.7-mile span. The ratio would be even higher for the TSP.) The increased water velocity resulting from implementation of the TSP would result in "channelization," which would change the NESS into a different body of water than would exist under natural conditions. The TSP thus would not achieve the Project's stated purpose.

It is vitally important to consider the Project as part of a much larger effort to restore the overall health of the Everglades. The CERP authorizes projects estimated to cost approximately $7.8 billion, the success of which will depend upon this Project for water deliveries. The Project thus represents a key first step in a broad effort to restore the natural hydrologic conditions of Everglades National Park. Man-made canals, channels and other hydrological projects have isolated and destroyed many features of the Everglades during the past century. CERP is intended to "decompartmentalize" hydrological features of the Everglades in order to promote ecological connectivity, thereby reversing the destruction that these man-made projects have caused over the years. This decompartmentalization process relies on the MWD component to restore natural hydrologic flow underneath the Tamiami Trail, because future projects rely on this flow of water for successful decompartmentalization. However, the RGRR/SEIS does not explain whether the TSP would provide the necessary amount of hydrologic interconnectivity to satisfy these future CERP projects.

As the RGRR/SEIS admits in section 9.6: "[T]he Ten-Mile Bridge alternative may have significance with respect to the eventual ecological restoration to be achieved through the CERP project. The bridge would provide the upper range of environmental benefits and may be the solution recommended by detailed CERP studies." In order to restore hydrologic connectivity, CERP projects will remove water conveyances north of Tamiami Trail in order to allow water to flow south towards Everglades National Park. However, if the eight-mile section of unraised roadway remains in place, it will continue to form a barrier to this southernly flow of water.

For example, CERP's WCA 3 Decompartmentalization and Sheetflow Enhancement Project will fill the L-29 canal immediately north of the Project in order to provide an increased flow of water south to Everglades National Park. But as the RGRR/SEIS admits, the two channels underneath the bridges proposed in the TSP may not provide enough area beneath them to accommodate this increased flow, which means that much of the freed-up water would not reach its intended destination. The result would be that the 8-mile unraised section would have to be rebuilt to accommodate the water freed up under the CERP project, which would be far more expensive than implementation of the Skyway alternative. The RGRR/SEIS fails to address this defect.

Section 7.6.4 of the RGRR/SEIS states that "the Tentatively Selected Plan provides an opportunity for integrating the bridges into a corridor-wide raised facility or as part of a multi-bridge system to minimize retrofit when implementing aspects of CERP." This concept of "retrofit" is inconsistent with the stated purpose of the Project. The MWD program is not intended to be a temporary or stop-gap measure. If the Corps truly sought to "minimize retrofit," then any alternative, such as the TSP, that adds a significant amount of asphalt to the roadbed would be rejected as not fulfilling the Project's purpose and need.

There are also unexplained discrepancies in the engineering data that the RGRR/SEIS relied upon. Appendix E contains the dataset that was used to create the alternative action plans. Currently, only 493,000 acre-feet per year of water can pass through the existing culvert system underneath the Tamiami Trail. The data that was relied upon to create the existing plans is the current volume of water that passes through Water Conservation Area 3B, i.e., 683,000 acre-feet per year. All of the action plans can successfully accommodate this volume of water. However, the Natural System Model (NSM Version 4.6) estimates that the natural flow across this section of NESS is 895,000 acre-feet per year. Yet nowhere in the RGRR/SEIS is the larger figure used. This conflicts with the goal of CERP, which is to restore the natural hydrological features of Everglades National Park. The RGRR/SEIS fails to explain how a structure designed to handle 683,000 acre-feet of water per year adequately accommodates a project that aims to come as close as possible to restoring a historic volume that is over 130% larger. The Skyway alternative, by comparison, allows the flexibility and safety to meet any CERP water stages and extreme rainfall events. The RGRR/SEIS fails to fully disclose this advantage.

III. The Discussion of Alternatives in the RGRR/SEIS Fails to Comply with NEPA.

A. The RGRR/SEIS Fails to Identify a Reasonable Range of Alternatives to the TSP.

The RGRR/SEIS fails to analyze a reasonable range of environmentally superior alternatives to the TSP. For example:

- There was no consideration given to alternatives that would refrain from modifying the US-41 roadbed on the non-bridged areas. An "escrow alternative" mentioned in prior drafts of the current RGRR/SEIS held promise in this regard, yet it was mysteriously withdrawn from consideration. This proposal would have authorized the construction of a limited portion of the Skyway, to the extent funding is available, and would have

It appears the Corps may be unjustifiably rejecting the Skyway alternative as economically infeasible based on inaccurate and misleading information regarding the relative costs of the TSP and Skyway alternative. For example, the RGRR/SEIS fails to address the fact that the estimated cost of implementing the TSP exceeds the Department of Interior's ("DOI") budget for the Tamiami Trail Modification under the MWD program. DOI Capital Asset Plan's funding allocation for the Tamiami Trail component of the MWD project is $109 million, and the cost of the TSP lies at $145,806,000.[5] The failure of the RGRR/SEIS to disclose this gap is especially problematic in view of the fact that the Corps appears poised to reject the environmentally superior Skyway alternative on the basis of economic infeasibility. The RGRR/SEIS fails to reconcile its determination that the Skyway proposal is too expensive because it exceeds current funding, while selecting the TSP as a preferred alternative that is similarly over-budget. The RGRR/SEIS is thus highly misleading in suggesting that the Corps has the funds to implement the TSP, but not the Skyway alternative. Additionally, the RGRR/SEIS's economic analysis of the TSP is insufficient in light of admissions that the TSP might require significant future modifications (involving substantial additional expense), because of incompatibility with CERP. Finally, it appears the estimated cost of the Skyway alternative may be artificially inflated, as the cost estimate has grown substantially from the time of initial scoping meetings – without adequate explanation – as described in the letter from Dr. Prieto-Portar enclosed herewith.

The RGRR/SEIS also contains a fatal disconnect between its engineering conclusions and their corresponding economic analyses. Although the RGRR/SEIS mentions the distinct possibility that CERP may require water deliveries that can only be achieved through the construction of a 10-mile bridge (exactly what is called for in the Skyway Proposal), thus requiring an expensive retrofit of the TSP, this has not been factored into the RGRR/SEIS's economic analysis. The RGRR/SEIS is thus highly misleading with regard to the relative costs of the TSP and Skyway proposal, and it therefore fails to foster informed decision-making in violation of NEPA.

C. The RGRR/SEIS Comparison of the Environmental Impacts of the TSP and Other Project Alternatives Is Inaccurate and Misleading, and Therefore Fails to Comply with NEPA.

Section 7 of the RGRR/SEIS purports to compare the environmental impacts of the TSP with the environmental impacts of the other Project alternatives. However, portions of that analysis mistakenly analyze Alternative 10 (4-Mile Bridge, Central), rather than the TSP. The following sections are tainted by analysis of the wrong plan.

- § 7.6.6 Threatened or Endangered Species, "Alternative 10 will be capable of passing the sufficient flow volumes under Tamiami Trail. The implementation of the project therefore does not preclude compliance with the RPAs of the 1999 Biological Opinion."

- § 7.13 Transportation, "The highway would remain available for evacuation during hurricane season, and improvements made through implementation of Alternative 10 would improve safe travel of motorists during evacuation scenarios in the future."

[5] RGRR/SEIS, p. 103 (table 23). According to the construction estimates in Appendix J, the cost is $125,105,593. The RGRR/SEIS does not explain that discrepancy.

affected by both aspects of the TSP: first, the bridge structures, and second, the increase in the mass of the roadbed to raise the road surface. The RGRR/SEIS fails to address these impacts.

Moreover, the RGRR/SEIS fails to discuss many other aspects of the TSP that could result in significant, adverse environmental effects. For example, if the channels underneath the road are inadequate to accommodate a volume of water from an extreme rainfall event, will the water overtop the road surface, or will it spill out underneath the bridge structures in a high-velocity, high-volume flow, resulting in severe damage to the delicate slough ecosystem? The RGRR/SEIS fails to address this issue.

Further, § 7.6.2 includes a description of flows "distributed through a four-mile wide conveyance channel," which evidently refers to a plan other than the TSP. As a result this section overstates the positive effect that the TSP would have on the hydrology of the NESS and Everglades National Park, because it is clear that the TSP contemplates two channels totaling three miles of waterway connectivity.

C. Biological Communities

The TSP fails to adequately disclose, assess, and mitigate impacts on biological communities in the affected Project area. The RGRR/SEIS provides only a bare assertion that the TSP would "enhance" biological communities, without any underlying analysis to support that conclusory statement. This is far short of the "hard look" required under NEPA.

D. The RGRR/SEIS Fails to Adequately Assess Wildlife Impacts

The RGRR/SEIS fails to adequately address the impacts of the TSP on threatened and endangered species, as well as other wildlife and fish species, as detailed below.

i. Threatened and Endangered Species

The RGRR/SEIS identifies six threatened or endangered species that may be present in the project area: the Cape Sable seaside sparrow, Eastern Indigo snake, Florida panther, snail kite, West Indian manatee, and wood stork. The RGRR/SEIS, however, contains only a cursory, superficial discussion of how the TSP would affect those species, in clear violation of NEPA.

The Sierra Club encloses herewith a letter from Dr. Stuart Pimm, the Doris Duke Chair of Conservation Ecology at the Nicholas School of Environment and Earth Sciences of Duke University. Dr. Pimm explains that the TSP – both directly and cumulatively in combination with other related projects – could have significant adverse effects on the Cape Cable seaside sparrow. The failure of the RGRR/SEIS to disclose and analyze those impacts renders the document inadequate as a matter of law.

The eastern indigo snake is a threatened species whose range encompasses the Project area. This species has been listed as threatened by the U.S. Fish and Wildlife Service (USFWS) since 1978, yet the RGRR/SEIS contains only one brief and uninformative sentence about the potential impacts that the TSP would have on this species.

The RGRR/SEIS notes that a Florida panther has strayed within ½ mile of the project site, yet the RGRR/SEIS mysteriously concludes that "construction ... would not affect the panther any more than normal traffic conditions on the highway." This bare assertion is both illogical and uninformative. First, the RGRR/SEIS lacks essential information about the social behavior and range of the panther – information that is necessary to assess how the Project may affect the species. Second, the panther sighting suggests there may be other panthers occupying the Project area; the brief discussion in the RGRR/SEIS about how the TSP may affect the one panther that has been sighted in the area fails to inform the public about how the TSP may affect the panther population as a whole. Moreover, "normal traffic" does not include the presence of heavy machinery that will be active on the Project site for the duration of the construction work, and does not consider that food debris associated with the construction activities may attract these animals. As of July 2001, the Florida Fish and Wildlife Conservation Commission has documented 44 Florida Panther deaths resulting from vehicular collision, including three on US-41,[7] and recommends that wildlife crossings be installed in areas where both sides of the highway are protected "to preserve their importance as panther habitat well into the future." The RGRR/SEIS fails to address whether the TSP could result in similar fatalities, and fails to propose mitigation measures to minimize such impacts.

ii. Wildlife Other than Threatened or Endangered Species

The RGRR/SEIS also fails to assess how the TSP would affect wildlife and fish species other than those classified as "threatened" or "endangered" under the Endangered Species Act. The Florida Everglades is an incredibly diverse ecological system, and it contains a vast array of wildlife and fish species that may be adversely affected by the TSP; yet the RGRR/SEIS essentially ignores those potential impacts. For example, the RGRR/SEIS is devoid of any analysis of potential impacts to specially-designated "sensitive" species and other rare wildlife species. While the RGRR/SEIS mentions that six species of special concern may nest in the Project area, it fails to analyze potential impacts to these species, and, in particular, fails to assess how the Project could affect the American alligator and Everglades mink. The RGRR/SEIS also fails to address the possibility that the TSP could result in additional traffic-related wildlife fatalities, a serious threat as evidenced by the photograph, enclosed herewith, taken by Brian F. Call very near to where the Project would be implemented.

E. Transportation

US-41 is an important part of South Florida's transportation infrastructure. It was the first major transportation link between the east and west coasts of Florida and is designated as a scenic highway. It provides public access to Everglades National Park, Big Cypress National Preserve, commercial facilities, and the Miccosukee Tribal lands. Although the RGRR/SEIS states that "[t]he highway would remain available for evacuation during the hurricane season, and improvements ... would improve safe travel of motorists during evacuation scenarios," this statement must be re-evaluated in light of predictions that the baseline hurricane data was accumulated during a period of moderate to low hurricane activity. Current meteorological

[7] *See* A Summary of Florida Panther Mortality Caused by Vehicular Collisions, published by the Florida Fish and Wildlife Conservation Commission:
http://www.panther.state.fl.us/pdfs/FloridaPantherMortalityCausedbyVehicular.pdf.

predictions indicate that the next couple of decades will see an increase in the intensity and severity of hurricane activity in the region. Further, the effects of global warming may exacerbate this trend. The RGRR/SEIS fails to address the predicted change in weather patterns.

ıe Tamiami Trail is one of only four exits out of Miami, the other three being I-95, I-75 and the Florida Turnpike. The need for the road as a hurricane evacuation route is compounded by increased development south of the Trail and the Florida Keys. The Tamiami Trail is the only road that services Miami-Dade alone. The other roads would have massive traffic from Broward and Palm Beach if a hurricane came from the Atlantic. In the event of a need for emergency evacuation, the Tamiami Trail is only one of two routes to the west, the other being I-75 west of Ft. Lauderdale, which also must serve Miami-Dade and Broward Counties. The Skyway alternative would aid hurricane evacuation. The RGRR/SEIS fails to sufficiently address these issues.

F. Economics and Socioeconomics

The RGRR/SEIS does not provide an adequate discussion of the effects of the TSP on economic and socioeconomic conditions in the Project area. Although the RGRR/SEIS states that no significant impacts on socioeconomic conditions are anticipated, there are several areas of concern that are not addressed by this conclusory statement. For example, members of the Miccosukee Tribe expressed concern that the TSP might result in increased flooding around the Tigertail camp, which would require its relocation. Several cities and counties have passed resolutions supporting the Skyway, for reasons pertaining to its beneficial effect on their economies as well as for its positive effect on the environment. The RGRR/SEIS fails to dress those issues.

G. Hydrologic Effects of Raising the Roadway

It is evident that the component of the Project that will have the greatest impact on the hydrological features of the NESS and Everglades National Park will be the construction of the bridge structures. However, raising the roadway may result in additional environmental effects that are not addressed in the RGRR/SEIS, including increased water velocities,[8] water blockage by the non-raised segments of the roadway, and creation of dangerous conditions during extreme weather events. None of the hydrological modeling incorporated the raised roadbed called for in the TSP, which casts doubt on the conclusion that the altered roadbed would benefit the hydrologic systems as compared to the current roadbed in the RGRR/SEIS.

The proposed construction would overlay the original roadbed, composed of decaying muck dredged from the bed of NESS, with a substantial mass of asphaltic concrete in order to raise the road surface. The RGRR/SEIS fails to address the potential impacts associated with this type of construction. Questions relating to safety limitations in a category 4 or 5 hurricane, roadbed instability, maintenance of such a thick road surface, and seepage beneath the road surface are not addressed in the current RGRR/SEIS. The failure to discuss such potentially significant impacts is a further flaw in the evaluation of the TSP.

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[8] See RGRR/SEIS Engineering Appendix Table 7

V. The RGRR/SEIS Fails to Adequately Consider the Cumulative Impacts of the TSP.

The RGRR/SEIS includes virtually no discussion of the potential cumulative impacts of the TSP and other related projects, in clear violation of NEPA. The RGRR/SEIS fails even to identify related past, present and reasonably future actions in the area, much less to perform the quantitative analysis of cumulative effects required by NEPA. *See* 40 CFR § 1508.7. *See also Florida Wildlife Federation v. U.S. Army Corps of Engineers*, No. 05-80339-CIV-MJ (Sept. 30, 2005) (court held that Corps failed to take requisite "hard look" at cumulative impacts) (opinion enclosed herewith). Some examples of past, present, and future actions that were not analyzed in the RGRR/SEIS are listed below.

A. Central and Southern Florida Project (C&SF Project)

The C&SF Project drastically altered the natural hydrology of south Florida including Shark River Slough and Taylor Slough. Canals shunted further west and provided less flows to NESS, causing adverse impacts.

B. I-75/State Road 84

Like the Tamiami Trail this highway blocks the natural sheetflow of the Everglades and causes other adverse impacts. Despite spreader canals and increased bridging, the highway still caused a deterioration of the ridge and slough landscape pattern in WCA 3A.

C. The MWD Project, Experimental Water Deliveries Program, and C-111 Project

The MWD Project consists of major structural modifications and additions to water control structures that are meant to restore more natural, timing, quantity and distributions of flows to NESS. The MWD Project is still not completed after 16 years, and this failure to complete the project has allowed continued adverse impacts to the hydrology of NESS. Recognizing the limitations of the MWD Project, the 1999 Biological Opinion prepared by the U.S. Fish & Wildlife Service ("FWS") recommended that the MWD Project be redesigned to "increase the restoration of natural flow patterns and volumes . . ."

The FWS issued a Biological Opinion in 1999 on the above three projects and concluded that the Corps' water management practices were likely to jeopardize the continued existence of the Cape Sable seaside sparrow. A Reasonable and Prudent Alternative ("RPA") was mandated and the Corps responded with the Interim Operation Plan (discussed below) that moves water east along the L-29 and south down the L-31, but does not deliver sheetflow to NESS. The RPA represents the minimum needed actions necessary to avoid jeopardizing the continued existence of the sparrow.

D. Interim Operation Plan

The current Interim Operational Plan was the Corps' response to provide the required water flows to NESS mandated by the FWS Biological Opinion that found that the Corps' previous water management practices jeopardized the continued existence of the Cape Sable seaside sparrow. The Plan basically sends water east along the L-29 canal then south along the L-31 and is released below the 8.5 Square Mile Area. This regime still does not restore natural sheetflow to NESS.

E. Combined Structural Operational Plan ("CSOP")

As a reasonably foreseeable future action, the CSOP is the future operational plan for how the MWD Project will be operated when completed. The EIS planning process is currently proceeding. There is considerable controversy over water levels that will permitted in Northeast Shark River Slough among agricultural interests, the 8.5 square mile community, Everglades National Park and the Corps.

F. Tamiami Trail Culverts

The Corps is proposing to construct 77 culverts under Tamiami Trail at 30 locations. The RGRR/SEIS fails to assess cumulative impacts resulting from the TSP and the proposed culvert construction.

G. Land Use Patterns – Past Urban and Agricultural Development

Urban and agricultural growth has continued largely unabated for the past century destroying 50% of the historic Greater Everglades Ecosystem. These developments destroy habitat, create demands for flood protection and water supply, and are a source of pollution. Proposed developments such as the Florida City Development of Regional Impact (DRI), Providence and the Scripps Research Park to name a few will serve as a catalyst for more urban sprawl and subsequent demands for more flood protection and water supply, thus undermining both the hydrological goals of the MWD Project and CERP.

H. Comprehensive Everglades Restoration Plan

The RGRR/SEIS fails to analyze the cumulative impacts of the TSP and the other projects it does identify. For example, while the RGRR/SEIS mentions CERP, it does not provide a cumulative impacts analysis of the CERP and the TSP, as required by NEPA. CERP is controversial and some scientists believe it will not restore the Everglades. For example, in commenting on CERP, Everglades National Park staff concluded that CERP does not represent a restoration scenario and that there is a shortfall of wet season water level targets in Shark Slough.

I. Everglades Construction Project ("ECP")

The objective of the ECP is to build a series of Stormwater Treatment Areas to treat phosphorous inflows from the Everglades Agricultural Area into Water Conservation Area 2A and 2B. The

project is controversial because of concerns that it will not meet phosphorous targets and will not be able release adequate flows further downstream into WCA 3A and 3B and eventually into NESS.

VI. The RGRR/SEIS Fails to Adequately Address the Project's Compliance with Section 4(f) of the Department of Transportation Act.

The RGRR/SEIS states that Section 4(f) of the Department of Transportation Act of 1966, which was codified as 49 U.S.C. § 303, does not apply to the Project because the Project is funded through the Department of the Interior and does not involve approval by or funding from the Department of Transportation. However, the EIS fails to explain the process and/or program within the Department of Interior that is responsible for this funding. The SEIS also fails to explain what role, if any, the Department of Transportation has, especially considering that the TSP exceeds the funding allocated under the DOI Capital Asset Plan. The SEIS thus fails to adequately explain why Section 4(f) does not apply to the Project.

VII. The RGRR/SEIS Fails to Utilize the Best Scientific Data Available.

Appendix D contains the results of engineering modeling which simulates the effect that the various design projects would have on the Shark River Slough. Although the new model has increased in scope from the one produced for the 2003 GRR/SEIS, one looming omission highlights the inadequacy of this engineering analysis: not one of the five modeled alternatives resembles the TSP.

Five different bridge alternatives were modeled in order to determine their effect on the hydrologic conditions south of the Project. One of the primary aims of this modeling exercise was to determine what effect each of the alternatives would have on the velocity of the water. Higher velocities, which are associated with shorter bridge spans, are "extremely destructive to the ridge and slough environment of the Everglades immediately south of the Tamiami Trail."[9]

It is impossible to overstate the relationship of water velocity to the health of the ridge and slough ecosystem. Proof that water velocity is of critical importance to the Everglades is contained in the attached document, "The Role of Flow in the Everglades Ridge and Slough Landscape," produced by the Science Coordination Team of the South Florida Ecosystem Restoration Working Group. Restoration of these hydrologic features requires extreme sensitivity to water velocity, which is absent from the discussion of the relevant scientific data. The most relevant dataset that came out of this study is illustrated in Table 7 of Appendix D, which contains statistical data on the amount of acreage that will experience flow greater than 0.1 ft per second. Yet none of this scientific data reflect the conditions that will be present under the TSP.

[9] Draft Revised General Reevaluation Report/Second Supplemental Environmental Impact Statement (RGRR/SEIS) for the Tamiami Trail Modifications, Appendix D § 12 (A).

CONCLUSION

Sierra Club strongly urges the Corps to select Alternative 17, the Skyway proposal, as the best alternative identified in the RGRR/SEIS to restore water flow and ecological connection through the Everglades. The TSP lacks the advantages of the Skyway alternative and represents a vastly inferior option. Among other deficiencies, the TSP would not provide enough sheet flow to Everglades National Park. Indeed, the TSP would frustrate the restorative goals of CERP, and the additional right-of-way required to raise the highway bed would result in the destruction of wetlands and encroachment into Everglades National Park. Sierra Club maintains that implementation of the TSP would endanger the health of the Everglades ecosystem and the success of the $7.8 billion CERP program.

The RGRR/SEIS fails to provide an accurate and meaningful comparison between the TSP and the Skyway alternative; and, indeed, it distorts the relative costs of the two proposals. Additionally, the RGRR/SEIS fails to adequately analyze the environmental impacts of implementing the TSP, and also fails to explore reasonable means of avoiding those impacts through the implementation of alternatives or mitigation measures. The RGRR thus fails to comply with NEPA and is insufficient, as a matter of law, to support a decision by the Corps to implement the TSP in lieu of the environmentally superior Skyway alternative.

Sincerely,

/s/
Aaron Isherwood
Senior Staff Attorney
Sierra Club
85 Second St., 2d Floor
San Francisco, CA 94107

/s/
Brian Scherff
Co-Chair, Florida Chapter Everglades Committee
P.O. Box 69
Fort Myers, FL 33902-0069

Enclosures:

1. October 4, 2005 letter of Stuart L. Pimm, Doris Duke Chair of Conservation Ecology, Nicholas School of the Environment and Earth Sciences, Duke University

2. Comments of Dr. L.A. Prieto-Portar, Professor of Civil and Environmental Engineering, Florida International University

3. *Does Water Flow Influence Everglades Landscape Patterns?*, National Academy of Sciences (2003)

4. *The Role of Flow in the Everglades Ridge and Slough Landscape*, Science Coordination Team, South Florida Ecosystem Restoration Working Group (Approved by the SCT: January 14, 2003)

5. June 12, 2001 letter of Science Coordination Team

6. Kinza Cusic, *The Ecological Effects of Roads on Wetlands*, The Road RIPorter, March/April 2001

7. *Florida Wildlife Federation v. U.S. Army Corps of Engineers*, No. 05-80339-CIV-MJ (Sept. 30, 2005)

8. Editorial: *Build the skyway*, The Miami Herald, August 24, 2005

9. Photograph taken by Brian F. Call

NICHOLAS SCHOOL OF THE ENVIRONMENT AND EARTH SCIENCES
DUKE UNIVERSITY

STUART L. PIMM, DORIS DUKE CHAIR OF CONSERVATION ECOLOGY

PHONE (919) 613 8141 E-MAIL STUARTPIMM@AOL.COM

To whom it may concern:

4th October 2005

These are my comments on the US ACE's Tentatively Selected Plan (TSP) for the Tamiami Trail Modifications Project under MWD. I find the plan to be totally inadequate ecologically. Moreover, it seriously and incompetently misrepresents scientific opinions that I made to ACE and others as evaluations of various alternatives.

TSP is a minimalist alternative to what is obviously one of the single most important aspects of Everglades' restoration — the reconnection of flows from WCA 3A into WCA 3B and then into the area of Everglades National Park that I shall call Northeast Shark Slough. Any one who examines satellite imagery, the maps made available for visitors at ENP, or even lands at Miami airport from the west immediately sees that L67 levees and the present Tamiami Trail block the natural flow of the Everglades as it forms a gentle curve first to the southeast, then back to the southwest. The alignment of the remaining tree islands — readily visible from the air — shows that original flow. ACE structures massively disrupt that natural pattern.

CERP — the plan intended to restore the Everglades has very few actions that do anything of the sort. In criticizing this plan, I asked the previous Secretary of Interior to establish an independent National Research Council committee to evaluate concerns about CERP's ability to restore the Everglades. In a series of reports, CROGEE did just that and was extremely critical. This is a now $10 billion plan that effects few benefits, despite its promise to do that. To the extent that one can find environmental benefit in this massive expenditure of public funds, it comes from the much-touted "decompartmentalization" of the system — its return to natural flow paths. The TSP ensures that this will not take place — making a complete mockery of any claim that the ACE has any intention of providing environmental benefits.

In particular, I note the following:

The Cape Sable seaside sparrow is currently being protected under the Interim Operational Plan (IOP) as described in the May 2002 IOP FEIS. Regulatory water releases occurring east of the L-67 Extension crossing Tamiami Trail were to be increased 60 percent. Alternative 10 will be capable of passing the sufficient flow volumes under Tamiami Trail. The implementation of the project therefore does not preclude compliance with the RPAs of the 1999 Biological Opinion.

If this were a summary of the work done by my team, it would be perilously close to a deliberate falsehood. The Cape Sable seaside sparrow is in no way protected under IOP: it is simply kept in its perilously highly vulnerable state. The report my colleagues and I wrote on the ecological consequences of IOP make it clear that this Federally Endangered species has been spared extinction across half of its range —thus far. ACE actions in the mid-1990s resulted in the loss of half the numbers of this species brought about by spectacularly bad management decisions. Water managers thought it reasonable to flood (to a depth of a metre of more) the breeding areas of this ground nesting bird during its breeding season, when water levels are naturally low. The prolonged, deliberate flooding of 1993 to 1995 nearly eliminated the species across half of its range and did such significant damage to the habitat as to be readily visible on satellite images. The other side of this coin is that populations in the east — immediately south of Northeast Shark Slough are in over-drained and so fire-prone habitats.

Since then, water managers, responding to the Biological Opinion have not so seriously flooded this area. The population there survives at perilously low levels. In short, to say the sparrow is being protected is simply rubbish and does not follow from the reports the ACE has received. Holding a gun to someone's head and not pulling the trigger is not protecting them; discarding the gun is the preferred alternative.

The written record makes it clear that IOP —please note the "I" — was in place until an effective diversion of water to the east under MWD could relieve the situation. Under TSP, that will not happen.

Finally, I have already provided an assessment of "minimalist" versus "extensive flow" alternatives and its effects on the sparrow to the relevant agencies. From the perspective of this species, the latter is the strongly preferred alternative.

Stuart Pimm

From: DiamondtelDeb@aol.com
Sent: Tuesday, April 22, 2008 8:38 PM
To: TTMComments SAJ
Cc: Charlie.crist@myflorida.com; aronberg.dave.web@flsenate.gov; saunders.burt.web@flsenate.gov; sancouncil@mysanibel.com; DIST3@leegov.com; District11@MiamiDade.gov; district@srwmd.state.fl.us; District6@MiamiDade.gov; District7@MiamiDade.gov; commissioners@broward.org; commissioners@colliergov.net; commissioners@leegov.com; schlottman.kimmie.s37@flsenate.gov; eeverham@fgcu.edu; wgcu@wgcu.org; dianner@hotmail.com; cgray@fgcu.edu; christinagwaltney@dep.state.fl.us; dplazas@news-press.com; swohlpar@fgcu.edu; barrynh@browardaudubon.org; pcorcora@fgcu.edu; shadowfaxfan@earthlink.net; ndemers@fgcu.edu; saveitnowglades@yahoogroups.com; ernie.mcclaney@cpcc.edu; pquasius@collieraudubon.org; adrian.mirabilio@mail.house.gov; susanglickman@verizon.net; joe@fusenow.org; Wildfed@aol.com; psiemen@stu.edu; mary.greco@jewishpalmbeach.org; riverwatch@caloosahatchee.org; htaylor@gloryroad.net; jonathan.ullman@sierraclub.org; luis.fleischman@jewishpalmbeach.org; levind@ajc
Subject: 11-MILE EVERGLADES SKYWAY NEEDED, NOT ONE- COMMENT UNTIL MAY 9, 2008.

Skyway Coalition members and friends - Earth Day, Tuesday April 22, You can do something for the Everglades! Public Comment open until May 9, 2008 by e-mail to TTMcomments@usace.army.mil:

At 7 p.m. at F.I.U.'s Pharmed Arena, you will have a chance to give your input on the current 1-mile bridge planned for Tamiami Trail

Sorry I couldn't make it in person! I care deeply about the Everglades, Here are my comments for the Army Corps. I invite all copied to submit yours. Thanks, Deb

TAMIAMI TRAIL DRAFT LRR PUBLIC MEETING

Tuesday, April 22, 2008, 7:00 PM, FIU Pharmed Arena

11200 SW 8th St., Miami FL 33199

I urge the Army Corps to focus on the big picture in the Everglades, especially since we are spending $billions to restore the Everglades, both within the State of Florida and Nationally to try to preserve our unique River of Grass.

Please, do not put in a quick, cheap fix of a 1-mile bridge when the whole 11-mile Skyway is needed to solve the underlying problem to restore sheet flow in the Everglades.

Arnason.txt

I have attended the Everglades Coalition and worked personally with Governor Crist, Sen Dave Aronberg and Sen Burt Saunders as well as former Rep Porter Goss, current US Rep Connie Mack, former State Senator Bob Graham, and a host of others from Florida Gulf Coast University such Peter Blaze Corcoran, head of their Center for Environmental and Sustainability Education and FGCU's new President Peter Bradshaw, other professors, local legislators and many students not only from FGCU, but from all over the State including Universities in Gainesville, Jacksonville, Orlando (Barry Law), Jupiter (FAU) and Miami who are very concerned with the long-term picture for our beloved Everglades, a national treasure we must protect.

Since the Federal Government is spending half of the $11 Billion budgeted to restore the Everglades, I encourage you, as a Federal Agency, to coordinate with Everglades Restoration to find the funds there to build the 11-mile skyway for the best solution, not just a quick fix. Half measures will avail us nothing.

Sanibel now, years later, regrets not spending an extra $100,000 to preserve a million dollar scallop industry when they built their bridge in the middle of the scallop beds, destroying them. Please take a lesson and do the right thing for the Everglades, the state of Florida and the Nation.

Please review the comments by Dr Wanless, an expert on Florida and sea level rise, also a keynote speaker at the Everglades Coalition I attended on Sanibel with Governor Crist and other prominent political and environmental leaders in the State:

* The science chair of Miami-Dade County's Global Warming Task Force and University of Miami Geology Chair, Dr. Harold Wanless, predicts a 3 to 5 foot sea level rise by 2100. He said that restoring natural historic flows may be pivotal to saving the Everglades. This week marks the 80th Anniversary of the completion of Tamiami Trail. In another 80 years, the road and much if not all the Everglades could be underwater if we don't make the right choices now. We hope State and Federal officials agree on a post-Mod Waters bridging plan by July to address these predictions.

Independent experts have said the bridge could be built in 4 years or less. The Skyway Coalition is investigating creative financing arrangements from state and federal governments and public/private partnerships. Tolling revenues from new and existing sources could be tapped for this effort. Please do not let monetary concerns prevent the Corps from doing the right thing for our Everglades. That would be "penny-wise and dollar-foolish"

Sincerely Deb Arnason - c 386-288-4454
Clean Air, Clean Water, Clean Government
12 Dill St, Alva, FL 33920
The entire Corps document can be viewed at:

http://www.saj.usace.army.mil/dp/mwdenp-c111/index.htm
<http://www.saj.usace.army.mil/dp/mwdenp-c111/index.htm>

Need a new ride? Check out the largest site for U.S. used car listings at AOL Autos
<http://autos.aol.com/used?NCID=aolcmp00300000002851> .

From: Michelle Avola [michelle@naplespathways.org]
Sent: Monday, May 05, 2008 8:10 PM
To: TTMComments SAJ
Subject: SAVE THE ROGG!

PLEASE do not to allow your project to prevent, impede or delay construction of the "River of Grass Greenway". Also, cyclists should be considered in bridge designs (e.g., shoulders should be free of obstructions such as rumble strips, raised reflectors, and drainage grates).

Thank you.

Michelle Avola

May 11, 2008

LTG Carl A. Strock
Commanding General & Chief of Engineering
U. S. Army Corps of Engineers - ATTN CECG
441 G Street NW
Washington, DC 20314-1000
carl.a.strock.ltg@usace.army.mil
Fax: 202/761-4463

Rebecca S. Griffith, Chief, Planning Division
Bradley A. Foster
US Army Corps of Engineers
Planning Division, South Florida Section
P. O. Box 4970
Jacksonville, FL 32232-0019
TTMComments@usace.army.mil
Fax: 904/232-3442

Re: Formal Comments – Groundwater Impacts Not Considered
Tamiami Trail Modifications Limited Reevaluation Report

Dear LTG Strock, Ms Griffith and Mr. Foster:

Background

On March 21, 2004 and March 5, 2008 I provided comments on the proposed elevation of the Tamiami Trail, purportedly promoted as a form of Everglades restoration. Although a copy of my comment letters was included in your agency's "DRAFT Tamiami Trail Mmodification Limited Reevaluation Report & Environmental Assessment" dated April 11, 2008, there was no evidence that your agency took a hard look at the alternatives or impacts described in my comment letters. In fact, there is no evidence that your agency even eonsidered the alternatives or impacts described in my previous comment letters. Specifically, there is no scientific evidence that elevating the Tamiami Trail will result in an increase in flow through the Everglades.

Failure to Consider Groundwater Impacts

Your agency failed to consider alternatives that are known to increase flows of both surface and groundwaters. Those alternatives include reductions in existing groundwater and surfacewater withdrawals from the Everglades Basin by agricultural, municipal and industrial users. Those withdrawls are not confined to mechnical pumping (e.g., supply wells and dewatering pumps). They include nonmechanical dewatering of the aquifer system by excavations (e.g., mine pits) throughout the Everglades, due to increased evaporative loss and volumetric displacement of groundwater into excavated areas. The mechanisms and environmental impacts of these types of water reductions are described in more detail in my 2006 publication titled, "Nonmechanical dewatering of the regional Floridan aquifer system. A copy of that peer-reviewed publication is attached to this comment letter.

The action alternatives considered by your agency failed to consider the fact that all would require considerable sources of "aggregate" (e.g., sand and rock) for construction. Aggregate is mined from the matrix of the Floridan aquifer system, generally from the shallow surficial aquifer. Examples include rock mining in the Everglades authorized under a single permit to 10 mining companies by your agency several years ago, resulting in Sierra's suit against your agency and the US Fish and Wildlife Service (FWS) and rulings by Judge Hoeveler in 2006 and 2007.

Removal of the aquifer matrix by mining **REDUCES** water availability and results in significant adverse environmental impacts to both wetlands and uplands (see the attached 2006 publication). An additional ~11,000 acres of the Everglades is proposed for aggregate mining by Rinker and Florida Rock Industries immediately up-gradient (north) of this proposed Tamiami Trail Modifications project. Thousands of additional acres in the Everglades Basin is proposed or has been excavated into the aquifer system by your agency under the guise of "reservoirs" for Everglades "restoration. All will result in further **REDUCTIONS** in water availability to the Everglades ecosystems, including the area at issue in the proposed Tamiami Trail Modifications project.

Dewatering of the Floridan aquifer by mining and mechnical pumping results in catastrophic, destructive wildfires, such as the muck fires that have been burning for days in the Everglades due to the dewatering of Lake Okeechobee. The mechanisms and environmental impacts of these catastrophic, destructive wildfires are described more fully in my 2007 publication titled, "More Inconvenient Truths: Wildfires and Wetlands, SWANCC and Rapanos. A copy of that peer-reviewed publication is attached to this comment letter. Adverse human impacts from these fires include asthma and other types of respiratory/pulumonary distress, as has been the case with the current muck fires in the Everglades

Failure to Conduct a Comprehensive Cumulative Impacts Analysis

The Environmental Analysis (EA), Environmental Impact Statement (EIS) and Cumulative Impacts Analysis conducted by your agency and the FWS all failed to consider the cumulative adverse impacts associated with your proposed agency action for this project, as well as your past and proposed approvals of other mining and construction projects in the Everglades Basin. The approach for conducting a Cumulative Impacts Analysis was described by the U. S. Council on Environmental Quality's 1997 Cumulative Effects Report. A synopsis of that report is attached.

Because both your agency and the FWS failed to consider all of the cumulative impacts of the proposed project, your agency's conclusions by Mr. Woodley, Jr. on January 25, 2006 regarding the "Means to Avoid or Minimize Adverse Effects" also failed to account for cumulative impacts. For example, in Table 6 of the FWS's "Florida Panter Habitat Matrix" only the "Project Footprint" was considered, rather than the additional dewatering and destructive wildfires that the proposed alternative would cause in the Everglades.

Conclusions

In closing, I concur with the conclusion stated by Dexter W. Lehtinen in his letter dated January 9, 2006, that the proposed alternative (and considered alternatives) is not consistent with the purpose in PL 101-229 WRDA 2000. The estimated cost of approximately $255 million in tax dollars for the proposed large-scale construction project ignores the fact that adequate water could be supplied to the entire Everglades Basin, at no cost to the tax payers, if your agency and FWS would identify all related cumulative impacts, issue no additional permits in the Everglades that would reduce water availability to the Everglades ecosystems and require mandatory avoidance and minimization of groundwater use and dewatering associated with existing permits you have issued in the Everglades basin.

Sincerely,

Sydney T. Bacchus, Ph. D.
Hydroecologist

Attachments

Bacchus 2006
Bacchus 2007
Synopsis of The U. S. Council on Environmental Quality 1997 Cumulative Effects Report

WHAT ARE CUMULATIVE IMPACTS?
SYNOPSIS OF THE U. S. COUNCIL ON ENVIRONMENTAL QUALITY
1997 CUMULATIVE EFFECTS REPORT

1. **Cumulative impacts** (effects) are not some nebulous, new concept that defies comprehensive, evaluation, or quantification. In fact, the large-scale, wide-spread damage to the environment from cumulative impacts was recognized at least by 1969, when the term was defined by **40 CFR § 1508.7** as follows:

> **"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."**

2. Based only on the information provided in the comment letter, it is difficult to imagine that anyone could attempt to make a serious argument that the **"past, present, and reasonably foreseeable future actions" of this proposed project, in conjunction with the cumulative impacts that already have occurred in east-central Florida could be considered anything but contrary to the public interest.** This conclusion is drawn particularly with respect to the current state of the Floridan aquifer system and the adverse impacts this proposed project would have on ground water and all of the intimately-connected surface water resources, including wetlands and other riparian areas. Yet, there is no reference in the Public Notice to cumulative impacts. Approximately half of the yearly totals listed in the January 27, 2001 Daytona Beach News-Journal article by Catron were Nationwide General projects, based on my personal communication with the author (see **http://www.n-jcenter.com/2002/Jan/27/ENV1.htm**). The cumulative impacts of all of those NWP projects have not been considered, but combined with the proposed project, are significant and adverse.

3. For the benefit of those having difficulty comprehending cumulative impacts, the U. S. Council on Environmental Quality, Executive Office of the President published a report in January 1997 entitled, **"Considering Cumulative Effects Under The National Environmental Policy Act"** (Cumulative Effects Report). Some of the information in the Cumulative Effects Report particularly is useful in illustrating the types of things that must be considered for a scientifically-valid evaluation of the actual impacts of projects routinely authorized and/or permitted under the CWA by the COE in Florida. Table E-1 of the Cumulative Effects Report summarizes the basic principles of a cumulative effects analysis. The Executive Summary of that Cumulative Effects Report expands on these basic principles, stating, in relevant part:

> ".....The handbook presents practical methods for addressing coincident effects (adverse or beneficial) on specific resources, ecosystems, and human communities of all related activities, not just the proposed project or alternatives that initiate the assessment process." [page v]
>
> "The process of analyzing cumulative effects can be thought of as enhancing the traditional components of an environmental impact assessment: (1) scoping, (2) describing the affected environment, and (3) determining the environmental consequences. Generally it is also critical to incorporate cumulative effects analysis into the development of alternatives for an EA or EIS. **Only by reevaluating and modifying alternatives in light of the projected cumulative effects can adverse consequences be effectively avoided or minimized.** Considering cumulative effects is also essential to developing appropriate mitigation and monitoring its effectiveness." [page v, emphasis added]
>
> ".....By evaluating resource impact zones and the life cycle of effects rather than projects, the analyst can properly bound the cumulative effects analysis." [page v]
>
> " Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern....Then **they must describe the response of the resource to this environmental change**....." [page vi]
>
> "....**Address the sustainability of resources, ecosystems, and human communities**." [Table E-1, page vii, emphasis added]

3. The introductory chapter of the Cumulative Effects Report elucidates the purpose of analyzing cumulative impacts. Table 1-1 in that chapter provides a list of federal agencies, with examples of the types of situations in which cumulative impacts are (or should be) involved. The COE is the first agency listed in Table 1-1. The example provided in Table 1-1, for the COE's consideration of cumulative impacts is provided below, following the Congressional testimony excerpt explaining the purpose of evaluating cumulative impacts, and other relevant excerpts from the introductory chapter:

> "...as a result of the failure to formulate a comprehensive national environmental policy...**environmental problems are only dealt with when they reach crisis proportions**..... Important decisions concerning the use and shape of man's environment continue to be made in small but steady increments which perpetuate requirements." [page 2, emphasis added]
>
> "....Cumulative effects analysis should be the tool for federal agencies to **evaluate the implications of even project-level environmental assessments (EAs) on regional resources**." [page 3, emphasis added]
>
> "**incremental loss of wetlands under the national permit to dredge and fill and from land subsidence**" [Table 1-1, page 2, emphasis added]

4. The fact the Floridan aquifer system has suffered irreparable damage in the form of subsidence, contamination, and depletion, to the point where Congress has authorized approximately $8 billion dollars in tax relief for experimental remedies in south Florida alone, should be sufficient evidence to conclude **the environmental problems in Florida have reached crisis proportions**. The reason for this crisis can be found in the fact that cumulative impacts have not been considered. Figure 1-2 of the Cumulative Effects Report is a flow chart depicting the results of a review of 89 EAs announced in the Federal Register during the first six months of 1992, to determine how many EAs correctly treated cumulative impacts. Only three were found to have correctly considered cumulative impacts.

5. The principles of cumulative impacts are further summarized in Table 1-2. With respect to the information provided in Table 1-2 and this case, the "given resource" is the Floridan aquifer system. Some of the more relevant parts of Table 1-2, with respect to the issues addressed in this affidavit, are as follows:

> "2. Cumulative effects are the total effect, including both direct and indirect effects, on a **given resource**, ecosystem, and human community of all actions taken, no matter who (federal, nonfederal, or private) has taken the actions." [emphasis added]
>
> "5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries."
>
> "7. Cumulative effects may last for many years beyond the life of the action that caused the effects.....(e.g., acid mine drainage, radioactive waste contamination, **species extinctions**). **Cumulative effects analysis needs to apply the best science** and forecasting techniques **to assess potential catastrophic consequences in the future**." [emphasis added]
>
> "8. **Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects**, based on its own time and space parameters....**The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.**" [emphasis added]

6. Eight scenarios of accumulating effects are described in Table 1-3 of the Cumulative Effects Report. Examples of the eight scenarios ("Types") of cumulative impacts that are specific to Florida (based on the "Main Characteristics" in Table 1-3) are relatively easy to identify. Some of the examples already are occurring in Florida, at crisis proportions, while others are building to such levels. All of the examples could have been triggered solely by the General permits authorized by the COE in Florida. **Type 1** (frequent and repetitive effects on an environmental system) is exemplified by the extensive destruction of forested wetlands - particularly pond-cypress wetlands - with no "regrowth" or replacement. **Type 2** (delayed effects) is exemplified by collapse of the aquifer structure - sinkholes - from groundwater mining, and exposure of coastal organisms and human communities to slow-acting contaminants (e.g., endocrine disruptors) from aquifer-injected effluent and other wastes. **Type 3** (high

spatial density of effects on an environmental system) is exemplified by pollution discharges into the aquifer from nonpoint sources. **Type 4** (effects occur away from the source) is exemplified by breached groundwater "divides" causing diversions from one watershed as a result of groundwater pumping in another watershed. **Type 5** (change in landscape pattern) is exemplified by fragmentation of critical wildlife migration corridors (e.g., Florida black bear migration corridor). **Type 6** (effects arising from multiple sources or pathways) could be exemplified by synergism among contaminants injected into the aquifer. **Type 7** (secondary effects) is exemplified by any and all type of development following highway construction. **Type 8** (fundamental changes in system behavior of structure) is exemplified by large-scale flow reversals in the Floridan aquifer system, such that the aquifer system that formerly discharged ground water to springs, streams, wetlands, and coastal areas, now is sucking water from those same systems.

7. The Cumulative Effects Report further explains that, "in simplest terms, cumulative effects may arise from single or multiple actions and may result in additive or interactive effects." Table 1-4 of the Cumulative Effects Report is a matrix showing the four combinations of single and multiple actions combined with either additive or interactive processes. Again, examples of the four types of action/process outcomes (based on the matrix) that are specific to the situation in Florida are provided. The **single action/additive process** combination is exemplified by linear transportation projects (General Category 14) and particularly wetland road which result in continual deaths of wildlife and generally disrupt natural flow patterns. Another example is stormwater management facilities (General Category 43) excavated near depressional wetlands that result in continual draining of those wetlands. Mining activities (General Category 44) are yet another example of this type of cumulative impact, similar to excavated stormwater facilities in the continual draining of wetlands, but on a much larger scale. This combination also is exemplified by dewatering activities, such as those authorized under General Category, that result pathogenic fungal infections of tree roots that later result in the death of those trees. The **single action/interactive process** combination is exemplified by stormwater management facilities (General Category 43) that act as "attractive nuisances" to wildlife, exposing them to biomagnifying contaminants such as heavy metals they would not be exposed to in natural wetlands. The **multiple actions/additive process** combination is exemplified by single-family housing (General Category 29), residential, commercial, and institutional development projects (General Category 39) and agricultural activities (General Category 40) that all contribute to drawing down the Floridan aquifer system. The **multiple actions/interactive process** is exemplified by any combination of the General Categories referenced in this paragraph that lead to both the reduction in pristine aquifer discharges to Florida's coastal waters (disrupting salinity regimes), in conjunction with induced aquifer discharge of injected sewage effluent (stress from nutrient-loading and other contaminant).

8. The second chapter of the Cumulative Effects Report describes the importance of proper scoping. It is important to note that the General Categories of projects routinely authorized by the COE in Florida result in virtually all of the cumulative effects issues listed under Item 7 of Table 2-1 of the Cumulative Effects Report. The discussion regarding identifying geographic boundaries uses Figure 2-1 of the Cumulative Effects Report to illustrate the "utility of using the ecologically relevant watershed boundary of the Anacostia River basin rather than the political boundaries of local governments to develop restoration plans." Although watersheds are logical geographic units in many areas of the U. S., this is not the case in Florida. Extensive groundwater mining of the karst Floridan aquifer system does not recognize watershed boundaries any more than it recognizes political boundaries, and has resulted in breached groundwater "divides". Consequently, geographic boundaries of resources in Florida now must be expanded to coincide with the natural boundaries of the regional aquifer system. Table 2-2 of the Cumulative Effects Report illustrates how an aquifer is an appropriate geographic area for a cumulative impacts analysis involving water quality. In Florida, the regional aquifer also is an appropriate geographic area for evaluating virtually every other resource listed in Table 2-2 of the Cumulative Effects Report. The following quote from Chapter 2 of the Cumulative Effects Report reiterates the importance of expanded geographic boundaries for a scientifically-based cumulative impacts analysis:

> "....Analyzing cumulative effects differs from the traditional approach to environmental impact assessment because it requires the analyst to expand the geographic boundaries and extend the time frame to encompass additional effects on the resources, ecosystems, and human communities of concern." [page 12]

9. Chapter 3 of the Cumulative Effects Report illustrates how to describe the affected environment

during a cumulative impacts analysis. For example, "the analyses and supporting data should be **extended in terms of geography, time, and the potential for resource or system interactions**." [page 23, emphasis added] Numerous components of the affected environment are listed, with examples of various issues to be considered under each component. All of the components and issues listed in Chapter 3 of the Cumulative Effects Report are capable of resulting solely from the cumulative impacts triggered by the General permits authorized by the COE in Florida. Examples of components and issues particularly relevant to this case include the following **[NOTE - the following "Surface Water" issues are equivalent to "Ground Water issues for Florida]**:

"Surface Water

Water shortages from unmanaged or unmonitored allocations of the water supply that exceed the capacity of the resource.

Deterioration of recreational uses from nonpoint-source pollution, competing uses for the water body, and over-crowding." [page 25, emphasis added]

"Ground Water

Water quality degradation from nonpoint- and multiple-point sources of pollution that infiltrate aquifers.

Aquifer depletion or salt water intrusion following the overdraught or groundwater for numerous uncoordinated uses." [page 25, emphasis added]

"Wetlands

Habitat loss and diminished flood control capacity resulting from dredging and filling individual tracts of wetlands.

Toxic sediment contamination and reduced wetlands functioning resulting from irrigation and urban runoff." [page 25]

"Ecological Systems

Habitat fragmentation from the cumulative effects of multiple land clearing activities, including logging, agriculture, and urban development.

Loss of fish and wildlife populations from the creation of multiple barriers to migration (e.g., dams and **highways**)." [page 25, emphasis added]

"Socioeconomics

Over-burdened social services due to sudden, unplanned population changes as a secondary effect of multiple projects and activities." [page 25, emphasis added]

10. Chapter 4 of the Cumulative Effects Report explains **how to determine the environmental consequences of cumulative effects**. Table 4-3 provides an example of a narrative description of effects on various resources, illustrating how the significant cumulative loss of wetlands occurs. With respect to the issues addressed in this affidavit, some of the other more relevant points in that chapter (beginning with "Step 10") are as follows:

"Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects." [page 37]

"In preparing any assessment, the analyst should gather information about the cause-and-effect relationships between stresses and resources...." [page 38]

"If cause-and-effect relationships cannot be quantified, or if quantification is not needed to adequately characterize the consequences of each alternative, qualitative evaluation procedures can be used. The analyst may categorize the magnitude of effects into a set of number classes (e.g., high, medium, or low) or provide a descriptive narrative of the types of effects that may occur....." [page 41]

"....As discussed above, the magnitude of an effect reflects relative size or amount of an effect. Geographic extent considers how widespread the effect might be. Duration and frequency refers to whether the effect is a one-time event, intermittent, or chronic...." [page 44]

"...In most cases, however, avoidance or minimization are more effective than remediating unwanted effects. For example, attempting to remove contaminants from air or water is much less effective than preventing pollution discharges into an airshed or watershed. Although such preventative approaches can be the most (or only) effective means of controlling cumulative effects, they may require extensive coordination at the regional or national scale (e.g., federal pollution control statutes)." [page 45]

11. The final chapter of the Cumulative Effects Report addresses **"Methods, Techniques, and Tools for Analyzing Cumulative Effects."** As a guide, Table A-1 (page A-8) provides a hypothetical checklist for identifying potential cumulative effects of a highway project (e.g., General Category 14 "linear transportation projects"). "Methods 9: Ecosystem Analysis" (page A-37) also is an important entry, based on the concerns expressed in this affidavit. Other aspects of this chapter that are most relevant to the problems addressed in this affidavit are as follows:

"....Fortunately, the methods, techniques, and tools available for environmental impact assessment can be used in cumulative effects analysis....." [page 49]

"Although the NEPA practitioner must draw from the available methods, techniques, and tools it is important to understand that a study-specific methodology entails using a variety of methods to develop a conceptual framework for the analysis...." [page 50]

"Ecosystem analysis involves considering the full range of ecological resources and their interactions with the environment. This approach can improve cumulative effects analysis by *providing the broad regional perspective and holistic thinking needed to address the following cumulative effects principles:* [page A-37]

"Focus on the resource or ecosystem...." [page A-37]

"Use natural boundaries.... [page A-37]

"Address resource or ecosystem sustainability....." [page A-37]

"Traditionally, environmental impact assessment has considered air quality, water resources, wildlife, and human communities as separate entities for analysis. This separation of resources has obscured many cumulative effects. Recognition of the interconnectedness of land, water, and human resources has driven many federal and state agencies to undertake ecosystem or watershed approaches to environmental protection....." [page A-37]

TAMIAMI TRAIL MODIFICATIONS

Draft Limited Reevaluation Report (LRR) and Environmental Assessment (EA)

COMMENTS

Thank you for attending this evening's Public Meeting. We value your contribution. If you would like to provide additional comments on this evening's presentation and discussion, please provide comments below and return to us prior to **May 9, 2008**.

COMMENTS: *(May be continued on reverse)*

Please build the one-mile bridge ASAP!!
and let's keep the hope alive for a 10.7 mile skyway!
We need to do what is right by the creatures of the Glades, return to them a healthy home, their habitat.
The world is watching what we do with this precious Heritage Site!

A work force of volunteers (similar to Benjamin Franklin prison-lake - not far from Everglades N.P. is a prison) can keep the culverts clean and also water flowing under the bridge. Money can come from selling plaques to attach to bridge (or bricks) with donors' names. Many billionaires in America.
Thank You for what you are doing, but hurry!

NAME & CONTACT INFORMATION: *(Optional)*

Kathy Bernabei
1713 SW 103 pl
Miami FL 33165

Please mail comments to:
Attn: Bradley A. Foster
U.S. Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, Florida 32207-8175

Or

E-mail to: ttmcomments@usace.army.mil

TO: ARMY CORPS ENGINEERS
P.O. BOX 4970
JACKSONVILLE FL 32232-0019
AHN PLANNING DIV

GATOR PARK
Stan Carlin
P.O. BOX 517
MELBOURNE, FL 32902-0517
321-729-8387 • 305-559-4136

RE: MODIFICATION WATER
LRR/EA
U.S. 41
CULVERT WATER VOLUME

RECEIVED
MAY 07 2008

DATE: 5/5/08

AHN [illegible] GRIFFITH

By CLEANING OUT 30'-50' WIDE CANAL SOUTH
BEFORE SPREADER SWALE - WATER VOLUME.
[illegible]
than 100yds south.

Regards
Stan Carlin

enclosed Copy MAR 07 LETTER

Stan Carlin
P. O. Box 517
Melbourne Fl 32902-0517
321-729-8387 * 305-559-4136
Gator Park

March 26, 2007

U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Fl 32232-0019

Re: Modified Water Deliveries
Tamiami Trail – U.S. 41
Culvert and Canal Maintenance

Gentlemen:

In 1992 and 1993 White Construction repaved roadway and extended 8'to 10' south, and extended culverts one length south. White Construction said 80% or more of existing culverts were clogged with mud and trash. We asked if they were cleaning out the culverts so water could flow 100%. White Construction said "no" because it was not in their contract. There has also been no maintenance on the water distribution canals that run south of the culverts.

A clean out/maintenance contract should be issued now for all clogged culverts and canals so 100% of even water flow would be restored this year. This could be done rapidly and would be cost effective.

Sincerely,

Stan Carlin

Hackett.txt

From: ghackett@comcast.net
Sent: Friday, May 02, 2008 7:12 AM
To: TTMComments SAJ
Cc: Unknown Nedene Hennrich
Subject: Tamiami Trail rebuilding (LRR/EA) keep it Bicycle friendly.

re: Limited Reevaluation Report and Environmental Assessment (LRR/EA) Hi,

Please keep this road bicycle friendy. No obstructions in the shoulder, such as rumble strips, raised reflectors, or drainage grates. If any of these obstructions are required please keep them as far to the richt as possible. Keep most of the 10 foot shoulder smooth and clear for skinny tire road bikes.

Thank you in advance.

Guy Hackett
405 NE 23rd AVE
Cape Coral, Florida

Deux42.txt

From: Deux42@aol.com
Sent: Wednesday, May 07, 2008 9:44 PM
To: TTMComments SAJ
Subject: Tamiami Trail Modifications

Access for sportsman, and airboat is not avail., north or south, of Trail and should be.

Access to area 3a, for airboat in case of plane crash is not avail.,and should be.

Flowage easement to Airboat Association of Florida, should NOT change day to day operations, or recreation access.

The bridge, is too expensive, the 55 curvets will flow enough with higher water level in L-29

Wondering what's for Dinner Tonight? Get new twists on family favorites at AOL Food
<http://food.aol.com/dinner-tonight?NCID=aolfod00030000000001> .

GP 8 JorgeMF.txt

From: JORGEMF@comcast.net
Sent: Monday, April 14, 2008 12:22 PM
To: TTMComments SAJ
Subject: Question

would the public meetings be an appropriate place to request that a bike/nature trail be instituted as part of this project?

GP 9 Loftus.txt

From: williamloftus@bellsouth.net
Sent: Monday, April 14, 2008 5:26 PM
To: TTMComments SAJ
Subject: Public Comment

While the proposed alternative may provide incremental benefit for the southern Everglades, it does not provide nearly the amount of flow across a wide-enough cross-section of Tamiami Trail to retore the hydrological conditions of Shark River Slough. Neither will it allow enough water to pass the western area of the cross-section near S-333 to alleviate flood conditions in WCA-3A during high rainfall years. Why throw good money after bad? It makes more sense to do this project correctly by elevating as much of the cross-section as possible, rather than spending millions doing an inadequate job. Only by eliminating this hydrological barrier will Shark River Slough begin its recovery.

Although the document states that the project is in compliance with EE 13112, it addresses only exotic plants. There are at least a dozen species of exotic fishes and several non-native snails in the canals that are not addresses in the document. How will the swales and any spreader canals affect populations of these animals and prevent their entry into the ENP?

GP 10 Melvin.txt

From: Sean R. Melvin [seanrmelvin@mac.com]
Sent: Thursday, May 01, 2008 10:33 AM
To: TTMComments SAJ
Subject: Limited Reevaluation Report and Environmental Assessment (LRR/EA)

hello
as i know you must have many things of more importance then reading emails i will make this short

on this project
keep the needs of cyclists in mind.. from the mom and dad to the guy putting in 400 miles a week we need a safe way to get around and putt in miles as well

have a great one

Sean R. Melvin
Partner

Island Bike Shop
Ave Maria 239 434 8401
Naples 239 732 8400
Marco Island 239 394 8400

CONFIDENTIALITY NOTICE
This email and any files transmitted with it are from Sean R. Melvin. This email address, message, and any files are confidential and intended only for the addressee. If you are not the intended recipient or have received this email in error, please call me immediately at (239) 963-7156 or promptly email me and then delete the message.

Thank you.

GP 11 Musgrove .txt

From: martha musgrove [malmusgrove@yahoo.com]
Sent: Sunday, May 11, 2008 8:41 PM
To: TTMComments SAJ
Subject: Tamiami Trail bridge comment from Martha Musgrove

To whom it may concern:

I support your proposed plan to build a Tamiami Trail bridge to complete the Modified Waters Delivery Project. This will allow more water to flow into the Northeast Shark River Slough section of Everglades National Park, and it will clear the way to implement additonal Everglades Restoration projects (known locally as decompartmentalization and sheetflow enhancement) to restore sheetflow through Conservation Area 3. Completion of the Modified Water Deliveries Project has been too long delayed.

Ultimately Tamiami Trail will have to become a series of bridges to pass all the water needed to ensure the viability of Everglades National Park. That goal begins with construction of the first bridge, for which I hope Congress will appropriate what is necessary.

I have followed these issues for many years. It is my considered opinion that there is nothing the COE or Congress could do this year that would provide more direct benefits to Everglades National Park. Those of us committed to saving and restoring the Everglades recognize that it is irresponsible to let our pursuit of perfection trample the good.

MLM

Ms. Martha Musgrove
2432 Edgewater Dr.
West Palm Beach, FL 33406
561-965-9409

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<http://us.rd.yahoo.com/evt=51733/*http://mobile.yahoo.com/;_ylt=Ahu06i62sR8HDtDypao8Wcj9tAcJ>

GP 12 Siemon.txt

From: Robbie Siemon [rsiemon@hgdomain.net]
Sent: Monday, May 05, 2008 8:25 AM
To: TTMComments SAJ; TTMComments SAJ
Subject: Mod Waters

I support finishing the original Mod Waters Act of 1989? (nine years ago!!!!) so that we can start restoration. We need to act not deliberate endlessly while the ecosystem dies. We can try to fund the bridge at a later time but let's get started.

Robbie Siemon
208 Ashworth Steet
West Palm Beach, Fl. 33405

STEARNS WEAVER MILLER
WEISSLER ALHADEFF & SITTERSON, P.A.

Miami ▪ Ft. Lauderdale ▪ Tampa

Andrew E. Stearns

Direct Line: (305) 789-3412
Fax: (305) 789-3395
Email: astearns@swmwas.com

Museum Tower, Suite 2200
150 West Flagler Street
Miami, Florida 33130
(305) 789-3200

May 9, 2008

Via Email and FedEx

Colonel Paul Grosskruger
U.S. Army Corps of Engineers,
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-8175

RE: Airboat Association of Florida Comments to the Modified Water Deliveries to Everglades National Park Tamiami Trail Modifications Limited Reevaluation Report and Environmental Assessment (LRR/EA)

Dear Colonel Grosskruger:

The Airboat Association of Florida ("AAoF") hereby submits its comments to the U.S. Army Corps of Engineers ("USACE") Modified Water Deliveries to Everglades National Park Tamiami Trail Modifications Limited Reevaluation Report and Environmental Assessment ("LRR/EA"). These comments are specifically directed to the U.S. Army Corps of Engineers' ("USACE") proposed acquisition of AAoF-owned real estate interests as referenced within the LRR/EA. The AAoF also incorporates by reference its May 7, 2007, comments submitted in response to the USACE Draft Third Supplemental Environmental Impact Statement (TSEIS), all comments made by the AAoF at public meetings, and all correspondence directed to and from the AAoF and the USACE relating to the USACE's proposed acquisition of real estate interests from the AAoF.

The AAoF objects to the LRR/EA to the extent it delineates the taking of the AAoF's property by the USACE where a taking of AAoF property was explicitly precluded under the Everglades National Park Protection and Expansion Act of 1989 ("Expansion Act").

The Expansion Act expanded the size of the Everglades National Park ("ENP"). The AAoF owns a ten (10) acre parcel of property adjacent to and wholly outside of the boundaries of the expanded ENP, as expanded by PL 101-229. As the USACE states in the LRR/EA:

> The Airboat Association of Florida property was explicitly excluded from acquisition under the Expansion Act.
>
> * * *
>
> The Airboat Association's ten-acre parcel located off of Tamiami Trail was exempt from the ENP boundary.
>
> * * *
>
> This [AAoF] Property was explicitly excluded from acquisition under the Expansion Act.
>
> * * *
>
> The Airboat Association of Florida was specifically excluded from the boundary of the ENP map at the time Public Law 101-229 was enacted.

(LRR/EA, 2-10; 2-11, 6-5, F-3).

Nevertheless, the USACE's contends that real estate interests in the AAoF's property must be taken by the USACE without providing the legal justification for the purchase of such an interest.

> A perpetual flowage easement up to elevation 8.5 feet and occasional flowage easement up to elevation 9.5 feet is required over the 10 acres [owned by the AAoF] due to an increase in water levels.

(LRR/EA, F-6). The USACE, within the LRR/EA, fails to propose the preferred and reasonable alternative to the taking of AAoF property: the raising of the elevation of the AAoF's property to a height above the estimated 100 year flood height.

The raising of the elevation of property is an alternative that the USACE extended to other stakeholders similarly affected by the USACE's actions with regards to the Modified Water Deliveries to Everglades National Park ("MWD") Project. The raising of the AAoF's property is the preferred alternative to mitigate the prospective damage to the AAoF's property that the USACE contends will occur with the implementation of the MWD Project.

The Airboat Association of Florida

The AAoF is a nonprofit organization established on December 21, 1951, by sportsmen/conservationists and is one of the oldest active conservation organizations in the State of Florida. In 1952, the AAoF acquired the ten (10) acre parcel of land it currently owns, located approximately fourteen (14) miles west of Miami at 25400 Tamiami Trail, Miami, Florida.

Due to its unique location, the AAoF enjoys unique access to the ENP. The AAoF extends its unique access to the ENP to various government and law enforcement agencies on a regular basis. Recently, the AAoF has authorized, among others, the National Park Service, Miami-Dade County Fire Rescue, and the U.S. Army Special Forces to utilize the AAoF's property as a staging area to facilitate access the ENP. The U.S. Forest Service regularly utilizes the AAoF's property as a firefighting staging area for its firefighting activities along the Tamiami Trail and within the ENP.

The Expansion Act expanded the ENP by approximately 107,600 acres (the "Expansion Area"). Congress included within the Expansion Area all publicly and privately held land south of and adjacent to Tamiami Trail from approximately S-334 on the east to approximately S-333 on the west, a stretch running approximately ten-point-seven (10.7) miles, *with the exception of* the ten (10) acre parcel owned by the AAoF. As acknowledged by the USACE in the LRR/EA, the AAoF's ten (10) acre parcel is the *only* property Congress excluded from the Expansion Area along the length of the Tamiami Trail. As noted previously, the LRR/EA specifically acknowledges that:

> The Airboat Association of Florida was specifically excluded from the boundary of the ENP map at the time Public Law 101-229 was enacted.

(LRR/EA, F-3).

The Expansion Act contemplates the taking of property in two circumstances, first, for properties located within the Expansion Area (§ 102(c)(1)), and second, for properties located partially within and partially outside of the Expansion Area (§ 102(d)). Nowhere does the Expansion Act authorize the taking of land wholly outside of the Expansion Area; rather, it unarguably specifically precludes such a taking.

Authority of USACE to Take Private Real Property

Army Regulation 405-10, Acquisition of Real Property and Interests Therein, outlines the circumstances in which the USACE may acquire real property:

> **1–3. Authority to acquire real property and interest therein**
>
> While the Federal Government has the inherent power to acquire land for its constitutional purposes, this power can be exercised only at the discretion of Congress. No land will be purchased in the name of the United States except under a law authorizing such purchase (R.S. 3736; 41 U.S.C 14). No military department may acquire real property not owned by the United States unless the acquisition is expressly authorized by law (10 U.S.C 2676).

As provided by law and regulation, USACE may only take real property where it is expressly authorized by Congress to do so.

The AAoF's Property Was "Carved Out" of the Expansion Area by the Expansion Act

If, as the USACE claims, the USACE's authority to implement the MWD Project emanates from The Expansion Act, then the project must be implemented while preserving the AAoF's private property rights, as provided for by The Expansion Act. Quite simply, if Congress had intended for the AAoF's property to be taken in conjunction with the implementation of the Expansion Act, Congress could have included the AAoF's ten (10) acre parcel in the 107,600 acre Expansion Area. Quite simply, Congress didn't. Congress "carved out" a single stakeholder, the AAoF, from the massive expansion of the ENP. In doing so, Congress expressly intended to preserve the AAoF's private property rights.

Proposed Taking of AAoF Real Estate Interests

In the LRR/EA, the USACE states that, in connection with its undertaking to implement the MWD Project, the USACE proposes to "secure real estate interests" to private property owned by the AAoF.

> A perpetual flowage easement up to elevation 8.5 feet and occasional flowage easement up to elevation 9.5 feet is required over the 10 acres [owned by the AAoF] due to an increase in water levels.

(LRR/EA, F-6). The LRR/EA does not propose any alternative to the taking of a flowage easement. The LRR/EA contains draft language of the proposed flowage easement, never before shown to the AAoF prior to the publication of the LRR/EA, that constitutes a *per se* taking of the AAoF's property:

FLOWAGE EASEMENT (Permanent Flooding)

The perpetual right, power, privilege and easement in, upon, over and across (the land described in Schedule "A") (Tracts Nos. ____ and ____) for the purposes set forth below:

a. Permanently to overflow, flood and submerge the land lying below elevation 8.00 feet NGVD 29 in connection with the operation and maintenance of the Modified Water Deliveries to Everglades National Park project for the purposes as authorized by the Act of Congress approved _____.

b. Occasionally to overflow, flood and submerge the land lying above elevation 8.00 feet NVGD 29 and below 9 feet NVGD 29 in connection with the operation and maintenance of said project.

Together with all right, title and interest in and to the structures and improvements now situate on the land below elevation 8.0 feet NVGD 29...The perpetual and assignable right, power, privilege and easement permanently to overflow, flood and submerge Tract No. _____ in connection with the operation and maintenance of the federal project as authorized; provided that no structures for human habitation shall be constructed or maintained on the land below 9 feet NGVD 29...

(LRR/EA, F-13-14).

In summary, the USACE's proposed easement provides that the AAoF is to abandon practically all of its rights to its property situated below 9.0 feet NGVD. Such a "flowage easement" is in reality equivalent to a fee simple interest in property, whereby AAoF would be asked to abandon practically all of its rights of possession, use, and enjoyment of its property. The LRR/EA elevation exhibit of the AAoF's property clearly shows how the proposed a "flowage easement" would actually be a taking of nearly the entire property:

(LRR/EA, F-22).

The USACE may not take real property where it is without the express authority to do so (AR 405-10). The Expansion Act does not authorize the USACE to take land that is located wholly outside of the Expansion Area. The USACE's proposal to take a "flowage easement" upon the AAoF's property is beyond the scope of the USACE's express authority provided under in The Expansion Act.

The AAoF Has Not Been Negotiating the Terms of a Flowage Easement with the USACE

In the LRR/EA, the USACE states that:

> The [Jacksonville] District has been negotiating a flowage easement with the [AAoF] for several years and has made commitments to the landowner to acquire a flowage easement, not fee. During preparation of the Real Estate Supplement, SAJ and SAD staff worked very closely to prepare estate language that meets the needs of the landowner and the project.

(LRR/EA, F-6). For absolute clarity, contrary to the assertion above by the USACE in the LRR/EA, the USACE and AAoF have never negotiated terms of a flowage easement relating to the AAoF's property. Although the AAoF agrees that the USACE has committed that it will not seek a fee interest in the AAoF's property, prior to the publication of the LRR/EA and through today's date, the USACE has not approached the AAoF to discuss the terms of a proposed flowage easement.

In the past, the USACE attempted to purchase a flowage easement from the AAoF, but the USACE's proposed flowage easement constituted nothing less than a *per se* taking of the AAoF property. On March 3, 2005, the USACE, in writing, proposed the purchase of a flowage easement across the AAoF's property. Although the USACE's proposal was entitled "flowage easement," the terms of the proposal were such that the AAoF would surrender virtually all rights of possession, use and enjoyment of the AAoF's property to the USACE.

On March 31, 2005, in writing, the USACE threatened that if the AAoF did not accept its proposed purchase of a flowage easement, the USACE would initiate "eminent domain proceedings for the acquisition of a flowage easement" against the AAoF's property. On May 13, 2005, the AAoF responded in writing in opposition to the USACE proposed eminent domain action. In its response, the AAoF raised various alternatives to the taking of its property, including the raising of the AAoF's property. On August 9, 2005, the USACE withdrew its offer to purchase a flowage easement across the AAoF's property. To date, the USACE has not pursued an eminent domain action against the AAoF's property.

Although there have been no negotiations between the USACE and the AAoF regarding the terms of any acquisition of any interest of AAoF property by the USACE, the USACE states in the LRR/EA that it has determined an estimated cost to acquire such interests.

> The new real estate costs represent the estimated cost of a flowage easement for the Airboat Association of Florida property for all alternatives that increase the stage constraint in the L-29 canal.
>
> * * *
>
> The estimated value of the required real estate interests [in the AAoF's property] is $1,625,000.

(LRR/EA, 2-10; LRR/EA, F-6). The LRR/EA does not specify how it determined that the value of a flowage easement encumbering the AAoF's property is $1,625,000, nor has the USACE otherwise shared any such information with the AAoF. The AAoF believes that the value of any interest in its ten (10) acre property is significantly in excess of $1,625,000.

If, from the USACE's perspective, the AAoF's refusal to accept the terms of the USACE's March 3, 2005 proposal constitutes "negotiation," then there has indeed been negotiation between the USACE and the AAoF. Otherwise, contrary to the USACE's assertions in the LRR/EA, negotiations between the USACE and AAoF regarding the terms of any flowage easement have not occurred.

There is No Comparable Property

As a result of the Expansion Act, the only private property adjacent to the Expansion Area and wholly outside the ENP is the AAoF's property. Quite simply, by act of Congress there is no comparable property in existence. If the USACE takes the AAoF's property, there is no comparable property where the AAoF may relocate. If Congress had intended such a result, it could have easily included the AAoF's property within the Expansion Area, which Congress didn't do. Again, the only reasonable interpretation of the Expansion Act is that Congress intended the AAoF's property not to be taken by the USACE or otherwise.

Reasonable Alternative - Raise the AAoF's Property

The USACE has a reasonable alternative to the taking of the AAoF's property: Raise the AAoF's property to an elevation above the anticipated post-MWD Project 100-year flood level. This alternative has been extended to other stakeholders in the area, as noted in the USACE's TSEIS:

> Two Miccosukee Tribe of Indians family group settlements are located within the project area: the Tigertail Camp and the Osceola Camp. Increased flows to ENP would result in higher water stages that would have had a potential for flooding the settlements. Facilities at the Tigertail Camp were elevated by the USACE to a

level above water stages anticipated for MWD. Similarly, ENP is currently coordinating with Miccosukee Tribe of Indians to raise facilities at the Osceola Camp.

The LRR/EA, like the TSEIS before it, does not propose, consider, or contemplate raising the AAoF's property to a height above the projected 100-year flood stage level. The USACE, in the LRR/EA and the TSEIS, fails to elaborate as to why the alternative of raising of other properties was reasonable in the case of those stakeholders, yet not reasonable as to the AAoF.

The AAoF's has, in writing and in numerous public appearances, discussed the reasonable alternative of raising the AAoF's property with the USACE. Why the alternative of raising the AAoF's property is conspicuously absent from the LRR/EA is a mystery. The AAoF's property is privately owned property wholly outside the boundaries of the ENP. Raising the AAoF's property to a level above the predicted 100-year flood stage level is a reasonable alternative that will preserve the AAoF's private property rights.

Conclusion

The USACE proposed taking of the AAoF's property as provided under the LRR/EA is unreasonable and is unauthorized. A reasonable alternative to the taking of the AAoF's property is the raising the AAoF's property to a protected elevation above the anticipated 100-year flood level.

The AAoF looks forward to working with the USACE to establish a reasonable alternative to the taking of the AAoF's property.

Sincerely,

Andrew Stearns
For the Firm

cc: Airboat Association of Florida

GP 14 Steele.txt

From: Dewey Steele [stee9190@bellsouth.net]
Sent: Monday, April 21, 2008 7:37 AM
To: TTMComments SAJ
Subject: Comments on Tamiami Trail

Dewey Steele
22320 SW 256 Street
Homestead FL 33031
305-247-0064
stee9190@bellsouth.net
April 21, 2008

Dear Sir or Madam,

Please enter my comments on Tamiami Trail/Everglades restoration into the record:

Restoring the flow of water through the Everglades is critical and the only way to help restore the health of Florida Bay, The Ten Thousand Islands and the rest of the ecosystem dependent on clean water flow.

In the past half century I have witnessed:

- water being blocked by the Tamiami Trail resulting in flooding of tree islands to the north and death and destruction of wildlife and habitat.
- reduced water flow to the south resulting in destruction of habitat and algae build up in Florida Bay
- polluted water being dumped into Biscayne and Manatee Bays destroying wildlife

If we are really serious about Everglades restoration the only possible solution is removing the barriers to water flow. The only real way to accomplish this is with a very long elevated causeway and or opening up many large culverts across the entire length of the Trail. Anything less would be inadequate.

I am totally opposed to beginning any project, such as a one mile bridge, that does not incorporate the idea of fully restoring water flow to the southern Everglades. I am all for beginning a project immediately aimed at restoring historical water flow funded, in part, by Defense Department allocations, tourist taxes, rock mining per ton fees and development impact fees.

Thanks for your consideration.

Sincerely,

Dewey Steele

GP 15 Yanez.txt

From: Mario Yanez [mario@earth-learning.org]
Sent: Monday, April 21, 2008 5:55 PM
To: TTMComments SAJ
Subject: Tamiami Trail Bridge

The 1-mile bridge is so insufficient and is not the intent of the CERP. As you may remember, CERP's original intent was to restore the functionality of the Greater Everglades system. Please reconsider the implementing 11-mile SkyWay. Nothing short of that will suffice. Dare to make your work relevant to the health of the Greater Everglades.

Sincerely,

Mario Yanez

8201 SW 99 Court

Miami, FL 33173

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APPENDIX K
LETTERS OF SUPPORT

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Letters of Support from Florida Department of Transportation, Florida Department of Environmental Protection and South Florida Water Management District dated May 12, 2008 to:

Florida Senator Bill Nelson
Florida Senator Mel Martinez
Florida Representatives Mario Diaz-Balart, Alcee Hastings and Debbie Wasserman Shultz

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Florida Department of Transportation

Florida Department of Environmental Protection

South Florida Water Management District

May 12, 2008

The Honorable Bill Nelson
United States Senate
716 Hart Senate Office Building
Washington, DC 20510

Dear Senator Nelson:

As you are aware, the U.S. Army Corps of Engineers has published the Draft 2008 Modified Water Deliveries to Everglades National Park Tamiami Trail Modification Limited Re-evaluation Report and Environmental Assessment. Prior to our submittal of formal comments on the report, we wanted to inform you of our support for the Tentatively Selected Plan identified in the Report and to thank you for Congressional support and attention to this project.

Our expectation, which appears consistent with the Tentatively Selected Plan, is the construction of a one-mile bridge and the reinforcement of Tamiami Trail to sufficiently allow sustained stages in the L-29 canal to reach 8.5 feet. While the "plan" is not and cannot be perfect, the ability to almost double the annual average volume of water delivered into Everglades National Park is a significant step. We understand the fiscal concerns identified by the Appropriations Committees. We believe the tentatively selected plan is the minimal alternative for addressing Tamiami Trail and is worthy of the investment by the federal government.

In fact, while the Modified Water Deliveries Project is identified as a 100 percent federally funded project, the State, in continuing to show strong support for our restoration partnership, is willing to assist in moving the Tamiami Trail project forward by contributing approximately $10 million in funds and materials to the Army Corps of Engineers.

Florida Department of Transportation
605 Suwannee Street - Tallahassee, Florida 32399-0450
Florida Department of Environmental Protection
3900 Commonwealth Boulevard - Tallahassee, Florida 32399-3000
South Florida Water Management District
3301 Gun Club Road - West Palm Beach, Florida 33406

We are encouraged that staff from our agencies, staff from the federal agencies, and individuals from the environmental community all have worked collectively to develop a plan that could, after all these years, result in improved water deliveries and contribute to the restoration of the southern region of *America's River of Grass*. We hope that your continued support and leadership will result in the Congressional support vital to now bring this page of Everglades Restoration to a close.

If we can be of any assistance, please do not hesitate to ask. We look forward to joining you at the groundbreaking celebration for Tamiami Trail in the very near future.

Sincerely,

Michael W. Sole
Secretary
Florida Department of
Environmental Protection

Stephanie C. Kopelousos
Secretary
Florida Department of
Transportation

Carol Ann Wehle
Executive Director
South Florida Water
Management District

c: Eric Buermann, Chairman, Governing Board, SFWMD
Kelly Layman, Chief of Staff, DEP
Kevin Thibault, Chief of Staff, DOT
Greg Knecht, Director, Ecosystem Projects, DEP
Kerry Feehery, Florida Washington Office
Hannah Walker, Florida Washington Office

Florida Department of Transportation

Florida Department of Environmental Protection

South Florida Water Management District

May 12, 2008

The Honorable Mel Martinez
United States Senate
356 Russell Senate Office Building
Washington, DC 20510

Dear Senator Martinez:

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In fact, while the Modified Water Deliveries Project is identified as a 100 percent federally funded project, the State, in continuing to show strong support for our restoration partnership, is willing to assist in moving the Tamiami Trail project forward by contributing approximately $10 million in funds and materials to the Army Corps of Engineers.

Florida Department of Transportation
605 Suwannee Street - Tallahassee, Florida 32399-0450
Florida Department of Environmental Protection
3900 Commonwealth Boulevard - Tallahassee, Florida 32399-3000
South Florida Water Management District
3301 Gun Club Road - West Palm Beach, Florida 33406

We are encouraged that staff from our agencies, staff from the federal agencies, and individuals from the environmental community all have worked collectively to develop a plan that could, after all these years, result in improved water deliveries and contribute to the restoration of the southern region of *America's River of Grass*. We hope that your continued support and leadership will result in the Congressional support vital to now bring this page of Everglades Restoration to a close.

If we can be of any assistance, please do not hesitate to ask. We look forward to joining you at the groundbreaking celebration for Tamiami Trail in the very near future.

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Carol Ann Wehle
Executive Director
South Florida Water
Management District

c: Eric Buermann, Chairman, Governing Board, SFWMD
Kelly Layman, Chief of Staff, DEP
Kevin Thibault, Chief of Staff, DOT
Greg Knecht, Director, Ecosystem Projects, DEP
Kerry Feehery, Florida Washington Office
Hannah Walker, Florida Washington Office

Florida Department of Transportation

Florida Department of Environmental Protection

South Florida Water Management District

May 12, 2008

The Honorable Mario Diaz-Balart
House of Representatives
25th District, Florida
328 Cannon House Office Building
Washington, DC 20515

The Honorable Alcee Hastings
House of Representatives
23rd District, Florida
2353 Rayburn Office Building
Washington, DC 20515

The Honorable Debbie Wasserman Shultz
House of Representatives
20th District, Florida
118 Cannon Office Building
Washington, DC 20515

Dear Congressman Diaz-Balart, Congressman Hastings, and Congresswoman Wasserman Shultz:

As you are aware, the U.S. Army Corps of Engineers has published the Draft 2008 Modified Water Deliveries to Everglades National Park Tamiami Trail Modification Limited Re-evaluation Report and Environmental Assessment. Prior to our submittal of formal comments on the report, we wanted to inform you of our support for the Tentatively Selected Plan identified in the Report and to thank you for Congressional support and attention to this project.

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delivered into Everglades National Park is a significant step. We understand the fiscal concerns identified by the Appropriations Committees. We believe the tentatively selected plan is the minimal alternative for addressing Tamiami Trail and is worthy of the investment by the federal government.

In fact, while the Modified Water Deliveries Project is identified as a 100 percent federally funded project, the State, in continuing to show strong support for our restoration partnership, is willing to assist in moving the Tamiami Trail project forward by contributing approximately $10 million in funds and materials to the Army Corps of Engineers.

We are encouraged that staff from our agencies, staff from the federal agencies, and individuals from the environmental community all have worked collectively to develop a plan that could, after all these years, result in improved water deliveries and contribute to the restoration of the southern region of *America's River of Grass*. We hope that your continued support and leadership will result in the Congressional support vital to now bring this page of Everglades Restoration to a close.

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Florida Department of
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Secretary
Florida Department of
Transportation

Carol Ann Wehle
Executive Director
South Florida Water
Management District

c: The Honorable Vern Buchanan
The Honorable Lincoln Diaz-Balart
The Honorable Ron Klein
The Honorable Connie Mack
The Honorable Tim Mahoney
The Honorable Kendrick Meek
The Honorable Adam Putnam
The Honorable Ileana Ros-Lehtinen
The Honorable Robert Wexler

Eric Buermann, Chairman, Governing Board, SFWMD
Kelly Layman, Chief of Staff, DEP
Kevin Thibault, Chief of Staff, DOT
Greg Knecht, Director, Ecosystem Projects, DEP
Kerry Feehery, Florida Washington Office
Hannah Walker, Florida Washington Office

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US Army Corps of Engineers

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