

Scenic Corridor Visitor Safety
Highway Improvements

Environmental Assessment
February 2001

Big Cypress National Preserve
Florida



Printed on Recycled Paper



United States Department of the Interior

NATIONAL PARK SERVICE

Big Cypress National Preserve
HCR 61, Box 110
Ochopee, Florida 34141-9710

L7617 (BICY)

FEB 20 2001

To Whom It May Concern:

Enclosed is the Scenic Corridor Visitor Safety Highway Improvements Environmental Assessment prepared by the National Park Service. The document proposes to improve and redesign or establish interpretive/orientation wayside areas (turnouts) adjacent to Highway 41 (Tamiami Trail), and Turner River and Loop roads in Big Cypress National Preserve. Two alternative are discussed:

- 1) The No Action Alternative which does not provide National Park Service improvements adjacent to Highway 41, Turner River and Loop roads.
- 2) The Proposed Action Alternative in which the National Park Service proposes to improve and redesign or establish ten interpretive/orientation wayside areas adjacent to Highway 41, and Turner River and Loop roads within Big Cypress National Preserve.

We are providing this document for public review and comment. The public comment period will close 45 calendar days after the date at the top of this letter. Please address your comments to:

Superintendent
Attention: Tamiami Trail EA
Big Cypress National Preserve
HCR 61, Box 110
Ochopee, Florida 34141

Sincerely,

John J. Dohahue
Superintendent

Enclosure

TABLE OF CONTENTS

PURPOSE AND NEED	1
Scoping	1
LEGISLATIVE MANDATES AND SPECIAL COMMITMENTS	1
NATIONAL PARK SYSTEM MANDATES	2
BIG CYPRESS LEGISLATIVE BACKGROUND AND THE PURPOSE OF THE PRESERVE	2
FEDERAL STATUTES, EXECUTIVE ORDERS, AND NPS POLICIES RELATED TO WATER RESOURCES	5
FEDERAL STATUTES AND NPS POLICIES RELATED TO BIOLOGICAL RESOURCES	7
MANAGEMENT OBJECTIVES	8
Natural Resources	8
Cultural Resources	9
Visitor Experience	9
BACKGROUND AND PREVIOUS PLANNING	10
ISSUES AND IMPACT TOPICS	14
Issues	14
Derivation of Impact Topics	14
ALTERNATIVES	20
ALTERNATIVE A - No Action	20
ALTERNATIVE B - Proposed Action	21
Site Selection - Choosing By Advantage	21
Mitigation Measures of the Proposed Action	25
Wetlands Mitigation	26
Sustainability	29
General Construction Schedule and Costs	29
SUMMARY OF ENVIRONMENTAL CONSEQUENCES	30
AFFECTED ENVIRONMENT	32
Location and Access	32
Descriptions of Project Site Present Developments	32
Tamiami Trail	33
Natural Resources	36
Special Status Species	39
Cultural Resources	40
Recreational Values, Visitor Safety, and Preserve Operations	43
ENVIRONMENTAL CONSEQUENCES	44
ALTERNATIVE A - No Action	45
ALTERNATIVE B - Proposed Action	47

CUMULATIVE EFFECTS	57
COMPLIANCE.....	59
SELECTED REFERENCES	64
CONSULTATION/COORDINATION	66
Preparers	66
Consultants	66
ILLUSTRATIONS	
General Project Locations Map.....	3
Figures	67
TABLES	
Table 1, 1997 - 1999, Tamiami Trail Average Daily Traffic Count	34
Table 2, Site Descriptions and Area Summaries	49
APPENDICES	
Appendix A, Statement Of Findings	
Appendix B, Special Status Species Letters	
Appendix C, Choosing By Advantage, Project Validation Report	
Appendix D, Vegetation of Project Sites	

PURPOSE AND NEED

The National Park Service proposes to improve and redesign or establish ten interpretive/orientation wayside areas (turnouts) adjacent to U.S. Highway 41 (the Tamiami Trail), and Turner River and Loop roads in Big Cypress National Preserve, Collier and Monroe counties, Florida (General Project Locations, Map 1). This action is needed because safety on the Tamiami Trail is compromised by traffic patterns, high speeds, lack of adequate turnouts, and visitors wishing to stop and view Preserve resources. In 1996, the accident rate for this section of the Tamiami Trail highway was 136 percent higher than the statewide average rate. Additional turnouts along the Tamiami Trail and associated roads would appreciably reduce accident rates, improve safety, and enrich the visitor experience.

Scoping: Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise (including the Advisory Council on Historic Preservation [ACHP], the State Historic Preservation Officer [SHPO], and Indian Tribes) to obtain early input.

Among other tasks scoping determines important issues and eliminates issues not important; allocates assignments among the interdisciplinary team members and/or other participating agencies; identifies related projects and associated documents; identifies other permits, surveys, consultations etc. required by other agencies; and creates a schedule which allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made.

Scoping for this project was initiated in 1997 and still continues. Agencies contacted and consulted personally or in writing include Florida Department of Environmental Regulation, South Florida Water Management District; South District; Florida Department of Transportation, TransStat Office; Florida Department of Transportation Crash Records & Research Division; Florida Department of Transportation Road and Bridge Maintenance; Florida Fish and Wildlife Conservation Commission; US Fish and Wildlife Service, South Florida Ecosystems Field Office; Robert Peccia & Associates; U.S. Army Corps of Engineers; Collier County; the Tamiami Trail Culvert Project (Multiagency); the ACHP; the SHPO; the Miccosukee Tribe of Indians of Florida; and the Seminole Tribe of Florida.

LEGISLATIVE MANDATES AND SPECIAL COMMITMENTS

This project has been developed consistent with NPS legal mandates, NPS *Management Policies*, the 1991 Big Cypress National Preserve General Management Plan/Environmental Impact Statement (GMP), and other approved Preserve planning documents. A review of these mandates and commitments is provided in this section.

Legislative mandates and special commitments include those measures that apply to the entire National Park Service, plus Preserve-specific requirements. In addition, visitor use in Big Cypress National Preserve must comply with all federal statutes, executive orders, and NPS policies.

The intent of all of the mandates and commitments is to establish sustainable conservation and to avoid impairment of NPS lands. As a result, visitor use can occur only to the extent that it does not significantly adversely affect the Preserve and its natural and cultural resources.

NATIONAL PARK SYSTEM MANDATES

The National Park Service and its mandates are authorized under the NPS Organic Act (16 USC 1, 2-4) and the General Authorities Act (16 USC 1a-8). These acts direct the agency to conserve the scenery, the natural and historic objects, and the wildlife, and to provide for the enjoyment of those resources in such a manner as to leave them unimpaired for future generations. Amending the NPS Organic Act of 1916, the Redwood Act (March 27, 1978, 16 USC 1a-1) was passed shortly after Big Cypress National Preserve was established, with complete knowledge of how the Act would affect such units as Big Cypress. In this act, Congress reaffirmed the mandates of the Organic Act and provided additional guidance on national park system management:

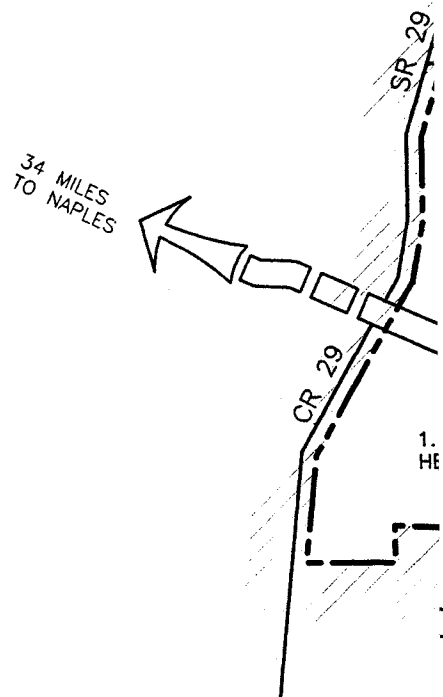
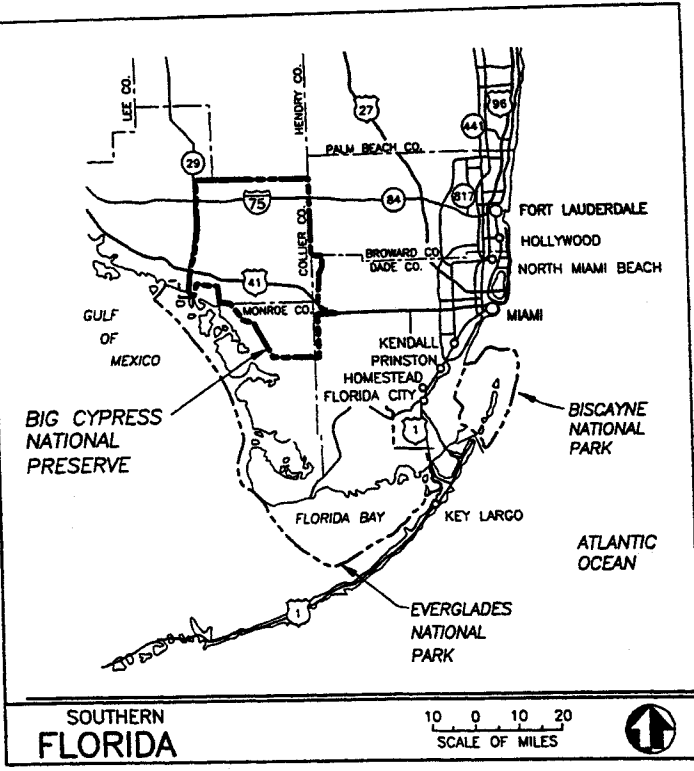
The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established.

According to Senate Report No. 95-528, page 7, the restatement of these principles of park management in the Redwoods Act intended to serve as the basis for any judicial resolution of competing private and public values and interests in the national park system (U.S. Senate 1976). If a conflict occurs between visitor use and protection of resources, this Act confirms the intent of Congress to favor resource protection.

BIG CYPRESS LEGISLATIVE BACKGROUND AND THE PURPOSE OF THE PRESERVE

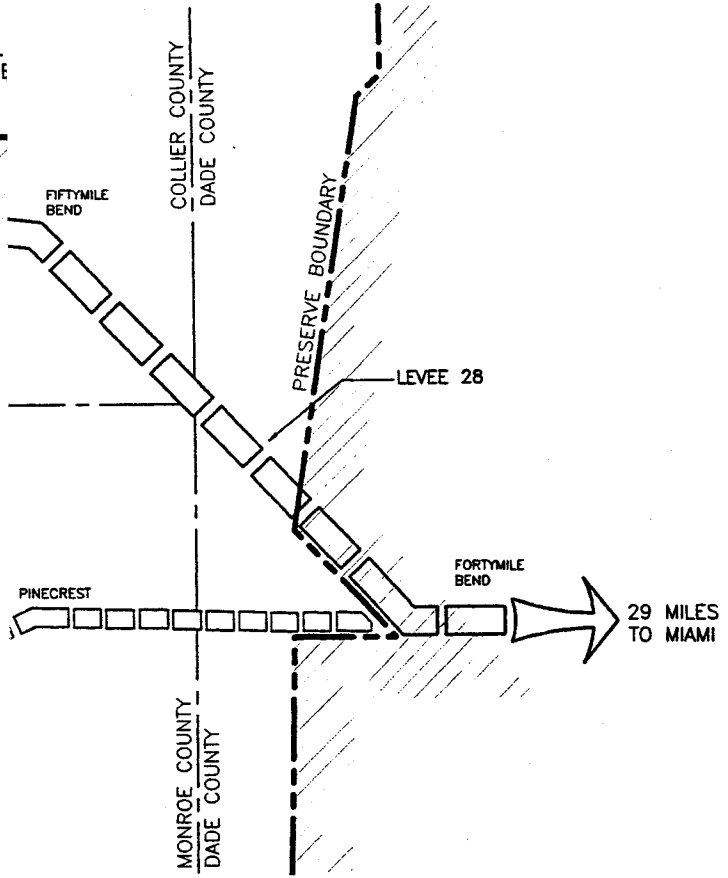
Big Cypress National Preserve was established in 1974 (16 USC 698), with the purpose being "to assure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed in the State of Florida and to provide for the enhancement and public enjoyment thereof."

The enabling legislation states that the Preserve, as a unit of the national park system, is to be managed in a manner that will ensure its "natural and ecological integrity in perpetuity." The legislation further states the management of the area should be in accordance "with the provisions



PROPOSED DEVELOPMENT

1. PRESERVE HEADQUARTERS
2. DONA DRIVE CAMPGROUND
3. TURNER RIVER CANOE ACCESS
4. HP WILLIAMS PICNIC AREA
5. TURNER RIVER TRAILHEAD
6. BURNS LAKE CAMPGROUND
7. KIRBY STORTER
8. MONUMENT CAMPGROUND
9. GATOR HOOK
10. SWEETWATER STRAND



10/5/00 14:26 K:\FRANZ\JUNN R15 P:\BCT\001\07\LEADER.DWG



8000 UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
SCENIC HIGHWAY
VISITOR SAFETY IMPROVEMENTS
LOCATION WITHIN PARK
PARK GENERAL
NAME OF PARK
BIG CYPRESS NATIONAL PRESERVE
REGION COUNTY STATE
SOUTHEAST COLLIER MONROE FLORIDA

of the Act of August 25, 1916 (NPS Organic Act)." Thus, the natural and ecological integrity of the Preserve is the fundamental value that Congress directed the National Park Service to protect.

In the enabling legislation for Big Cypress National Preserve, Congress directs the National Park Service to limit and control the use of federal lands and waters with respect to motorized vehicles and certain other activities. The enabling legislation directs the Secretary of the Interior to develop appropriate rules and regulations to carry out the purpose of the act, protecting the natural and ecological integrity of the watershed.

The Senate and House reports that comprise part of the Preserve's legislative history both contained identical language discussing the management of the Preserve (U.S. House of Representatives 1973; U.S. Senate 1974).

The area included in the Preserve is largely undeveloped at the present time and . . . it will be managed in a manner which will assure its return to the true wilderness character which once prevailed.

The reports recognize that preserves "differ in some respects, from national parks and monuments insofar as administrative policies are concerned. Hunting for example, subject to reasonable regulation by the Secretary, could be permitted to the extent compatible with the purposes for which the area is established." However the reports state that "All management activities within these areas should be directed toward maintaining the natural and scientific values of the area, including preservation of the flora and fauna and establishment of the indigenous plant and animal life, if possible." The report further states "National preserves may accommodate significant recreational uses without impairing the natural values, but such public use and enjoyment would be limited to activities where, or periods when, such human visitation would not interfere with or disrupt the values which the area is created to preserve."

FEDERAL STATUTES, EXECUTIVE ORDERS, AND NPS POLICIES RELATED TO WATER RESOURCES

The NPS (1988) *Management Policies* require protection of water quality consistent with the Clean Water Act (33 USC Section 1251 et seq.) and other applicable federal, state, and local laws and regulations, and an examination of impacts during planning. The Water Resources Management Plan: Big Cypress National Preserve (NPS 1996) provides guidance for protecting water resources in the Preserve. Special consideration of impacts on wetlands and floodplains is required by E.O. 11990, "Protection of Wetlands," and E.O. 11988, "Floodplain Management."

The primary goal of the Clean Water Act (33 USC Section 1251(a)) is to "restore and maintain the chemical, physical, and biological integrity of the Nation's water." The Act directs the individual states to set and enforce water quality standards that meet U.S. Environmental Protection Agency

(EPA) minimum guidelines. Section 404 of the Act and Section 10 of the Rivers and Harbors Act authorize the Army Corps of Engineers to prohibit or regulate, through a permit process, discharges of dredged or fill material into the nation's waters, including wetlands.

Some of the facilities proposed for construction in this project would affect wetlands and would require a Section 404 permit. Most of these construction proposals would consist of minimal fill to provide for visitor use, safety, and resource education. To help protect wetlands, the National Park Service would obtain permits before affecting wetlands with construction.

Section 303 (d) of the Clean Water Act requires states to identify water segments that are impaired by pollution, even after application of pollution controls. For those waters, states must establish a total maximum daily load (TMDL) of pollutants to ensure that water quality standards can be attained. If a state does not do this, the EPA is required under Section 303 (d) to develop a priority list and make its own TMDL determination. Section 319 requires states to voluntarily develop and implement programs to control non-point pollution sources.

Under the Clean Water Act, the EPA has delegated to the state of Florida the authority to identify high-quality waters. It is then the responsibility of the state to protect the quality of such waters to ensure that they are not degraded. Under this authority, the Florida Department of Environmental Protection (DEP) established rules for protecting certain special waters to prevent any degradation from existing conditions. Designated waters are to be preserved in perpetuity for the benefit of the public. The waters of Big Cypress National Preserve are classified as Outstanding Florida Waters under these rules (Florida Administrative Code (FAC) 62-302.700 (2)(g)). Before construction, the National Park Service would obtain all of the required permits to ensure protection of the Preserve's waters.

E.O. 11990 for protecting wetlands directs federal agencies to minimize the destruction, loss, or degradation of wetlands. NPS Director's Order #77-1 and Procedural Manual #77-1 provide the guidelines for implementing this order. If a proposed action would result in new adverse impacts on wetlands, a Statement Of Findings documenting compliance with this director's order and procedure manual would be required.

E.O. 11988 on floodplain management directs federal agencies to reduce the risk of flood loss; minimize the impacts on human safety, health, and welfare; and restore and Preserve the natural and beneficial values served by floodplains. The National Park Service Floodplain Management Guideline provides the procedures for implementing this order. A floodplain Statement Of Findings is required for certain actions that occur in regulatory floodplains.

A wetland and floodplain statement of findings was prepared for Big Cypress National Preserve in the GMP. The National Park Service concluded that there were no practicable alternatives to the GMP for avoiding impacts on wetlands and floodplains. However, the proposed action would include development of a sustainable system that would incorporate wetland restoration.

FEDERAL STATUTES AND NPS POLICIES RELATED TO BIOLOGICAL RESOURCES

The Endangered Species Act and 1988 NPS *Management Policies* provide guidance for protecting biological resources and require the examination of impacts during planning. Additionally, one of the primary goals in the overall mission statement of the Department of the Interior is to protect plant and animal diversity (biodiversity) on public lands.

The Endangered Species Act requires federal agencies, in consultation with the Secretary of the Interior, to utilize their authorities in the furtherance of the purposes of the Act and to carry out programs for the conservation of listed endangered and threatened species (16 USC 1535 Section 7(a)(1)). The National Park Service interprets Section 7(a)(1) as an affirmative restoration mandate and will comply through positive habitat protection and restoration programs that are integral to the proposed action.

The Act also directs federal agencies, in consultation with the Secretary of the Interior, to ensure that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat (16 USC 1535 Section 7(a)(2)). Consultation with the U.S. Fish and Wildlife Service (USFWS) is required if the action may affect such a species to ensure that it does not jeopardize the species' continued existence. NPS policies involve managing biological resources through the use of management areas. The management areas for Big Cypress National Preserve are described in detail in the GMP. Within the Preserve, development and special use zones are managed and maintained for intensive visitor use. Within those zones, the natural aspects might be altered. The primary objective in natural zones, which constitute the majority of the Preserve, is the protection of natural resources and values for appropriate types of enjoyment but only if that enjoyment occurs in a manner that leaves the resources unimpaired for future generations. In natural zones, the goal of the National Park Service is to maintain the natural components and processes of naturally evolving ecosystems, including the natural abundance, diversity, and ecological integrity of the plants and animals.

NPS (1988) *Management Policies* for implementing the Endangered Species Act call for the National Park Service to "identify and promote the conservation of all federally listed threatened, endangered, and candidate species . . . and their critical habitat" within the Preserve. The National Park Service also must control access to critical habitats and conduct management programs that perpetuate the natural distribution and abundance of these species and the ecosystems on which they depend.

The National Park Service consulted with the USFWS during the development of the GMP. The USFWS issued a biological opinion that the GMP would adversely affect the Florida panther, but was not likely to jeopardize the continued existence of the species (USFWS 1991). The USFWS concurred with the determination of the National Park Service that the GMP would not adversely affect eight other federally listed species that occur in the vicinity of the Preserve.

MANAGEMENT OBJECTIVES

Objectives for management of Big Cypress National Preserve are presented below. These management objectives are based on the intent of the enabling legislation. They were further defined based on the Preserve's GMP.

NATURAL RESOURCES

Water Resources

Maintain natural water flows within Big Cypress National Preserve and outflows to Everglades National Park.

Maintain the water quality within the Preserve.

Restore areas where natural water flows have been disrupted.

Soils

Maintain natural elevation, composition, and integrity of soils.

Restore areas where soils have been disturbed.

Vegetation

Protect vegetation from disturbance outside of access points and designated trails.

Maintain and affirmatively restore habitat for rare and federally and state-listed species.

Control and reduce the spread of invasive plants.

Wildlife

Maintain the natural abundance of wildlife populations.

Protect and affirmatively restore federally listed threatened and endangered species and state special-concern species and their habitat.

CULTURAL RESOURCES

Protect all known cultural resources on or eligible for listing on the National Register of Historic Places. Prior to their evaluation, protect all known cultural resources to the same level that listed resources are protected.

Protect Indian sacred sites within the Preserve.

Cooperate with the Miccosukee Tribe of Indians of Florida and Seminole Tribe of Florida to continue usual and customary use and occupancy of Preserve lands.

Ensure that the plan does not conflict with the provisions of the Native American Graves Protection and Repatriation Act.

VISITOR EXPERIENCE

Provide all visitors with the opportunity to explore Big Cypress National Preserve.

Provide opportunities for diverse groups to use the Preserve.

Maintain the scenic quality of Big Cypress National Preserve.

Provide appropriate resource-related recreational opportunities.

Manage and reduce adverse impacts of ORV use to natural and cultural resources.

Provide for public safety.

BACKGROUND AND PREVIOUS PLANNING

The 1991 GMP identified the need for traffic safety improvements, waysides, interpretive bulletin cases, boardwalks, and other site amenities at a variety of key locations in the Preserve. The design phase of this present project, Scenic Corridor Visitor Safety Highway Improvements, consists of 12 sites which are HP Williams, Kirby Storter, Monument Campground, Burns Lake Campground, Preserve Headquarters, Gator Hook, Turner River Trailhead, Turner River Canoe Access, Dona Drive, Florida Trailhead, Oasis Visitor Center, and Sweetwater Strand.

Planning, public involvement, and 1969 National Environmental Policy Act (NEPA) compliance for two of the sites were completed in the 1991 GMP. These sites are:

Oasis Visitor Center:

Amenities: Reconfigure parking (50 cars), relocate Florida Trail, reconfigure canal, and provide an observation platform.

Florida Trailhead

Amenities: Loop Road trailhead parking

Development for these two sites are not addressed in this present document and the reader is referred to the 1991 GMP for planning discussions. This present project proposes to continue implementation of the 1991 GMP by providing additional safety improvements and waysides with amenities at 7 sites directly adjacent to U.S. Highway 41, one site along Turner River Road, and two sites along Loop Road. The proposal to develop and/or improve existing facilities at the ten sites is completely within the scope and intent of approved 1991 GMP and other Preserve documents.

Other Tamiami Trail projects currently being planned or are now underway by other agencies include:

- **The State of Florida Department of Transportation (FDOT)** is in the process of preparing a Corridor Management Plan as part of scenic highway designation for U.S. Highway 41. During scoping for this Scenic Corridor Visitor Safety Highway Improvements project, FDOT was consulted to coordinate this project with the scope of the corridor management plan and to determine the ability of the state to partner for certain aspects of this project (e.g., the provision of acceleration and deceleration lanes).

- **Tamiami Trail Culvert Project (Multiagency).** From within the Preserve boundaries this project extends from the intersection of Tamiami Trail and SR29 eastward on the Tamiami Trail for approximately 28 miles to end at 50-Mile Bend. A portion of Loop Road south of the Tamiami Trail is also included. The purpose of this project is to restore the natural hydrologic connection between Water Conservation Area 3 (WCA3), Big Cypress National Preserve, Ten Thousand Islands National Wildlife Refuge, Rookery Bay, Southern Golden Gate Estates, Fakahatchee Strand State Preserve, and Everglades National Park. The Tamiami Trail, along with the L-28 canal, forms a hydrologic barrier at the southern end of WCA 3 and the Big Cypress watershed. Adding culverts under the Tamiami Trail will help restore sheet flow, equalize water levels, and improve interchange of biotic material across the boundary. Sixty-two 36 inch culverts will be installed along the Tamiami Trail at 54 sites with 38 of these within the Preserve boundaries. The road surface will also be improved for the length of the project. There will be a monitoring program associated with this project that will be carried out in two phases – pre- and post-construction.

Final plans and construction documents were completed on August 1, 2000. The construction is expected to be completed by July 1, 2002.

Relationship to Visitor Safety: During the construction phase of this Scenic Corridor Visitor Safety Highway Improvements project, traffic flow along the Tamiami Trail will be impeded. Road improvements, in addition to resurfacing, could also include paved road shoulders and turning lanes at intersections such as the Oasis Visitor Center.

- **Florida Department of Transportation Road and Bridge Maintenance.** Bridge repair and road maintenance are done on an as needed basis.

Relationship to Visitor Safety: During road work, there could be some possible traffic flow delays. Minor bridge repairs typically do not disrupt traffic flow.

- **Vegetative Maintenance (Big Cypress National Preserve lead agency, partners include Florida Department of Transportation Right-of-Way Maintenance, Lee County Electric Cooperative, and Utility/Cable maintenance to include Sprint, Qwest, and ATT).** Manual brush removal and herbicide spraying are conducted on an as needed basis. Typically this takes place about three times per year. The Florida DOT mows the right-of-way on a schedule of approximately eight times per year generally commencing in April or May.

Relationship to Visitor Safety: Vegetative maintenance activities maintains roadside access.

- **Restudy of the Central and South Florida Project (Federal, State, South Florida Ecosystem Restoration Task Force and Working Group, Governor's Commission for a Sustainable South Florida).** The Central and Southern Florida (C&SF) Project, first authorized by Congress in 1948, was intended to provide flood control, and water supply for municipal, industrial, and agricultural uses. The system includes about 1,000 miles each of levees and canals, 150 water control structures, and 16 major pump stations. The C&SF Project Comprehensive Review Study (known as the Comprehensive Everglades Restoration Plan [CERP]) was authorized by Water Resources Development Act in 1991, to reexamine the C&SF Project to determine the feasibility of modifying the project to restore the south Florida ecosystem and to provide for other freshwater needs of the region. The CERP proposes changes in the quantity, quality, timing and distribution of south Florida's water as the foundation for the region's restoration.
- **Turner River Management Plan (Big Cypress National Preserve).** Big Cypress National Preserve is preparing a plan for managing the Turner River corridor to enhance visitor and recreational opportunities. A canoe trail runs the length of Turner River from the Tamiami Trail area at Turner River Road to the mouth of the river near Chokoloskee. Parking facilities and a canoe launch area convenient to the Trail would be a component of this plan.

Relationship to Visitor Safety: The headwaters of the Turner River are approximately 1/4 mile north of Tamiami Trail at Turner River Road. Possible locations for parking areas are being considered as part of this present plan. Visitor safety will be an important factor in the decision-making process.

- **Other State Programs.** The state of Florida has several established programs to help protect resource values both within and outside Preserve boundaries. These programs are intended to protect visitor enjoyment and natural resources and should not have any negative impacts on visitor safety. A brief description of some of these programs follows (for additional detail see the GMP).
- **Florida Area of Critical Concern:** The Big Cypress area (boundaries include the Preserve, contiguous land and water that is ecologically linked with Everglades National Preserve, estuarine fisheries and the freshwater aquifer of south Florida) was designated as an area of critical concern by the Florida Legislature with the passage of the Big Cypress Conservation Act of 1973. Under this law the state must approve the comprehensive plan and land development regulations for any local government within an area of critical state concern.
- **Outstanding Florida Waters:** The waters within Big Cypress were designated by the state as "special waters" because of their exceptional recreational and ecological significance. These waters are to be preserved in a non-degraded state and protected in perpetuity for the benefit of the public.

The present proposal, Scenic Corridor Visitor Safety Highway Improvements, is entirely consistent with these related plans. Where possible, coordination of Tamiami Trail road projects would be conducted with other agencies in order to optimize repairs and improvements, and to minimize disruption to traffic and visitors.

ISSUES AND IMPACT TOPICS

Issues: Issues and concerns affecting this proposal were identified from past NPS planning efforts, environmental groups, and input from other state and federal agencies. The major issues are the conformance of this proposal with the approved 1991 GMP; biotic communities including wetlands; special status species (threatened, endangered, species of concern, and critical habitats); recreational values, visitor safety, and Preserve operations; floodplains; water quality; air quality; prime and unique farmland; cultural (historic and archeological) resources; socioeconomic values; and environmental justice.

Derivation of Impact Topics: Specific impact topics were developed for discussion focus, and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and Executive Orders; 1988 NPS *Management Policies*; and NPS knowledge of limited or easily impacted resources. A brief rationale for the selection of each impact topic is given below, as well as rationale for dismissing specific topics from further consideration.

Impact Topics Included in this Document

Biotic Communities Including Wetlands: The National Environmental Policy Act (NEPA) calls for an examination of the impacts on all components of affected ecosystems. NPS policy is to protect the natural abundance and diversity of all of the Preserve's naturally occurring communities.

Executive Order 11990 (Protection of Wetlands) requires an examination of impacts to wetlands, of potential risk involved with placing facilities in wetlands, and protecting wetlands. The 1988 NPS *Management Guidelines*, Director's Order (DO)-2 (*Planning Guidelines*), NPS-12 (*National Environmental Policy Act Guidelines*), DO-77-1 Wetland Protection, the 1991 GMP, and the 1998 *Big Cypress National Preserve Resources Management Plan* provide guidelines on developments proposed in wetlands and floodplains.

Executive Order 11990 requires federal agencies to avoid, where possible, impacts on wetlands. If required, a Statement Of Findings in compliance with DO-77-1:Wetland Protection and its accompanying Procedural Manual #77-1, would address any concerns for wetlands. There are wetlands within the project area. Should the proposal be implemented there would be long term impacts to approximately 5.82 acres of wetlands. Therefore, biotic communities including wetlands is included as an impact topic in this document and, in compliance with DO-77-1, Wetland Protection, a Statement Of Findings is required. It has been prepared and is included as appendix A in this document.

Federally Listed Special Status Species (Threatened, Endangered, Candidate, and Rare Species): The 1973 Endangered Species Act, as amended, requires an examination of impacts to all federally listed threatened or endangered species or designated critical habitats. NPS policy requires examination of the impacts to state listed threatened or endangered species and federal species of concern. In a letter dated May 24, 2000, the US Fish and Wildlife Service (USFWS) lists a number of federally listed species that may reside within or depend on the project area for habitat (please see Appendix B for USFWS letter). Based on the USFWS letter, a review of Preserve species records, and Preserve staff knowledge of special status species and critical habitats within the project area, Big Cypress National Preserve natural resource management staff have determined that individuals of federally listed special status species may be affected by implementation of the proposed alternative. Therefore, federally listed special status species is an impact topic that will be addressed in this document.

Recreational Values, Visitor Safety, and Preserve Operations: Providing for visitor enjoyment is one of the elemental purposes of the NPS according to the 1916 Organic Act. The 1991 GMP and the 1990 *Big Cypress National Preserve Statement for Management* established provisions for recreational uses by providing quality facilities for a more meaningful visitor experience.

The 1991 GMP, the 1990 *Big Cypress National Preserve Statement for Management*, the 1984 NPS Park Road Standards, and numerous other NPS and Preserve documents clearly state human safety as a principal consideration when providing Preserve facilities.

Both the no action and proposed action alternatives have the potential to variously influence recreational values, safety, and Preserve operations on this section of the Tamiami Trail. Therefore, recreational values, safety, and Preserve operations is an impact topic that will be addressed in this document.

Cultural Resources: The 1966 National Historic Preservation Act (NHPA, 16 USC 470 et seq.), the 1916 NPS Organic Act, and NPS planning and cultural resource guidelines call for the consideration and protection of historic properties in development proposals. (The term historic properties refers to all cultural resources, including prehistoric archeological sites, cultural landscapes, ethnographic sites, and historic sites eligible for or listed on the National Register of Historic Places.) The evaluation of potential impacts of proposed actions on significant historic properties is required by NEPA and NHPA, as is attention to the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) for sites where human remains or burials may be present. Actions from the proposed alternative could affect some cultural resources. Therefore, cultural resources will be addressed as an impact topic in this document.

Impact Topics Dismissed from Further Analysis

State of Florida Listed Special Status Species (Threatened, Endangered, Candidate, and Rare Species): The 1973 Endangered Species Act, as amended, requires an examination of impacts to all federally listed threatened or endangered species or designated critical habitats. NPS policy requires examination of the impacts to state listed threatened or endangered species and federal species of concern.

In a letter dated September 1, 2000, the Florida Fish and Wildlife Conservation Commission (FWC) (formerly the Florida Game and Fresh Water Fish Commission), Office of Environmental Studies, Punta Gorda, also lists a number of state listed species that may reside within or depend on the project area for habitat (please see appendix B for State of Florida letter).

Based on the FWC letter, a review of Preserve records, a knowledge of Preserve resources, and a field inspection of each project site during Fall of 2000, Big Cypress National Preserve natural resource management staff have determined that no individuals of the FWC listed special status species are at risk should the proposed action be implemented. Prior to and periodically during construction, each project site would be surveyed by Preserve resource management staff. If any individuals of any state listed species were discovered, work would be halted at the site and, if possible, the individual animal would be relocated outside the project area by a qualified Preserve natural resource management staff person. If relocation would not be possible, work would remain halted and consultation would be initiated immediately with the appropriate agency. Additionally, prior to construction, contractor staff would be instructed on the special sensitivity of special status species and instructed to report the discovery of any individual of any such species to the appropriate contractor supervisor and Preserve staff. Should wildlife species, especially the American alligator, become a potential problem in a construction area, Resource Management and/or Ranger Activity Division staff will be contacted to assess and handle the situation. Therefore, State of Florida Special Status Species was dismissed as an impact topic in this document.

Environmental Justice: Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. No alternative would have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Draft Environmental Justice Guidance (July 1996). Therefore, Environmental Justice was dismissed as an impact topic in this document.

Floodplains: Executive Order 11988, "Floodplain Management," requires all federal agencies to avoid construction within the 100-year floodplain unless no other practical alternative exists. Certain construction within a 100-year floodplain requires that a Statement Of Findings be prepared and accompany a Finding Of No Significant Impact.

All project sites in the proposed alternative are within the 100-year floodplain. There are no practicable alternatives to site locations. The NPS visitor use facilities proposed by this action are functionally dependent on their location at the Tamiami Trail, and Loop and Turner River roads in order to accommodate visitor needs, provide resource management, and management operations.

Conditions associated with flooding in the proposed project locations are not considered particularly hazardous. Depths of flow during the 100-year flood are relatively low, 2 to 4 feet, and velocities are very low due to low gradient. Furthermore, flooding generally occurs slowly as a result of prolonged rainfall making warning and evacuation a practical option for protection of human life. Heavier flooding related to hurricanes and other intense tropical storms also can occur but warning is possible with these storms as well.

Although the project sites are within the 100-year floodplain, compliance with Executive Order 11988 (*Floodplain Management*) is not required because all facilities proposed (interpretive signs, boardwalks, trails, day-time parking areas, entrance roads to parking areas, and comfort facilities that are related to these facilities) are excepted actions (NPS *Floodplain Management Guidelines*, 1993, V. B. Excepted Actions, 1, 2, and 3). Additionally, an evaluation of alternative sites has indicated that there are no aesthetically comparable, flood-safe locations available. Therefore, no Statement Of Findings for floodplains will be prepared for this project should the proposed alternative be selected. Because the proposed facilities are excepted actions, floodplains was dismissed as an impact topic in this document.

Water Quality: The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters and to enhance the quality of water resources and prevent, control, and abate water pollution. The 1988 NPS *Management Policies* provides direction for the preservation, use, and quality of water originating, flowing through, or adjacent to park boundaries. The NPS seeks to restore, maintain, and enhance the quality of all surface and ground waters within the parks consistent with the 1972 Federal Water Pollution Control Act, as amended, and other applicable federal, state, and local laws and regulations.

The proposed boardwalks are functionally dependent on their location for visitor interpretation and education of wetlands and associated habitats. All boardwalks would be designed as meandering rather than straight line features. Each boardwalk would be designed specifically for each site to avoid, where possible, large trees and other features, avoid habitat fragmentation, and to be nonrestrictive to water flow. Boardwalk decking would be constructed of recycled material (plastic or a plastic and sawdust composite) which is longer lived and more environmentally compatible than treated timber.

To the extent feasible, trailheads would be designed to maximize percolation and filtration of storm water by using pervious surfaces. Runoff would be retained in retention basins and not discharged directly into any wetlands.

In areas of fill, the banks could be stabilized with rip rap or contained with retaining walls. Wherever possible, impacts of fill would be minimized through the use of Best Management Practices.

No new dredging or further excavation of previously dredged sites within the Preserve would be conducted for fill material for proposed NPS developments. To the extent feasible, existing spoil piles within the Preserve would be used as fill sources so that these piles could be removed and no longer serve as hydrological obstructions or refuges for exotic plants. The pile sites would be returned to original contours. Administrative use of fill on Preserve lands may require further planning. Where obtaining spoil material from within the Preserve would be impracticable, fill would be obtained from approved sources outside the Preserve.

During all NPS construction activities care would be taken to protect hydrological values. In-stream work would proceed in low flow periods and as quickly as possible to minimize sediment load introduced into the water. However, local water quality may be slightly and temporarily affected by increased sedimentation and turbidity during construction. Slight amounts of soil, gravel, and debris may periodically wash into the water. These would be infrequent events of short duration and such pulses of material would quickly flush from the system and present no long term effects. Mitigation measures include Best Management Practices, possible netting to prevent blocks of material from falling into the stream, falsework and other construction devices to catch any spilled material, erosion control during bank work and work within the water (boardwalk construction), and revegetative actions during the post construction period.

On a case-by-case basis, all mechanized equipment brought into the Preserve for this project could be cleaned outside Preserve boundaries, especially equipment used in association with work in the water; this may include steam cleaning. Steam cleaning would remove any imported seeds and other non-native material as well as any petroleum products clinging to the equipment.

Fueling of all machinery would be conducted only in the equipment staging areas away from flowing water. Any spills of hazardous materials, fuel, etc., would be cleaned up immediately, and would not be washed into flowing water. Materials used for cleaning fuel spills and other hazardous materials would be available on the staging sites. Some petrochemicals from construction equipment could seep into the soil. To minimize this possibility, equipment would be checked frequently to identify and repair any leaks.

Throughout the project, all fill operations would comply with the permit requirements of Section 404 of the Federal Water Pollution Control Act (commonly known as the Clean Water Act), chapter 253 of the Florida Statutes, and chapter 17 of the Florida Administrative Code. All 404, 401, and other permits would be obtained by the design firm prior to construction.

Throughout all aspects of the project, water quality would be maintained at or above minimum levels required by the State of Florida Water Quality Control Board. Therefore, water quality was dismissed as an impact topic in this document.

Prime and Unique Farmland: In August, 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the United States Department of Agriculture's Natural Resource Conservation Service as prime or unique. Prime or unique farmland is defined as soil which particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the Natural Resource Conservation Service, there are no prime farmlands associated with and of the project areas. Therefore, prime and unique farmland was dismissed as an impact topic in this document.

Socioeconomic Values: Socioeconomic values consist of local and regional businesses and residents, the local and regional economy, and Preserve concessions. The local economy and most business of the communities surrounding the Preserve are based on professional services, construction, tourist sales and services, and educational research; the regional economy is strongly influenced by tourist activity. The 1991 GMP discussed the socioeconomic environment and impacts extensively.

Local and Regional Economy: Should the proposed action alternative be implemented, short-term economic benefits from construction related expenditures and employment could include economic gains for some local and regional businesses and individuals. Possible disturbance and inconvenience to Preserve visitors from construction activities would be temporary and only occur during the construction period.

Preserve Businesses: It is not anticipated that businesses within the Preserve would experience any appreciable adverse short-or long-term economic impacts should either of the alternatives be implemented.

Traffic flow into and out of the Preserve and project area would be maintained.

There would be short-term benefits to the local and regional economy; local and regional businesses would not be appreciably affected in the long-term. Therefore, socioeconomic values was dismissed as an impact topic in this document.

ALTERNATIVES

Introduction

The alternatives section describes two alternatives for this project. Alternatives were developed to resolve pertinent visitor use and management issues.

The no action alternative describes the action of continuing the present management operation and condition; it does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no action alternative provides a basis for comparing the management direction and environmental consequences of the proposed action. Should the no action alternative be selected, the NPS would respond to future needs and conditions associated with this project without major actions or changes in present resource management.

The proposed action presents the NPS preferred alternative and defines the rational for the action in terms of resource protection and management, visitor safety, management operations and costs, and other applicable factors. All actions described in the preferred alternative are consistent with the 1991 GMP and related Preserve documents.

In conformance with applicable laws and regulations, specifically the Architectural Barriers Act of 1968 (P.L. 90-480), the Rehabilitation Act of 1973 (P.L. 93-112), the 1984 Uniform Federal Accessibility Standards (UFAS), 49 CFR 31528, and the 1990 Americans with Disabilities Act, all facilities would be handicap accessible.

A summary table comparing the environmental consequences of each alternative is presented at the end of the alternatives section.

ALTERNATIVE A - No Action

Under the no action alternative, there would be no National Park Service proposed safety improvements along the Tamiami Trail, no additional interpretive signs, boardwalks, or comfort facilities.

ALTERNATIVE B – Proposed Action

Site Selection - Choosing By Advantage

The preferred alternative proposes actions to provide visitors a safer way to experience a variety of features of the Big Cypress Swamp. Currently, the Preserve has few developed facilities to accommodate the visiting public.

To determine the sites for the proposed alternative, a Choosing By Advantage (CBA) method was used. The result of the CBA process is a Project Validation Report which chronicles the CBA process. Please see Appendix C for the Project Validation Report.

Broadly, for this project, the CBA process is one tool to help establish the most cost effective alternative that could satisfy project goals with minimum impact on site conditions. Essentially, the CBA process consisted of three broad elements; 1) what and how large are the advantages of each site; 2) how important are the advantages for each site, and; 3) are those advantages worth their associated cost?

The CBA did not weigh factors in advance so that some sites could be more important than others. Rather, the CBA focussed on site-specific advantages and determined the importance of these advantages. The CBA process established a single scale that compared the advantages of each site. An estimated site-specific cost was then introduced into the scale establishing an importance to cost ratio. The resulting priorities represent those sites which provided the greatest benefit for each dollar spent. This process resulted in the sites that are described in the proposed alternative.

The CBA examined ways to help resolve the safety and access issues. Two previously identified sites were reaffirmed and ten sites were identified for development to provide visitors an improved way to experience the resources of the Preserve. Facility development would include providing or improving comfort facilities, existing highway access, parking areas, information gathering, and interpretive trails into the Preserve.

These sites are identified for this use in the 1991 GMP and the 1984 *Interpretive Plan, Big Cypress National Preserve*. Site developments would include:

- Bulletin cases to display safety and interpretive information about the Preserve and the south Florida ecosystem.
- Deceleration and acceleration lanes at parking areas along U.S. Highway 41 and controlled parking for a total of 125 vehicles.
- 16,163 linear feet of elevated boardwalk to extend into the cypress strands and/or sawgrass prairies with interpretive wayside exhibits along the walk.
- Permanent screened structures for restrooms.

The Proposed Sites

HP Williams Picnic Area (Figure 1)

The proposal would reconfigure access to the parking area to eliminate the safety hazard at the U.S. Highway 41 intersection and to expand the capacity of the parking area.

The elements for this site consist of:

- Construct new 3-inch bituminous asphalt parking area with embankment
- Install double-vault toilet (comfort facility) with concrete pad
- Install ditch block with bleeder separator
- Construct stormwater detention basins
- Construct gravel transition to existing roadway
- Grade median areas to drain
- Construct 200 feet of open box concrete channel with metal grate top
- Remove existing traffic counter and install new counter and inductance loop
- Install 120-foot long 48-inch culvert with flared end sections
- Construct 12-foot wide 220-foot long boardwalk viewing platform
- Construct 5-foot wide concrete sidewalk with handicap ramp access
- Install bulletin case and wayside exhibits
- Landscape Islands

Kirby Storter (Figure 2a & 2b)

The proposal consists of removing the linear road shoulder parking along U.S. Highway 41, establishing a single vehicle access point, relocating parking and the picnic area away from the highway, and extending an interpretive loop trail into the strand with a spur section terminating at the edge of the cypress strand overlooking the prairie. The elements for this site consist of:

- Construct new 3-inch bituminous asphalt pavement parking area with embankment
- Install ditch block with bleeder separator
- Construct stormwater detention basins
- Construct 5-foot wide concrete sidewalk
- Install double-vault toilet
- Install 4 covered picnic shelters
- Remove existing asphalt pavement parking areas, topsoil and revegetate
- Construct 2,647-foot long 6-foot wide boardwalk trail with viewing platforms
- Install bulletin case at trailhead
- Install wayside exhibits along trail
- Landscape Islands
- Install concrete trench with slotted grate

Monument Campground (Figure 3)

- Remove existing pavement and construct new 3-inch bituminous asphalt pavement
- Construct ditch block with bleeder
- Replace existing loop detector and install new traffic counter
- Construct stormwater detention basin
- Remove existing guardrail and replace end section and new entry location
- Relocate utility pole
- Remove existing culverts and replace with 60-foot long 36-inch corrugated metal pipe

Burns Lake Campground (Figure 4)

- Remove existing pavement and construct new 3-inch bituminous asphalt pavement
- Construct ditch block with bleeder
- Replace existing loop detector and install new traffic counter
- Construct stormwater detention basin
- Remove existing guardrail and replace end section at new entry location

Preserve Headquarters (Figure 5)

The proposal would improve public and administrative access to Preserve headquarters. The elements for this site consist of:

- Construct a new 3-inch asphalt pavement perimeter roadway with embankment
- Construct new access on U.S. Highway 41
- Grade grass median areas to drain
- Install concrete trench with slotted grate
- Construct drainage v-ditches
- Remove existing pavement and construct new 3-inch bituminous asphalt pavement (future action)
- Remove existing pavement in various locations, topsoil and revegetate

Gator Hook (Figure 6)

The proposal for this site consists of parking, a comfort facility, vegetation clearing, and trail definition and access. The elements for this site consist of:

- Construct 3-inch thick gravel and soil cement parking pullout areas
- Construct half circle with 50 foot radius turnaround access
- Install double-vault toilet (comfort facility)
- Reestablish existing trail roadbed (about 2.5 miles)
- Construct 12,220-foot long, 6-foot wide boardwalk with viewing platforms
- Install Trailhead bulletin case

Turner River Canoe Access (Figure 7)

Canoeists currently access Turner River along the south road shoulder of U.S. Highway 41, just east of the Turner River bridge. The proposal would relocate this activity away from the road shoulder and develop an access site away from the highway. This action would relocate the canoe access to the north side of U.S. Highway 41 and west of the Turner River to an area formerly known as Turner River Jungle Trail. The elements for the Turner River Canoe Access site consist of:

- Construct new 3-inch bituminous asphalt parking area with embankment
- Install double-vault toilet with concrete pad
- Install ditch block with bleeder separator
- Construct stormwater detention basin
- Construct boat ramp and install canoe ramp
- Install 2 covered picnic shelters
- Install bulletin case
- Reestablish section of existing canal to original shape
- Construct concrete walkway
- Landscape Islands
- Remove existing culvert under access drive

Turner River Trailhead (Figure 8)

The proposal for this site consists of providing parking and trail access. The elements for this site consist of providing:

- Construct new 6-inch gravel surface parking area with embankment
- Install double-vault toilet with concrete pad
- Install ditch block with bleeder separator
- Construct stormwater detention basins
- Construct 5-foot wide concrete sidewalk with 10-foot wide section for vehicle access
- Install 15-inch corrugated metal pipe
- Construct 538-foot long, 6-foot wide boardwalk trail with viewing platforms
- Install trailhead bulletin case and wayside exhibits

Dona Drive (Figure 9)

- Remove existing pavement and construct new 3-inch bituminous asphalt pavement
- Construct ditch block with bleeder
- Relocate existing trees
- Replace existing loop detector and install new traffic counter
- Construct stormwater detention basin

Sweetwater Strand (Figure 10)

- Widening road shoulders to provide linear gravel parking for about 12 vehicles.
- Removing 3 60" metal culverts, replacing with 4 60" concrete culverts.
- Provide viewing platforms on each side of the road at new culverts.

Staging Area: Vehicle and equipment storage, staging areas, and turn-arounds would be located in Preserve approved areas devoid of significant biological, archeological, historical, and ethnographic resources. Staging areas would be returned to preconstruction conditions once construction would be complete or could eventually be part of each developed area.

Mitigation Measures of the Proposed Action: Measures to mitigate adverse environmental and cultural impacts of the proposed alternative have been incorporated into the project designs and are analyzed as part of the proposed action. These measures are intended to avoid, minimize, or rectify impacts as described in 40 CFR 1508.20. Additional mitigating measures to protect sensitive natural and cultural resources would be initiated as operating stipulations as described below.

Natural Resources: Construction zones would be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

Temporary impacts associated with construction would occur, such as soil and vegetation disturbance and the possibility of soil erosion. In an effort to avoid introduction of exotic plant species, no hay bales would be used. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by NPS to be weed-free (e.g., Coors barley straw or Arizona winter wheat straw), cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales. Standard erosion control measures such as silt fences and/or sand bags would also be used to minimize any potential soil erosion.

Silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 75% full. Silt removal would be accomplished in such a way as to avoid introduction into any wetlands or flowing water bodies.

Although soil side-cast during construction would be susceptible to some erosion, such erosion would be minimized by placing silt fencing around the excavated soil. Excavated soil may be used in the construction project; excess soil would be stored in approved areas.

Revegetation plantings would use native species originating from the region. Revegetation efforts would reconstruct the natural spacing, abundance, and diversity of native plant species. All disturbed areas would be restored as nearly as possible to preconstruction conditions shortly after construction activities are completed. The principal goal is to avoid interfering with natural processes.

In many areas soils and vegetation are already impacted to a degree by various human and natural activities; most construction would take place on existing fill. Construction would take advantage of previously disturbed areas wherever possible. Soils within the project construction limits would be compacted and trampled by the presence of construction equipment and workers. Soils would be susceptible to erosion until revegetation takes place. Vegetation impacts and potential compaction and erosion of bare soils would be minimized by conserving topsoil in windrows. The use of conserved topsoil would help preserve micro-organisms and seeds of native plants. The topsoil would be respread as near to the original location as possible, and supplemented with scarification, mulching, seeding, and/or planting with species native to the immediate area. This would reduce construction scars and erosion.

All trenching would take place in previously disturbed areas of fill. Any trenching operations (i.e., to install buried utility lines) would utilize a backhoe, trencher, or some similar equipment. As the trench is dug the excavated material would be side-cast for storage. After trenching is complete, bedding would be placed and compacted in the bottom of the trench and the pipe installed in the bedding. Backfilling and compaction would begin immediately after the pipe is placed into the trench and the trench surface would be returned to preconstruction contours.

All trenching restoration operations would follow guidelines approved by Preserve staff. These guidelines would minimize disturbance to soils and vegetation due to construction activities, and restore affected areas to their original form wherever possible. Excavated material would be windrowed in the construction zone. Although soil windrowed during construction is susceptible to some erosion, such erosion would be minimized by placing silt fencing, as required, adjacent to the excavated soil. Excavated soil would be windrowed only as long as it takes to dig the trench and install the utility lines. Further, once construction is complete and disturbed surfaces recontoured, erosion mats or other erosion control measures would be used to protect bare, exposed soils from erosion until revegetation takes place. Efficient planting and staging, and careful machine work would be emphasized.

Wetlands Mitigation

Should the proposed action be selected, approximately 5.82 acres of wetlands would be filled to support construction of facilities at Preserve Headquarters, Turner River Canoe Access, HP Williams, Turner River Trailhead, Burns Lake Campground, Kirby Storter, Monument Campground, Gator Hook, and Sweetwater Strand.

Adding fill to wetlands is subject to compliance with Section 404 of the Clean Water Act (dredge and fill requirements). Mitigation would require reclamation of disturbed areas equivalent to or larger than the area directly impacted by the proposed action.

Special care and consideration was taken in the selection and layout of each site to provide the needed facilities in a way that minimizes the disturbance to the surrounding natural environment.

When possible, existing fill pads or previously disturbed sites were utilized. Relatively flat (4:1) fill slopes were used in all areas of the design to minimize the potential for erosion and improve site maintenance. Measures to mitigate adverse environmental and cultural impacts of the proposed project have been incorporated into the project designs. Stormwater detention and treatment facilities have been included in the site designs. These measures are intended to avoid, minimize, or rectify impacts as described in 40 CFR 1508.20.

The acceptability of the following on-site mitigation measures were discussed with the SFWMD and the ACOE at a May 11, 2000 pre-application meeting held at the Fort Myers office of the SFWMD.

Several design features included in the project would mitigate previous disturbance to the wetland environment. These design features are described below:

H.P. Williams – A 4 foot x 4 foot box culvert with a flow control structure would be installed that would allow water east of the site flow west towards the Turner River. The Turner River Road currently prevents this water from following its natural path to the Turner River. This action would reestablish the natural flow patterns in this portion of the Preserve.

Kirby Storter – Two existing fill pads (0.9 acres) on the south side of the Tamiami Trail would be removed as part of this project. These fill pad areas would be reestablished to their original wetland condition.

Sweetwater Strand – Three existing 48-inch corrugated metal culverts would be removed and replaced with four 48-inch reinforced concrete culverts. The installation of the additional culvert would enhance flow across the Loop Road and help to reestablish the natural flow patterns in this area of the Preserve. The actual benefits would be marginal over several square miles.

Mitigation for this project would also consist of removing 0.03 acres of Mixed-Hardwood Swamp wetland fill at Turner River Canoe Access (Figure 11); 0.05 acres of Cypress Strands wetland fill at Kirby Storter and 0.9 acres of Cypress Strand fill at Kirby Storter (Figure 12). Combined, this 0.98 acre area (Turner River Canoe Access and two sites at Kirby Storter) would be returned to natural wetlands of the type that existed prior to filling.

Mitigation would also include restoring 12.0 acres of previously impacted of sawgrass dominated marshlands (marsh emergent wetland) and some brackish wetlands at the Ochopee Irrigation Canal near the Turner River headwaters in the Preserve (Figure 13). At the Ochopee Irrigation Canal fill would be removed and a wetlands restoration (revegetation) and enhancement effort would be conducted using plant species native to the project area.

As described in the Disturbed Land Restoration project, under current conditions the 12.0 acres of canal and canal-side man-made berm at the Ochopee Irrigation Canal is causing unnatural

hydrologic and vegetation disturbances. The canal and berm features alter both the natural hydrologic regime and the natural vegetative species composition, diversity, and abundance of adjacent and downstream wetlands. Although it is difficult to identify the exact type of wetland which was altered by the canal and canal-side man-made berm, Big Cypress National Preserve hydrological staff have estimated it may have been sawgrass dominated marshland, marsh emergent wetland (Cowardin system of Wetland Classification). The southern end near the Turner River may have been brackish due to influx of tidal flow during low tides and low water seasons.

The berm would be returned to the adjacent canal from which it was taken and much of the 12.0 acres would be cleared of unnatural and exotic vegetation, such as melaleuca (*Melaleuca quinquenervia*), and the area restored as closely as possible to its original wetland type.

The result of this restoration would approximate the ecological functions of the marsh wetlands community as it existed prior to human disturbance. Altogether, approximately 12.98 acres of wetlands would be restored. Restored wetland ecological functions would include holding areas for rising flood waters and the revegetated areas would help reduce water velocity and deplete its destructive energy. The restored wetland vegetation would also form buffers against erosion by absorbing current and storm energy, stabilizing substrates, and trapping nutrients. The restored area would help with filtration of sediments, nutrient pollutants, and toxic substances; these natural functions would help to improve water quality. Additionally, habitat for wildlife residing in or depending on the wetland ecosystem at the project areas would be improved.

All together, it is expected the wetlands restoration efforts described above would be completed about May, 2001, and would restore 12.98 acres of impacted wetland to natural hydrologic regime and vegetative cover.

Cultural Resources: Because of the nature of the terrain and the amount of past disturbance, the potential for encountering buried sites within the project area is low. Nevertheless, Stop-Work provisions and other protective measures would be included in the project contract documents. The area of potential effect would be restricted to areas shown on the project plans. No new disturbance would occur outside this area.

If previously unknown and significant archeological resources are unearthed during construction, work would be stopped in the area of the discovery and the National Park Service would consult with the Florida State Historic Preservation Officer (SHPO) and, as appropriate, the Advisory Council on Historic Preservation. If impacts to significant resources could not be avoided by redesign, mitigating measures would be developed in consultation with the Florida SHPO to help ensure that the informational significance of the sites would be preserved.

As appropriate, provisions of the Native American Grave Protection and Repatriation Act of 1990 would be implemented.

All workers would be informed of the penalties for illegally collecting artifacts or intentionally damaging any archeological or historic property by construction crews. Workers would also be informed of the correct procedures in case previously unknown resources are uncovered during construction activities.

Should unknown resources be uncovered during construction, work would be stopped in the discovery area and the NPS would follow all regulations and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990.

Sustainability: The NPS has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy-efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. The proposed action subscribes to and supports the practice of sustainable planning, design, and use of the Tamiami Trail safety features and associated public facilities.

General Construction Schedule and Costs: Construction for this project is expected to last approximately 17 months, starting sometime in the Fall of 2001; however, construction could be delayed by weather conditions or other unexpected events. The cost of this project is expected to be approximately \$5.3 million (gross year 2000 dollars).

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Impact Topic	Alternative A No Action	Alternative B Proposed Action
Biotic Communities Including Wetlands	No new impacts	Construction would disturb about 12.79 acres of which 9.19 acres would be wetland fill (including boardwalks and viewing platforms). Wetland mitigation would be accomplished by restoring 12.98 acres of filled wetlands at Kirby Storter, Turner River Canoe Access, and Ochopee Irrigation Canal near the Turner River headwaters. There would be a gain of 3.79 acres of wetlands. Overall, there would be a net gain of restored wetland and upland habitats of 0.70 acres. Thus, there would be long term positive impacts to biotic communities and wetlands should the proposed action be implemented.
Special Status Species	No new impacts	It is unlikely construction activities and subsequent visitation at the project sites described in the proposed action alternative would have any measurable long term impacts on wood stork or Florida panther populations or individuals.
Recreational Values, Visitor Safety, and Preserve Operations	No New impacts. There would be a long term minor adverse impact on interpretive and educational opportunities, the visitor experience, visitor safety, and Preserve operations.	The long term effect on the visitor experience would be positive. Visitor safety would be increased with safer turnouts on the Tamiami Trail, and Loop and Turner River roads. Interpretive opportunities would be expanded by providing boardwalks, interpretive signs, and bulletin cases. There could be a reduction in the frequency for which Preserve enforcement ranger staff would be required to respond to traffic accidents.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES
continued

Impact Topic	Alternative A No Action	Alternative B Proposed Action
Cultural Resources	Continuation of undirected visitor use of the pullouts and the canoe launch along the Tamiami Trail would tend to increase the number of informal trails along and to the river. The lack of restrooms in the area also would continue to contribute to litter and site damage. As a result, archeological resources and traditional cultural properties could suffer long-term adverse effects due to erosion and unauthorized collecting.	The proposed action could help to protect the National Register district and associated traditional cultural properties along the Turner River. Most of the existing landscape features at HP Williams picnic area would be retained and rehabilitated, and interpretive opportunities would be enhanced here and at the Storter site. Refurbishing the tramway at Gator Hook and interpreting this feature would aid in its preservation. Thus, the proposed action would generally have a positive effect on cultural resources overall. Temporary negative impacts to the viewsheds would occur during construction.

AFFECTED ENVIRONMENT

Detailed information on resources in Big Cypress National Preserve may be found in the 1991 GMP and the 1998 *Resources Management Plan*. A summary of resources associated with this project follows.

Location and Access: Big Cypress National Preserve is in southern Florida, centrally located between Miami and Naples. It extends from the northern boundary of Everglades National Park to 7 miles north of I-75. Besides I-75, U.S. Highway 41 (the Tamiami Trail) is the other major highway across the Preserve.

Descriptions of Project Site Present Developments

1. **HP Williams Picnic Area:** This site was constructed on a large fill pad and is located on the northeast side of Turner River Road and U.S. Highway 41 intersection. The picnic area was originally developed by the state to provide a roadside picnic area. Facilities include paved parking, picnic tables and grates, and an information plaque. The existing parking access points are located very close to the main intersection with U.S. Highway 41 and present a safety hazard for people turning on to and off of the Tamiami Trail from Turner River Road.
2. **Kirby Storter:** This site is two roadside pulloffs developed on a large fill pad located 4 miles west of Monroe Station. The State of Florida developed it as a roadside picnic area. The facility includes two parking areas that straddle a cypress strand, picnic tables, and short boardwalk trail that provides a glimpse into a cypress strand and connects the two parking areas. The boardwalk is presently closed for safety reasons. The site has multiple unsafe access points for people turning on to and off of the Tamiami Trail.
3. **Monument Campground:** Monument campground is a camping site facility for RVs, trailers, and tents. The access road leads off the Tamiami Trail. There are inadequate turnouts for people turning on to and off of the Tamiami Trail.
4. **Burns Lake Campground:** Burns Lake Campground is a camping facility for RVs, trailers, and tents. The access road leads off the north side of the Tamiami Trail east of the Turner River Road. There are inadequate turnouts for people turning on to and off of the Tamiami Trail.
5. **Preserve Headquarters:** Located on the south side of U.S. Highway 41, the site is approximately 3 miles east of the Preserve's west boundary. The headquarters building (including the administrative office) is a former motel and restaurant originally constructed on a large fill pad. Facilities include paved entrance ways, paved and gravel parking for cars, buses, and commercial vehicles; maintenance yard and buildings; and employee residences. The site has inadequate turnouts and poor public access.

6. **Gator Hook:** The site is a large road shoulder located 2-1/4 miles south of Monroe Station, on the east side of the Loop Road. The area connects to an historic logging tram road that was constructed with fill. The site offers an alternative visitor use site to similar, though unsafe, areas along the Tamiami Trail.
7. **Turner River Trailhead:** The site is located on the west side of Turner River Road, approximately 3,000 feet north of U.S. Highway 41. The project site is a large fill pad with a house used for Preserve employees and a shed. The site offers an alternative visitor use site to similar, though unsafe, areas along the Tamiami Trail.
8. **Turner River Canoe Access:** Canoeist's currently access Turner River along the south road shoulder of U.S. Highway 41, just east of the Turner River bridge and also on the north side at the Jungle Trail access point. The site offers an alternative visitor use site to similar, though unsafe, areas along the Tamiami Trail.
9. **Dona Drive:** Dona Drive is a paved road leading to the Dona Drive campground. Dona Drive is accessed off the Tamiami Trail. There are inadequate turnouts for people turning on to and off of the Tamiami Trail.
10. **Sweetwater Strand:** This site is a large road shoulder located along the west section of the Loop Road that traverses Sweetwater strand. This area provides an array of viewing opportunities into the cypress swamp, with the most impressive views along three culvert crossings. The site offers an alternative visitor use site to similar, though unsafe, areas along the Tamiami Trail.

Tamiami Trail

The main travel corridor through the southern portion of Big Cypress National Preserve is U.S Highway 41, also known as the "Tamiami Trail," named because it connects the cities of Tampa and Miami. Although the entire length was under construction for about 13 years, most of the 38 miles of the Tamiami Trail that traverses the Preserve was completed between 1924 and 1927 and was opened in 1928. The Tamiami Trail was constructed on fill material through wetlands which are now part of the Preserve.

The Tamiami Trail is a two-lane, undivided highway which runs east-west through the Preserve, connecting Miami to the east with Naples to the west. The speed limit is 60 MPH, and there is little or no formal shoulder area provided on this section of road.

In the Preserve, the majority of this section of the Tamiami Trail is within Collier County, with just the eastern end in Dade County. There are a number of minor three-way intersections with county

and local roads, and even more bridge crossings. Traffic on the Tamiami Trail is a mix of tourist, commuters, residential, agricultural, and heavy truck.

Traffic Volumes: The Florida Department of Transportation maintains two traffic count stations along the Tamiami Trail inside the Preserve. One count station is on U.S. Highway 41 east of SR 29, while the other is at Monroe Station just west of CR 94. The count station at Monroe Station collects traffic data 24 hours per day, 365 days per year. Average annual daily traffic (AADT) volumes from each of these count stations are shown below in Table 1 for the years 1997 through 1999.

Table 1 1997 - 1999, Tamiami Trail Average Daily Traffic Count Collier County, Florida			
Average Daily Traffic Count	1997	1998	1999
Station 030104 - US 41, E of SR 29	3,300	2,700	4,300
Station 030270 - US 41, 0.7 m. W of CR 94 (Monroe Station)	2,845	2,875	3,056
SOURCE: FDOT, TransStat. Off., Tallahassee, FL			

Accident History/Safety: Traffic accident records for the years 1992 through 1996 were provided for the Tamiami Trail in the Preserve by the FDOT, Crash Records and Research Division. A total of 127 accidents occurred during this five-year period, an average of 25 accidents per year. More accidents were recorded in 1996 than in any of the previous four years; 15 fatality accidents occurred from 1992-1996 and 60 percent of all accidents resulted in injuries.

The majority of accidents involved two vehicles (54 percent), and 42 percent were single-vehicle accidents. Most accidents occurred during daylight on dry roads. Nearly 24 percent of all accidents occurred at an intersection or driveway access location. Approximately 11 percent of accidents involved a rear-end collision. Improper driving, careless driving, and failure to yield right-of-way were the most common contributing causes listed.

Pullouts/Waysides: The Tamiami Trail is a well-known scenic road with high public visibility. Most of its formal pullouts and waysides are planned facilities that provide trailhead access and other opportunities. There are also a number of "informal" pullouts that have simply developed over the years because of continued use by visitors. These informal pullouts are simply wide bare spots along the road shoulder and are inadequately sized for the number and size of vehicles using them; many of these informal pullouts are near bridges and have limited sight distance. Inadequate

parking space, limited sight distances, the lack of acceleration and deceleration lanes, and high traffic speeds combine to create hazardous conditions. Additionally, with continued use, these

informal pullouts are growing larger with resultant impacts to resources, particularly vegetation and wildlife habitat.

Pullouts are important for traffic management and help to provide positive visitor experiences. From a visitor experience standpoint, one of the major purposes of park roads is to provide for leisurely driving experiences with ample opportunities to safely pull off and enjoy scenic vistas and significant resources. For these reasons the Preserve is committed to maintaining safe pullouts on the Tamiami Trail and associated roads.

Natural Resources: Water is a principal natural resource of the entire south Florida region, and about 90 percent of Big Cypress is flooded during the wet season. Because of the high annual rainfall (mean annual precipitation is 54 inches, with approximately three-fourths falling during the summer) and the flat limestone topography (a seaward slope of about 2 inches per mile), the inundation lasts for several months beyond the actual rainfall period. Because the Preserve is relatively undeveloped, it serves as a large natural reservoir and nutrient filter, permitting natural biological processes to nourish diverse ecological communities distinctive to south Florida. Throughout the wet season the water flows in a southwesterly direction through the estuaries of western Everglades National Preserve. The ecosystem of the Preserve is finely tuned to the seasonal flow of water, and any interference can alter this sensitive subtropical habitat.

Extensive prairies and marshes, forested swamps, and shallow sloughs characterize the Preserve and the project sites. Hydroperiod, the amount of time each year that soils are saturated, is the major determinant of vegetative communities, and a difference of only a few inches in elevation subsequently changes the hydroperiod and leads to the establishment of totally different plant communities. At one time Big Cypress contained pristine cypress strands and old-growth pinelands, but by 1950 virtually all the cypress strands of commercial value and much of the pinelands within the Preserve had been logged. The young cypress strands, mixed-hardwood swamps, and pinelands in the Preserve today are still recovering. Big Cypress is also noted for its widespread cypress prairies - natural grasslands dotted with stunted cypress trees.

Wildlife: Among the mammals found in and around the Tamiami Trail area are the Florida panther, black bear, white-tailed deer, otter, raccoon, bobcat, Everglades mink, river otter, and Big Cypress fox squirrel. Manatees occasionally inhabit the canals adjacent to the road.

Numerous birds, including herons, egrets, rails, moorhens, gallinules, and wood storks forage in the Tamiami Trail area. Reptiles in the area include the American alligator, cottonmouth moccasin, Carolina anole, softshell turtle, and pig frog.

Major Vegetation Types

Eleven major vegetation types can be described for the Preserve: cypress domes, cypress strands, mixed-hardwood swamps, hardwood hammocks, pinelands, cypress prairies, marshes, prairies, sloughs, mangroves, and disturbed areas. Not all vegetation types would be affected by the proposed action. Following is a brief description of the vegetation types that would be affected by the proposed action. Please see Appendix D for a detailed list of major vegetative species of each project site.

Cypress Strands. Cypress strands are found throughout the Preserve in deep mineral soil depressions, but they are distinct from cypress domes because they form along major drainages and generally retain a north-south orientation. Dominant vegetation features, when present, are very large cypress trees, a few over 100 feet tall and 6 feet in diameter. Understory vegetation is diverse, unlike cypress domes, and includes shade-tolerant hardwoods, ferns, and epiphytes. All cypress strands within the Preserve have been logged, and many sites are now more characteristic of the mixed-hardwood swamps described in the following section. Cypress strands are also associated with relatively deep water, with a hydroperiod that extends over 240 days. This wetland type occurs at the Kirby Storter and Sweetwater Strand project sites. According to the Cowardin system of Wetland Classification, the cypress strand here is Palustrine Forested Wetland ("Palustrine forested, needle-leaved deciduous, seasonally flooded, partially drained (PFO2Cd))." The proposal would result in the fill of 0.99 acres of Cypress Strand wetland at Kirby Storter and 0.26 acres at Sweetwater Strand.

Mixed-Hardwood Swamps. The logging of overstory bald cypress in some strands has resulted in domination by former subcanopy hardwood species, such as maple and pop ash. Bald cypress are often present, but they are no longer the dominant overstory trees. If the area remains relatively undisturbed, cypresses often return in impressive numbers. Understory species include ferns, epiphytes, aquatic species, and saplings of overstory vegetation. Older successional stages are dense and quite complex in terms of structure and species. Mixed-hardwood swamps occupy peats, sands, and rock and have a 270-day or longer hydroperiod. Project sites where this wetland type occur are HP Williams, Turner River Trailhead, and Turner River Canoe Access. According to the Cowardin system of Wetland Classification, the mixed-hardwood swamp at these sites is Palustrine Forested Wetland ("Palustrine forested, needle-leaved deciduous, seasonally flooded, partially drained (PFO2Cd))." The proposal would result in the fill of mixed-hardwood swamps at Gator Hook (0.76 acres), HP Williams (0.96 acres), Turner River Trailhead (0.64 acres), and Turner River Canoe Access (0.50 acres).

Wet and Dry Prairies. Prairies are mostly treeless areas dominated by grasses and grasslike plants; wet and dry prairies have been identified within the Tamiami Trail project area. Wet prairies are characterized by muhly grass, love grass, and sand cordgrass. Wet prairies and marshes generally occupy the slopes of an undulating bedrock surface, with wet prairies being in higher areas than marshes. Wet prairies tend to have sandier soils than marshes, but they also occupy thin layers of marl soil over bedrock. Wet prairie types have hydroperiods of 70 days and are inundated to a maximum depth of 8 inches during the wet season. Dry prairies are characterized by broom sedges, white top sedge, cordgrass, and saw palmetto. Dry prairies occur at higher elevations on bedrock and have relatively little soil. Dry prairies have hydroperiods of 50 days and are inundated to a maximum of 2 inches during the wet season. Both types of prairie wetlands occur at the Kirby Storter project site. According to the Cowardin system of Wetland Classification, the dry prairies are "Palustrine emergent, persistent, temporarily flooded, partially drained (PEM1Ad)" and wet prairies are "Palustrine emergent, persistent, seasonally flooded, partially drained (PEM1Cd)." The proposal would result in the fill of 0.99 acres of dry and wet prairies at Kirby Storter.

Intensely Disturbed Sites. Intensely disturbed sites are areas that are paved with roads and parking lots, and support buildings or picnic areas. Immediately adjacent areas are typically mowed grass. Project sites are Burns Lake Campground (0.16 acres), Preserve Headquarters (0.22 acres), Dona Drive (no wetland impacts), and Monument Campground (0.34 acres).

Exotic Species: Thousands of nonnative plant species have been introduced to south Florida for ornamental plantings, agriculture, and other human uses and many are reported from Big Cypress National Preserve. One of the most invasive exotic species is melaleuca, which is capable of invading native plant communities and replacing almost all other native plant species. Melaleuca is fairly widespread in the Preserve and control efforts have been concentrated on this species.

Melaleuca is a native of Australia and New Guinea and was introduced to Florida around 1910 for landscaping. Perhaps the first introduction of melaleuca in Big Cypress was at Monroe Station around 1940. A total of about 60 square miles (7 percent) of the Preserve has been affected. Because it grows in pure stands at the expense of native plants and can occupy large areas, melaleuca is considered to be a major threat to the ecological integrity of the Preserve.

The exotic plant control program, which includes melaleuca, is carried out by the Preserve's resource management staff.

Special Status Species

Ten species of wildlife that are federally listed as either endangered or threatened reside in Big Cypress National Preserve. The State of Florida lists an additional eight species as threatened or endangered. The State also lists an additional 13 species of special concern (SSC). These species warrant special attention because they have experienced long-term population declines and are vulnerable to exploitation or environmental changes. Of the 30 listed species, two, the wood stork and Florida panther are known to occupy portions of the Preserve adjacent to the project area.

Appendix B provides the status of all 30 special status wildlife species that occur in Big Cypress National Preserve. Brief descriptions of the two federally listed species as they relate to this project are provided below.

Florida Panther and Mountain Lion

Federally Listed Endangered and Similarity of Appearance

State Listed Endangered

In 1995, eight female mountain lions were released into the Florida panther population, four into the Preserve, to offset the negative effects of inbreeding documented in panthers. The mountain lion, therefore, is federally listed, based on its "similarity of appearance" to the panther.

The historic range of the Florida panther included eastern Texas or western Louisiana and the lower Mississippi River valley east through the Southeastern States in general (Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, and parts of Tennessee and South Carolina). Even though numerous sighting reports continue to surface annually throughout its historic range, it is unlikely that viable populations of the Florida panther presently occur outside Florida. The only known self-sustaining population occurs in south Florida, generally within the Big Cypress Swamp physiographic region and centered in Collier and Hendry counties. Currently, the wild population is estimated to be comprised of about 60 adults and subadults (McBride, R. 2000).

Panthers require large remote tracts with adequate prey, cover, and reduced levels of disturbance. Habitat use is diverse and varies with season in some areas. Hardwood hammocks and pinelands are commonly used as daytime resting sites throughout panther range, however, the use of cypress domes and strands increases during the dry season. All habitats, including prairies and marshes, are undoubtedly used during the panther's nocturnal activities of hunting and traveling.

Wood Stork

Federally listed Endangered

State Listed Endangered

Wood storks typically construct their nests in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water. Wood storks tend to use the same colony sites as long as the sites remain undisturbed and sufficient feeding habitat remains in the surrounding wetlands. Typical foraging sites include freshwater marshes and stock ponds, shallow, seasonally-flooded roadside or agricultural ditches, narrow tidal creeks or shallow

tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. The maintenance of natural hydropatterns in foraging grounds is vital to the recovery of wood storks in South Florida. Wood stork management guidelines recommend buffer zones to reduce human disturbance of storks in feeding and roosting habitats. The wood stork forages annually in the Preserve when water levels provide concentrations of fish. Documented nesting in the Preserve was rare until 1996 when 45 colonies were reported (Jansen and Brooks 1996). The previous two consecutive years of high water and subsequent buildup of the prey base apparently provided ideal conditions in which to raise young that year. In June of 2000, approximately 50 nestling wood storks were documented in the colony located in the large cypress dome 0.75 miles northeast of the Sweetwater project site. A week later all but 12 had fledged.

Cultural Resources

Prehistoric Resources: Evidence of human occupation of this area, beginning perhaps 4,000 years ago, is found throughout the Preserve. Archeological surveys have located 395 sites in Big Cypress, including black earth middens, sand mounds, transient camps, and rock accumulations. "Black earth" mounds (middens) are composed of an extensive midden area of black soil and shell that supports lush hammock growth. Artifacts may include a variety of ceramic wares, bone tools and ornaments, food remains (shell and bone), along with occasional lithic artifacts. These sites have tremendous potential for answering numerous questions about human behavior and its relation to the environment in South Florida (Ehrenhard et al. 1978). Unfortunately all too often these mounds have been farmed, used for hunting camps, or subjected to unauthorized collecting. Looting and vandalism have damaged many sites.

Based on the archeological evidence, Big Cypress was used year-round by early inhabitants in a transitory hunting and gathering pattern. People relied on wild food sources rather than cultivating crops, and many of the foods, especially shellfish, were not easily preserved and stored for later use. Consequently, only a few large, relatively permanent settlements have been identified.

Within the past 30 years, a number of Big Cypress sites have been recorded by various researchers (Ehrenhard et al.:1978 describes portions of the multiphase survey of Big Cypress conducted from 1977 to 1981). Typical of prehistoric sites within the Preserve are a series of black earth mounds indicating human occupation extending from ca. 400 AD to about 1400 AD (e.g. the Glades I (Late) period through the Glades III A period). These sites are recognized as an integral part of the prehistoric settlement system that once extended along the Turner River.

Other prehistoric campsites include hardwood hammocks with animal bone, shell remains, and ceramic sherd scatters. Some middens are situated in mixed swamp forest. Some of these sites have been reused by historic tribes and, more recently, by hunters.

Ethnographic Resources: The present-day Seminole and Miccosukee Indian tribes residing in or near Big Cypress are descendants of several Creek Indian bands who emigrated to Florida from perhaps the late 1600s until the mid-1800s. These groups refused removal to Oklahoma following the Seminole Wars, and retreated into the Everglades and Big Cypress Swamp.

The Miccosukee Tribe of Indians of Florida was incorporated in 1962. The Seminole Tribe of Florida was incorporated in 1957 and occupies the Big Cypress Seminole Reservation. Some Seminole and Miccosukee individuals (Independents) are unaffiliated. These groups comprise three political factions (Paige and Van Horn 1982:6). The Trail Miccosukees, sometimes called the Traditional Miccosukees, remain by choice unaffiliated and unorganized.

The enabling legislation for Big Cypress outlined a number of rights accorded to the Seminole and Miccosukee tribes, including the right to continue their usual and customary use and occupancy of areas within the Preserve, including subsistence hunting, fishing, and trapping, and continuation of traditional tribal ceremonies.

U.S. Highway 41 bisects the Miccosukee Reservation, and some of the Trail Miccosukee currently reside in roadside villages along the highway. The Miccosukee manage several concessions (primarily restaurants and airboat tours). They have built a casino and hotel just east of the Preserve. The Seminole and Miccosukee Indians depend on the Preserve as a source of natural materials for housing, crafts, and other cultural and religious uses. Numerous sites (traditional cultural properties) throughout the Preserve are of special spiritual or historical importance to these tribes.

Historic Resources: In 1850 the United States Government transferred much of the land in South Florida to the state. Over the next half-century only a few non-Indian settlers came by sea to the Chokoloskee Bay country, an area that encompassed much of the western Everglades and Big Cypress. Settlers established themselves on Chokoloskee Island and at areas near the Bay, and it was not until construction of the Tamiami Trail that settlement extended inland for any distance.

Commercial logging began in Big Cypress during the 1930s and continued until about 1956. It was an incredibly tough job. Trees were identified and girdled, other vegetation was cleared, trails or grades were built, and tracks were laid. Cut trees were winched, dragged, or rolled to the tracks, loaded via a crane, and hauled to sawmills by trail-grade locomotives. Gator Hook strand was logged in the late 1930s and early 1940s (Duever et al 1985:376). The raised tramway at Gator Hook was built in the early 1940s to access cypress needed for construction of docks and airfields in the Pacific combat zone (Dayhoff 2000). To construct the tramway, the vegetation was cleared in a path about 65 feet wide. Larger trees were pushed to one side for transport to the mill, and smaller materials were used in construction. Soil and vegetation was scooped up with a dragline to form the grade to hold the tracks (Duever et al. 1985:377-378). The logs were then transported via rail to a sawmill for processing into lumber. This mill, known only as mill #2, was located along the Loop Road. According to Becerra (n.d.:23), "many smaller companies benefited in the future by using the 30 miles of logging roads cut leading to the mill (Mill #2)".

The original railroad grade had a number of small bridges that allowed water to flow through the area (Dayhoff 2000). These wooden structures have since been lost to fire, decay, and reuse elsewhere. The steel rails were removed sometime after World War II, and the tramway grade has since been breached in several areas. The mill associated with the original tramway also has been removed. All that remains of the original tramway are several elevated portions that extend in an east-northeast direction from the Loop Road. This tramway was abandoned after World War II.

Construction of a cross-peninsula road at the southern tip of Florida was first suggested in 1914 by real estate promoters and land owners as a means of developing southwest Florida and of connecting Tampa to Miami. Work began in 1916 but was slowed by lack of funding, World War I, and competing routes. By 1923 only the Dade County portion of the roadway, including what is now the Loop Road, had been built. (The Lee County portion of the project had become mired in financial and construction difficulties [Paige and Van Horn 1982:117]). Developer Barron G. Collier financially resurrected the road project, and by 1928 a new 274 mile-long route (the present Tamiami Trail) was opened.

To construct the trail, crews cleared vegetation, built a roadbed and laid rails, dynamited the roadway corridor to shatter the subsurface limestone stratum, dredged the blasted rock, leveled and packed the crushed rock, and covered the roadway with asphalt. The dredged area became the canal that now parallels the roadway.

By 1930 the town of Ochopee had sprung up at the western end of the Trail. Begun as a tomato production/canning development, the town dwindled in size by 1953 due to salt-water intrusions into the agricultural fields (construction of the Trail reduced the natural north-south flow of fresh water). The Ochopee Post Office (the "smallest post office in the USA") remains as a reminder of this earlier development. The town of Everglades City serves as the western gateway to the Preserve. A few historic home sites are found along the Loop Road.

As tourism became a growing economy in Florida, and more visitors were using the Tamiami Trail, roadside pull-offs and other facilities were added. These facilities included the H.P. Williams and Kirby Storter picnic areas. The H.P. Williams roadside park, believed to be the first of its type built in Florida, was designated by the 1965 Florida Legislature. It honors Homer P. Williams, an engineer who worked for the Collier Company at the time the Tamiami Trail was being built. At first the site included only a small monument to Mr. Williams and a picnic table, but has had subsequent improvements.

The Kirby Storter roadside park was designated in 1971 by the Florida Legislature to honor Kirby S. Storter, a district Maintenance Engineer for the Department of Transportation. He had worked for the Collier Company at the time the Tamiami Trail was being built. Over the years, this roadside park also has been renovated, and some changes have been made in the original features.

Only four of the 15 sites or buildings listed on the National Register of Historic Places for Collier County (C.J. Ostl Site, Plaza Site, Sugar Pot Site, and Turner River Site) are within the general vicinity of the project, and none are within the area of potential effect. Based on NPS consultation with Mr. Walt Marter of the Florida State Historic Preservation office (Marter 2000), remnants of the tramway at Gator Hook are not considered eligible for the National Register of Historic Places.

Recreational Values, Visitor Safety, and Preserve Operations: U.S. Highway 41, the Tamiami Trail, traverses Big Cypress National Preserve for approximately 50 miles. The highway is narrow, with many side roads. For the most part, this is a daily commuting route for thousands of vehicles traveling at high rates of speed (legal speed limit 60 mph - actual speed averages in excess of 70 mph) between Naples and Miami. Many vehicle drivers are visiting the Preserve and are looking for wildlife, birds, and scenic vistas and they travel slower than the commuters speed. The mix of high speed commuters and slower moving visitors causes extreme safety hazards for all and often results in serious motor vehicle accidents (many with personal injuries or fatalities).

With few developed roadside parking opportunities, visitors are forced to stop along the narrow road shoulder, often in heavy traffic, to experience the Preserve. Inadequate roadside parking opportunities causes parking congestion and parked vehicles block driver's views as they attempt to pull off the shoulder and merge into traffic. Additionally, pedestrians commonly walk across the Tamiami Trail and with no traffic control or crosswalks, pedestrian traffic crossing the road is a hazard.

The conflict among commuter, commercial, and visitor traffic, and pedestrians along the Tamiami Trail is extremely dangerous and has resulted in excess of 15 fatalities since 1992. All those involved in these accidents have had their trips, and in some cases their lives, ruined.

While the Preserve does not have jurisdiction on U.S. Highway 41, the Preserve is generally the closest emergency service agency with the capability to render law enforcement, medical, fire and rescue assistance. 16 USC 1b(1) authorizes the NPS to render emergency assistance to nearby agencies. Considering that the NPS is the closest force and that most of the incidents are potentially life threatening, NPS enforcement rangers are generally first on scene at accidents. While it is critical that the NPS respond to these incidents, in doing so other NPS responsibilities are negatively affected by the staff being away from their primary duties.

There is little in the way of interpretive or educational information at any of the Tamiami Trail pullouts. Visitors can stop and look but there is no on-site information to explain natural or cultural resources.

ENVIRONMENTAL CONSEQUENCES

Introduction

This section describes the environmental consequences associated with the no action and proposed action alternatives. It is organized by Impact Topics, which distill the issues and concerns into distinct topics for discussion analysis. These topics focus on the presentation of environmental consequences, and allow a standardized comparison between alternatives based on the most relevant topics.

Methodology

Overall, the National Park Service based these impact analyses and conclusions on the review of existing literature and Preserve studies, information provided by experts within Big Cypress National Preserve and other agencies, professional judgments and Preserve staff insights, and public input.

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.

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 – impacts that last less than one year.

Long term – impacts that last longer than one year.

Direct versus Indirect Impacts

The following definitions of direct and indirect impacts were used in this evaluation:

Direct – an effect that is caused by an action and occurs at the same time and place

Indirect – an effect that is caused by an action but is later in time or farther removed in distance, but still reasonably foreseeable.

Cumulative Effects

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "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." (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and are presented at the end of the Environmental Consequences section.

ALTERNATIVE A - No Action

Biotic Communities Including Wetlands: There would be no new impacts to biotic communities or wetlands. Visitor use of the informal pullouts along the road shoulders would continue. As a result, the informal pullouts would be expected to edge out and grow larger, and continue to be impacted through compaction and erosion. This would be a long term negligible impact to biotic communities.

Conclusion: No new impacts.

Special Status Species: There would be no new impacts to any special status species under this no action alternative. Therefore, the no action alternative would have no new short or long term impacts on any special status species.

Conclusion: No new impacts.

Recreational Values, Visitor Safety, and Preserve Operations: There would be no new impacts to recreational values, visitor safety, and Preserve operations under this alternative; existing conditions would continue. Presently, comprehensive interpretive and educational wayside opportunities introducing and describing the Preserve's natural and cultural history are few and scattered. The Preserve's interpretive and educational program would not be as comprehensive as it could be. Visitors would continue to receive a limited and incomplete understanding of the Preserve's natural and cultural resources.

There would be no improvement to visitor safety along this section of the Tamiami Trail. Visitors would continue parking on the road shoulders to experience the Preserve. With few developed safe parking opportunities, the existing roadside safety hazards would be expected to persist. The mix of high speed commuters and slower visitor traffic would continue to cause extreme safety hazards for vehicles exiting and entering the Tamiami Trail, and pedestrians crossing it. Roadside parking congestion and parked vehicles would continue to block driver's views as they attempt to pull off the shoulder and merge into traffic. The present high incidence of serious motor vehicle accidents with personal injuries and fatalities would be expected to continue.

Preserve enforcement rangers are usually the first to respond to traffic incidents within and close to Preserve boundaries. While this first response practice is critical in rendering law enforcement, medical, fire, and rescue assistance, the primary responsibilities of the Preserve are negatively affected by enforcement staff being away from their primary duties.

As a result, there would be a long term minor adverse impact on interpretive and educational opportunities, the visitor experience, visitor safety, and Preserve operations.

Conclusion: No new impacts. There would be a long term minor adverse impact on interpretive and educational opportunities, the visitor experience, visitor safety, and Preserve operations.

Cultural Resources: Continuation of existing conditions would not have adverse effects on cultural resources at most of the proposed development areas. However, at the Turner River Canoe Access site, a National Register property, there could be long-term adverse effects on archeological resources and traditional cultural properties. Over time, undirected/unstructured use of the pullout and canoe launch along the Tamiami Trail could increase the number of informal trails along and to the river. The lack of restrooms in the area also would continue to contribute to litter and site damage. As a result, artifacts and site features could be lost due to erosion and unauthorized collecting. Such losses would also diminish the values of the area's traditional cultural properties (TCPs) important to tribes.

At Gator Hook, the tramway has previously been breached in several places. Over time, if vegetation is not cleared, the remaining portions of the grade would continue to erode away and its surfaces be overgrown, so that almost all the physical traces of this feature would eventually disappear.

Conclusion: Continuation of undirected visitor use of the pullouts and the canoe launch along the Tamiami Trail would tend to increase the number of informal trails along and to the river. The lack of restrooms in the area also would continue to contribute to litter and site damage. As a result, archeological resources and traditional cultural properties could suffer long-term adverse effects due to erosion and unauthorized collecting.

ALTERNATIVE B - Proposed Action

Biotic Communities Including Wetlands: Construction is proposed to develop paved roadside parking areas, comfort facilities, trailheads, boardwalks, and shelters along the Tamiami Trail, and the Loop and Turner River roads. As illustrated in Table 2 (Site Descriptions and Area Summaries), should the proposal be implemented there would be impacts to:

- a) 5.82 acres new fill in wetlands (excludes boardwalks and viewing platforms) at Preserve Headquarters (0.22 acres), Turner River Canoe Access (0.50 acres), HP Williams (0.96 acres), Turner River Trailhead (0.64 acres), Burns Lake Campground (0.16 acres), Kirby Storter (1.98 acres), Monument Campground (0.34), Gator Hook (0.76 acres), and Sweetwater Strand (0.26 acres).
- b) 3.37 acres wetland impacts from boardwalks and viewing platforms at HP Williams, Turner River Trailhead, Kirby Storter, Gator Hook, and Sweetwater Strand.
- c) 9.19 acres total wetland impact (5.82 acres [a] + 3.37 acres [b]) = 9.19 acres
- d) 3.6 acres new pavement on existing fill and new pavement on new fill at Preserve Headquarters, Dona Drive (no wetland fill, new fill would be placed on existing fill), Turner River Canoe Access, HP Williams, Turner River Trailhead, Burns Lake Campground, Kirby Storter, Monument Campground, Gator Hook, and Sweetwater Strand.
- e) 12.79 acres new impact (9.19 acres [c] + new pavement [d]) = 12.79 acres
- Areas restored and upland features reestablished
- f) 0.51 acres Existing pavement would be removed and the area revegetated (uplands) at Preserve Headquarters
- Area restored and wetland reestablished
- g) 0.90 acres Existing pavement and fill removed and area restored to wetlands at Kirby Storter.
- h) 12.08 acres Fill removed at Kirby Storter and Turner River Canoe Access and berm and channel returned to natural grade, and wetland vegetation restored at Ochopee Irrigation Canal. This would be mitigation for filling 5.82 acres of wetland at Preserve Headquarters, Turner River Canoe Access, HP Williams, Turner River Trailhead, Burns Lake Campground, Kirby Storter, Monument Campground, Gator Hook, and Sweetwater Strand.
- i) 12.98 acres wetlands restored (0.90 acres [g] + 12.08 acres [h]) = 12.98 acres

- j) 7.16 acres wetlands gain (excludes boardwalks and viewing platforms for NPS SOF) (12.98 acres [i] - 5.82 acres new fill in wetlands (excludes boardwalks and viewing platforms) [a] = 7.16 acres
- k) 3.79 acres net wetland gain
(12.98 acres restored [i] - 9.19 acres impacted [c] = 3.79 acres
- l) 13.49 acres Total Area Restored
 (0.51 acres [d] + 12.98 acres [g] = 13.49 acres)
- +0.70 acres Net impact of the proposed action
(13.49 acres restored [l] - 12.79 acres impacted [e] = 0.70 acres)

Over the long term, there would be a minor beneficial impact from the net gain of +0.70 acres of restored uplands and wetlands habitats.

Loss of wildlife would be proportional to the amount of habitat lost. Much of the proposed construction would be on previously disturbed fill areas that are presently used for human occupation and activity. Wildlife inhabiting these areas have to various degrees been habituated to humans and human activity through years of close association with buildings, roads, vehicles, and attendant human activity. Larger wildlife would probably avoid the construction zone to a certain extent during construction. During construction some small animals may be killed or forced to relocate to areas outside the construction zone. Constructing proposed facilities on these areas would not be expected to result in any permanent adverse effects on wildlife or habitat. Overall populations of affected species might be slightly and temporarily lowered. However, with the mitigation measures and revegetation during the post construction phase, appreciable permanent negative effects on wildlife would not be anticipated.

Construction of roads, parking areas, detention basins, and comfort facilities would affect existing impacted soils, including existing fill soil. About 5.82 acres of new fill in wetlands would be required for construction of roads, parking areas, comfort facilities, canoe access, and boardwalks and viewing platforms.

Through the design process the runoff from asphalt surfaces, roof structures, and other impermeable structures would be channeled into retention basins ensuring that point discharges did not contribute to excessive flow conditions within any immediate wetland areas. As a result, direct flows into associated wetland systems would not occur as a result of these proposed actions.

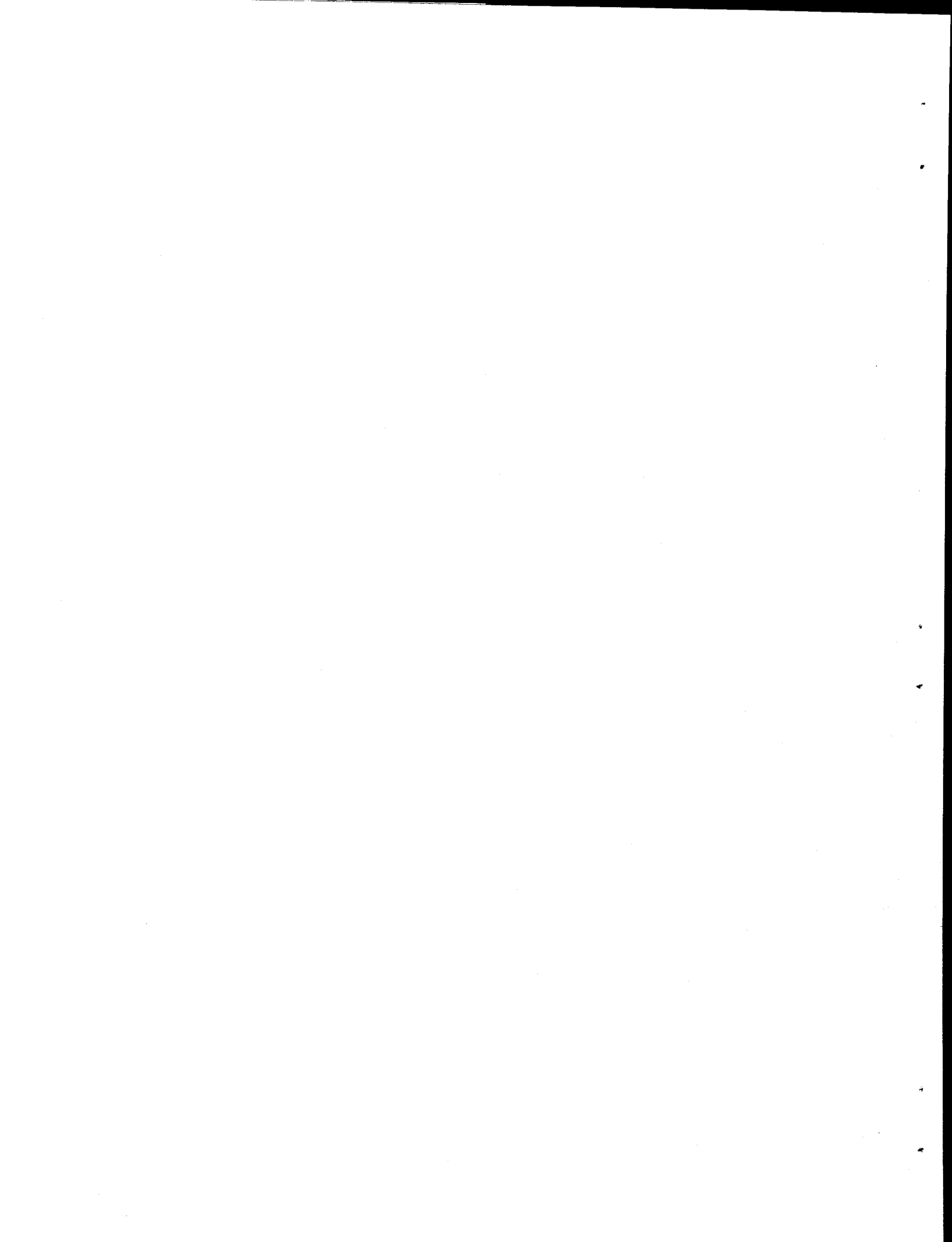
Big Cypress Preserve

Site Descriptions and Area Summaries

October 5, 2000

		RESTORATION		
		3 + 4 + 5) removed and area (acres)	6 pavement removed and area restored to wetlands	7 Existing fill to be removed for wetlands mitigation (restored) (Subtotal) area to be restored (Columns 7 + 8 + 9)
		9 (acres)	10 (acres)	11 (acres)
Preserve Headquarters	Construct new paving an ex and construc	~	0.51	1.06
Dona Drive	Reconstruct increase entr	~	~	0.04
Turner River Canoe Access	Construct new adjacent to T construct sto	0.03	0.03	0.81
HP Williams	Construct new platform, new construct sto	~	~	1.28
Turner River Trailhead	Construct new viewing platf	~	~	0.98
Burns Lake Campground	Reconstruct increase entr	~	~	0.22
Kirby Storter	Construct new viewing platf detention bas	0.05	0.95	2.48
Monument Campground	Reconstruct increase entr	~	~	0.51
Gator Hook	Construct new select locatio	~	~	3.56
Sweetwater Strand	Construct line viewing platf	~	~	0.36
Ochopee Irrigation Canal	Clear reach natural wetla	12.00	12.00	-12.00
TOTAL (Acres)		12.08	13.49	-0.70

TABLE 2



Petroleum products could potentially enter nearby wetland systems as a result of faulty vehicles which are parked on the parking areas. Use of detention basins/grease separators to minimize petroleum introduction into wetlands are part of the parking lot design. The introduction of hydrocarbon compounds into a wetland could have ramifications throughout the food chain, especially considering the highly productive ecosystem functions within these areas which serve as breeding grounds and habitat for all trophic levels.

The State of Florida considers elevated boardwalks in wetlands to be fill. The proposed action calls for approximately 3.37 acres of new boardwalks and viewing platforms in wetland areas. Boardwalks would be constructed as elevated platforms with concrete piers. Separated decking slats would permit aquatic marsh vegetation to establish itself under the elevated structures. With the design of boardwalks in this manner minimal impacts would be expected to occur to wetlands. This design would disturb the least extent of wetlands within the area and accommodate visitor needs.

As discussed in the Mitigation section, temporary sediment control devices would be utilized during construction to ensure that water quality degradation did not occur. This includes the use of appropriate silt stabilization devices such as silt fences, straw bales, or other suitable control measures. In addition, if required, turbidity screens would be utilized within the wetland environment to ensure that sediment loading does not occur within the surface waters.

A NPS Statement of Findings for the proposed construction of boardwalks is not required for this project because Director's Order (DO) 77-1, Wetland Guidelines states that boardwalks constructed for public education, interpretation, or enjoyment of wetland resources may be excepted actions. The specific citation is:

Actions that **may** be excepted from the Statement of Findings (Sections 5.3.D and 5.3.E) and compensation (Section 5.2.C) requirements:

- a. Scenic overlooks and foot/bike trails or boardwalks, including signs, **the primary purposes of which are public education, interpretation, or enjoyment of wetland resources.**

The proposed action is within the scope and intention of these wetlands guidelines. A National Park Service Statement of Findings (SOF) has been prepared for this project due to proposed fill activities of 5.82 acres of wetlands, it does not address boardwalk and viewing platform construction.

The total wetland area, including boardwalks and viewing platforms, that would be filled to construct visitor use and safety facilities would be approximately 9.19 acres. Although this would represent essentially a permanent wetland habitat loss, approximately 12.98 acres of presently disturbed wetland habitat would be returned to natural conditions by implementing mitigation as described in the Mitigation section above, and the Disturbed Land Restoration project for the Ochopee Irrigation Canal as described in the Mitigation section above.

Overall, there would be long term positive impacts to biotic communities and wetlands should the proposed action be implemented.

Conclusion: Construction would disturb about 12.79 acres of which 9.19 acres would be wetland fill (including boardwalks and viewing platforms). Wetland mitigation would be accomplished by restoring 12.98 acres of filled wetlands at Kirby Storter, Turner River Canoe Access, and Ochopee Irrigation Canal near the Turner River headwaters. There would be a gain of 3.79 acres of wetlands. Overall, there would be a net gain of restored wetland and upland habitats of 0.70 acres. Thus, there would be long term positive impacts to biotic communities and wetlands should the proposed action be implemented.

Special Status Species

Wood Stork

The wood stork annually forages in the Preserve when water levels provide concentrations of fish. Documented nesting in the Preserve was rare until 1996 when 45 colonies were reported (Jansen and Brooks 1996). The previous two years of high water and subsequent buildup of the prey base apparently provided ideal conditions in which to raise young. The colonies closest to the proposed project sites are shown in Figure 14.

Since 1996, only a few stork colonies have been documented near the project sites. In 1998, 3 nests with eggs in the Deep Lake Unit subsequently failed. In 2000, nesting was documented at a site in the Loop Unit, 3/4 mile north of the proposed Sweetwater project site and 200 meters east of Loop Road. The estimated 50 stork nestlings in the colony apparently fledged. According to the habitat management guidelines (Ogden 1990), the activities within the 1,500 foot primary zone likely to be detrimental to an active colony include:

- Any unauthorized human entry closer than 300 feet of the colony, and
- Any increase or irregular pattern in human activity anywhere in the primary zone.

The recommended restrictions in the secondary zone (a radius of 2500 feet from the outer edge of the colony) include:

- Any increase in human activities above the level that existed in the year when the colony first was formed, especially if visual screens are lacking.

Should the proposed alternative be implemented, the USFWS (undated) recommended buffer zone or setback (protection zone) for feeding sites (300 to 750 feet), nesting colonies (500 to 2,500 feet), and roosting sites (500 to 1,000 feet) would be enforced. Although the proposed Sweetwater site is outside the secondary zone, the Preserve biologist would determine whether nesting activity is occurring and, if so, would monitor stork responses to any construction activity that may take place

during the nesting season. It is not expected that construction or visitation at the Sweetwater site would have an impact on stork nesting at currently known sites.

Florida Panther

Panther densities in Big Cypress south of I-75 were low for many years. Factors responsible for the low productivity included little ingress and low productivity in part due to the extended periods in which males and females were not occupying the same areas. Since 1989, 23 panthers have been monitored in the Preserve south of I-75. Figure 11 shows the locations of the 13 panthers that have been found in the vicinity of the proposed project sites. Only recently has the population expanded, in large part due to the reproductive success of a female cougar that was brought in as part of the Genetic Restoration Program. Her offspring have recently raised young that are residing in the vicinity of the proposed project sites near Turner River Road, namely H.P. Williams Park, Turner River Canoe Access, and Turner River Trailhead (Figure 15).

Between 1989 and 1999, only two panthers, #70 and #79, were documented crossing Turner River Road. Panther #70 had the most documented crossings, until contact was lost with her when her collar failed on January 25, 2000. Once her offspring were collared in March and April, it became apparent that the family group was still crossing the road and frequenting the mixed swamp hardwood strands on either side of Turner River Road.

Panther #70's family of three dispersed in August and continue to use the area around Turner River Road as they gradually establish their individual home ranges. The typical travel pattern has been through the strand east of Turner River Road. They cross the road approximately one mile north of the junction with U.S. Highway 41. Based on tracks and daytime locations, their main crossing points over the Turner River canal are on a plug directly across from the river and on a bridge another mile north. Other bridges further north on Turner River Road are used to a lesser extent, probably because they are associated with less cover or a residence.

Radio telemetry has documented the importance of strands as travel corridors for panthers and other wildlife, and, subsequently, wildlife crossings have been established at these locations on Highway 29 and I-75. Between December and May, the drying mixed-swamp strands provide cooler and secure resting areas not available during the wet season. They also provide new vegetative growth for deer and hogs, the panther's main prey. The use of these seasonally wet habitats by panthers and their prey increases at this time. This is also the time of highest visitation in the Preserve.

Panthers apparently will tolerate human disturbance and road noise only to a point. This has been demonstrated on I-75 north of Big Cypress, where, in spite of the existence of wildlife underpasses, only 3 males have been documented using them in the past 5 years. Radio telemetry has documented that females are even more reluctant to cross roads, as shown by the numerous data points that line either side of a highway such as I-75 and U.S. Highway 41. Female #103, for example, lived for 4 years south of U.S. Highway 41 and approached but never crossed. The dominant male #79 has crossed on only 9 occasions. There evidently is a reluctance to cross roads

with certain levels of disturbance, and that level is unknown. Janis and Clark (1999) demonstrated that even off-road vehicles on a designated trail, although slower and less common than street-legal vehicles on a highway, impacted panther use of an area.

It is possible that the construction and use of a boardwalk at the proposed site on Turner River Road would have a detrimental effect on panther use of the area and ultimately impact their ability to expand into currently unoccupied habitats in the Preserve. Big Cypress National Preserve resource management staff would continue to monitor the proposed Turner River Trailhead site for a minimum of five years to determine level of panther use. If panther use of the site decreases, or diminishes entirely, project implementation would be considered after consultation with the USFWS. If the level of panther use remains at present levels or increases, proposed development at the Turner River Trailhead site would most likely be dismissed.

Based on these data, it is unlikely construction activities and subsequent visitation at the project sites described in the proposed action alternative of this document would have any measurable long term impacts on Florida panther populations or individuals.

Conclusion: It is unlikely construction activities and subsequent visitation at the project sites described in the proposed action alternative would have any measurable long term impacts on wood stork or Florida panther populations or individuals.

Recreational Values, Visitor Safety, and Preserve Operations: Construction would be expected to last about 17 months, starting about March or April, 2001. Wherever possible, coordination would take place with other agencies who would be doing work on the Tamiami Trail at the same time this safety improvement project would be conducted. Coordination and scheduling work activities simultaneously with other agencies would minimize traffic disruption during construction.

Should this proposed action alternative be selected and construction initiated, all roads would remain open a majority of the time, but they could occasionally be reduced to one lane during construction and traffic could be subject to alternating, one-way movement at the construction zones. Flaggers and/or pilot cars could be used during work hours and, if necessary, automatic signal light systems would control traffic at night. Due to unforeseen circumstances, it may be required to close portions of the roads completely for one or more days. Should road closure be required, detour routes would be designated and the Florida Department of Transportation would receive notice of the construction and closure scheduling; the general public would be notified through public media and roadside signing. Construction signing would also be installed to reduce traffic hazards due to road work.

There would be no construction activities on legal holidays. During these times the contractor would be responsible to leave the road surface in a drivable condition. This action would minimize disruption to commuters, highway traffic, visitors, and administrative staff.

Construction vehicles associated with the project would contribute to already heavy traffic using the roads, especially the Tamiami Trail. Because of frequent use by heavy vehicles, there might be some potential for road and bridge damage. However, enforcement of weight limits and other federal, state, and local regulations and contractual stipulations would minimize the potential for conflicts and/or damage.

During construction activities, traffic would be subject to the increased commercial truck traffic hauling construction material, and noise, dust, and visual intrusion. At times, traffic could experience delays usually not exceeding 30 minutes. Although people caught in the delays would be frustrated and consider the delays interminable, major construction-related traffic delays are not anticipated.

Although various portions of the roads could be closed during road reconstruction activity, access would be provided immediately to any emergency vehicles.

Visitor safety would be increased with safer turnouts on the Tamiami Trail and turnouts provided on the slower, less crowded Loop and Turner River roads away from the Tamiami Trail. Accident rates associated with vehicles exiting and entering the Tamiami Trail from the road shoulders, and pedestrians crossing the Tamiami Trail, would be expected to decrease, with a corresponding reduction in injuries and fatalities.

Interpretive and educational opportunities would be expanded over present conditions by providing boardwalks through presently inaccessible habitats. Interpretive signs and bulletin cases would enhance visitor's educational opportunities of the Preserve's resources and habitats.

Over the short term, the visitor experience would be adversely affected by noise, dust, fumes, delays, and construction vehicle traffic for the duration of construction activities. Some visitors would be dissatisfied because they would be unable to visit a particular feature or features due to construction actions.

With the development of safer turnouts on the Tamiami Trail, and Loop and Turner River roads, there could be a reduction in the frequency for which Preserve enforcement ranger staff would be required to respond to traffic accidents and traffic problems on the roads. This would allow more time for enforcement staff to perform their primary NPS duties.

Conclusion: The long term effect on the visitor experience would be positive. Visitor safety would be increased with safer turnouts on the Tamiami Trail, and Loop and Turner River roads. Interpretive opportunities would be expanded by providing boardwalks, interpretive signs, and bulletin cases. There could be a reduction in the frequency for which Preserve enforcement ranger staff would be required to respond to traffic accidents.

Cultural Resources: Improvements at the Monument Campground, Burns Lake Campground, Preserve Headquarters, H.P. Williams picnic area, Kirby Storter, Dona Drive, and Gator Hook would occur in previously disturbed areas. No significant historic properties have been identified at these development sites, so there would be no impacts on important cultural resources. Work at the HP Williams Picnic Area is intended to preserve its general configuration and basic design. Elements of the design that would be retained or enhanced include the grassy lawn, walkways, rock walls and the memorial. (All but one of the rock walls would be retained in place.)

At Kirby Storter, relocation of the picnic area and trail away from the highway would increase visitor safety, enjoyment, and appreciation for the park's resources but would not impact significant cultural resources. Improved interpretation at these two picnic areas also would help facilitate resource protection and preservation.

By relocating the Turner River Canoe Access in the area previously occupied by the Turner River Jungle Trail, and by constructing formal walkways, boat ramps, restrooms, and parking, visitors would be directed to non-sensitive areas. This would result in additional protection for important cultural resources. The same is true for construction of the Turner River Trailhead, which would not have any adverse effects on National Register site 8Cr8. Visitors would park in formalized parking and would follow a boardwalk trail so damage to cultural resources from erosion, trampling, and unauthorized collecting would be reduced.

Remnants of the Gator Hook Strand tramway would be cleared of vegetation, and the grade would be restored. Boardwalks would be built in selected areas, and interpretive messages would enhance visitor understanding of the past history of the Preserve and the lumber industry.

During construction, there would be temporary, minor impacts on the area viewsheds.

Big Cypress National Preserve has contacted the Miccosukee and Seminole tribes regarding this project. The Preserve worked with the tribes on-site to develop designs that would not impact any ethnographic resources. Thus, no traditional cultural properties have been identified within any of the areas of potential disturbance (APE), and there would be no impact on customary uses.

Conclusion: The proposed action could help to protect the National Register district and associated traditional cultural properties along the Turner River. Most of the existing landscape features at HP Williams picnic area would be retained and rehabilitated, and interpretive opportunities would be enhanced here and at the Kirby Storter site. Refurbishing the tramway at Gator Hook and interpreting this feature would aid in its preservation. Thus, the proposed action would generally have a positive effect on cultural resources overall. Temporary negative impacts to the viewsheds would occur during construction.

CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "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." (40 CFR 1508.7).

No Action

There are no known cumulative impacts to the Preserve's natural or cultural resource base or associated values as a result of actions proposed by this alternative. No new developments at Big Cypress National Preserve are proposed under this alternative. Traffic accidents, and the loss of property and human life as the result of an unsafe road condition by maintaining its current status, would be expected to continue at the present rate within the Preserve.

Proposed Action

Natural Resources Analysis: This alternative proposes limited development. Implementation of this alternative would not contribute to additional long term loss or impacts to the resource base within Big Cypress National Preserve. Although 9.19 acres (includes boardwalks and viewing platforms) of wetland would be filled for development, 12.98 acres of presently disturbed wetland would be returned to natural wetland conditions with implementation of the Disturbed Land Restoration project for the Ochopee Irrigation Canal as described in the Mitigation section above. This wetland restoration effort would occur in locations that are important for wetland resources and where wetlands have been impacted and degraded by past human activity and exotic plant invasion. This is an appreciable and positive gain for wetland values in the Preserve and within the region. Habitat loss, especially in wetland areas, is a national problem and the solution proposed at Big Cypress National Preserve for restoration of a previously impacted wetland area is an attempt to reverse this trend and recognize the intrinsic values of this important component of the ecosystem. Overall, within Big Cypress National Preserve and the South Florida region, there would be a net gain of 3.79 acres of wetlands and an overall net gain of 0.70 acres of restored habitat as a result of the proposal.

There would be no cumulative impacts to any special status species.

Other present and foreseeable future projects associated with the Tamiami Trail are involved with vegetative maintenance, wetland restoration, resource management of special waters, culvert and bridge repair/replacement, road maintenance, and scenic corridor management; essentially maintenance of existing facilities and removal of past impacts. The present project, *Scenic Corridor Visitor Safety Highway Improvements*, when combined with other past, present, and foreseeable

future actions along the Tamiami Trail, would have negligible long term cumulative adverse impacts to the resource.

Cultural Resources Analysis: Over the next few years, a few of the other projects proposed or underway by the state of Florida and other agencies, including the National Park Service, have the potential to have cumulative effects on cultural resources near the Tamiami Trail. Most of the programs would not have an appreciable cumulative effect on cultural resources. However, cumulative impacts can arise over time from gradual deterioration of archeological sites or unauthorized, casual artifact collecting if visitor use is unstructured and unmonitored. Proposals in the upcoming Turner River Management Plan and the multiagency Tamiami Trail Culvert project will build on and continue proposals for management of visitor use along the Turner River begun with this current plan for visitor safety along the Tamiami Trail. In the future, as visitor use increases, provisions for structuring visitor activities and access in these two plans should help to reduce cumulative impacts on archeological sites.

Over the past half century, the Gator Hook Strand tramway has become overgrown, and has been segmented by activities intended to increase water flow. Through restoration, interpretation, and maintenance of parts of the tramway, deterioration would be slowed, helping to assure that this historic resource would remain in viable condition far into the future.

Recreational Values, Visitor Safety, and Preserve Operations Analysis: Recreational values, education, and interpretation, visitor safety, and park operations would have positive cumulative impacts throughout the park and region. Implementation of the proposal would provide more and better educational and interpretative opportunities, and safer methods to experience these opportunities; these enhanced opportunities would be applicable throughout the South Florida region.

Conclusion: The cumulative effect of a safer road system and interpretative and educational information by the construction of interpretive/orientation wayside areas (pullouts) would contribute to the reduction of traffic accidents, loss of property and human life within and outside the Preserve, and a greater public understanding and appreciation of natural and cultural resources within Big Cypress National Preserve with no measurable impacts to natural and cultural resources.

COMPLIANCE

This environmental assessment provides disclosure of the planning and decision-making process and potential environmental consequences of the alternatives. The analysis of environmental consequences was prepared on the basis of a need to adequately analyze and understand the consequences of the impacts related to the proposed park developments and to involve the public and other agencies in the decision-making process.

The environmental analysis was prepared in accordance with the regulations of the Council on Environmental Quality (CEQ), the National Environmental Policy Act (NEPA) (40 CFR 1500 et seq.) and in part 516 of the U.S. Department of the Interior's *Departmental Manual* (516 DM).

NEPA is the basic national charter for environmental protection; among other actions it calls for an examination of the impacts on the components of affected ecosystems. The GMP, 1988 NPS *Management Policies*, NPS-77 (*Natural Resources Management*), and the 1998 *Resources Management Plan, Big Cypress National Preserve*, among other NPS and park policies, provides general direction for the protection of the natural abundance and diversity of all the park's naturally occurring communities.

Various agencies have been contacted and consulted as part of this planning and environmental analysis effort. Appropriate federal, state, and local agencies have been contacted for input, review, and permitting in coordination with other legislative and executive requirements.

In implementing this proposal, the NPS would comply with all applicable laws and executive orders, including the following:

Special Status Species: Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. Section 7 consultation with the U.S. Fish and Wildlife Service has been conducted for this project. Consultation with the U.S. Fish and Wildlife Service would again be conducted before construction to ensure that no newly listed species have been found on site.

Wilderness: The NPS wilderness management policies are based on statutory provisions of the 1916 NPS Organic Act, the 1964 Wilderness Act, and legislation establishing individual units of the national park system. A unit of the National Wilderness Preservation System is a site designated by Congress and legally protected as wilderness in perpetuity. The 1988 NPS *Management Policies* require the administration of NPS managed wilderness areas for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness. Among other mandates are the protection of wilderness areas and the preservation of their wilderness character.

Floodplains and Wetlands Management: Executive Orders 11988 (Floodplain Management), and 11990 (Protection of Wetlands), directed federal agencies to avoid development in floodplains and wetlands whenever there is a practicable alternative and to avoid, to the extent possible, adverse impacts associated with the occupancy or modification of floodplains and wetlands.

The National Park Service has identified certain classes of action which required modified approaches to achieve the objectives of the Executive Order 11988 (Protection of Floodplains) that assists the agency with meeting its environmental compliance issues while meeting the needs for park visitors and management actions. Small parking lots and boardwalks for use of the project area are excepted actions from this Executive Order. However, acting in the spirit of this Executive Order the National Park Service would provide for proper floodplain protection through the design of the parking areas and boardwalks.

The National Park Service visitor use facilities proposed in this document are functionally dependent on their location at the Tamiami Trail, and Loop and Turner River roads in order to accommodate visitor needs and provide for resource protection. The new structures proposed would be placed in an area which has flooding potential. However, the design of these structures incorporates methods for protecting life and minimizing storm damage through appropriate mitigative procedures that includes the elevation of the boardwalks above the flooding potential wherever possible. Flood protection (and wind protection) would be an important design criterion.

The actions proposed by this Scenic Corridor Visitor Safety Highway Improvements Plan are in conformance with Executive Order 11990 (Protection of Wetlands). In all practicable cases avoidance of wetland areas and communities would be required. In some areas, such as Preserve Headquarters, Burns Lake Campground, Monument Campground, Sweetwater Strand, Turner River Canoe Access, HP Williams, Turner River Trailhead, Kirby Storter, and Gator Hook avoidance is not possible and therefore design criteria has been developed to ensure maximum protection of wetland communities and their associated values. This specifically includes elevated boardwalks which would enable the establishment of wetland species under the elevated structures. In addition, the plan specifies replacement of impacted wetlands at greater than a 2:1 replacement ratio and details a major wetlands restoration effort through the ongoing control of the exotic species *melaleuca* for wetland communities which have been impacted by invasion of this species.

In conformance with the National Park Service's DO #77-1: Wetland Protection, a Statement Of Findings has been prepared to document the rationale for locating visitor use structures and facilities within wetlands. The SOF provides the rationale for actions proposed including wetland restoration within the impacted areas of Big Cypress National Preserve. Approval of the SOF by the National Park Service Southeast Regional Director is required before implementation of this plan.

Water Quality: Regulations implementing Section 404 of the Clean Water Act (33 USC 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 USC 401 et seq.) are administered by the U.S. Army Corps of Engineers, which issues permits for work affecting navigable waters and wetlands of the United States.

Actions proposed will impact waters which are considered waters of the United States. Therefore the proposed actions pertaining to wetlands fill and restoration are subject to U.S. Army Corps of Engineers review under the 404 regulatory program in compliance with the Clean Water Act. A permit application will be made to the Corps of Engineers for proposed activities which are regulated by that agency in conformance with Section 404 of the Clean Water Act.

Under the State of Florida designation of Outstanding Florida Waters, no degradation of water quality, other than that allowed in Rule 62-4.242(2) and (3), F.A.C., is to be permitted.

If any unknown hazardous waste is found in areas proposed for development or visitor use, the NPS would comply with the Comprehensive Environmental Response Compensation and Liability Act (42 USC 9601 et seq.) to determine if resources are being polluted by the substance or if it presents a health and safety issue. If any excavated material is determined to be hazardous, the NPS would comply with the Resource Conservation and Recovery Act (42 USC 6901 et seq.).

Coastal Zone Management: Regulations implementing the Coastal Zone Management Act (CZMA) of 1972 require consistence with Florida's coastal zone management program. State concurrence with a National Park Service determination of consistency is required as part of plan approval.

Compliance with this Act is required by Federal agency activities in or affecting the state's coastal zone or activities in compliance with Section 307 of the CZMA, 16 U.S.C. Sections 1456(c) and (d) and implementing regulations, 15 C.F.R. Part 930, which require that such federal activities be conducted consistently with Florida's Coastal Management Plan (CMP). The objective of the consistency evaluation is to assure that Federal activities affecting Florida coastal resources are planned and implemented in conformance with the core laws of Florida's federally approved CMP. Under Section 380.23, Florida Statutes, only those Federal activities which may significantly affect Florida's coastal zone will be evaluated for consistency with the CMP.

The State Clearinghouse (SCH) is the single point of contact for intergovernmental coordination and review of state and federal activities. The SCH receives and disseminates all project information requiring federal consistency review to the state agencies responsible for implementing the CMP core laws. State agencies review the determinations and comment to the SCH on the consistency of the project with their applicable statutory authorities. This environmental assessment will be provided to the SCH as part of this consistency, comment, and review process. The NPS will seek a Coastal Consistency Determination.

Florida State Permitting: Since the actions proposed involve activities in the surface waters and wetlands of Florida an application permit approval must be obtained from the Florida Department of Environmental Protection. A permit application will be completed for those activities which require evaluation by this agency.

Storm Water Rule: The Storm Water Rule (40 CFR, Parts 122, 123, and 124) requires an Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) be submitted to the EPA, with a copy sent to the appropriate State Department of Environmental Quality, on construction activities in excess of five acres which includes activities such as clearing and grading; such clearing and grading activities may affect storm water discharge.

Additionally, the EPA NPDES process requires a Storm Water Pollution Prevention Plan (SWPPP) be developed prior to any ground-disturbing activities. A SWPPP is the guiding tool for the prevention, minimization, and mitigation of soil erosion and water pollution prevention during construction activities; the completed SWPPP must be available for public and agency inspection at the construction site.

Should the proposal be implemented more than five acres would be disturbed. Therefore, an Environmental Protection Agency National Pollutant Discharge Elimination System Notice of Intent would be submitted to the EPA. The contractor would be responsible for developing a Preserve-approved SWPPP and making it available at each of the construction sites.

Cultural Resources: The NPS is mandated to preserve and protect its cultural resources through the Organic Act of August 25, 1916, and through specific legislation such as the Antiquities Act of 1906, the National Environmental Policy Act of 1969 (as amended), and the National Historic Preservation Act of 1966, NPS *Management Policies*, the *Cultural Resources Management Guideline* (DO-28), and the Advisory Council on Historic Preservation's implementing regulations regarding "Protection of Historic Properties" (36 CFR 800). Other relevant policy directives and legislation are detailed in DO-28.

Early in the project, the Advisory Council on Historic Preservation (ACHP) and the Florida State Historic Preservation Office (SHPO) were invited to join in the planning process. This environmental assessment will be forwarded to the Florida SHPO for review and comment, and for concurrence with NPS' determination that the proposed actions would not adversely affect properties on or eligible for the National Register of Historic Places. A courtesy copy will be forwarded to the Advisory Council on Historic Preservation.

Relevant to the management of Big Cypress National Preserve are the various laws, rules, regulations, etc. that deal with American Indian relationships and discovery of human remains. Native American tribes traditionally associated with Big Cypress National Preserve were contacted early in the planning/design process. In addition, during design development, the NPS met on-site with representatives of these concerned Native American groups to work out mutually acceptable

design details. These actions would help ensure that the project proposals do not affect traditional cultural properties.

The 1992 amendments to the National Historic Preservation Act and the Archeological Resources Protection Act provide means whereby information about the character, location, or ownership of archeological sites, historic properties, and ethnographic sites, including traditional and cultural sites, might be withheld from public disclosure. This provision is especially important in cases where disclosure could risk harm to the resource or impede the use of a traditional site by practitioners.

Areas proposed for development (the areas of potential effect) have been surveyed for cultural resources, and site designs were revised to avoid impact on significant historic properties. In the unlikely event that buried human remains are discovered during project development, the National Park Service would begin consultations under the Native American Graves Protection and Repatriation Act.

SELECTED REFERENCES

- Becerra, Cesar Alejandro
n.d. *The Logging History of the Big Cypress*. Article on file at Big Cypress National Preserve, Florida.
- Dayhoff, Fred. Telecon with Diane Rhodes (NPS, DSC), March 24, 2000.
- Duever, Michael J., John E. Carlson, John F. Meeder, Linda C. Duever, Lance H. Gunderson, Lawrence A. Riopelle, Taylor R. Alexander, Ronald L. Myers, and Daniel P. Spangler.
The Big Cypress National Preserve. Research Report No. 8 of the National Audubon Society. New York, NY:National Audubon Society.
- Ehrenhard, John E., Robert S. Carr, and Robert C. Taylor
The Archeological Survey of Big Cypress National Preserve:Phase I. Tallahassee, FL:National Park Service, Southeast Archeological Center.
- Janis, M.W. and J. D. Clark. 1999.
The Effects of Recreational Deer and Hog Hunting on the Behavior of Florida Panthers. Final Report to Big Cypress National Preserve. 107 pp.
- Jansen, D.K. and J. J. Brooks. 1996.
Big Cypress National Preserve in 1996 Late Season Wading Bird Nesting Report for South Florida. SFWMD. West Palm Beach, FL. 2 pp.
- Marter, Walter, Division of Historic Preservation, Florida State Historic Preservation Office,
Telecon with Diane Rhodes (NPS, DSC), May 1, 2000.
- McBride, R. 2000.
Current Panther Distribution and Habitat Use. A review of field notes. Fall 1999 - Winter 2000. Prepared for Florida Panther Subteam of MERIT. USFWS. 26 pgs.
- Ogden, J.C. 1990.
Habitat Management Guidelines for the Wood Stork in the Southeast Region. U.S. Fish and Wildlife Service. 9 pp.

Executive Orders

- Executive Order 11988 (Floodplain Management)
Executive Order 11990 (Protection of Wetlands)
Executive Order 12898 (Environmental Justice)

National Park Service, U.S. Department of the Interior

DO-2 *(Planning Process Guidelines)*
DO-12 *draft (NEPA Compliance Guidelines)*
DO-28 *(Cultural Resource Management)*
DO-77-1 *(Wetland Protection)*

NPS-65 *(Explosives Use and Blasting Program)*
NPS-77 *(Natural Resources Management)*

1984 *Interpretive Plan, Big Cypress National Preserve.*
1990 *Statement for Management, Big Cypress National Preserve.*
1991 *General Management Plan/Environmental Impact Statement (GMP/EIS), Big Cypress National Preserve, Florida.*
ND *Disturbed Land Restoration, Ochopee Irrigation Canal, Big Cypress National Preserve.*
1998 *Resources Management Plan and Environmental Assessment for Big Cypress National Preserve.*

U.S. Federal Government

1864 Act of Congress (13 Stat. 325)
1890 Act of Congress (26 Stat. 650)
1906 Joint Resolution of Congress (34 Stat. 831)
1916 NPS Organic Act
1955 Federal Air Quality Law
1963 Clean Air Act, as amended
1964 Wilderness Act
1966 National Historic Preservation Act
1968 The Architectural Barriers Act (P.L. 90-480)
1969 National Environmental Policy Act (NEPA)
1973 The Rehabilitation Act (P.L. 93-112)
1973 Endangered Species Act, as amended
1977 Clean Water Act
1984 Uniform Federal Accessibility Standards (49 CFR 31528)
1990 Native American Graves Protection and Repatriation Act

36 CFR 800.11 40 CFR, Part 503

CONSULTATION/COORDINATION

Preparers

Michele D'Arcy, Former Job Captain, NPS, DSC
John Donahue, Superintendent, NPS, BICY
Kristie Franzmann, Job Captain, NPS, DSC
Wally Hibbard, Former Superintendent, NPS, BICY
John Hoesterey, Project Manager, NPS, DSC
Carolyn Kriz, Former Assistant Superintendent, NPS, BICY
Diane Rhodes, Cultural Resource Specialist, NPS, DSC
Steve Stone, Natural Resource Specialist, Principal Document Author, NPS, DSC

Consultants

Ron Clark, Chief Resource Management Specialist, NPS, BICY
Norm Feders, Florida Department of Transportation
Deborah Jansen, Wildlife Biologist, NPS, BICY
Stuart Johnson, Chief of Planning, NPS, SERO
Leslie Krueger, WASO, WRD
Tony Pernas, Botanist, NPS, BICY
Dan Sholly, Chief Ranger, NPS, BICY
Robert Sobczak, Hydrologist, NPS, BICY
Clarence Tears, Big Cypress Basin, South Florida Water Management District
Don Weeks, Water Resources Division, NPS, WASO

Florida Department of Environmental Protection, South District
Luci Blair, Environmental Administrator, Punta Gorda, Florida

Florida Department of Transportation, TransStat Office,
Roberta Martin, Traffic Engineering Technician, Tallahassee, FL
Florida Department of Transportation Crash Records & Research Division
Lula Revels, Crash Records and Research Engineer, Tallahassee, FL

Florida Fish and Wildlife Conservation Commission
Jim Beever, Biological Scientist IV, Punta Gorda, Florida

Robert Peccia & Associates
Mike Kulbacki
Doug Widmayer

U.S. Army Corps of Engineers
Chad Conickson, Biologist, Ft. Myers, Florida

U.S. Fish and Wildlife Service, South Florida Ecosystems Field Office
James Slack, Project Leader, Vero Beach, Florida

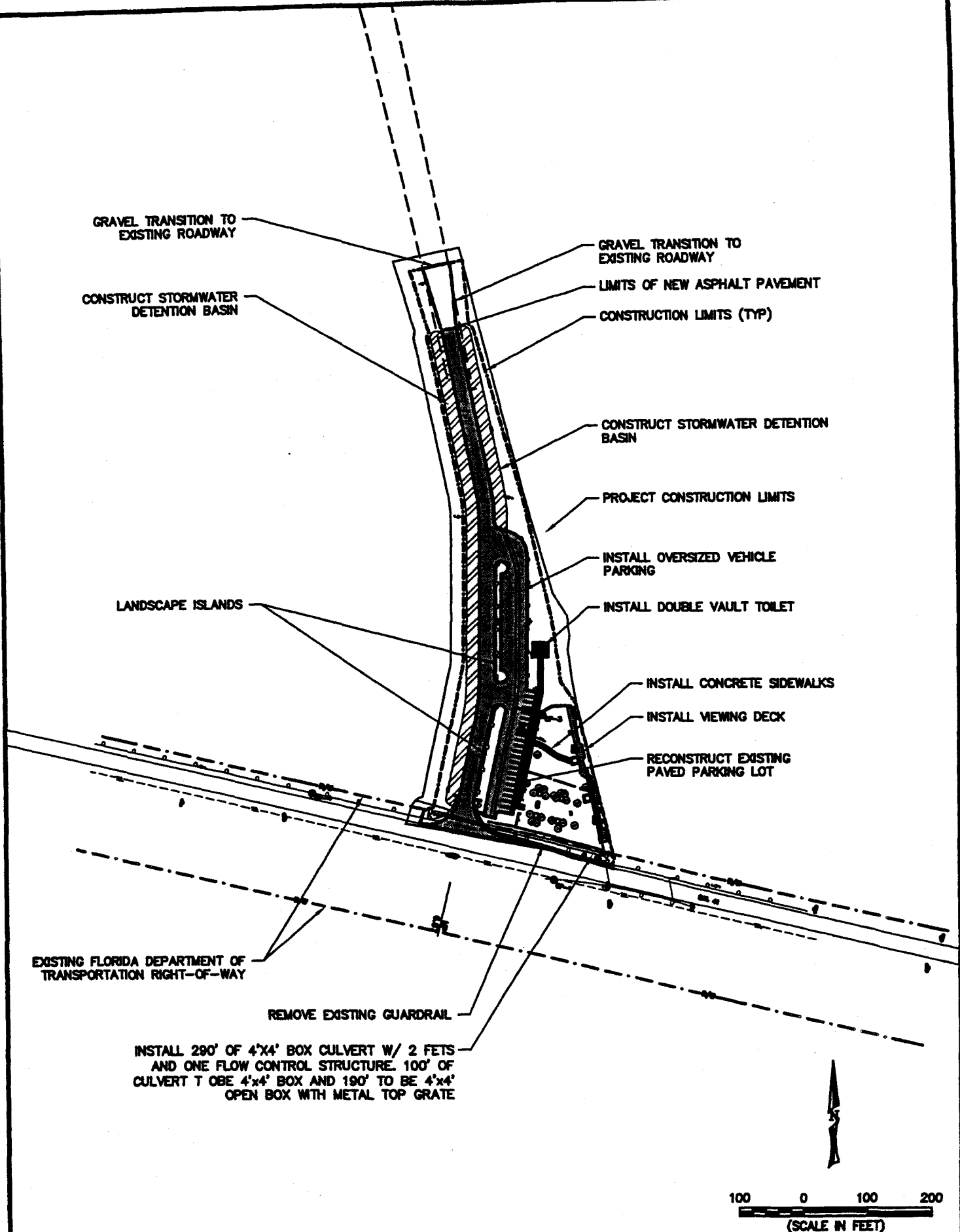


FIGURE 1
DSC 176/20,058

**H P WILLIAMS PICNIC
AREA PROPOSED
DEVELOPMENT PLAN**

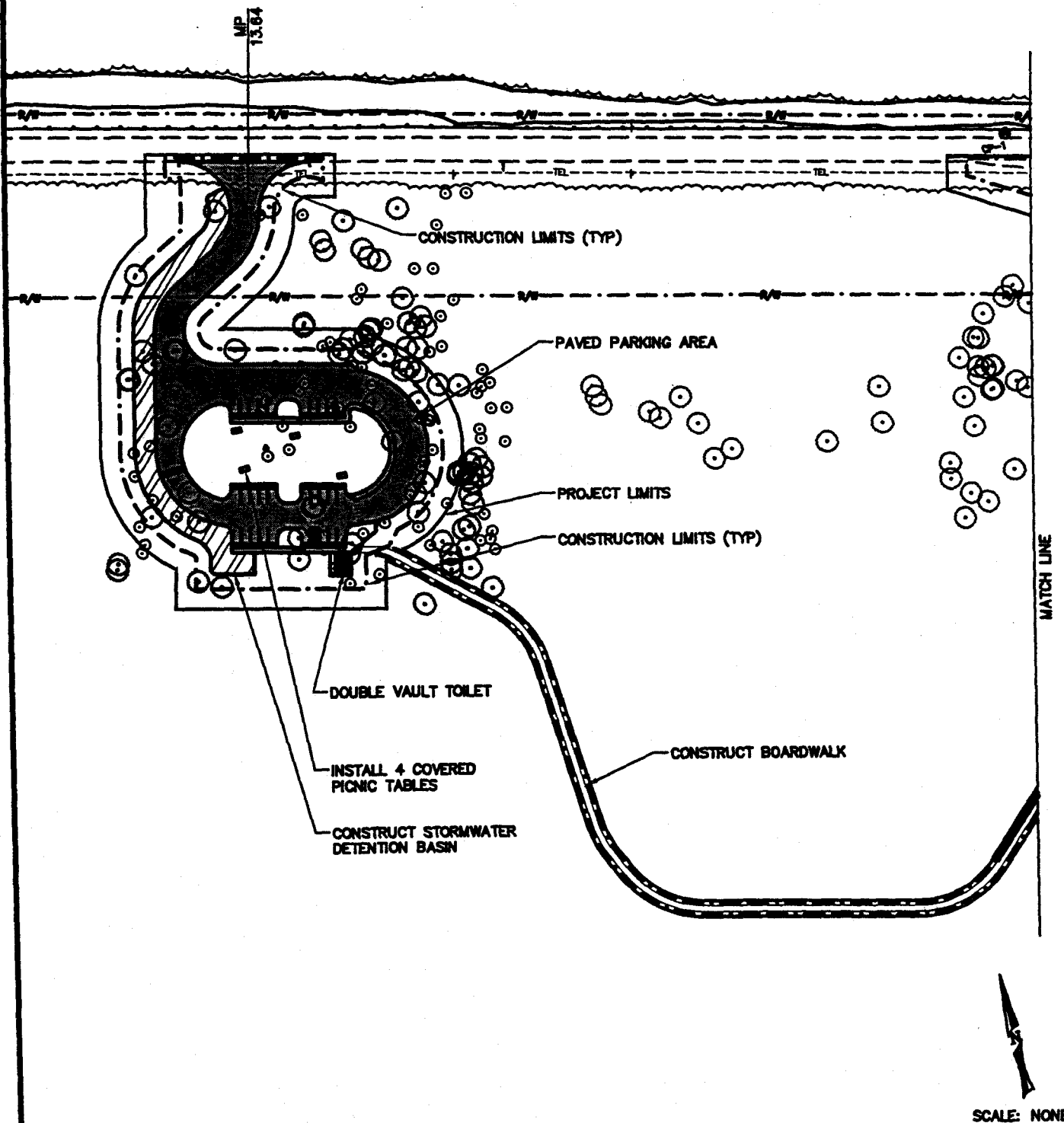
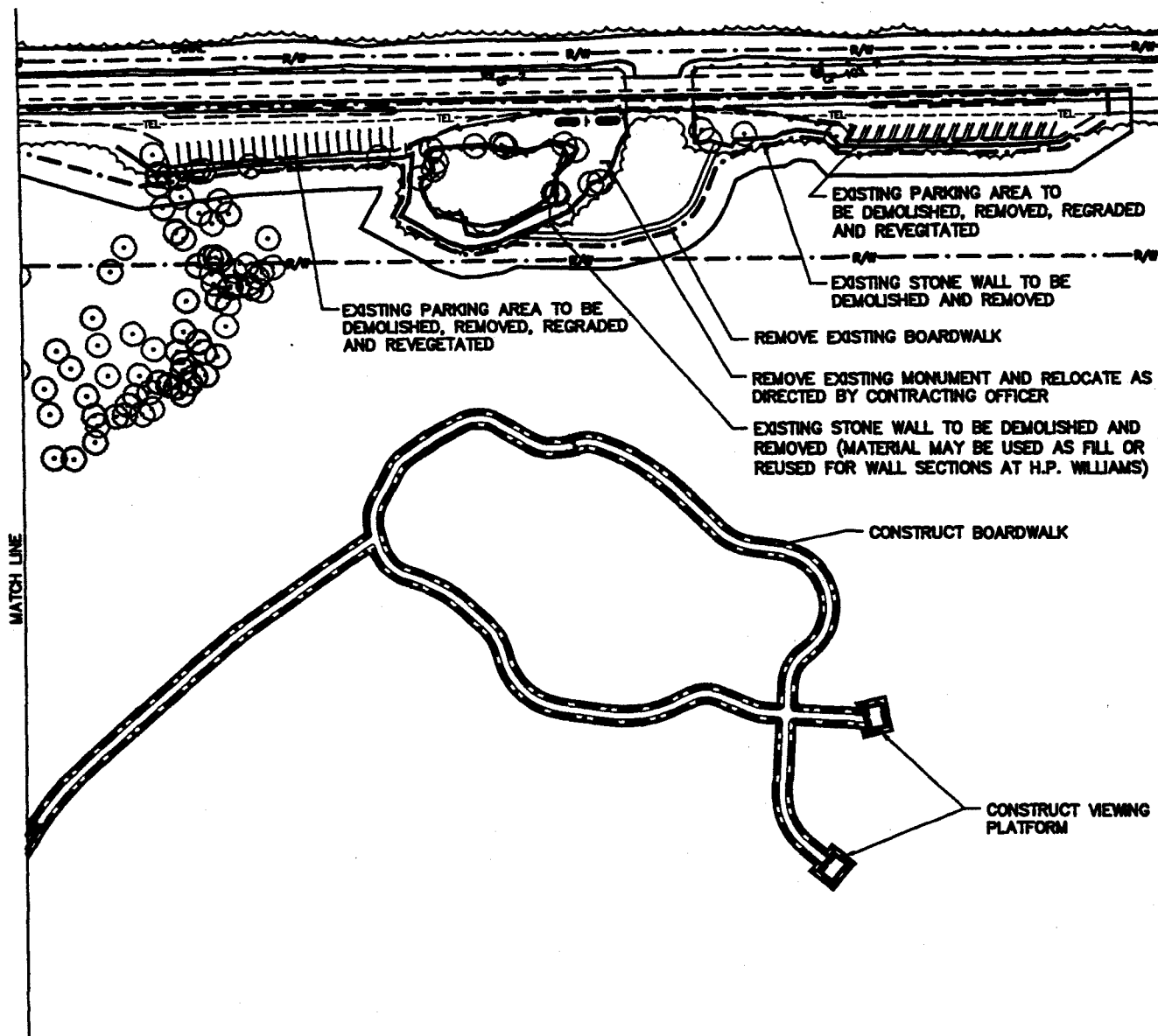


FIGURE 2A
DSC 176/20,059

**KIRBY STORTER
PROPOSED DEVELOPMENT PLAN**



SCALE: NONE

FIGURE 2B
DSC 176/20,060

**KIRBY STORTER
PROPOSED DEVELOPMENT PLAN**

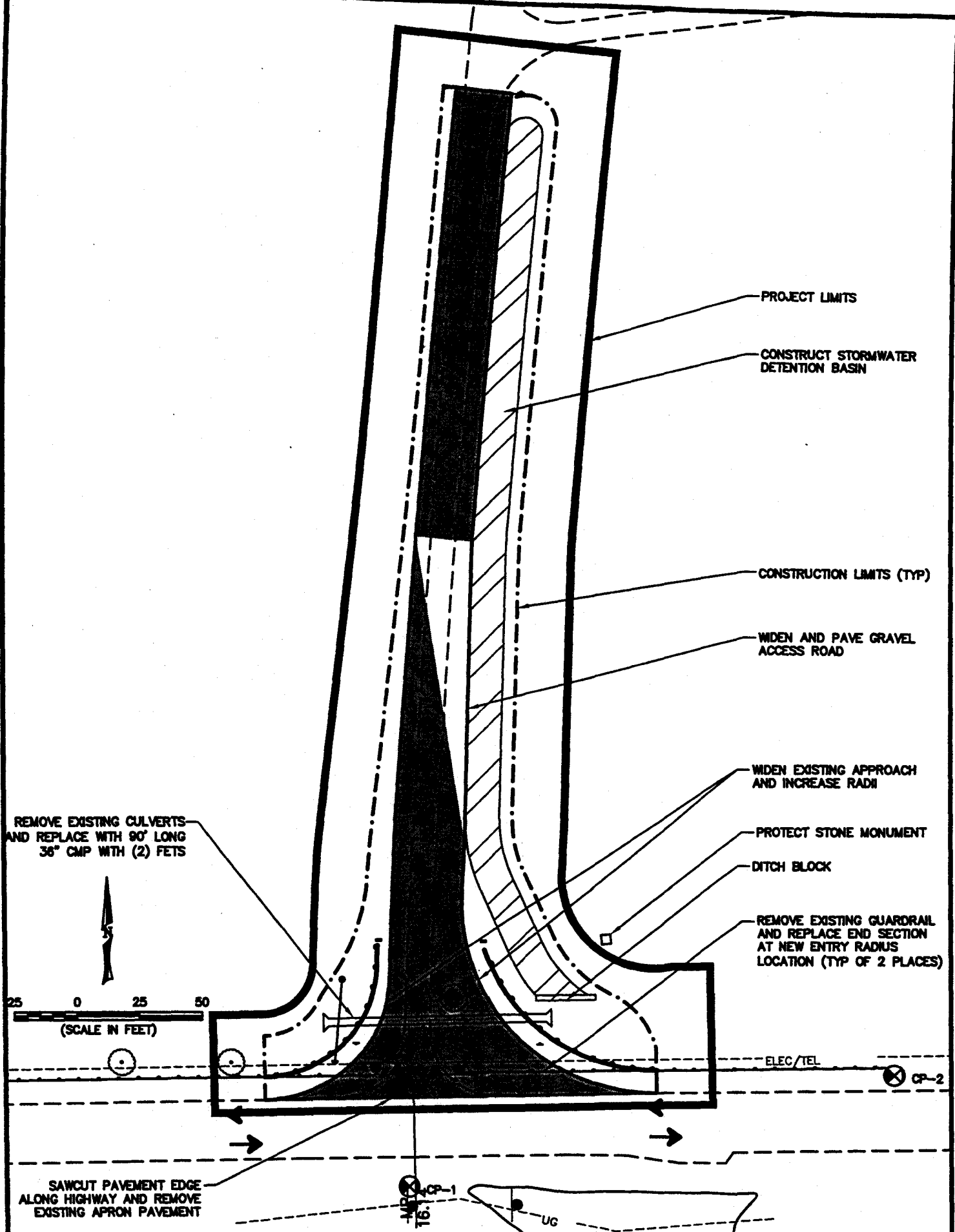


FIGURE 3
DSC 176/20,062

**MONUMENT CAMPGROUND
PROPOSED DEVELOPMENT PLAN**

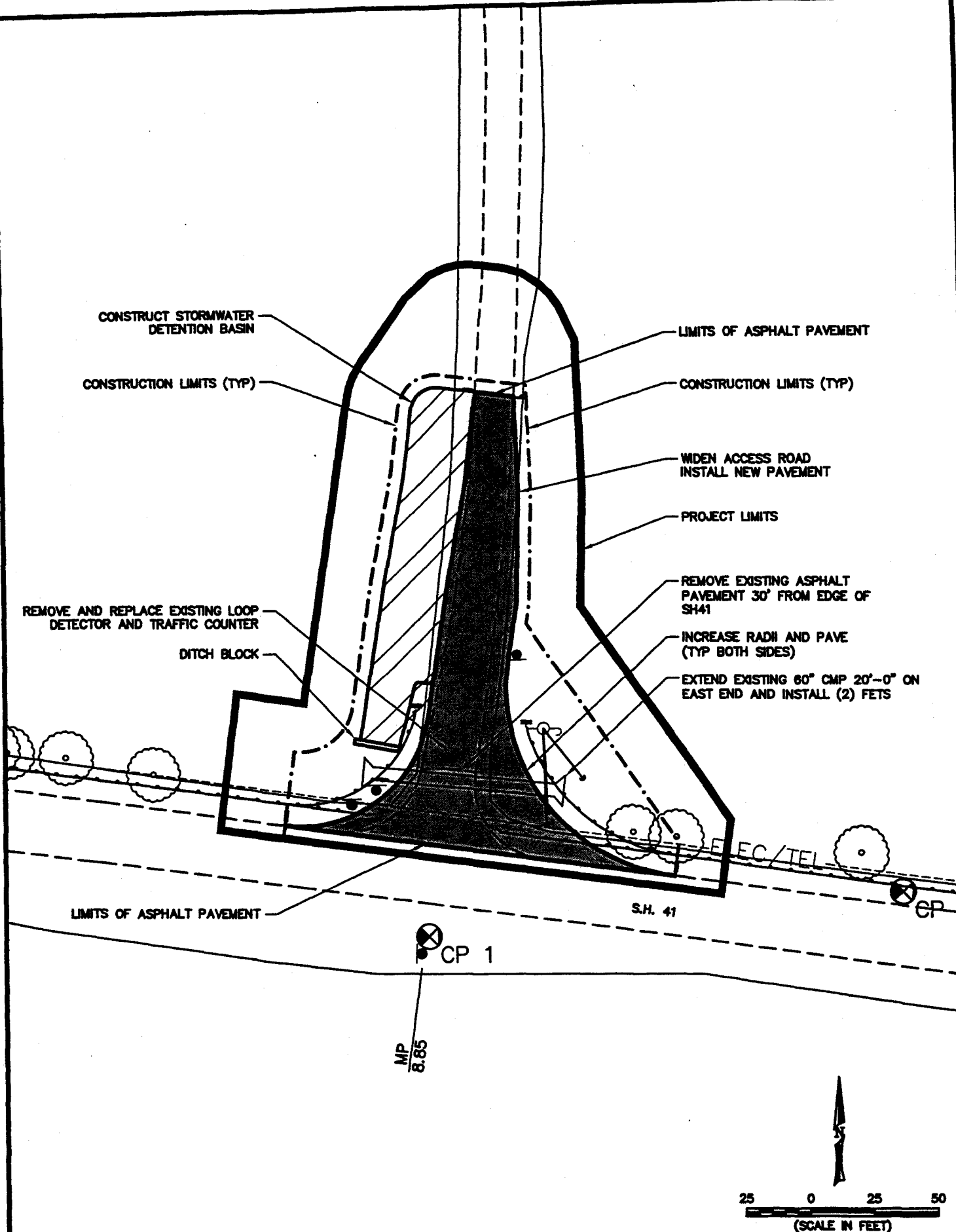


FIGURE 4
DSC 176/20,063

**BURNS LAKE CAMPGROUND
PROPOSED DEVELOPMENT PLAN**

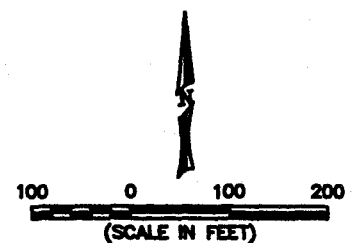
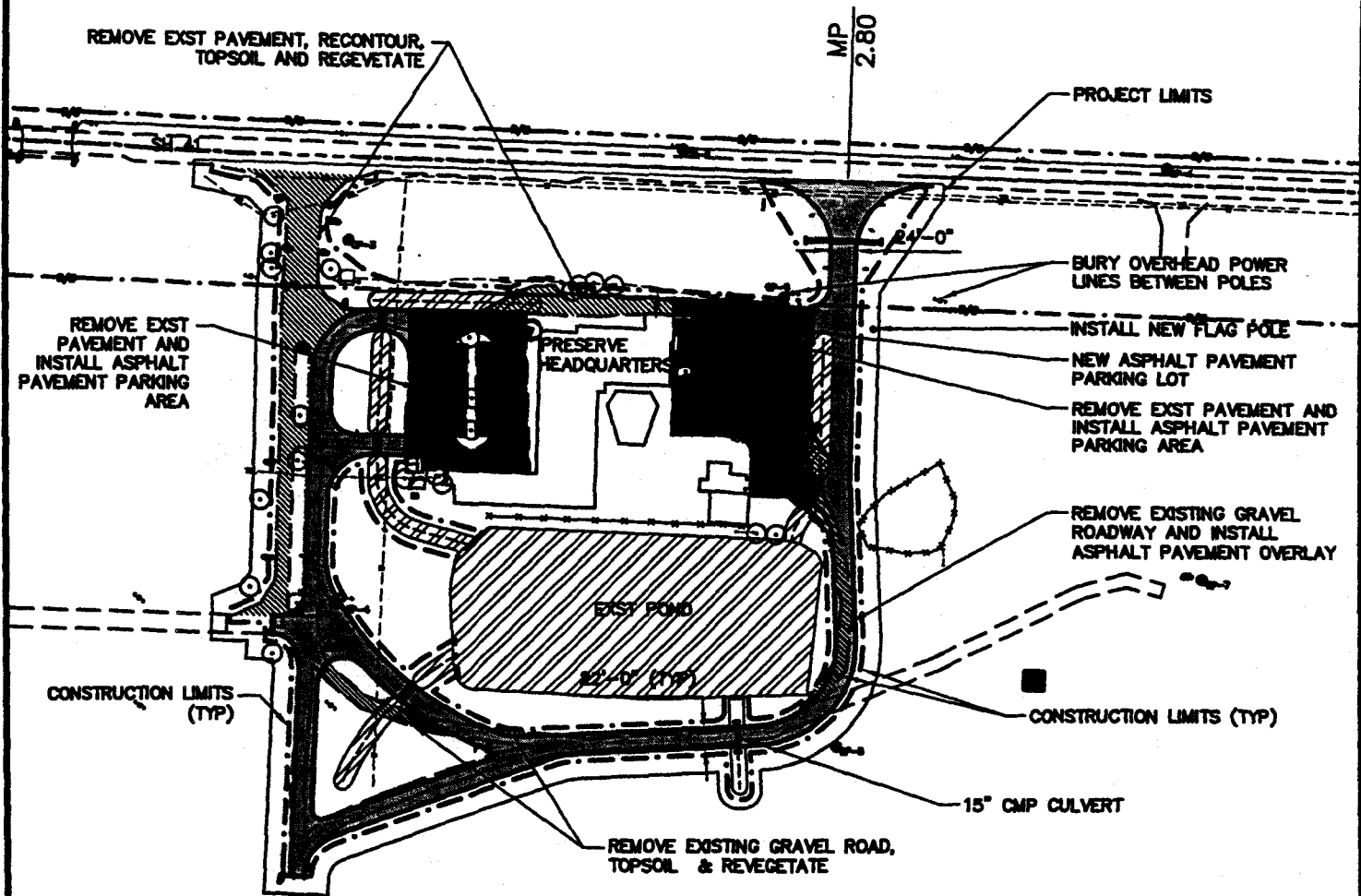


FIGURE 5
DSC 176/20,064

**PRESERVE HEADQUARTERS
PROPOSED DEVELOPMENT PLAN**

NOTE:

PROJECT INCLUDES CONSTRUCTION OF 3.69 MILES OF BOARDWALK IN 4 SECTIONS ALONG THE EXISTING TRAM ROAD ALIGNMENT PLUS 8 VIEWING PLATFORMS (NOT SHOWN IN DRAWING).

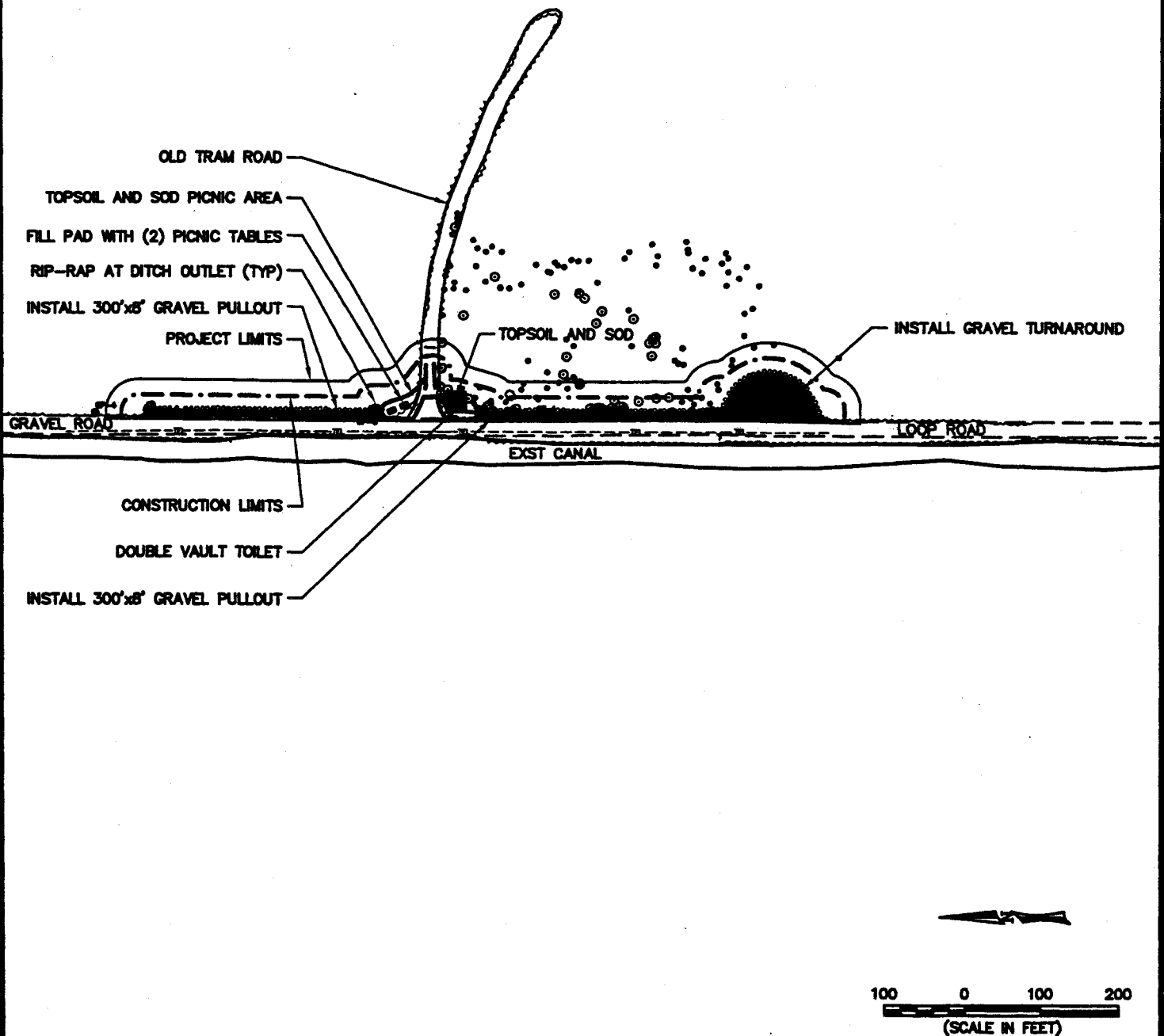


FIGURE 6
DSC 20,065

**GATOR HOOK
PROPOSED DEVELOPMENT
PLAN**

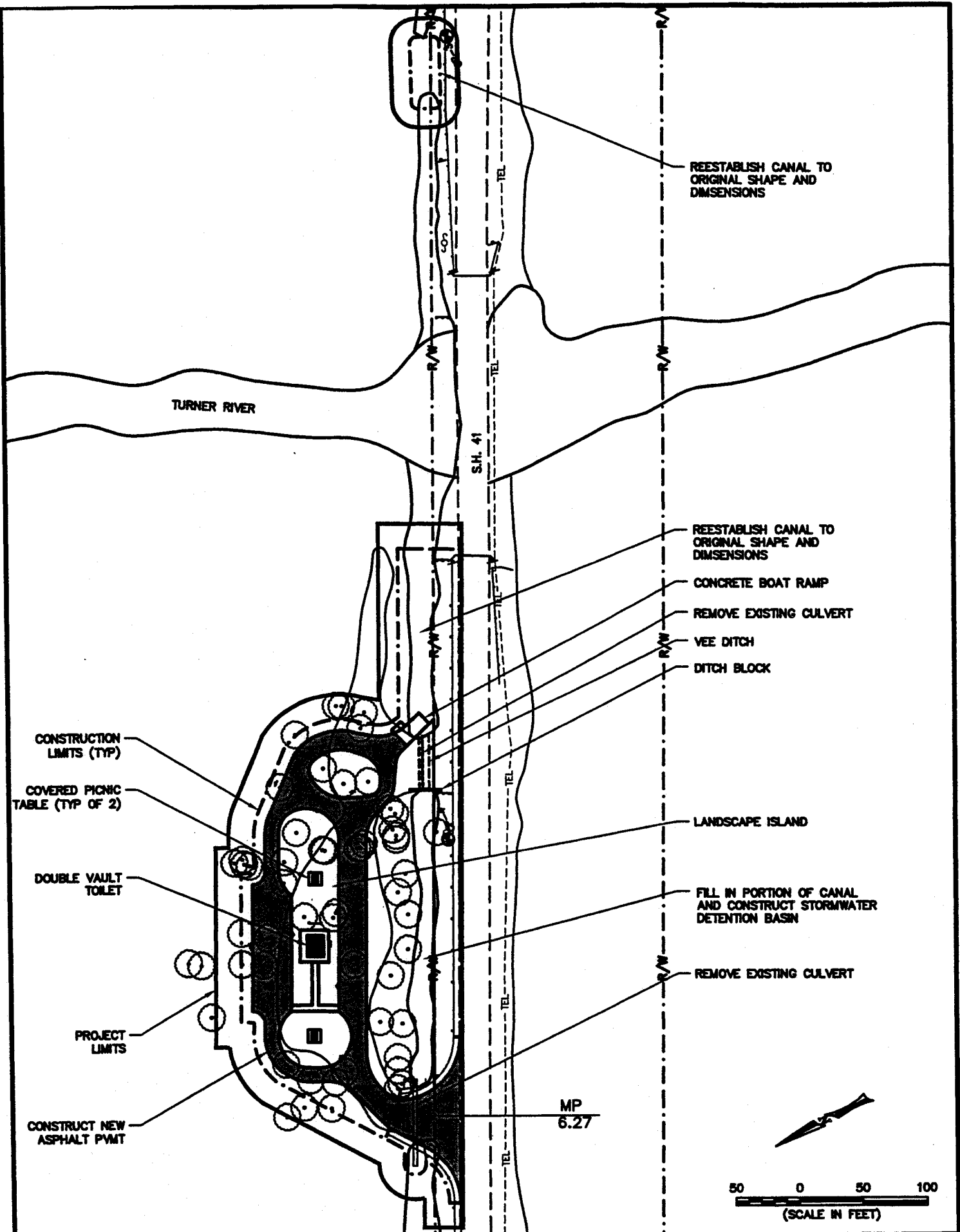


FIGURE 7
DSC 176/20,066

**TURNER RIVER CANOE
ACCESS PROPOSED
DEVELOPMENT PLAN**

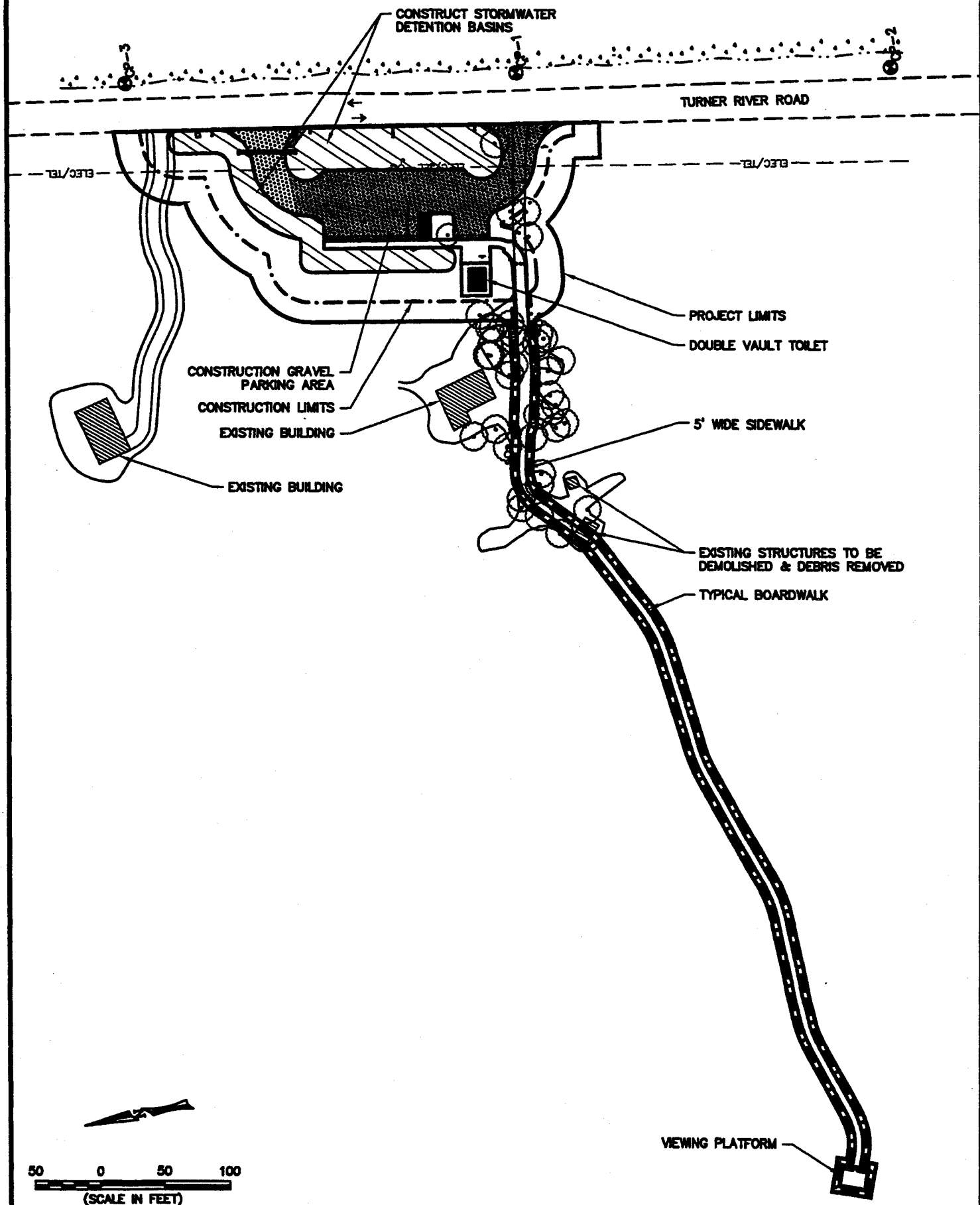


FIGURE 8
DSC 176/20,067

**TURNER RIVER TRAILHEAD
PROPOSED
DEVELOPMENT PLAN**

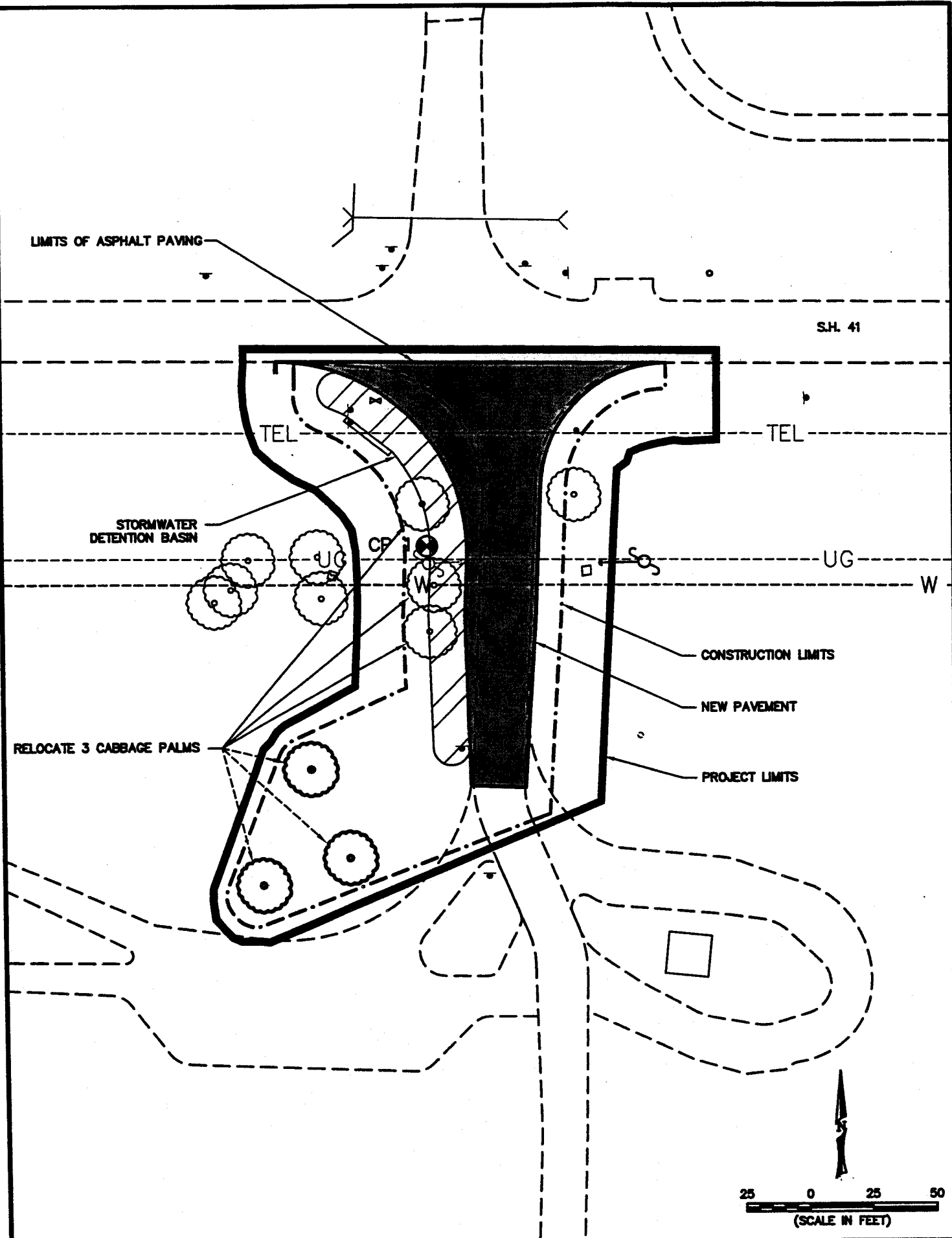


FIGURE 9
DSC 176/20,068

**DONA DRIVE CAMPGROUND
PROPOSED DEVELOPMENT PLAN**

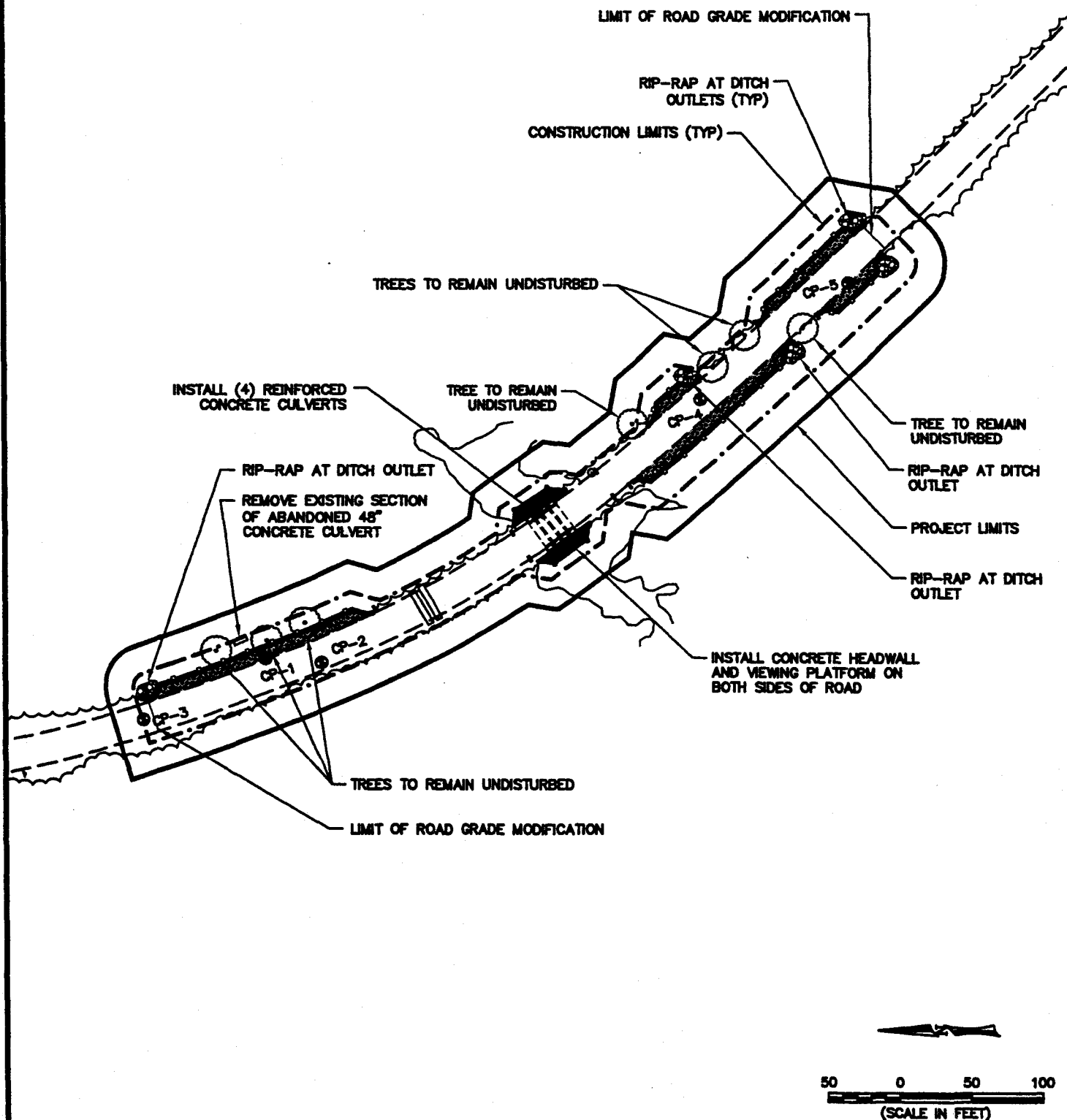


FIGURE 10
 DSC 176/20,069

**SWEETWATER STRAND
 PROPOSED DEVELOPMENT PLAN**

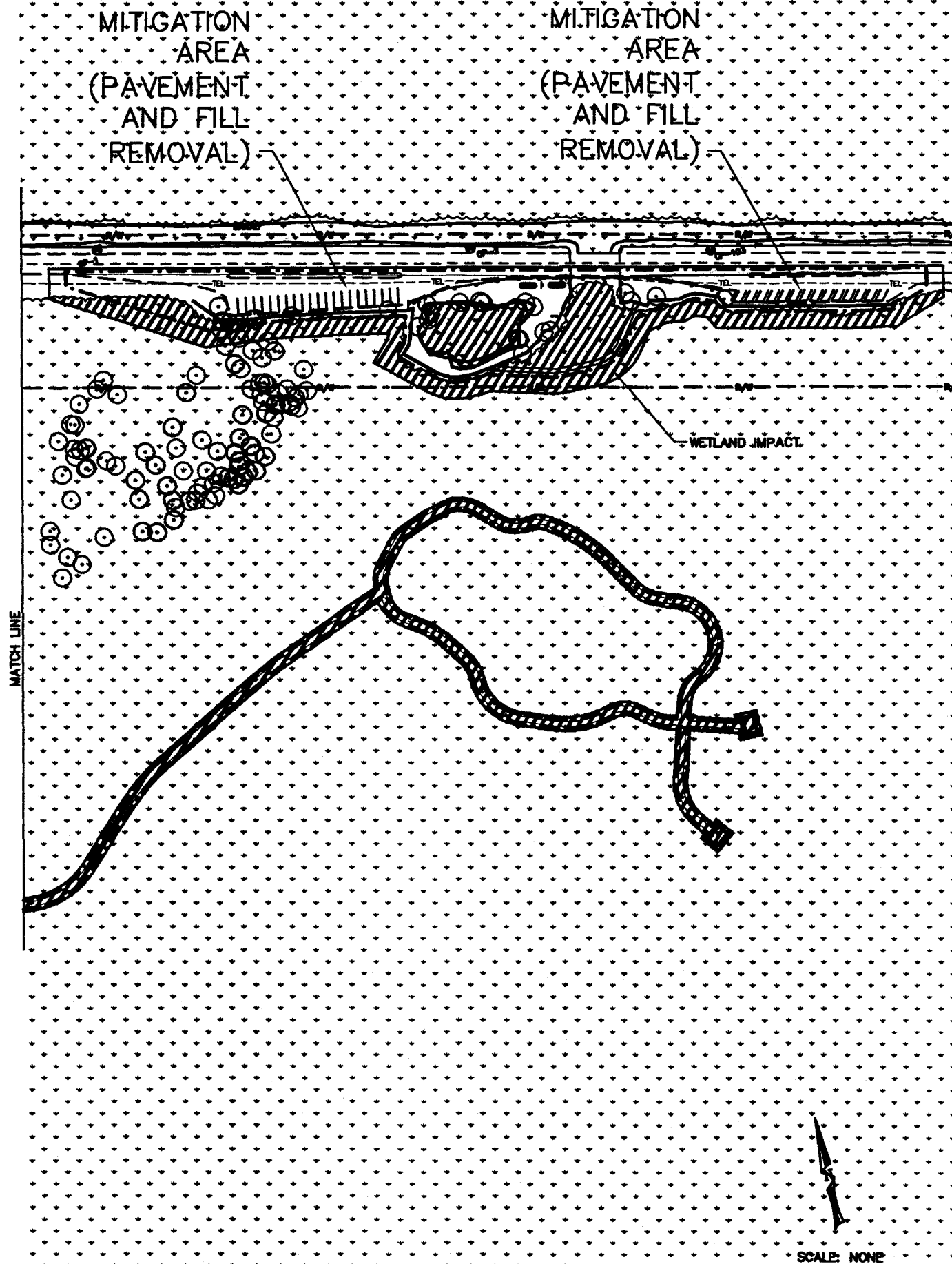


FIGURE 12

**KIRBY STORTER
DELINEATION OF
WETLANDS**

Ochopee Irrigation Canal Restoration

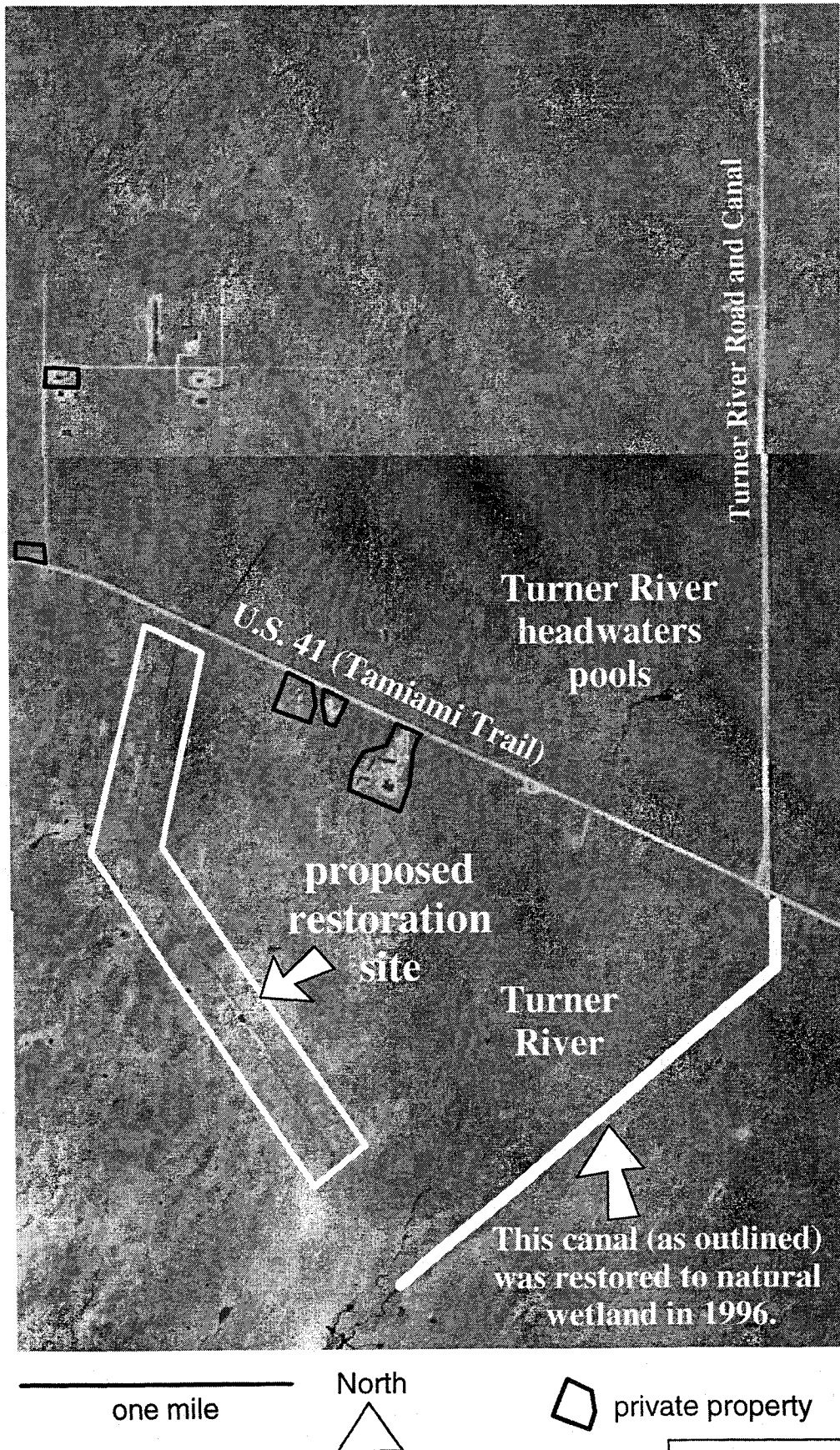


Figure 13

Big Cypress National Preserve Scenic Corridor Visitor Safety Improvements Tamiami Trail (U.S. Highway 41)

Wood Stork Colonies and Florida Panther Locations

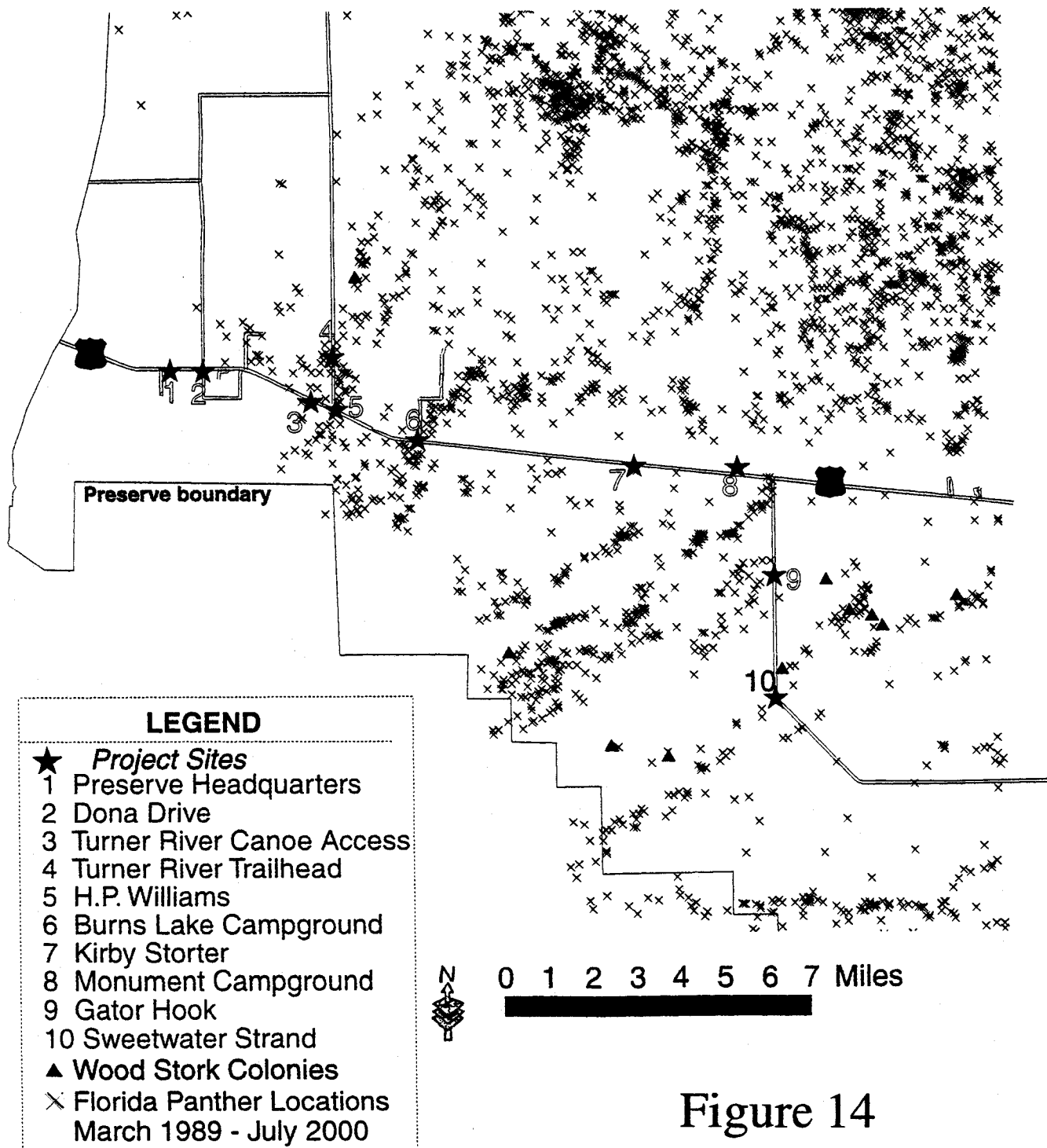
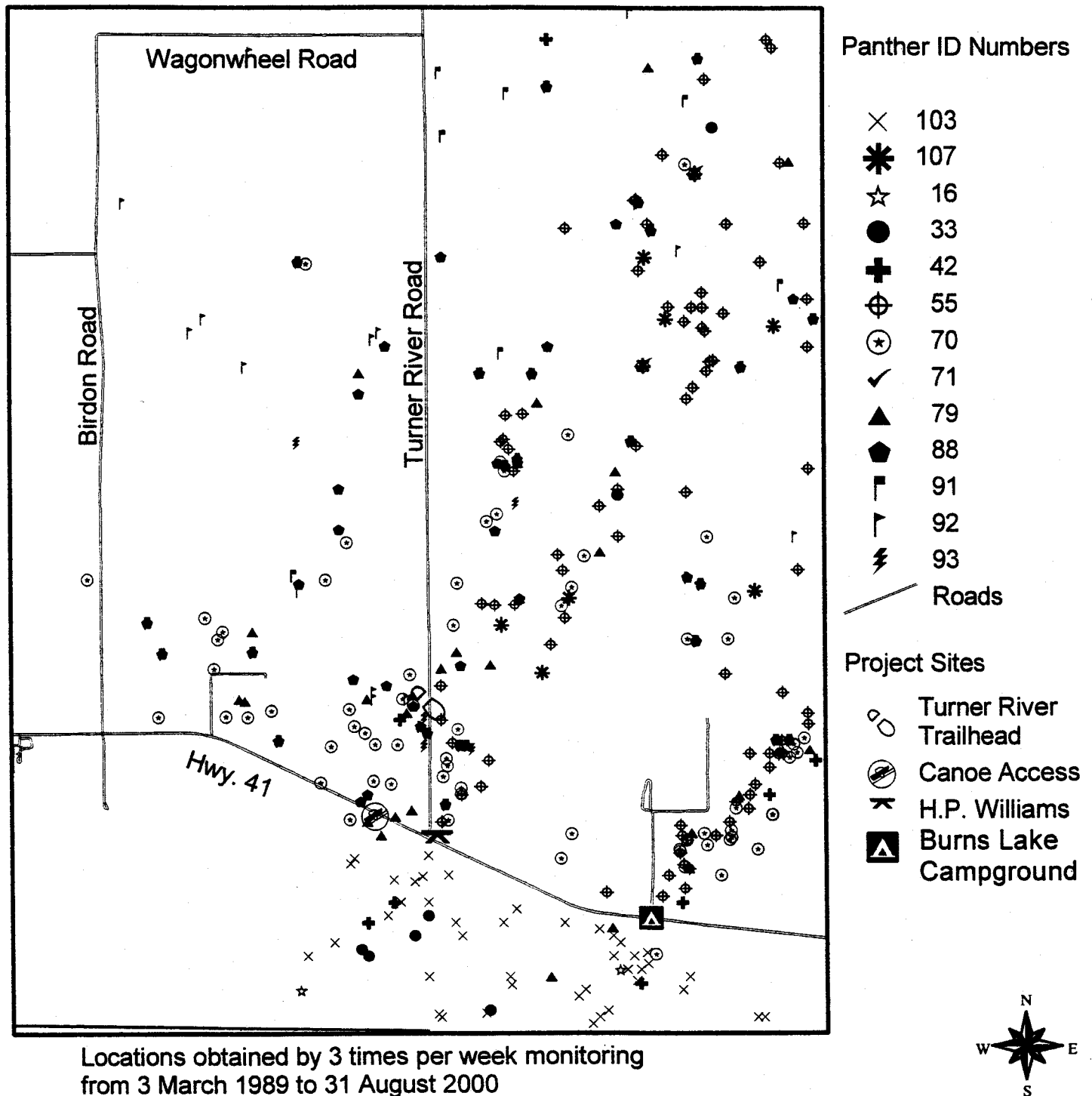


Figure 14

Panther Locations in the Vicinity of the Turner River Road Project Sites.



1 0 1 2 Miles

Figure 15

S. Schulze/D. Jansen
Resource Management Division
Big Cypress National Preserve

STATEMENT OF FINDINGS
FOR
EXECUTIVE ORDER 11990 "PROTECTION OF WETLANDS"

Scenic Corridor Visitor Safety Highway Improvements
Environmental Assessment
Big Cypress National Preserve
Florida

February 2001

RECOMMENDED: _____
SUPERINTENDENT, BIG CYPRESS NATIONAL PRESERVE DATE

CONCURRED: _____
CHIEF, WATER RESOURCES DIVISION DATE

CONCURRED: _____
SOUTHEAST REGIONAL COMPLIANCE OFFICER DATE

APPROVED: _____
DIRECTOR, SOUTHEAST REGION DATE

INTRODUCTION

Big Cypress National Preserve is in Collier, Dade-Miami, and Monroe counties, southern Florida. The approved 1991 *General Management Plan/Environmental Impact Statement* (GMP) for the Preserve serves to guide visitor use, manage natural and cultural resources, and directs general development within the Preserve. This plan states the NPS's intent to manage the area's resources, providing for legislatively authorized uses, and allowing for appropriate visitor use and interpretation of the resources. The great majority of Big Cypress is wetlands, and some occupation of this resource is unavoidable if visitor use, education and interpretation, and recreation are to be provided.

The NPS has prepared and made available an Environmental Assessment (EA) proposing scenic corridor visitor safety highway improvements. The preferred alternative (proposed action) proposes to improve and redesign or establish ten interpretive/orientation wayside areas (turnouts) areas adjacent to Highway 41 (the Tamiami Trail), and Turner River and Loop roads in Big Cypress National Preserve, Florida (Vicinity Map). This action is needed because safety on the Tamiami Trail is compromised by traffic patterns, high speeds, lack of adequate turnouts, and visitors wishing to stop and view Preserve resources. In 1996, the accident rate for this section of the Tamiami Trail highway was 136 percent higher than the statewide average rate. Additional turnouts along the Tamiami Trail and associated roads would appreciably reduce accident rates along the Tamiami Trail, improve safety, and enrich the visitor experience.

The preferred alternative proposes development and restoration within wetlands; approximately 5.82 acres of wetlands would be filled (excludes boardwalks and viewing platforms) to provide for visitor facilities at Preserve Headquarters (0.22 acres) (Figure SOF 1), Turner River Canoe Access (0.50 acres) (Figure SOF 2), HP Williams (0.96 acres) (Figure SOF 3), Turner River Trailhead (0.64 acres) (Figure SOF 4), Burns Lake Campground (0.16 acres) (Figure SOF 5), Kirby Storter (1.98 acres) (Figures SOF 6a & SOF 6b), Monument Campground (0.34) (Figure SOF 7), Gator Hook (0.76 acres) (Figure SOF 8), and Sweetwater Strand (0.26 acres) (Figure SOF 9). No wetlands would be impacted by the proposal at Dona Drive.

Mitigation for this project would consist of implementing a Preserve proposal to restore 0.03 acres of presently filled wetlands at Turner River Canoe Access (Figure SOF 2); 0.05 acres of presently filled wetlands at Kirby Storter (Figure SOF 6b); and 12.0 acres of filled wetlands at the Ochopee Irrigation Canal near the Turner River headwaters in the Preserve (Figure SOF 10) (*Disturbed Land Restoration, Ochopee Irrigation Canal, Big Cypress National Preserve, Detailed Project Plan*). A complete description of this Ochopee Irrigation Canal restoration project is available at Preserve headquarters.

Executive Order 11990 ("*Protection of Wetlands*") requires the NPS and other federal agencies to evaluate the likely impacts of actions in wetlands. The objectives of the executive order are to avoid to the extent possible the long-and short-term adverse impacts associated with the occupancy, modification, or destruction of wetlands and to avoid indirect support of development and new

construction in such areas wherever there is a practicable alternative. This Statement Of Findings (SOF) has been prepared to comply with Executive Order 11990. The National Park Service's Director's Order 77-1 (Wetland Protection) implements EO 11990.

BACKGROUND, PREVIOUS PLANNING, AND THE PROPOSED ACTION

The 1991 GMP identified the need for traffic safety improvements, waysides, interpretive bulletin cases, boardwalks, and other site amenities at a variety of key locations in the Preserve. The design phase of this present project, Scenic Corridor Visitor Safety Highway Improvements, consists of 12 sites which are HP Williams, Kirby Storter, Monument Campground, Burns Lake Campground, Preserve Headquarters, Gator Hook, Turner River Trailhead, Turner River Canoe Access, Dona Drive, Florida Trailhead, Oasis Visitor Center, and Sweetwater Strand.

Planning, public involvement, 1969 National Environmental Policy Act (NEPA) compliance, and a SOF for floodplains and wetlands compliance for two of the sites was completed in the 1991 GMP. These sites are:

Oasis Visitor Center:

Amenities: Reconfigure parking (50 cars), relocate Florida Trail, reconfigure canal, and provide an observation platform.

Florida Trailhead

Amenities: Loop Road trailhead parking

This present project, Scenic Corridor Visitor Safety Highway Improvements, proposes to continue implementation of the 1991 GMP by providing additional safety improvements and waysides with amenities at seven sites directly adjacent to U.S. Highway 41; one site along Turner River Road, and two sites along Loop Road. As stated above, compliance procedures have been completed for the Oasis Visitor Center and Florida Trailhead improvements in the 1991 GMP. Development activities for those two sites are not addressed in this present document and the reader is referred to the 1991 GMP for planning of those sites.

The proposed action alternative proposes to provide visitors a safer way to experience a variety of features of the Big Cypress Swamp. Currently, the Preserve has few developed facilities to accommodate the visiting public. The proposal to develop and/or improve existing facilities at all sites is completely within the scope and intent of approved 1991 GMP and other park documents.

The proposed action is described in detail in the EA. Site developments would include:

- Kiosks to display safety bulletins and interpretive information about the Preserve and the south Florida ecosystem.
- Deceleration and acceleration lanes at parking areas along Highway 41 and controlled parking for a total of 125 vehicles.

- Elevated boardwalks and viewing platforms extending into the cypress strands or grass prairies with interpretive guide plaques along the walk.
- Permanent screened structures for restrooms.

Constructing visitor use facilities would require filling of wetlands at Preserve Headquarters (0.22 acres), Turner River Canoe Access (0.50 acres), HP Williams (0.96 acres), Turner River Trailhead (0.64 acres), Burns Lake Campground (0.16 acres), Kirby Storter (1.98 acres), Monument Campground (0.34), Gator Hook (0.76 acres), and Sweetwater Strand (0.26 acres).

Proposed NPS developments would occupy about 5.82 acres of wetlands.

Mitigation for this project would also consist of removing 0.03 acres of Mixed-Hardwood Swamp wetland fill at Turner River Canoe Access and 0.05 acres of Cypress Strands wetland fill at Kirby Storter. Combined, this 0.08 acre area would be returned to natural wetlands of the type that existed prior to filling.

Additional mitigation for this project would consist of implementing a Preserve proposal to restore 12.0 acres of filled wetlands at the Ochopee Irrigation Canal near the Turner River headwaters in the Preserve (*Disturbed Land Restoration, Ochopee Irrigation Canal, Big Cypress National Preserve, Detailed Project Plan*). Presently, the 12.0 acres of canal and canal-side man-made berm at the Ochopee Irrigation Canal is causing unnatural hydrologic and vegetation disturbances. The canal and berm features alters both the natural hydrologic regime and the natural vegetative species composition, diversity, and abundance of adjacent and downstream wetlands. Although it is difficult to identify the exact type of wetland which was altered by the canal and canal-side man-made berm, Big Cypress National Preserve hydrological staff have estimated it may have been sawgrass dominated marshlands, Palustrine Emergent Seasonally Flooded Wetland (PEMC, Palustrine emergent) (Cowardin system of Wetland Classification). The southern end near the Turner River may have been brackish do to influx of tidal flow during low tides and low water seasons. The berm would be returned to the adjacent canal from which it was taken and much of the 12.08 acres would be cleared of unnatural and exotic vegetation, such as melaleuca (*Melaleuca quinquenervia*). A complete description of this Ochopee Irrigation Canal restoration project is available at Preserve headquarters.

An additional 0.9 acres of fill would be removed at Kirby Storter. The 0.9 acres was originally cypress strand (Palustrine Forested Seasonally Flooded Wetland) and would be restored to its original wetland condition. Should the project be implemented, wetland mitigation would restore 12.98 acres of the canal to natural hydrologic regime and vegetative cover. The mitigation project would be completed by May, 2001.

Should the project be implemented, approximately 5.82 acres of wetland would be filled and 12.98 acres of presently impacted wetlands would be returned to natural conditions for a net gain of 7.16 acres of restored wetlands. This results in a greater than 2:1 mitigation ratio.

As advised by the Florida Department of Environmental Regulation, all development would be designed to minimize the size of the fill pad and to avoid segmenting wetland communities. Wetland types that have been identified by the NPS as important resource areas would be avoided to the maximum extent possible and wetland disturbance would be limited primarily to Cypress-Mixed swamp forest and wet prairie, both of which are widespread in the Preserve and throughout South Florida. Filling would be mitigated by the removal of 12.98 acres of abandoned fill material in wetlands from the Ochopee Irrigation Canal near the Turner River headwaters and at Kirby Storter. Restored wetlands would be of similar or greater productivity than those taken.

In addition, natural resource management would emphasize the perpetuation of wetland values. The Preserve would actively assist private landowners and federal, state, and local regulatory agencies in protecting wetlands that are outside the Preserve boundary, but whose use may affect Preserve resources. Moreover, wetlands would be used for their educational, recreational, and scientific qualities through expanded interpretive programs and research emphasis. The National Park Service has determined that the proposed action conforms to State and local ordinances concerning floodplains, wetlands, and coastal zone management.

Alternatives Considered: The no action alternative (status quo alternative) describes the scenario that would occur if conditions remained essentially as they are today. The hazard to visitors travelling the Tamiami Trail because of inadequate parking and other facilities would continue. In addition, previously filled sites would continue to divert or impound surface water, and impact wetlands by filling them.

WETLANDS WITHIN THE PROJECT AREA

Big Cypress National Preserve is centrally located between Miami and Naples (Vicinity/Project Location Map). Wetlands have been mapped by the U.S. Fish and Wildlife Service as part of the National Wetlands Inventory. Hydroperiod, the amount of time each year that soils are saturated, is the major determinant of vegetative communities, and a difference of only a few inches in elevation subsequently changes the hydroperiod and leads to the establishment of totally different plant communities. At the peak of the rainy season (May through October) as much as 90 percent of the Preserve is inundated to depths ranging from a few inches to more than 3 feet. When the dry season begins, the water levels recede until at its driest, perhaps only 10 percent of the Preserve is covered by water (i.e., the lowest areas such as ponds and sloughs).

Eleven major vegetation types are within the Preserve. The majority of Preserve lands are classified as wetlands with the exceptions being hardwood hammocks, some pinelands, and artificially filled areas.

Not all vegetation types would be affected by the proposed action. Following is a brief description of the vegetation types that would be affected by the Proposed Action. Please see Appendix D of the EA for a detailed list of major vegetative species of each project site.

Cypress Strands. Cypress strands are found throughout the Preserve in deep mineral soil depressions, but they are distinct from cypress domes because they form along major drainages and generally retain a north-south orientation. Dominant vegetation features, when present, are very large cypress trees, a few over 100 feet tall and 6 feet in diameter. Understory vegetation is diverse, unlike cypress domes, and includes shade-tolerant hardwoods, ferns, and epiphytes. All cypress strands within the Preserve have been logged, and many sites are now more characteristic of the mixed-hardwood swamps described in the following section. Cypress strands are also associated with relatively deep water, with a hydroperiod that extends over 240 days. This wetland type occurs at the Kirby Storter and Sweetwater Strand project sites. According to the Cowardin system of Wetland Classification, the cypress strand here is Palustrine Forested Wetland ("Palustrine forested, needle-leaved deciduous, seasonally flooded, partially drained (PFO2Cd))." The proposal would result in the fill of 0.99 acres of Cypress Strand wetland at Kirby Storter and 0.26 acres at Sweetwater Strand.

Mixed-Hardwood Swamps. The logging of overstory bald cypress in some strands has resulted in domination by former subcanopy hardwood species, such as maple and pop ash. Bald cypress are often present, but they are no longer the dominant overstory trees. If the area remains relatively undisturbed, cypresses often return in impressive numbers. Understory species include ferns, epiphytes, aquatic species, and saplings of overstory vegetation. Older successional stages are dense and quite complex in terms of structure and species. Mixed-hardwood swamps occupy peats, sands, and rock and have a 270-day or longer hydroperiod. Project sites where this wetland type occur are HP Williams, Turner River Trailhead, and Turner River Canoe Access. According to the Cowardin system of Wetland Classification, the mixed-hardwood swamp at these sites is Palustrine Forested Wetland ("Palustrine forested, needle-leaved deciduous, seasonally flooded, partially drained (PFO2Cd))." The proposal would result in the fill of mixed-hardwood swamps at Gator Hook (0.76 acres), HP Williams (0.96 acres), Turner River Trailhead (0.64 acres), and Turner River Canoe Access (0.50 acres).

Wet and Dry Prairies. Prairies are mostly treeless areas dominated by grasses and grasslike plants; wet and dry prairies have been identified within the Tamiami Trail project area. Wet prairies are characterized by muhly grass, love grass, and sand cordgrass. Wet prairies and marshes generally occupy the slopes of an undulating bedrock surface, with wet prairies being in higher areas than marshes. Wet prairies tend to have sandier soils than marshes, but they also occupy thin layers of marl soil over bedrock. Wet prairie types have hydroperiods of 70 days and are inundated to a maximum depth of 8 inches during the wet season. Dry prairies are characterized by broom sedges, white top sedge, cordgrass, and saw palmetto. Dry prairies occur at higher elevations on bedrock and have relatively little soil. Dry prairies have hydroperiods of 50 days and are inundated to a maximum of 2 inches during the wet season. Both types of prairie wetlands occur at the Kirby Storter project site. According to the Cowardin system of Wetland Classification, the dry prairies are "Palustrine emergent, persistent, temporarily

flooded, partially drained (PEM1Ad)" and wet prairies are "Palustrine emergent, persistent, seasonally flooded, partially drained (PEM1Cd)." The proposal would result in the fill of 0.99 acres of dry and wet prairies at Kirby Storter.

Intensely Disturbed Sites. Intensely disturbed sites are areas that are paved with roads and parking lots, and support buildings or picnic areas. Immediately adjacent areas are typically mowed grass. Project sites are Burns Lake Campground (0.16 acres), Preserve Headquarters (0.22 acres), Dona Drive (no wetland impacts), and Monument Campground (0.34 acres).

Functions and Values: Wetlands serve a wide range of ecological functions. They are valuable as holding areas for rising flood waters; vegetation reduces floodwater velocity and depletes its destructive energy. Wetland vegetation also form buffers against erosion by absorbing current and storm energy, stabilizing substrates, and trapping suspended sediments. Filtration of sediments, nutrient pollutants, and toxic substances has the added advantage of improving water quality.

At Big Cypress, wetlands provide substantial primary production that serves as the base of detrital food webs and are important habitat for many mammals and avian species within the Preserve and within the regional context. Many of the species are residents within uplands communities found in Big Cypress. Some species are residents of the wetlands which surrounds these higher land areas. During high water events, these animals often take refuge in the emergent vegetation, on small hammocks, or other places with dry ground.

Within the Preserve, there are several wading bird rookeries. Rookeries are used by some or all of the following species: wood stork, black-crowned night-heron, great blue heron, great egret, little blue heron, cattle egret, and tricolor heron. Additionally, wetland areas are important nesting and feeding areas for wading birds.

Justification for Use of the Wetlands: Actions proposed include development of support facilities, kiosks to display safety bulletins and interpretive information about the Preserve and the south Florida ecosystem, deceleration and acceleration lanes at parking areas along Highway 41 and controlled parking for a total of 125 vehicles, elevated boardwalks to extend into the cypress strands or grass prairies with waysides and exhibits along the walk, and restrooms and permanent screened structures for restrooms. The facilities are functionally dependent on their location at Big Cypress to accommodate visitor needs. Other actions that would affect wetlands are restoration of 12.98 acres of previously impacted wetland sites. As much as possible, secondary construction impacts to wetland areas and communities would be avoided during new construction (see Mitigative Actions below). There are no practicable alternatives to site locations.

MITIGATIVE ACTIONS

Wetland mitigation has been incorporated into the EA in order to outline opportunities that exist for restoration or enhancement of previously impacted areas and to mitigate impacts resultant from the proposed action at Big Cypress. Such mitigation would increase resource protection, preservation, and visitor enjoyment at the Preserve; these mitigation measures include constructing the elevated boardwalks on pilings. Although the boardwalks would provide access to wetlands, minimal impacts would result from the placement of pilings. Additionally, other mitigation would include sustainable design; best management practices; standard sediment control measures; surfacing parking areas with a permeable, no-fines asphalt or natural substrate to mitigate the loss of soil by reducing erosion and channelization from storm water runoff; and reducing or eliminating the impact over time by preservation and maintenance operations.

Special care and consideration was taken in the selection and layout of each site to provide the needed facilities in a way that minimizes the disturbance to the surrounding natural environment. When possible, existing fill pads or previously disturbed sites were utilized. Relatively flat (4:1) fill slopes were used in all areas of the design to minimize the potential for erosion and improve site maintenance. Measures to mitigate adverse environmental and cultural impacts of the proposed project have been incorporated into the project designs. Stormwater detention and treatment facilities have been included in the site designs. These measures are intended to avoid, minimize, or rectify impacts as described in 40 CFR 1508.20.

H.P. Williams – A 4 foot x 4 foot box culvert with a flow control structure would be installed that would allow water east of the site flow west towards the Turner River. The Turner River Road currently prevents this water from following its natural path to the Turner River. This action would reestablish the natural flow patterns in this portion of the Preserve.

Kirby Storter – Two existing fill pads (0.9 acres) on the south side of the Tamiami Trail would be removed as part of this project. These fill pad areas would be reestablished to their original wetland condition.

Sweetwater Strand – Three existing 48-inch corrugated metal culverts would be removed and replaced with four 48-inch reinforced concrete culverts. The installation of the additional culvert would enhance flow across the Loop Road and help to reestablish the natural flow patterns in this area of the Preserve. The actual benefits would be marginal over several square miles.

Mitigation for this project would also consist of removing 0.03 acres of Mixed-Hardwood Swamp wetland fill at Turner River Canoe Access, 0.05 acres of Cypress Strands wetland fill at Kirby Storter, and 0.9 acres of cypress strand fill at Kirby Storter. Combined, this 0.98 acre area (Turner River Canoe Access and two sites at Kirby Storter) would be returned to natural wetlands of the type that existed prior to filling.

Mitigation would also include restoring 12.0 acres of previously impacted of sawgrass dominated marshlands (marsh emergent wetland) and some brackish wetlands at the Ochopee Irrigation Canal near the Turner River headwaters in the Preserve. At the Ochopee Irrigation Canal fill would be removed and a wetlands restoration (revegetation) and enhancement effort would be conducted using plant species native to the project area.

As described in the Disturbed Land Restoration project, under current conditions the 12.0 acres of canal and canal-side man-made berm at the Ochopee Irrigation Canal is causing unnatural hydrologic and vegetation disturbances. The canal and berm features alter both the natural hydrologic regime and the natural vegetative species composition, diversity, and abundance of adjacent and downstream wetlands. Although it is difficult to identify the exact type of wetland which was altered by the canal and canal-side man-made berm, Big Cypress National Preserve hydrological staff have estimated it may have been sawgrass dominated marshland, marsh emergent wetland (Cowardin system of Wetland Classification). The southern end near the Turner River may have been brackish due to influx of tidal flow during low tides and low water seasons.

The berm would be returned to the adjacent canal from which it was taken and much of the 12.0 acres would be cleared of unnatural and exotic vegetation, such as melaleuca (*Melaleuca quinquenervia*), and the area restored as closely as possible to its original wetland type.

The result of this restoration would approximate the ecological functions of the marsh wetlands community as it existed prior to human disturbance. Altogether, approximately 12.98 acres of wetlands would be restored. Restored wetland ecological functions would include holding areas for rising flood waters and the revegetated areas would help reduce water velocity and deplete its destructive energy. The restored wetland vegetation would also form buffers against erosion by absorbing current and storm energy, stabilizing substrates, and trapping nutrients. The restored area would help with filtration of sediments, nutrient pollutants, and toxic substances; these natural functions would help to improve water quality. Additionally, habitat for wildlife residing in or depending on the wetland ecosystem at the project areas would be improved.

Additionally, on-site surveys for special status species and designated critical habitats would continue to be conducted periodically throughout construction. If such species or habitats would be found, consultation with the U.S. Fish and Wildlife Service and the state of Florida would be conducted. Specific design criteria regarding but not limited to actual equipment used, revegetation time and species, and permits would be included in construction documents and forwarded with permit applications to the U.S. Army Corps of Engineers (COE) and state agencies.

COMPLIANCE

Actions proposed would impact waters which are considered waters of the United States. Therefore the proposed actions pertaining to filling wetlands and wetlands restoration are subject to COE review under the 404 regulatory program in compliance with the Clean Water Act. A permit application would be made to the COE for proposed activities which are regulated by that agency in conformance with Section 404 of the Clean Water Act.

Since the actions proposed involve activities in the surface waters and wetlands of Florida an application permit approval must be obtained from the Florida Department of Environmental Regulation. A permit application would be completed for those activities which require evaluation by this agency. In addition, the NPS would seek a Coastal Consistency Determination.

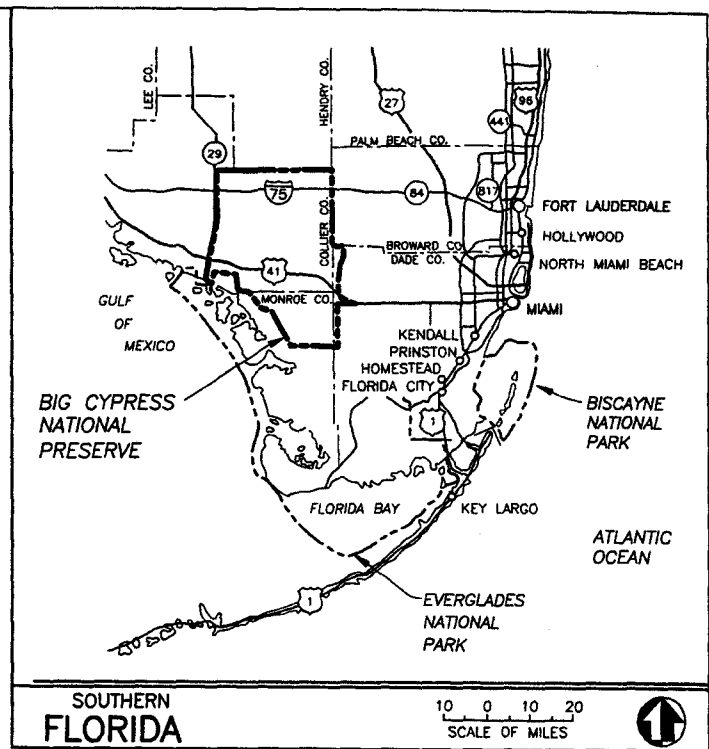
The Environmental Assessment with its mitigation section, this Statement Of Findings required by Director's Order #77-1 (Wetland Protection), and the Finding Of No Significant Impact, when signed, would complete the requirements for the National Environmental Policy Act for this project.

CONCLUSION

The protection of people and property, and preservation of natural resources at Big Cypress National Preserve is of high priority to the National Park Service. The NPS concludes that there is no other practicable alternative for the developments proposed.

Should the proposed action be implemented, there would be 5.82 acres of wetlands impacted. There would be 12.98 acres of presently impacted wetlands restored; overall there would be a net gain of 7.16 acres of restored wetlands within the Preserve as a result of the restoration and enhancement of presently impacted areas at the Ochopee Irrigation Canal; presently impacted wetlands would be restored to the ecosystem for natural functions. This restoration more than compensates for the 5.82 acres that would be filled should the proposed action be implemented. Mitigation would include good design through sustainable design principles, appropriate siting, and best management practices during and after construction. The NPS finds the proposal to be consistent with EO 11990 and the NPS no-net-loss of wetlands policy.

Maps showing the project area, project sites, wetlands, and wetlands mitigation sites are attached.



PROPOSED DEVELOPMENT

1. PRESERVE HEADQUARTERS
2. DONA DRIVE CAMPGROUND
3. TURNER RIVER CANOE ACCESS
4. HP WILLIAMS PICNIC AREA
5. TURNER RIVER TRAILHEAD
6. BURNS LAKE CAMPGROUND
7. KIRBY STORTER
8. MONUMENT CAMPGROUND
9. GATOR HOOK
10. SWEETWATER STRAND

34 MILES
TO NAPLES



SR 29

CR 29

1. PI
HEAD

FIFTYMILE
BEND

COLLIER COUNTY
DADE COUNTY

PRESERVE BOUNDARY

LEVEE 28

ECREST

FORTYMILE
BEND

29 MILES
TO MIAMI

MONROE COUNTY
DADE COUNTY



8000

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
DENVER SERVICE CENTER

TITLE OF DRAWING
SCENIC HIGHWAY
VISITOR SAFETY IMPROVEMENTS
LOCATION WITHIN PARK
PARK GENERAL

NAME OF PARK
BIG CYPRESS NATIONAL PRESERVE
REGION COUNTY STATE
SOUTHEAST COLLIER MONROE FLORIDA

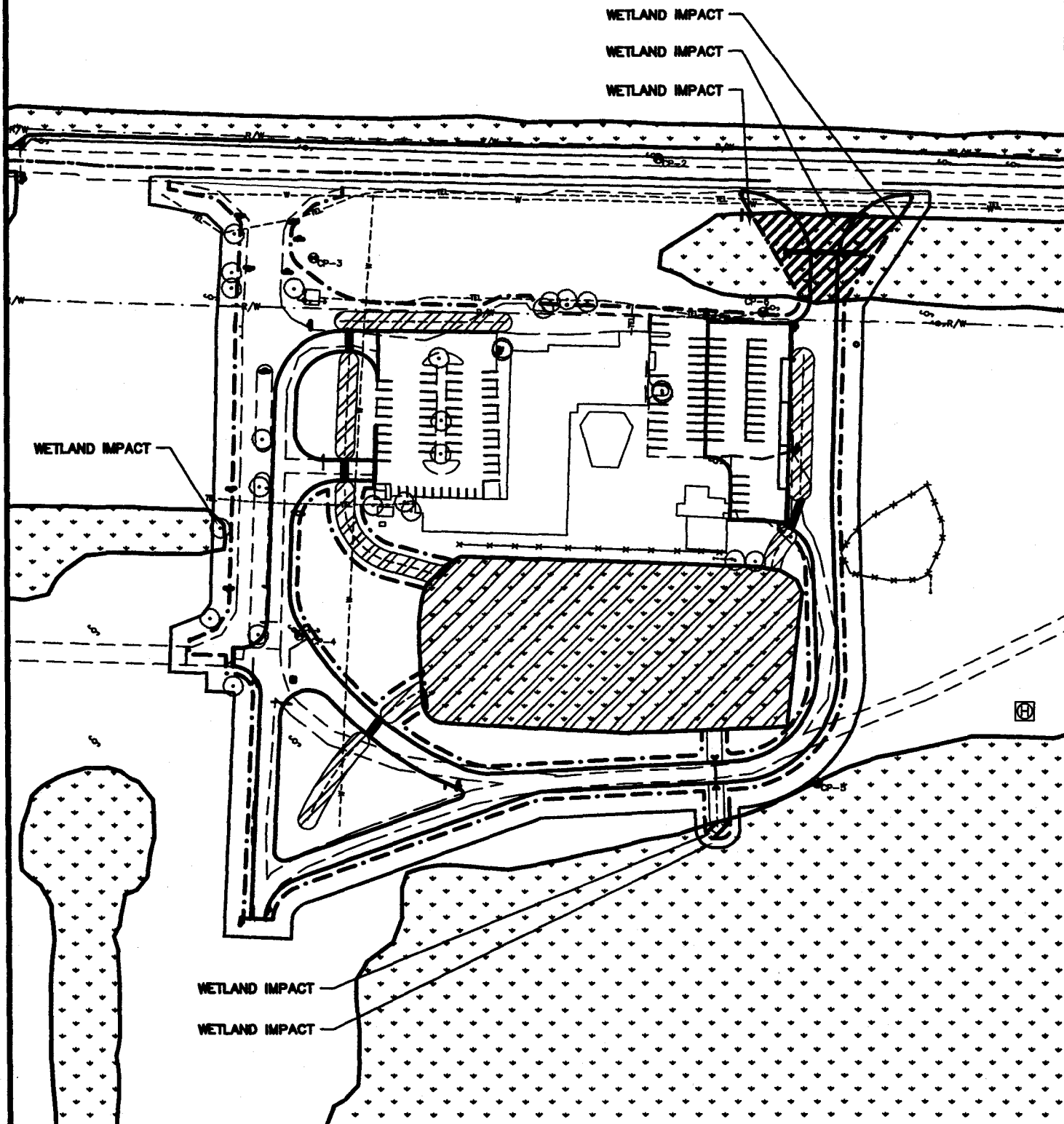


FIGURE SOF 1

**PRESERVE HEADQUARTERS
DELINEATION OF
WETLANDS**

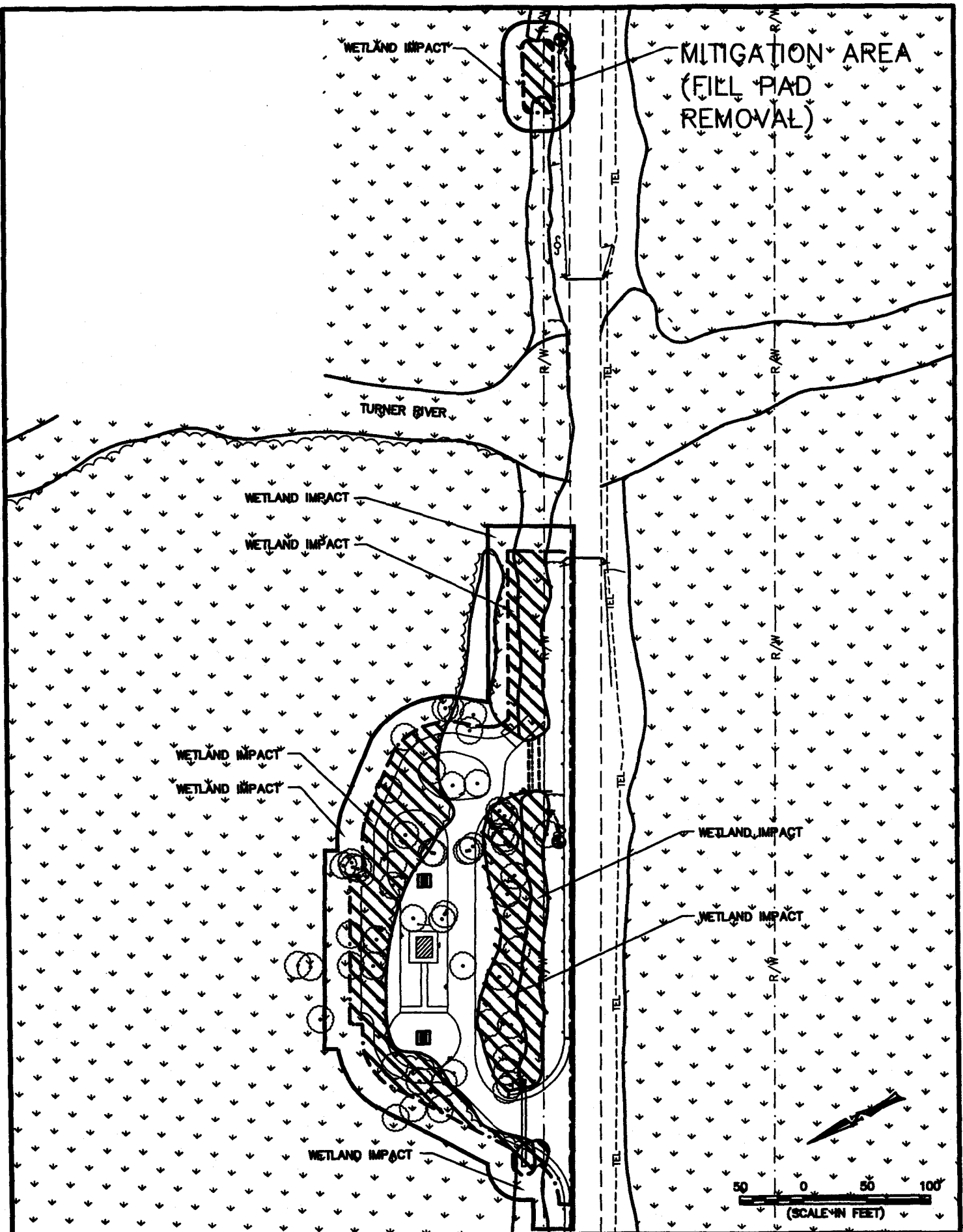


FIGURE SOF 2

**TURNER RIVER CANOE
ACCESS DELINEATION
OF WETLANDS**

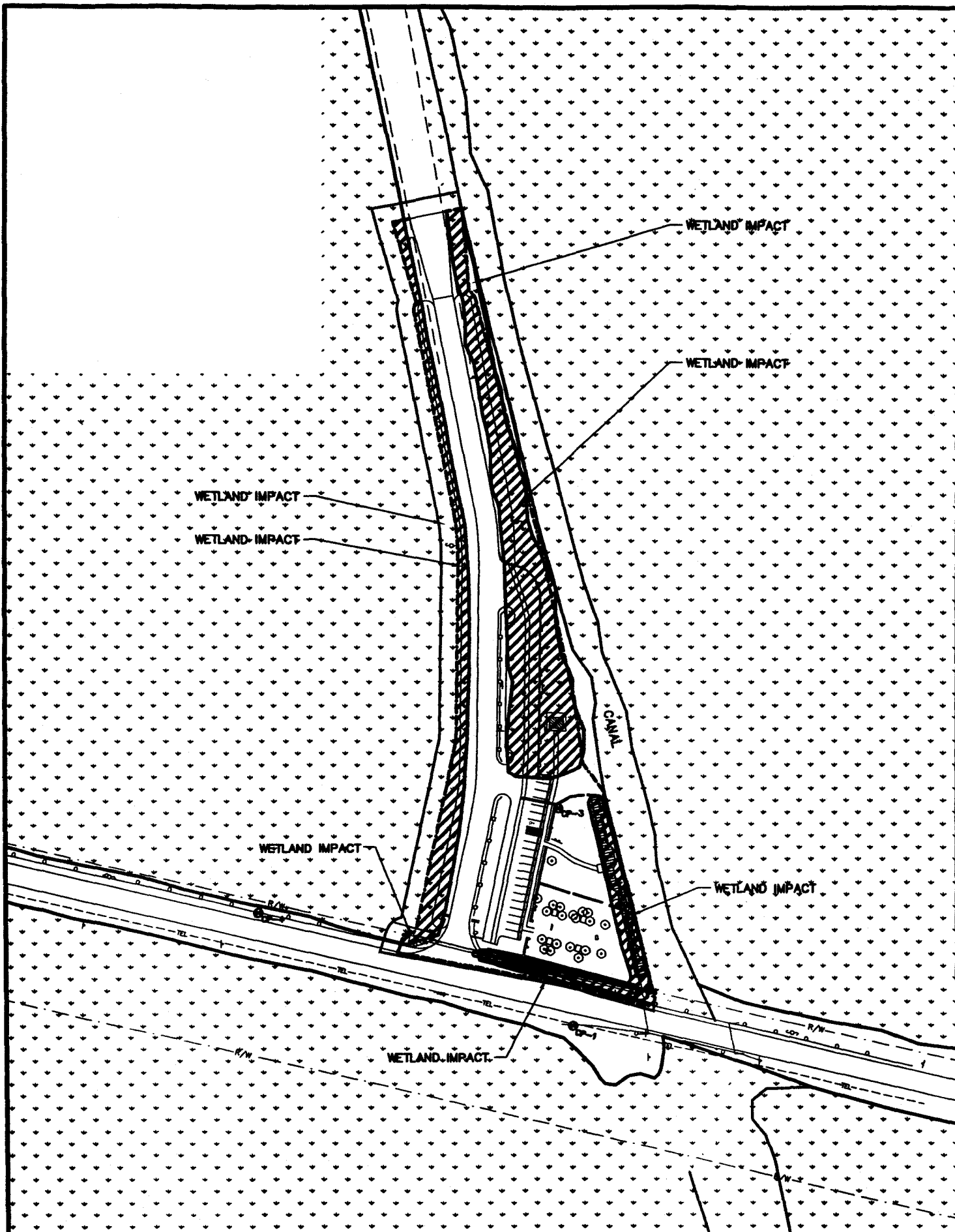


FIGURE SOF 3

**H P WILLIAMS PICNIC
AREA DELINEATION
OF WETLANDS**

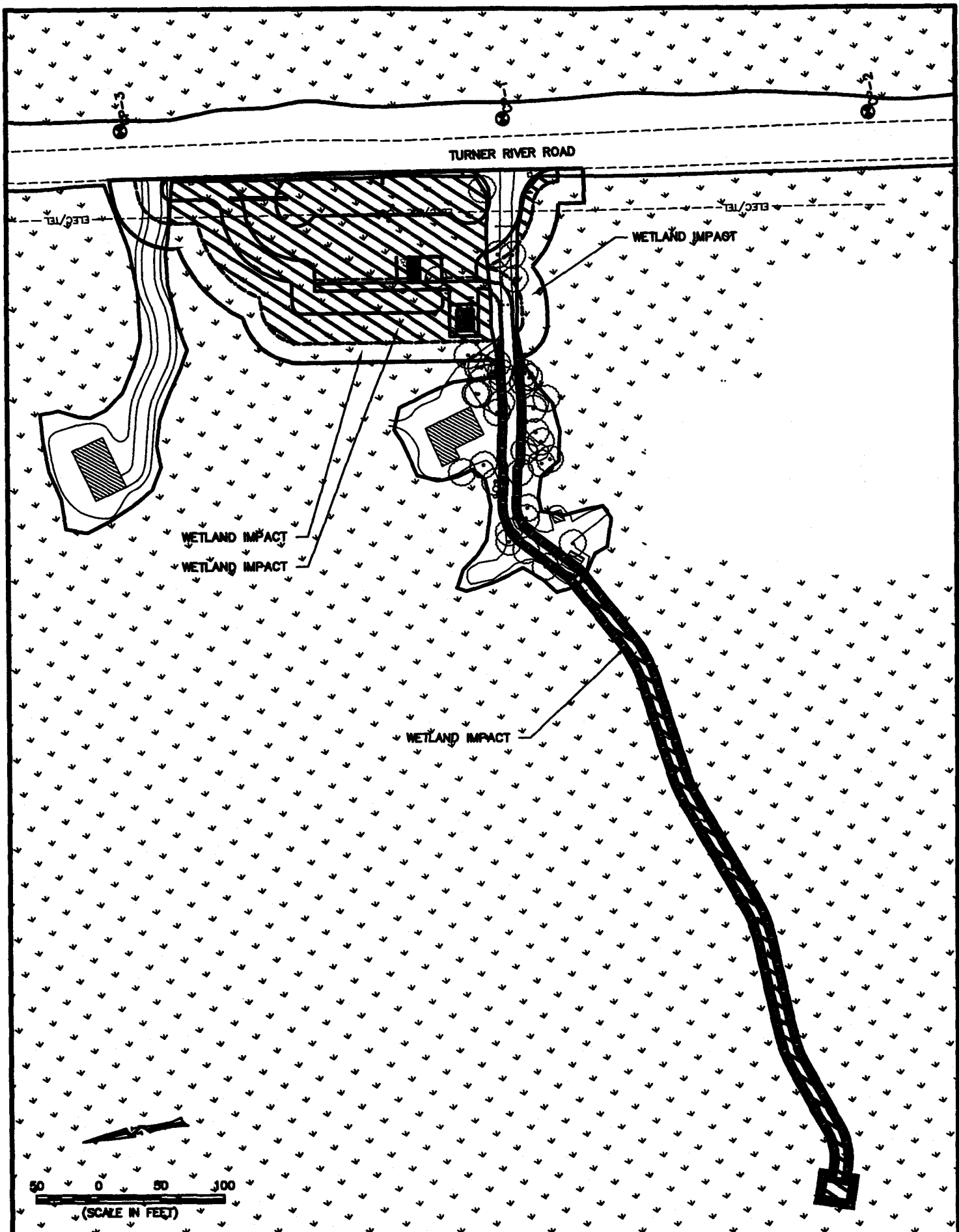
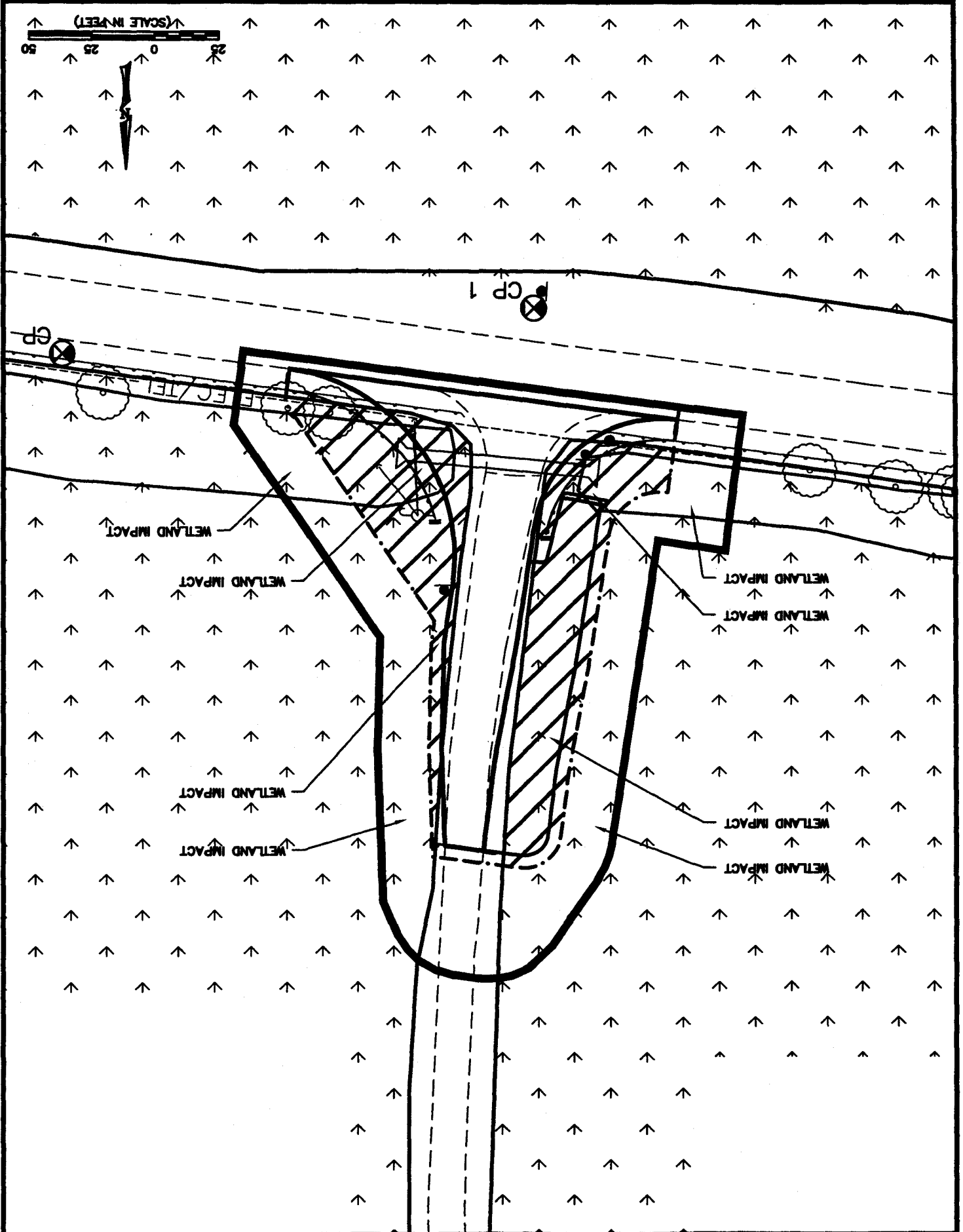


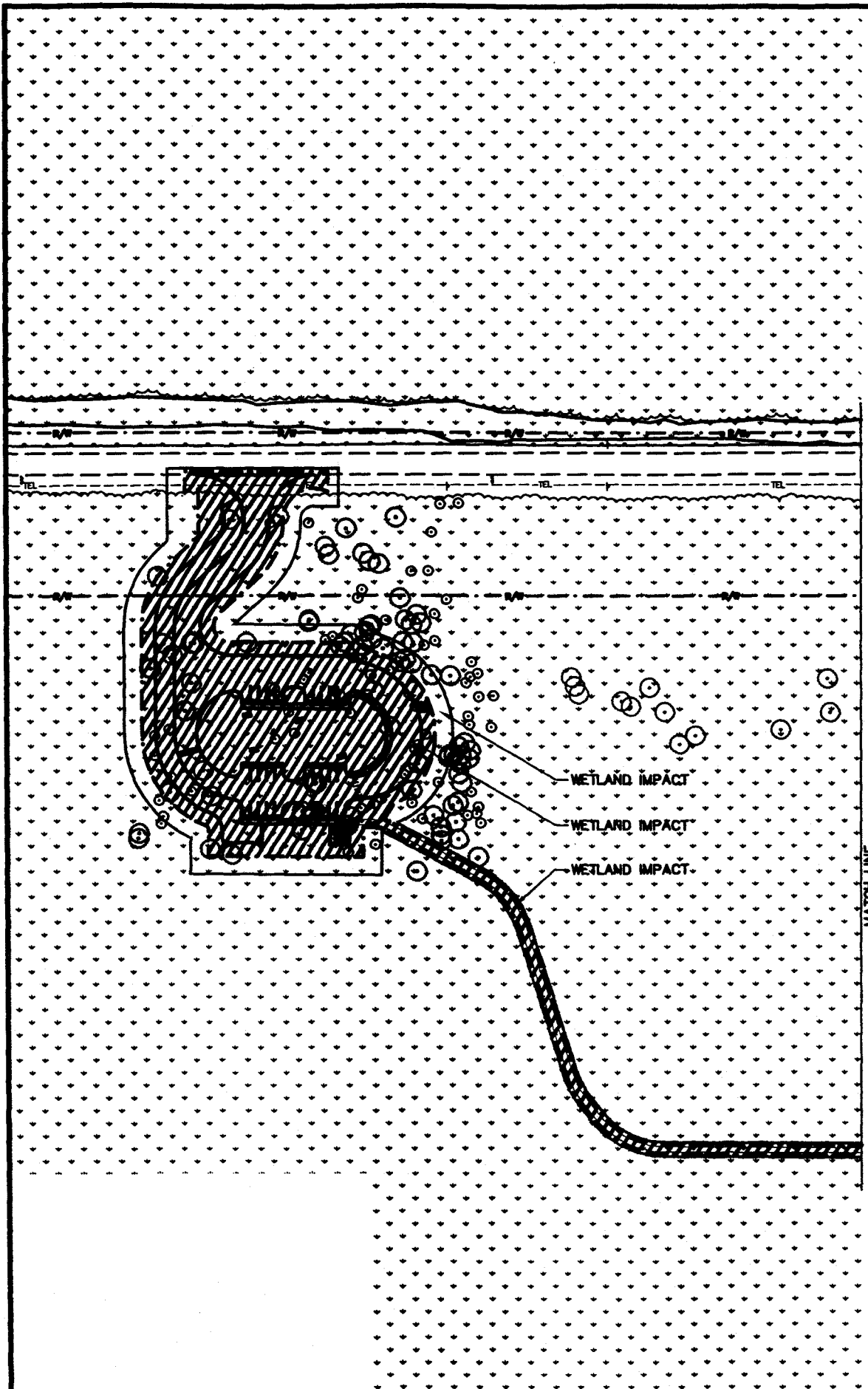
FIGURE SOF 4

**TURNER RIVER TRAILHEAD
DELINEATION OF
WETLANDS**

FIGURE 5

BURNS CAMPGROUND
DELINEATION OF
WETLANDS





SCALE: NONE

FIGURE SOF 6A

**KIRBY STORTER
DELINEATION OF
WETLANDS**

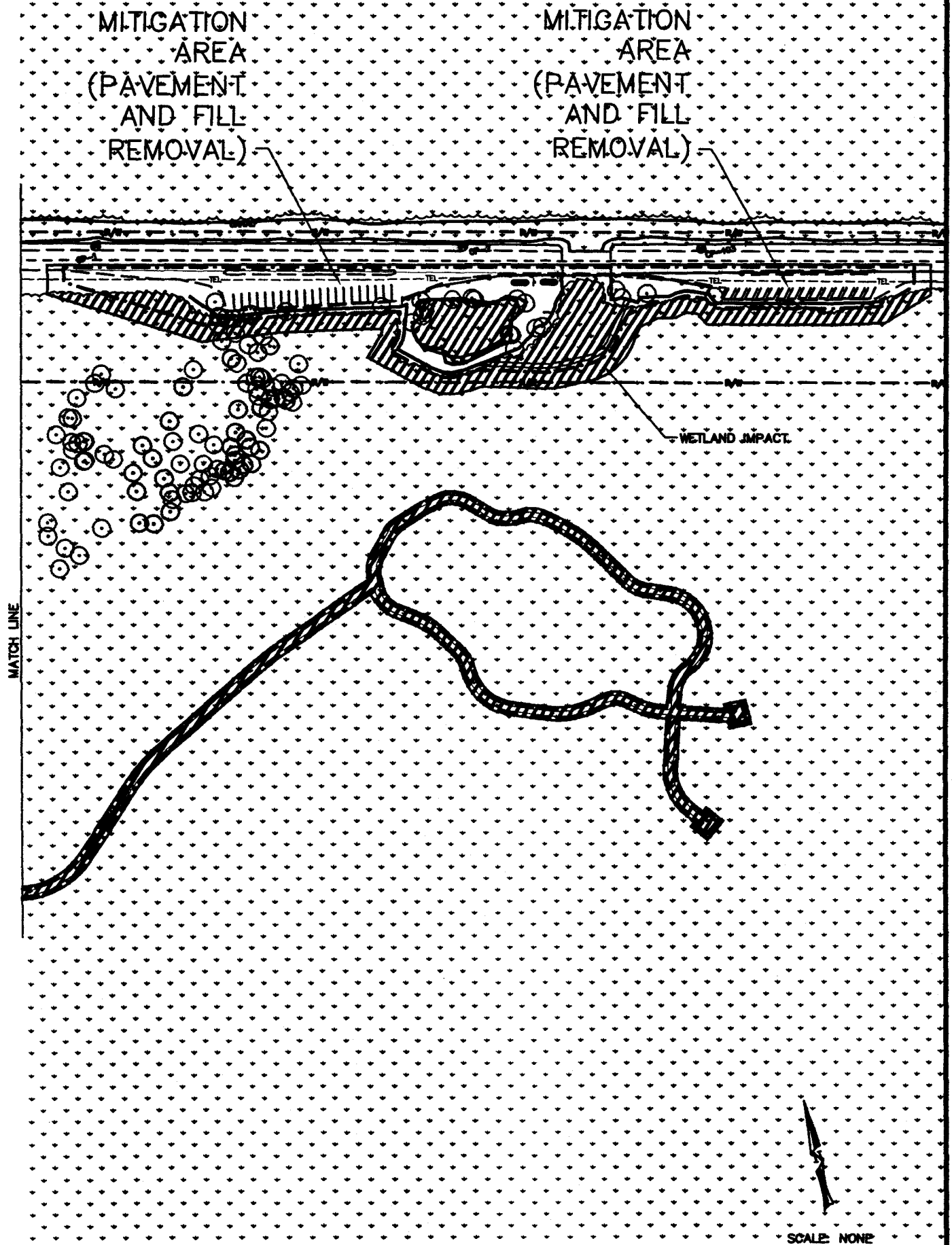
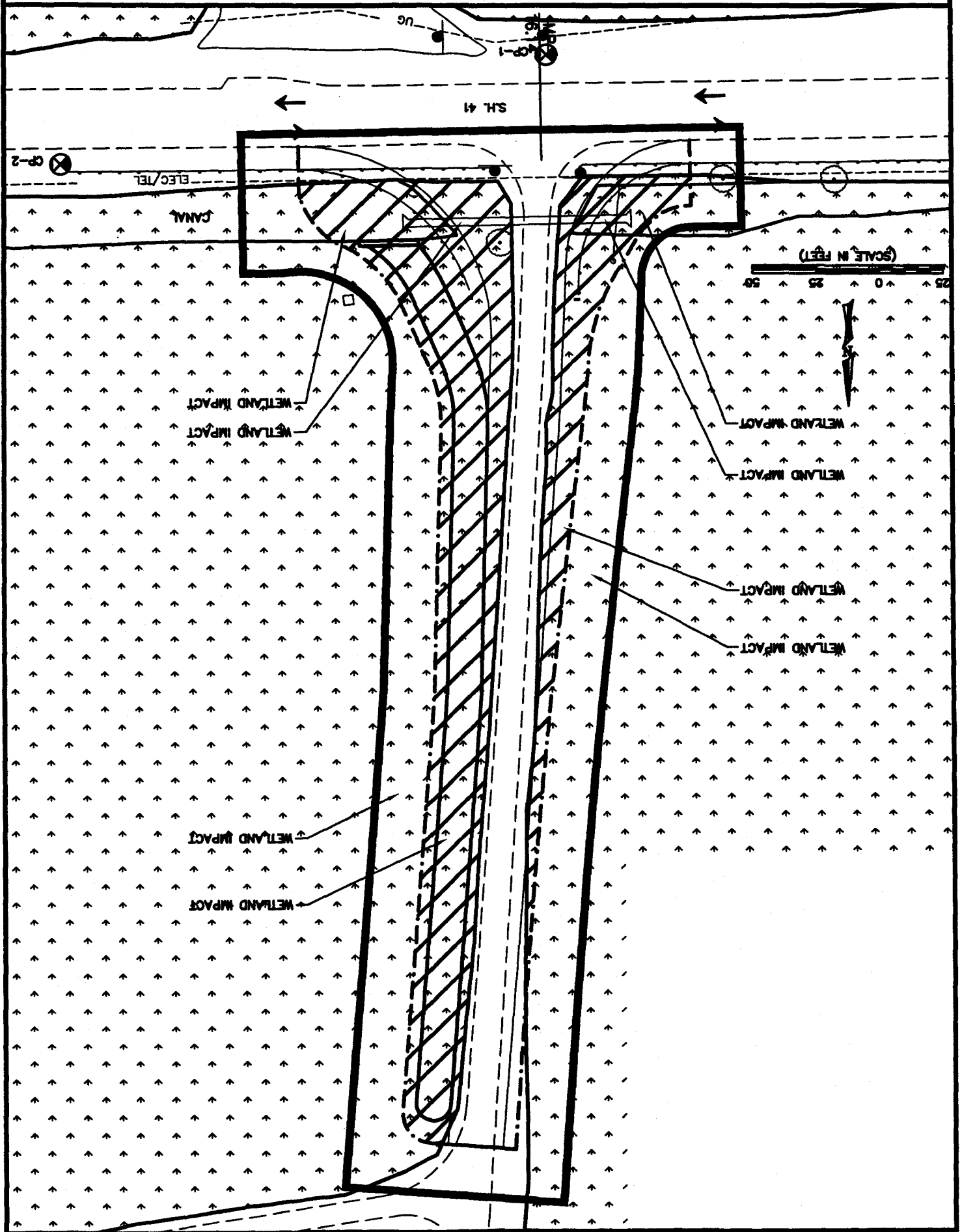


FIGURE SOF 6B

**KIRBY STORTER
DELINEATION OF
WETLANDS**

MONUMENT CAMPGROUND
DELINEATION OF
WETLANDS

FIGURE SOF 7



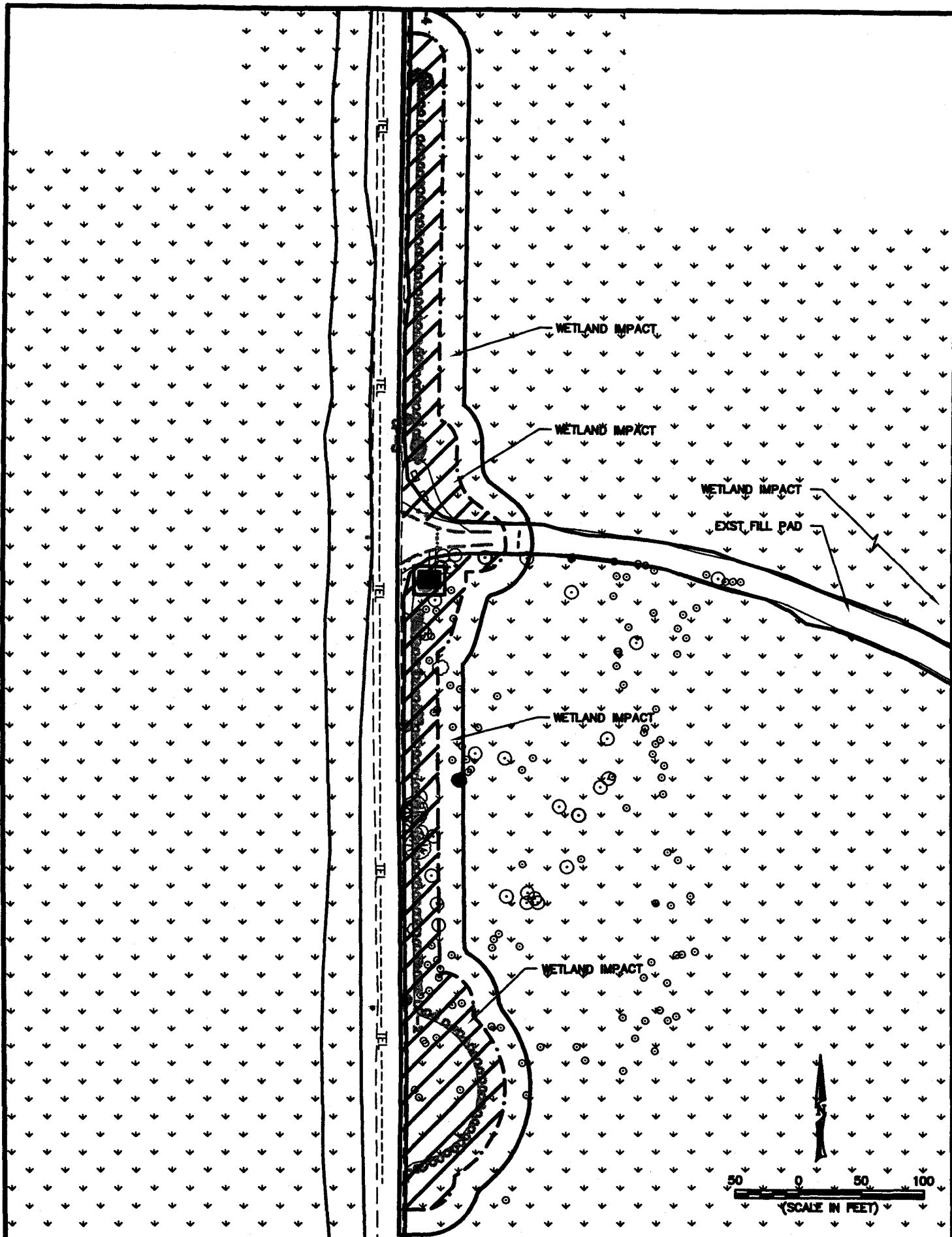


FIGURE SOF 8

**GATOR HOOK
DELINEATION OF
WETLANDS**

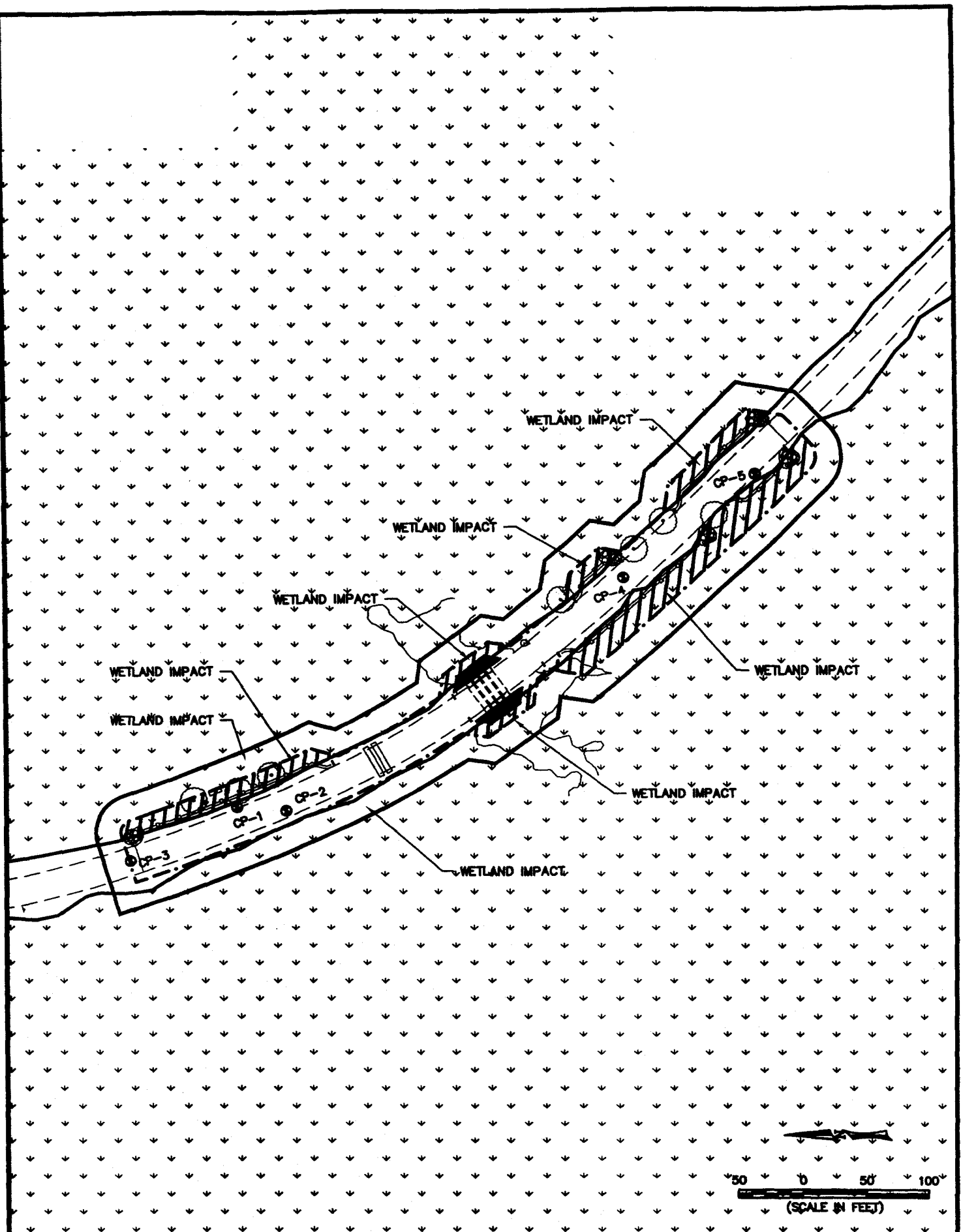
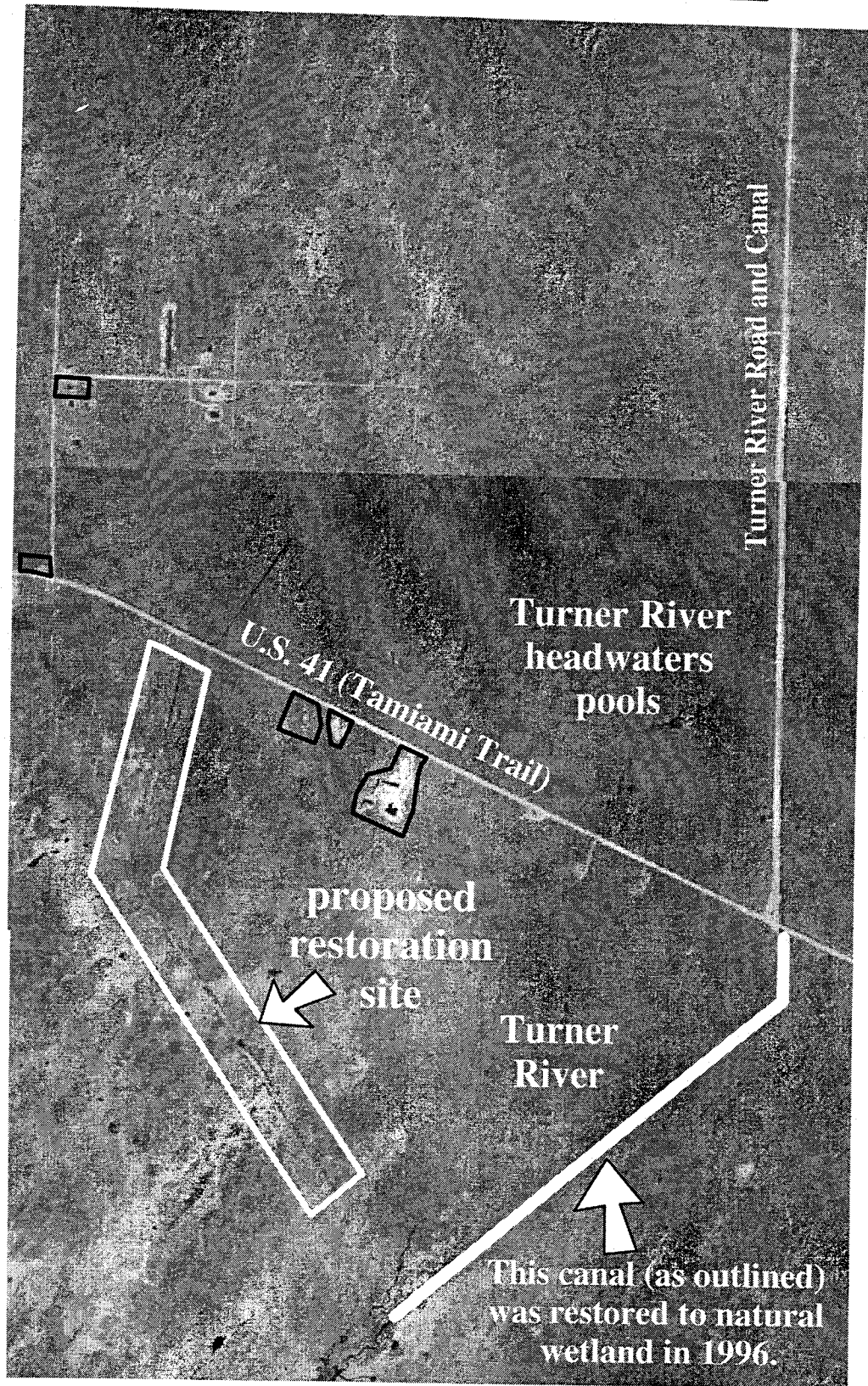


FIGURE SOF 9

**SWEETWATER STRAND
DELINEATION OF
WETLANDS**

Ochopee Irrigation Canal Restoration



one mile

North



private property

SOF 10

Appendix B

**US Fish and Wildlife Service
List of Special Status Species dated May 24, 2000**

**Florida Fish and Wildlife Conservation Commission
List of Special Status Species dated September 1, 2000**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

South Florida Ecological Services Office

P.O. Box 2676

Vero Beach, Florida 32961-2676



May 24, 2000

Stephen Stone
National Park Service
Denver Service Center
12795 W. Alameda Parkway
P.O. Box 25287
Denver, Colorado 80225-0287

Dear Mr. Stone:

Thank you for your letter dated April 11, 2000, requesting information on threatened and endangered species present at Big Cypress National Preserve in Monroe and Collier Counties, Florida.

We are enclosing a matrix of listed endangered and threatened species found in Florida by county. In addition, the Service has been petitioned to list the Big Cypress fox squirrel (*Sciurus niger avicennia*) as a threatened species with associated designated critical habitat. In addition, the Service has been petitioned to revise the designated critical habitat for the Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*). Both critical habitat designations would include portions of the Big Cypress National Preserve.

Thank you for the opportunity to provide assistance to the National Park Service in their planning efforts. We look forward to continued coordination between our agencies. If you have questions, please contact Jane Tutton at (561) 562-3909, extension 235.

Sincerely yours,

Kalani D. Cairns

for James J. Slack
Project Leader
South Florida Ecological Services Office

cc:

BCNP, Superintendent Donahue

BCNP, Ron Clark

Service, Ecological Services-Naples (Attn: Kim Dryden)

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
AND CANDIDATES FOR FEDERAL LISTING
IN SOUTH FLORIDA**

Mammals (except whales)

Florida panther	<i>Puma (=Felis) concolor coryi</i>	E
Puma (=mountain lion)	<i>Puma (=Felis) concolor</i>	T (S/A)
Key deer	<i>Odocoileus virginianus clavium</i>	E
Key Largo cotton mouse	<i>Peromyscus gossypinus allapaticola</i>	E
Key Largo woodrat	<i>Neotoma floridana smalli</i>	E
Lower Keys rabbit	<i>Sylvilagus palustris hefneri</i>	E
Rice rat (=silver rice rat)	<i>Oryzomys palustris natator (=O. argentatus)</i>	E (CH)
Southeastern beach mouse	<i>Peromyscus polionotus niveiventris</i>	T
West Indian manatee	<i>Trichechus manatus</i>	E (CH)

Birds

Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	T
Bachman's warbler	<i>Vermivora bachmanii</i>	E
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Cape Sable seaside sparrow	<i>Ammodramus (=Ammodramus) maritimus mirabilis</i>	E (CH)
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E (CH)
Florida grasshopper sparrow	<i>Ammodramus savannarum floridanus</i>	E
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	T
Ivory-billed woodpecker	<i>Campephilus principalis</i>	E
Kirtland's warbler	<i>Dendroica kirtlandii</i>	E
Piping plover	<i>Charadrius melodus</i>	T
Red-cockaded woodpecker	<i>Picoides (=Dendrocoptes) borealis</i>	E
Roseate tern	<i>Sterna dougallii dougallii</i>	T
Whooping crane	<i>Grus americana</i>	XN
Wood stork	<i>Mycteria americana</i>	E

Reptiles

American crocodile	<i>Crocodylus acutus</i>	E (CH)
American alligator	<i>Alligator mississippiensis</i>	T (S/A)
Atlantic salt marsh snake	<i>Nerodia clarkii (=fasciata) taeniata</i>	T
Bluetail (=blue-tailed) mole skink	<i>Eumeces egregius lividus</i>	T
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T
Green sea turtle	<i>Chelonia mydas (incl. agassizi)</i>	E (CH)
Hawksbill (=carey) sea turtle	<i>Eretmochelys imbricata</i>	E (CH)
Kemp's (=Atlantic) ridley sea turtle	<i>Lepidochelys kempii</i>	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E (CH)
Loggerhead sea turtle	<i>Caretta caretta</i>	T
Sand skink	<i>Neoseps reynoldsi</i>	T

Invertebrates

Highlands tiger beetle	<i>Cicindela highlandensis</i>	C
Schaus swallowtail butterfly	<i>Heraclides (=Papilio) aristodemus ponceanus</i>	E
Stock Island tree snail	<i>Orthalicus reses (not incl. nesodryas)</i>	T

E=Endangered; T=Threatened; C=Candidate; (S/A)=Similarity of Appearance species; XN=Nonessential experimental population; CH=Critical habitat has been designated

Plants

<i>Amorpha crenulata</i>	Crenulate lead-plant	E
<i>Argythamnia blodgettii</i>	Blodgett's silverbush	C
<i>Asimina tetramera</i>	Four-petal pawpaw	E
<i>Bonamia grandiflora</i>	Florida bonamia	T
<i>Brickellia mosieri</i>	Florida brickell-bush	C
<i>Cereus eriophorus</i> var. <i>fragrans</i>	Fragrant prickly-apple	E
<i>Chamaecrista lineata</i> var. <i>keyensis</i> (= <i>Cassia keyensis</i>)	Big Pine partridge pea	C
<i>Chamaesyce</i> (= <i>Euphorbia</i>) <i>deltoidea</i> ssp. <i>deltoidea</i>	Deltoid spurge	E
<i>Chamaesyce deltoidea</i> ssp. <i>pinetorum</i>	Pineland sandmat	C
<i>Chamaesyce deltoidea</i> ssp. <i>serpyllum</i>	Wedge spurge	C
<i>Chamaesyce</i> (= <i>Euphorbia</i>) <i>garberi</i>	Garber's spurge	T
<i>Chionanthus pygmaeus</i>	Pygmy fringe-tree	E
<i>Chromolaena frustrata</i> (= <i>Eupatorium frustatum</i>)	Cape Sable thoroughwort	C
<i>Chrysopsis</i> (= <i>Heterotheca</i>) <i>floridana</i>	Florida golden aster	E
<i>Cladonia perforata</i>	Florida perforate cladonia	E
<i>Clitoria fragrans</i>	Pigeon wings	T
<i>Conradina brevifolia</i>	Short-leaved rosemary	E
<i>Crotalaria avonensis</i>	Avon Park harebells	E
<i>Cucurbita okeechobeensis</i> ssp. <i>okeechobeensis</i>	Okeechobee gourd	E
<i>Dalea carthagenensis</i> var. <i>floridana</i>	Florida prairie clover	C
<i>Deeringothamnus pulchellus</i>	Beautiful pawpaw	E
<i>Dicerandra christmanii</i>	Garrett's mint	E
<i>Dicerandra frutescens</i>	Scrub mint	E
<i>Dicerandra immaculata</i>	Lakela's mint	E
<i>Digitaria pauciflora</i>	Florida pineland crabgrass	C
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	Scrub buckwheat	T
<i>Eryngium cuneifolium</i>	Snakeroot	E
<i>Galactia smallii</i>	Small's milkpea	E
<i>Halophila johnsonii</i>	Johnson's seagrass	T
<i>Hypericum cumulicola</i>	Highlands scrub hypericum	E
<i>Indigofera mucronata</i> var. <i>keyensis</i>	Florida indigo	C
<i>Jacquemontia reclinata</i>	Beach jacquemontia	E
<i>Liatris ohlingerae</i>	Scrub blazing star	E
<i>Linum arenicola</i>	Sand flax	C
<i>Linum carteri</i> var. <i>carteri</i>	Carter's small-flowered flax	C
<i>Lupinus aridorum</i>	Scrub lupine	E
<i>Nolina brittoniana</i>	Britton's beargrass	E
<i>Opuntia corallicola</i>	Florida semaphore cactus	C
<i>Paronychia chartacea</i> (= <i>Nyachia pulvinata</i>)	Papery whitlow-wort	T
<i>Pilosocereus</i> (= <i>Cereus</i>) <i>robinii</i>	Key tree-cactus	E
<i>Polygala lewtonii</i>	Lewton's polygala	E
<i>Polygala smallii</i>	Tiny polygala	E
<i>Polygonella basiramia</i> (= <i>ciliata</i> var. <i>b.</i>)	Wireweed	E
<i>Polygonella myriophylla</i>	Sandlace	E
<i>Prunus geniculata</i>	Scrub plum	E
<i>Warea amplexifolia</i>	Wide-leaf warea	E
<i>Warea carteri</i>	Carter's mustard	E
<i>Ziziphus celata</i>	Florida ziziphus	E

E=Endangered; T=Threatened; C=Candidate; (S/A)=Similarity of Appearance species; XN=Nonessential experimental population; CH=Critical habitat has been designated

MEMORANDUM

TO: Mr. Steve Stone
National Park Service

FROM: Jim Beever, Office of Environmental Services, Punta Gorda

DATE: September 1, 2000

SUBJECT: State-listed species list for Collier and Monroe Counties, Tamiami Trail Culverts Project

Attached for your use is the list of state-listed animals and the list of state-listed plants that occur in the project area or vicinity of the effects of the proposed culverts in Collier and mainland Monroe Counties.

LISTED ANIMALS OF THE BIG CYPRESS NATIONAL PRESERVE TAMIAMI TRAIL PROJECT
COLLIER COUNTY AND MAINLAND MONROE COUNTY

<u>Scientific Name</u>	<u>Common Name</u>	<u>State</u>	<u>Federal</u>
<i>Ajaia ajaja</i>	roseate spoonbill	SSC	
<i>Alligator mississippiensis</i>	American alligator	SSC	T(SA)
<i>Aramus guarauna</i>	limpkin	SSC	
<i>Centropomus undecimalis</i>	common snook	SSC	
<i>Crocodylus acutus</i>	American crocodile	E	E
<i>Drymarchon corais couperi</i>	eastern indigo snake	T	T
<i>Egretta caerulea</i>	little blue heron	SSC	
<i>Egretta thula</i>	snowy egret	SSC	
<i>Egretta tricolor</i>	tricolored heron	SSC	
<i>Eudocimus albus</i>	white ibis	SSC	
<i>Falco peregrinus</i>	peregrine falcon	E	
<i>Falco sparverius paulus</i>	southeastern American kestrel	T	
<i>Felis concolor coryi</i>	Florida panther	E	E
<i>Gopherus polyphemus</i>	gopher tortoise	SSC	
<i>Grus canadensis pratensis</i>	Florida sandhill crane	T	
<i>Haliaeetus leucocephalus</i>	bald eagle	T	T
<i>Mustela vison evergladensis</i>	everglades mink	T	
<i>Mycteria americana</i>	wood stork	E	E
<i>Picoides borealis</i>	red-cockaded woodpecker	T	E
<i>Sciurus niger avicennia</i>	Big Cypress (mangrove) fox squirrel	T	
<i>Trichechus manatus</i>	West Indian manatee	E	E
<i>Ursus americanus floridanus</i>	Florida black bear	T	

LISTED PLANTS OF THE BIG CYPRESS NATIONAL PRESERVE TAMiami TRAIL PROJECT
COLLIER COUNTY AND MAINLAND MONROE COUNTY

<u>Scientific Name</u>	<u>Common Name</u>	<u>FDA</u>	<u>USFWS</u>
<i>Acrosticum aureum</i>	golden leather fern	T	
<i>Acrosticum danaeifolium</i>	giant leather fern	C	
<i>Asplenium serratum</i>	bird's nest spleenwort	E	
<i>Burmannia flava</i>	Fakahatchee burmannia	E	
<i>Calopogon barbatus</i>	bearded grass pink	T	
<i>Calopogon multiflorus</i>	many-flowered grass pink	E	
<i>Campyloneurum angustifolium</i>	narrow strap fern	E	
<i>Campyloneurum costatum</i>	tailed strap fern	E	
<i>Campyloneurum phyllitidis</i>	long strap fern	E	
<i>Chrysophyllum olivaeforme</i>	satinleaf	E	
<i>Ctenitis submarginalis</i>	brown-hair comb fern	T	
<i>Encyclia tampensis</i>	butterfly orchid	C	
<i>Epidendrum rigidum</i>	rigid epidendrum	E	
<i>Habenaria distans</i>	rein orchid	E	
<i>Harrisella filiformis</i>	threadroot orchid	T	
<i>Ipomea tenuissima</i>	rocklands morning glory	E	
<i>Isoetes engelmannii</i>	Englemann's quillwort	E	
<i>Jacquemontia curtissii</i>	pineland clustervine	E	
<i>Lechea divaricata</i>	pine pinweed	E	
<i>Licaria triandra</i>	Gulf licaria	E	
<i>Linum arenicola</i>	sand flax	E	
<i>Linum carteri</i>	South Florida flax	E	
<i>Lycopodium cernuum</i>	nodding clubmoss	C	
<i>Microgramma heterophylla</i>	climbing vine fern	E	
<i>Nephrolepis biserrata</i>	Boston fern	T	
<i>Ophioglossum palmatum</i>	hand adder's tongue fern	E	
<i>Osmunda cinnamomina</i>	cinnamon fern	C	
<i>Osmunda regalis</i>	royal fern	C	
<i>Peperomia glabella</i>	cypress peperomia	E	
<i>Pinguicula caerulea</i>	blue butterwort	T	
<i>Pinguicula lutea</i>	yellow butterwort	T	
<i>Plantanthera nivea</i>	snowy orchid	T	
<i>Polygonella ciliata</i> var. <i>basiramia</i>	hairy jointweed	E	E
<i>Sphenomeris clavata</i>	parsley fern	E	
<i>Spiranthes brevilabris</i>	Florida ladies' tresses	E	
<i>Spiranthes lacinata</i>	long-lip ladies' tresses	T	
<i>Spiranthes longilabris</i>	long-lip ladies' tresses	T	
<i>Tetrazygia bicolor</i>	tetrazygia	T	
<i>Tillandsia balbisiana</i>	wild pine	T	
<i>Tillandsia fasciculata</i>	common wild pine	E	
<i>Tillandsia flexuosa</i>	twisted air plant	E	
<i>Tillandsia utriculata</i>	giant wild pine	E	
<i>Tillandsia valenzuelana</i>	wild pine	T	
<i>Zamia floridana</i>	Florida coontie	C	
<i>Zephyranthes simpsonii</i>	Simpson's zephyr lily	T	

Key to Listed Species Designated Status

E =	Endangered
T =	Threatened
T(SA) =	Threatened Due to Similarity of Appearance
SSC =	Species of Special Concern
C =	Commercially Exploited
FDA=	Florida Department of Agriculture
USFWS=	United States Fish and Wildlife Service

Appendix C
Choosing By Advantage
Project Validation Report

PROJECT VALIDATION REPORT**Date:** August 1, 1998*United States Department of the Interior/National Park Service/Development Advisory Board*

PARK: Big Cypress National Preserve**Pkg #:** BICY 001 06**REGION:** SERO**Project Title:** Scenic Corridor Visitor Safety Highway Improvements

PROJECT PURPOSE

The main issues this project will address relate to safety along U.S. Highway 41, the Tamiami Trail. The trail is a two lane highway running east/west through the lower third of the Preserve. Traffic is typically low volume (less than 3,000 ADT), but safety is currently compromised by two distinct traffic patterns: high speed commuters and commercial truck traffic versus the slower moving casual Preserve visitor. Some visitors stop in the traffic lane or partially pull off the road to park to get a better glimpse of the Preserve resources. Safety is further compromised by the presence of a borrow canal and guardrail running along the entire north side of the highway, making the available pull-off space very narrow in many sections. The canal attracts wildlife which in turn attracts visitors. In 1996, the accident rate for this section of highway was 136% higher than the statewide average rate.

The management staff of the Preserve would like to provide visitors a safer way to experience the predominant features of the Big Cypress Swamp. Currently, the Preserve has few developed facilities to accommodate the visiting public.

ORIGINAL PROPOSAL

Project Scope: (1997 10-238 description)

"Establish interpretive/orientation wayside areas adjacent to major roadways throughout the Preserve, as identified in the General Management Plan and Statement for Interpretation. This project will accomplish the following:

Develop 12 wayside areas along Scenic Highway 41, Highway 29, Turner River and Loop roads. Areas to have:

Bulletin cases to display safety bulletins and interpretive information about the Preserve and the South Florida ecosystem.

Deceleration and acceleration lanes at parking areas along Highway 41 and controlled parking for a total of 125 vehicles.

10,500 lineal feet of elevated boardwalk trail to extend into the cypress strands or grass prairie with interpretive guide plaques along the way.

Permanent screened structures for portable restrooms."

Class C Cost Estimate:

Paving	15,840 L.F. single lane	\$870,000
Vehicle parking	125 ea	\$312,500
Bulletin case	12 ea	\$90,700
Boardwalk	10,500 L.F.	\$2,310,000
Signs, Entrance and Informational	569 sf	\$25,600
Restroom Screening	12 ea	\$7,800
Landscaping, Parking	12 sites	\$5,700
Landscaping, HQ & VC	1 site	<u>\$12,000</u>
Total estimate based on 1997 prices		\$3,634,300

Inflation adjustment for FY 2000 construction	\$4,207,565
--	--------------------

SCHEMATIC DESIGN**Rationale for Selection:**

The CBA method (choosing by advantages) was used to help establish the most cost effective alternative that could satisfy the project goals and site conditions. The park initially listed over sixty sites that included existing access roads to areas off the Tamiami Trail, sites along the corridor that currently attract visitors, or sites that have the potential for providing access to some unique resources. An initial cut on the list was made that recommended removing sites from further consideration near existing municipal, residential and/or commercial developments. This would avoid encouraging more congestion along the highway thereby increasing the safety hazards. Limited site distance also eliminated some sites. Sites that were located across the highway from other areas of interest, creating a temptation for visitors to cross the highway on foot, were also eliminated. And finally, there may have been a scenic or aesthetic issue with the site, such as noise, view of neighbors, manipulated landscape, conflicts with ORV use patterns, lack of resource opportunities, etc. that prompted their removal from further consideration. Of the sites that remained, a development program was identified for each site based on it's location, proximity to resource opportunities, and safety issues particular to the site. The park's GIS data base showing vegetation and disturbed sites, USGS digital ortho photo quads, on-site review, aerial reconnaissance, FDOT highway standards, intersection analysis, and accident history was used to help determine the development potential for each area.

A matrix was developed listing the development alternatives for each site against the objectives (factors) for the project. Seven objectives were identified to help determine the sites best suited to address the current safety and resource access issues along the Tamiami Trail. They include:

1.Enhance Safety on the Tamiami Trail: The degree of safety improvements proposed for the site was quantified. In many cases, bringing existing access points up to a minimum standard to accommodate the turning radius of a tour bus, represented a minimum improvement to safety. In other areas, relocating informal activities occurring along the road corridor to a formalized parking area represented a moderate improvement. Adding turn lanes represented a major improvement to safety on the Tamiami Trail and received the highest value.

2. Provide Safe Access to Preserve Features: This was ultimately combined with factor 1.

3. Provide Educational Opportunities: This was described by the number and range of resource types that the visitor could access from the proposed development action. Sites providing access to a higher number of resource types received the highest rating.

4. Provide Interpretation: The presence and degree of interpretive facilities made accessible by the proposed development was rated. Access to a staffed facility received the highest rating.

5. Provide Facilities: The extent of facilities or recreational opportunities made accessible or provided through this project were quantified. Sites providing access to higher number of facilities, received the higher value.

6. Minimize Fill in Wetlands: The degree to which this objective was met was determined by the extent of fill required to provide development. If the site was already disturbed with an existing fill pad and the site was located within an area that contained grass prairie, the site received a higher value than a site requiring major fill in an undisturbed area with sensitive vegetation (forested wetland).

7. Avoid Disrupting Sensitive Natural and Cultural Resources: Of the sites evaluated, there are no known areas hosting endangered species, but there are some areas that have a higher probability of containing archeological resources. Hydrological impacts were also quantified. Sites located in areas where development would pose no impact to the hydrological flow and did not occupy an area with a likelihood of archaeological resources received the highest value.

Each site was evaluated to identify its attributes and then compared against all other alternatives to distinguish the advantages of each. The paramount advantage which set the scale for establishing value, was found under the factor "enhancing safety on the Tamiami Trail". A value was placed on how well each site performed with regards to the project objectives, and together with initial costs, a ratio of value to cost was established. Sites were then prioritized according to this ratio. Alternatives were developed by utilizing this list to build out a scenarios to match 100%, 95%, and 75% of the construction funding originally requested in the project 10-238.

Recommendation:

Two scenarios for funding and action are attached. They represent a list of sites that could be developed to address safety and access based on using 75% and 95% of funding originally requested for this package, including a factor for inflation. The 75% alternative is unacceptable because safety and access improvements are not addressed for three major unsafe traffic patterns occurring along the highway. The 100% alternative (\$4,207,565) included additional development at the Concho Billy Trail. However, when a comparison was made between the 100% and 95% scenario, the additional value provided by improvements to this trail, while providing access to a variety of resource experiences, it did not substantially contribute to enhancing the safety concerns of the project. Therefore the 95% scenario became the preferred alternative. In addition, the park is committed to pursuing other funding sources to correct the entrance conditions at the existing campground entrances and Preserve headquarters, preferring to focus the funds for this project on those sites that will directly affect the casual visitors and move them safely off the highway to access and experience the unique features of the Preserve.

Class 'B' Cost Estimate Summary for the Preferred Alternative:

1	US 41 Highway Intersection Treatment	9 sites along US 41 all other sites are on county roads	\$ 533,800
2	Access Roads and Parking	14 sites-- 246 cars/26 RVs	\$ 931,763
3	Orientation and Informational Bulletin	8 each	\$ 80,000
4	Restroom Facilities	8 vault toilets, extend water & sewer lines at Chamber of Commerce site	\$ 207,400
5	Relocate Picnic Areas	2 locations: Chamber of Commerce & Kirby	\$ 58,000
6	*Interpretive Trails	10,365 lineal feet of trail, 10 trailheads. 22 waysides	\$ 1,517,680
7	Shade Structures	2 locations: Chamber of Commerce & Turner River Canoe Access	\$ 47,750
8	Demolition	2 locations: Kirby Storer & Headquarters	\$ 43,596
9	Mitigation	7.6 acres	\$ 213,808
	Subtotal		\$ 3,633,797
	Contingency	10% of subtotal	\$ 363,380
	Grand Total (net construction)		\$ 3,997,177

* Park to construct interpretive trails via day labor effort.

VALIDATION ANALYSIS**Changes in the Project Scope Compared to the Original Proposal:**

The only change in the project scope included providing vault toilets in lieu of the port-o-let screens. Improving the sanitary facilities at selected sites would greatly enhance the visitor experience without major impact to overall life cycle cost for either system. Shade structures and picnic facilities further enhance the attractiveness and convenience of the proposed development areas.

Changes to the Anticipated Advantages for the CBA Factors in the Original Proposal:

No changes were made to the anticipated advantages identified in the original proposal.

Reasons for Not Accepting Any Value Analysis Recommendations that Would Increase Project Benefits or Reduce Costs:

Not applicable

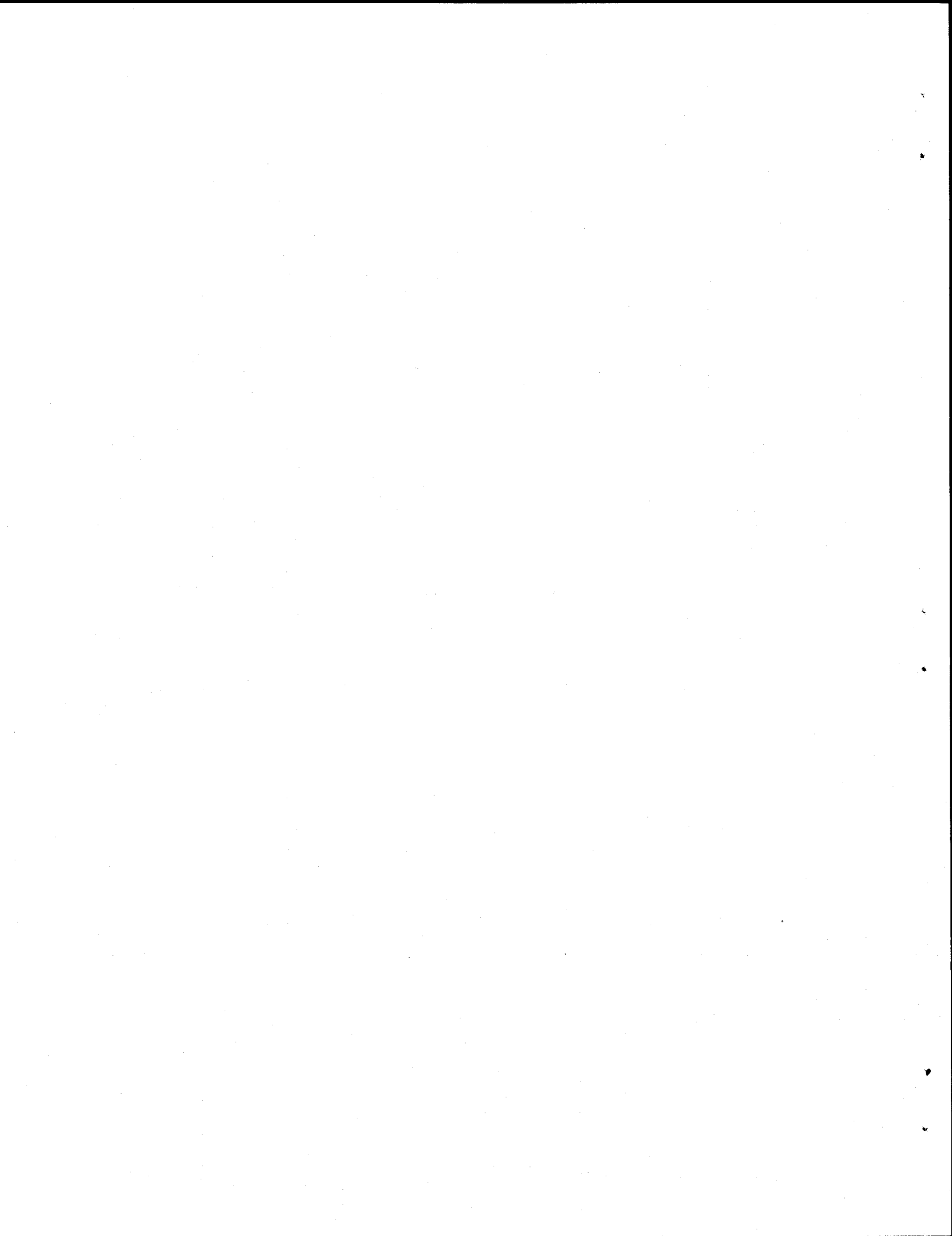
SCHEDULE & FUNDING SUMMARY:

FY 98 PT 06 \$203,000 Preliminary Design, site and visitor use surveys

FY 99 PT 06 \$60,000 Geotech Investigations, Environmental Assessment PT 07 \$300,000
Contract Documentation

FY 00 PT 07 \$20,000 Contract Advertisement and Award, Construction Begins

PREPARED BY: Michele D'Arcy, Landscape Architect, Denver Service Center



Appendix D

Vegetation of Project Sites

HP Williams - This heavily disturbed site is located on Turner River Road. The road and associated canal were constructed in 1962.

Aquatic vegetation in the canal:

Floating - Mosquito fern (*Azolla caroliniana*), Water Lettuce (*Pistia stratiotes*) (exotic)

Emergent - Swamp Lily (*Crinum americanum*), Maidencane (*Panicum hemitomon*), Torpedo Grass (*Panicum repens*) (exotic), Pickerel Weed (*Pontederia lanceolata*), Bladderworts (*Utricularia inflata*)

Submerged - Hydrilla (*Hydrilla verticillata*) (exotic), Water Naiads (*Najas guadalupensis*)

Dominant plants on the disturbed site include Live Oak, Strangler fig (*Ficus aurea*), Brazilian Pepper, and Guava (*Psidium guajava*) (exotic).

The surrounding vegetation is classified as Cypress-Mixed swamp forest with cypress as the dominant species. Other species include Pop Ash, Pond Apple, Sabal palms, Wax Myrtle, Red Ample, Red Bay (*Persea palustris*), Myrsine (*Myrsine floridana*), Laurel Oak (*Quercus laurifolia*) and the exotic pest tree Brazilian Pepper. The dominant understory plant is swamp fern.

Kirby Storter - The filled portion of the site contains various landscape plants including Live Oak, and the exotic Sausage Tree (*Kigelia pinnata*). Strand vegetation consists of an overstory of Cypress; other species include Pop Ash, Pond apple, Sabal Palms, and Willow.

On either side of the strand are prairies which were farmed extensively in the 1950's-1960's. The vegetation on the prairies is a diverse association of grasses, sedges and herbs. Species include Beak Rush, Black Sedge, Sawgrass, White tops, Muhly Grass, and south Florida blue stem.

A culvert connects the Tamiami canal on the north side of US 41 to the strand interior. The deeper water in this culvert area contains the following aquatic vegetation in the canal:

Floating - Mosquito fern, Water Lettuce, and Water Hyacinth (*Eichhornia crassipes*).

Emergent - Swamp Lily, Maidencane, Torpedo Grass, Pickerel Weed, and Bladderworts.

Submerged - Hydrilla, Water Naiads, Coon Tail (*Ceratophyllum demersum*), and the exotic Asian marsh weed (*Limnophila sessiflora*).

Monument Campground - Intensely disturbed site. A paved campground access road with mowed shoulders.

Burns Lake Campground - Intensely disturbed site. A paved campground access road with mowed shoulders.

Preserve Headquarters - The project area is disturbed habitat; the site is filled with oolitic limestone. The landscape on the site varies. A berm along the south side of US 41 directly in front of the headquarters building consists of a variety of native plants including native hardwoods and slash pines that were planted in the late 1980's. Immediately east of the berm to the eastern most driveway is an area containing cypress trees that were planted in the mid 1980's. The remainder of the site is Bahia grass and associated low weeds with some sabal palms and desert fan palms (*Washingtonia robusta*).

The surrounding vegetation is salt marsh. The salt marsh vegetation consists primarily of Cord Grass, Spike rush, Salt Grass (*Distichlis spicata*), Cattails, Saw Grass, Purslane, and Needle rush.

Gator Hook - Aquatic vegetation in the canal consists of:

Floating - Mosquito fern.

Emergent - Swamp Lily, Maidencane, Torpedo Grass, Pickerel Weed, and Bladderworts.

Submerged - Hydrilla and Water Naiads.

The surrounding vegetation is a Cypress-Mixed swamp forest with Cypress as the dominant species. Other species include Pop Ash, Pond Apple, Sabal palms, Wax Myrtle, Red Ample, Red Bay, Myrsine, Laurel Oak, Dahhon Holly, and the exotic pest tree Brazilian Pepper. The dominant understory plants is swamp fern.

Turner River Canoe Access - Aquatic vegetation in the canal consists of:

Floating - Mosquito fern.

Emergent - Swamp Lily, Maidencane, Torpedo Grass, Pickerel Weed, and Bladderworts.

Submerged - Hydrilla and Water Naiads.

The surrounding vegetation is a Cypress-Mixed swamp forest with Cypress as the dominant species. Other species include Pop Ash, Pond Apple, Sabal palms, Wax Myrtle, Red Ample, Red Bay, Myrsine, Laurel Oak, Dahhon Holly, and the exotic pest tree Brazilian Pepper. The dominant understory plants is swamp fern. This site has some areas of disturbance (added fill) and has some exotic vegetation including Bamboo (*Bambusa* sp.), *Widelia* (*Widelia trilobata*) and various exotic fern cultivars.

Turner River Trailhead Access - Aquatic vegetation in the canal consists of:

Floating - Mosquito fern.

Emergent - Swamp Lily, Maidencane, Torpedo Grass, Pickerel Weed, and Bladderworts.

Submerged - Hydrilla and Water Naiads.

The surrounding vegetation is a Cypress-Mixed swamp forest with Cypress as the dominant species. Other species include Pop Ash, Pond Apple, Sabal palms, Wax Myrtle, Red Ample, Red

Bay, Myrsine, Laurel Oak, Dahhon Holly, and the exotic pest tree Brazilian Pepper. The dominant understory plants is swamp fern.

Dona Drive - Intensely disturbed site. A paved campground access road with mowed shoulders.





As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

