

**ATTACHMENT 3: DETERMINATION OF IMPAIRMENT FOR THE NPS PREFERRED
ALTERNATIVE**

A determination of impairment is made for each of the resource impact topics carried forward and analyzed in the environmental impact statement for the NPS preferred alternative. The descriptions of the Preserve's purpose and significance in chapter 1 of the general management plan were used as a basis for determining if a resource is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Preserve, or
- key to the natural or cultural integrity of the Preserve or to opportunities for enjoyment of the Preserve, or
- identified in the Preserve's general management plan or other relevant NPS planning documents as being of significance.

Impairment findings are not necessary for visitor experience, socioeconomic, public health and safety, environmental justice, land use, and NPS operations, because impairment findings relate back to Preserve resources and values. These impact topics are not generally considered to be Preserve resources or values according to the Organic Act and cannot be impaired in the same way that an action can impair Preserve resources and values. Beneficial impacts and adverse impacts that are negligible or minor in intensity would, by definition, not constitute impairment.

For each relevant impact topic a brief resource description is provided below. For more details, see "Chapter 3: Affected Environment" of the general management plan. For impact thresholds, see "Chapter 4: Environmental Consequences" under the "Methods and Assumptions for Analyzing Impacts" subheading. For each impact topic a determination on impairment and the rationale for this determination are also provided.

NATURAL RESOURCE TOPICS

Hydrologic Resources: Surface Water Flow and Water Quality

The Addition is part of the regional Everglades watershed that has been highly engineered and managed for agriculture, flood control, and water supply for a growing population in south Florida. Currently, water quality in some parts of the Everglades (including many portions of the Addition) is dramatically different than it was before 1900. Surface water entering the Preserve is almost completely controlled and, having drained from agricultural and developed areas, is periodically laden with nutrients, dissolved solids, and trace amounts of pesticides and herbicides. The various freshwater and marine systems of the Addition have been altered from their original natural conditions. However, major efforts are underway to restore the greater

Everglades hydrology and ecosystem, including more natural water quality, quantity, timing, and distribution.

Hydrologic resources are necessary to fulfill the purpose of the Preserve and are key to the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on hydrologic resources. The primary beneficial impacts will accrue from ORV management and ecosystem/hydrologic restoration efforts. The primary adverse effects are attributed to the development and maintenance of facilities and ongoing visitor use, but these effects will be localized in nature and mitigated by ongoing NPS restoration efforts, use of best management practices, and vegetation management. Because of these long-term, widespread, beneficial effects and only localized adverse effects, the NPS preferred alternative will not result in impairment of hydrologic resources.

Wetlands

During the wet season, as much as 90% of the Addition can be inundated with water, and most of the Addition is classified as wetlands, with 27 different types that are primarily seasonal in nature. The non-seasonal wetland types comprise a much smaller area than seasonal wetland types. The wetlands in the Addition are highly productive and provide a wide range of functional services that benefit wildlife, vegetation communities, and surface hydrology. Wetlands in the Addition could be altered as a result of development and maintenance of facilities. A site-specific functional analysis of wetland impacts from ORV trails throughout the Addition is beyond the scope of the general management plan and will be completed as part of the "Wetlands Statement of Findings," which will also include specific wetland avoidance and mitigation measures in accordance with Director's Order 77-1 (Wetland Protection).

Wetlands are necessary to fulfill the purpose of the Preserve and are key to the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on wetlands. The primary long-term, beneficial impacts will accrue from south Florida ecosystem restoration efforts. Actions in the preferred alternative will have mostly localized adverse impacts on wetlands as a result of development and maintenance of facilities, such as trails. Because of the long-term beneficial effects of ecosystem restoration combined with avoidance and mitigation measures applied for construction activities, the NPS preferred alternative will not result in impairment of wetlands in the Addition.

Floodplains

Two sites in the Addition are located within the 100-year floodplain: Carnestown and Copeland. The Carnestown site contains two structures, the Collier County Sheriff District 7 substation and the Everglades

Chamber of Commerce information center, and the Copeland site contains one structure, the NPS fire operations center. These facilities in the 100-year floodplain will be retained, but they will cause no additional impacts on floodplains beyond what is accounted for under the no-action alternative.

Floodplains are necessary to fulfill the purpose of the Preserve and are key to the natural integrity of the Addition. The preferred alternative will have no new impacts on floodplains and will not result in impairment of floodplains.

Vegetation and Soils

The major plant communities in the Addition include cypress strands and domes, mixed-hardwood swamps, sloughs, prairies and marshes, mangrove forests, pinelands, and hardwood hammocks. The substrates of many cypress and hardwood hammock communities in the Big Cypress Swamp develop when cypress and other trees shed leaves and branches, which collect in solution hole depressions and slowly decompose into a thick mantle on the substrate surface. Peat and muck soils are often present in sloughs and marshes, whereas prairie communities are often found on frequently flooded fine sands or calcium carbonate marls, with limestone near the soil surface. Mangrove forests are present in the southern part of the western Addition, and endemic plants, native only to the Preserve area, comprise 10% of the Big Cypress vegetation. These communities provide a diverse mosaic of habitat conditions for a wide variety of wildlife species. Although the vegetation communities of the Addition are generally in good condition, many of these plant communities have been affected by local and regional alterations to surface water flows, as well as several other past human uses and developments such as agriculture, oil and gas exploration, and exotic plant invasion.

Vegetation and soils are necessary to fulfill the purpose of the Preserve and are key to maintaining the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on vegetation and soils. The primary beneficial effects will accrue from ORV management, ongoing vegetation management, and ecosystem restoration projects. The primary adverse effects will result from new facility development and maintenance and visitor use. However, because of the widespread beneficial effects and only localized adverse effects, the NPS preferred alternative will not result in impairment of vegetation or soils.

Wildlife: Federal Special Status Species

There are nine federally listed endangered or threatened species documented in the Preserve, and eight of those are known to be present in the Addition. The impacts on the following threatened or endangered species are addressed in detail in the general management plan for the

Addition – Florida panther, West Indian manatee, red-cockaded woodpecker, wood stork, Everglade snail kite, American crocodile, and Eastern indigo snake. These species warrant attention because there have been long-term population declines and these species are vulnerable to exploitation and environmental changes. They are endangered as a result of habitat reduction and water pollution caused by water management projects, urbanization, and agricultural expansion. Information on the preferred habitats of these species and their current condition can be found in the general management plan.

These species are necessary to fulfill the purpose of the Preserve and are key to the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on federal special status species. The primary beneficial effects relate to continued partnerships and improved monitoring in concert with FWC and USFWS, NPS restoration and resource management efforts, overall ecosystem restoration projects, efforts to meet species recovery goals, and designation of lands as wilderness. The primary adverse effects resulting from new facility development and expanded visitor use will be localized and result in *not likely to adversely affect* determinations under Section 7 of the Endangered Species Act for all species except for the Florida panther, which is addressed below. However, because of the widespread beneficial effects and only localized adverse effects on federal special status species, the NPS preferred alternative will not result in impairment of any federal special status species.

Florida Panther (*Puma concolor coryi*). The Florida panther was listed as endangered under the federal Endangered Species Act in 1967. Today, the only confirmed breeding population of Florida panthers in the United States is in south Florida. Although the panther once lived throughout most of the southeastern United States, intensive hunting and conversion of wildlands to agriculture have severely reduced the population. Despite this, the panther population has been steadily increasing in recent years, and the current population is believed to be in better condition than it was in 1985. The total population is estimated to be 100-120 individuals, with one to three collared panthers using the Addition each year, according to radio telemetry data.

This species is necessary to fulfill the purpose of the Preserve and is key to the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on the Florida panther. The primary beneficial effects relate to ORV management, ecosystem restoration projects, and designation of lands as wilderness. The primary adverse effects will result from new facility development and expanded visitor use, but effects will be mostly localized. The NPS determined that the actions contained in the preferred alternative will have a *likely to adversely affect* determination under Section 7 of the Endangered Species Act and consulted with USFWS. Impacts will be mitigated by cautious phasing of trails over time, managing game for sustainable harvests, maintaining

or enhancing habitat conditions, developing additional mitigation measures that are required by USFWS in their "Biological Opinion" (see attachment 2), as well as NPS efforts to meet species recovery goals. As a result of the beneficial effects and only localized adverse effects, the NPS preferred alternative will not result in impairment of the Florida panther.

Wildlife: Major Game Species – White-tailed Deer and Wild Turkey

The populations of major game species in the Addition (white-tailed deer, wild turkey, and the exotic feral hog) provide prey sources for several nongame and special status species, as well as hunting opportunities for the public. Deer and turkey populations are generally in good condition, with the number of deer observations being highest north of I-75. However, the current population of feral hogs has declined in recent years and is very low. Major game species populations vary from year to year because of environmental conditions, such as exotic species infestation, heavy rains, and prolonged winter droughts. The biggest threat to major game species is loss of habitat.

Wildlife are necessary to fulfill the purpose of the Preserve and are key to the natural integrity of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on major game species. The primary beneficial effects relate to ecosystem restoration projects, ORV management, and designation of lands as wilderness. The primary adverse effects will result from new facility development, visitor use, and regional growth and development. Game species, however, typically adapt to changes in habitat conditions and can become habituated to the predictable use of designated ORV routes. Because of the widespread beneficial effects and only localized adverse effects, the NPS preferred alternative will not result in impairment of major game species.

Wilderness Resources and Values

There is currently no designated wilderness in the Addition; however, there are expansive areas that contain wilderness characteristics. The four qualities of wilderness are relevant to discussions of wilderness character and are discussed below.

Untrammelled (relates to human manipulation or control) – Although portions of the Addition have been manipulated by farming, grazing, road building, and other activities in the past, some of these areas have since reverted to a natural state and are now largely free of human manipulation or control. Portions of the Addition have never been significantly altered by human activities, and their natural processes continue to function in an essentially unhindered manner.

Natural – Much of the Addition is impacted by the presence of exotic, nonnative plants, although visitor experience and perception of naturalness varies. The Addition contains a high degree of naturalness; however, regular intervention is necessary to maintain natural values and conditions.

Undeveloped – Although much of the natural landscape of the Addition has been modified over time by human activity, there are expansive areas that retain their primeval character and where the “imprint of man’s work is substantially unnoticeable.”

Outstanding Opportunities for Solitude or Primitive, Unconfined Recreation – Primitive (nonmotorized) forms of recreation in the Addition include hiking on- and off-trail, scenic viewing, wildlife watching, fishing, camping, and exploration. Canoeing and kayaking are also possible in certain areas of the Addition. There are ample opportunities for solitude in the Addition.

The wilderness character of the Addition is also enhanced by scenic, educational, and ecological resources and values that allow visitors to learn about and experience the contrasting scenery of various plant communities, archeological resources, and water-dependant natural systems.

Wilderness resources and values are necessary to fulfill the purpose of the Preserve and are key to the natural integrity and opportunities for enjoyment of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on wilderness character. The primary beneficial effects relate to ecosystem restoration projects, ORV management, and designation of lands as wilderness. The primary adverse effects will result from regional growth and development, future oil and gas proposals, and development of ORV trails that will adversely affect natural soundscapes and fragment native habitat. Impacts from ORV trails will be reduced by the use of a designated trail system. The NPS preferred alternative will result in long-term, beneficial, and Addition-wide effects, and therefore the NPS preferred alternative will not result in impairment of wilderness resources and values.

Soundscape (Natural Sound Preservation)

Natural sounds generally predominate throughout the Addition. Human-generated noise in the Preserve is predominantly from vehicle traffic, aircraft overflights, recreation activities, NPS management activities, and oil and gas drilling operations. Most human-caused sounds are usually confined to developed areas along major roads and are mobile and temporary in nature; however, there can be human-caused noise in the backcountry related to NPS management activities and recreational activities such as ORV use.

Natural soundscapes in remote areas of the Preserve are necessary to fulfill the purpose of the Preserve and are key to the natural integrity and recreational values of the Addition. Actions in the preferred alternative will have both beneficial and adverse impacts on the soundscape. The primary beneficial effects relate to the special status and protection afforded lands designated as wilderness under the Wilderness Act and ORV management activities. The primary adverse effects will result from new facility development and visitor use. However, because of the beneficial effects and only localized, mobile, and temporary adverse effects, the NPS preferred alternative will not result in impairment of the soundscape.

CULTURAL RESOURCES

Archeological Resources

To date, 57 archeological sites have been identified in the Addition. These resources are associated with the Archaic and Glades periods in the Preserve's cultural chronology. Most of the archeological resources are earth middens, although a few surface scatters (sand mounds, sand burial mound, village site, and home site) have also been identified. Preliminary chronology determinations have been made about these sites by the NPS Southeast Archeological Center. Ten of the 57 sites have been determined to be prehistoric; 23 are determined to be Native American sites; and 22 are associated with the Glades cultural period. Five sites span a range of historic periods and contain artifacts representing Native American and Seminole cultures, and two sites at Deep Lake are without a specific date or time period determination. The potential for scientific archeological resources within Deep Lake is great, and although no archeological work has been done to date, researchers speculate that it may retain resources dating from the earliest periods of human occupation in south Florida.

Archeological resources are key to the cultural integrity of the Addition. Actions in the preferred alternative could result in permanent adverse impacts on archeological resources as a result of trail construction, motorized recreation, and increased visitation. Archeological surveys will precede any ground disturbance, and national register eligible or listed archeological resources will be avoided during construction. Ranger patrol and emphasis on visitor education regarding the significance and fragility of archeological resources and how visitors can reduce their impacts to them will discourage vandalism and inadvertent impacts associated with recreation or increased visitation; few adverse effects are anticipated. The NPS concludes that implementation of the preferred alternative could result in potential adverse effects on archeological resources, but as a result of avoidance and mitigation efforts, the NPS preferred alternative will not result in impairment of archeological resources.

American Indian Ethnographic Resources

The Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida are both recognized in the enabling legislation as peoples traditionally associated with the Preserve. Under the authority of the Indian Reorganization Act, a number of Seminoles officially organized as the Seminole Tribe of Florida in 1957, and other Seminoles incorporated and formed the Miccosukee Tribe of Indians of Florida in 1962. The Seminoles trace their origins back to bands of the Creek confederacy that had migrated into Florida in the 18th century to escape Indian removal. Some resources in the Addition have traditional associations with the Seminole and Miccosukee tribes. Information relating to these ethnographic resources will be collected in the future through collaborative research between the NPS and designated tribal representatives.

American Indian ethnographic resources are key to the cultural integrity of the Addition. Actions in the preferred alternative, such as motorized recreation and the construction of trails, will have limited potential for impacts on ethnographic resources. However, the NPS will work with traditionally associated people to identify ethnographic resources, identify appropriate protection strategies for them, and consult in the future before any construction. As a result of these mitigation measures, no adverse impacts are anticipated from construction. Because of identified mitigation measures and only limited potential for adverse impacts, the NPS preferred alternative will not result in impairment of American Indian ethnographic resources.

SUMMARY

Adverse impacts anticipated as a result of implementation of the NPS preferred alternative on a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation, (2) key to the natural or cultural integrity of the Preserve (including the Addition) or to opportunities for enjoyment of the Preserve, or (3) identified as significant in the Preserve's general management plan or other relevant NPS planning documents will not rise to levels that would constitute impairment.