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Everglades National Park
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Acquisition of Florida Power & Light Company Land in the East Everglades Expansion Area Final Environmental Impact Statement

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UNITED STATES DEPARTMENT OF THE INTERIOR – NATIONAL PARK SERVICE

ACQUISITION OF FLORIDA POWER & LIGHT COMPANY LAND IN THE EAST EVERGLADES EXPANSION AREA, EVERGLADES NATIONAL PARK, FLORIDA

FINAL ENVIRONMENTAL IMPACT STATEMENT

Lead Agency: National Park Service (NPS), U.S. Department of the Interior

This draft environmental impact statement (EIS) describes five alternatives for acquiring land owned by the Florida Power & Light Company (FPL) in the East Everglades Expansion Area (EEEA) within the boundary of Everglades National Park (the park), or sufficient interest in this property, to allow for higher water levels in the area to facilitate restoration efforts within the park. The document also describes the affected environment and evaluates the environmental consequences of implementing these alternatives.

The purpose of the project is NPS acquisition of the existing FPL land within the park, or sufficient interest in the property, to facilitate hydrologic and ecologic restoration of the park and Everglades ecosystem. This action is needed to support the mission of the NPS and the park, because the EEEA, which includes the existing FPL parcel, has been identified as vital to long-term protection of the park for ecosystem restoration purposes. Also, the acquisition of the existing FPL parcel within the EEEA is needed to support the goals of restoring the Northeast Shark River Slough (NESRS) and to fulfill the purposes of the Modified Water Deliveries project and the Comprehensive Everglades Restoration Plan. Acquisition of land within the EEEA is legally authorized. Public Law (PL) 101-229 (December 13, 1989) articulates that the Everglades is both nationally and internationally significant and sets forth specific goals and objectives for acquisition of properties in this area. Acquisition of land within the EEEA through an exchange of lands with FPL is also legally authorized (PL 111-11, 2009).

The no-action alternative in this EIS assumes that the NPS would take no action to acquire FPL property within the EEEA. However, this EIS addresses both the potential impacts from the acquisition of FPL land in the park as well as the indirect impacts that could result from the subsequent construction and operation of transmission lines that could be built either inside or outside the park as a result of the alternatives selected. These transmission line construction scenarios depend in part on the alternative selected for land acquisition, but also on other factors that are beyond the NPS's control. For each of the possible actions NPS could select with respect to acquisition of the FPL corridor within the park (alternatives), there are several possible scenarios regarding where and whether the FPL transmission lines may ultimately be constructed. For the sake of clarity, the NPS decided not to repeat the description and analysis of every one of the possible scenarios if it was already described under another alternative. There are two no action alternatives, one with a "no-build" scenario for analyzing baseline conditions (1a), and one other with a "build" construction scenario (1b). Each other alternative was assigned one scenario for analysis.

Under alternative 1a (no NPS action), the NPS would not take action to acquire FPL property within the park or a flowage easement on it. There would be no change in the status of the FPL lands in the park, and the NPS would retain ownership of lands being considered for exchange. The NPS and U.S. Army Corps of Engineers (USACE) would continue to lack a perpetual flowage easement on FPL's entire property in the EEEA necessary to implement higher water levels resulting from ecosystem restoration projects. This alternative assumes that FPL would not construct transmission lines on its existing land in the park, in the exchange corridor, or in any area outside the park. This alternative could result if other necessary permits are denied by regulatory agencies or if FPL chooses not to build transmission lines.

Under alternative 1b, the NPS would not take action to acquire FPL property within the park or a flowage easement on it. Although it represents the same land acquisition option as alternative 1a, this alternative assumes that FPL would construct transmission lines on its existing land in the park (designated as FPL's "West Secondary Corridor"). It also assumes that the NPS would not be able to flow additional water on this property to achieve its long-term ecosystem restoration objectives because it would not have acquired the right or interest to do so. In late 2013, FPL withdrew the West Secondary Corridor from its application for State of Florida site certification and from its application for a USACE Section 404 wetland fill permit. In light of this development, construction of transmission lines in the West Secondary Corridor is less likely than before; however it is included to provide a full range of alternatives and assessment of impacts."

Under alternative 2, the 320-acre FPL corridor would be acquired directly by purchase or through the exercise of eminent domain authority by the United States. This alternative would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park and would allow for flowage of water on this property. **T**he construction scenario associated with alternative 2 assumes that FPL would likely acquire a replacement corridor east of the existing park boundary to meet its transmission needs and the transmission lines would be built outside the park on lands within the FPL West Consensus Corridor and West Preferred Corridor.

Under alternative 3, the NPS would acquire fee title to the 320-acre FPL corridor through an exchange for park property, as authorized by the exchange legislation. NPS land conveyed to FPL would consist of 260 acres along 6.5 miles of the

eastern boundary of the EEEA. The NPS would also convey a 90-foot-wide perpetual nonnative vegetation management easement to FPL adjacent to the entire length of the exchange corridor. The “fee for fee” land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. FPL would be required to allow the United States the perpetual right, power, and privilege to flood and submerge the property consistent with hydrologic restoration requirements. The May 2014 Final Order of Certification directs FPL to pursue locating transmission lines in the FPL West Consensus Corridor east of the current park boundary and indicates that the FPL West Preferred Corridor would only be used in the event that an adequate right-of-way within the FPL West Consensus Corridor cannot be secured in a timely manner and at a reasonable cost. Therefore, the NPS has revised alternative 3 to include a commitment that FPL shall reconvey to the NPS any and all acreage in the FPL West Preferred Corridor determined to be unneeded by FPL to build transmission lines. In this instance, after going through the process described below, FPL would return to the NPS land in the FPL West Preferred Corridor that it would no longer need to complete the transmission line requirements. After the reconveyance is complete, the park boundary would be adjusted to reflect final land ownership between FPL and NPS. FPL would strive to avoid siting transmission lines within the park to the extent practical. For a conservative analysis, the construction scenario associated with this alternative assumes that FPL would build the transmission lines in the exchange corridor and meet the fee for fee terms and conditions that include additional requirements developed by the NPS for environmental protection.

Under alternative 4, the NPS would acquire fee title to the 320-acre FPL corridor through an exchange for an easement on NPS property. The NPS would grant an easement to FPL on 260 acres of park land along 6.5 miles of the eastern boundary of the EEEA for potential construction of transmission lines, in accordance with the terms and conditions developed for this “easement for fee” exchange. Although the exchange corridor involved in this alternative is the same as alternative 3, under this easement for fee exchange, NPS would retain ownership of the corridor. No adjustments would be made to the boundary of the park, but the NPS would no longer have the unencumbered use of the exchange corridor. The NPS would also convey a 90-foot-wide perpetual easement to FPL adjacent to the entire length of the exchange corridor for nonnative vegetation management. The easement for fee land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. Similar to alternative 3, an essential condition for this exchange is that the FPL Utility Easement Area would be subject to a perpetual flowage easement.

Under alternative 5, the NPS would acquire a perpetual flowage easement on FPL’s property within the EEEA through purchase, condemnation, or donation by FPL. FPL would retain ownership of its 320-acre corridor in the park during the term of the easement and could seek to site transmission lines there. The flowage allowed under this easement would allow sufficient water flow over this area to support ecosystem restoration projects. There would be no change to the authorized boundary of the park, although NPS would retain the current goal of acquiring this property over the long term. The construction scenario associated with this alternative would be the same as the one for alternative 1b (FPL construction of transmission lines on its existing land in the park), except that NPS would acquire a long-term, perpetual flowage easement.

Alternative 2 is the environmentally preferred alternative. Alternative 3 is the NPS preferred alternative.

The potential environmental consequences of the alternatives are addressed for hydrology, water quality, soils, vegetation and wetlands, floodplains, soundscapes, wildlife, special status species (both federally listed and state listed species), visual resources, wilderness, visitor use and experience, adjacent land uses and policies, tribal lands (including Indian trust resources), socioeconomics, and park operations and management.

The draft EIS was made available for public and agency review and comment for 60 days after publication of the U.S. Environmental Protection Agency Notice of Availability in the Federal Register, from January 17, 2014, to March 18, 2014. Copies of the draft EIS or links to download it on the NPS Planning, Environment and Public Comment website, were sent to individuals, agencies, organizations, libraries, and local businesses. This final EIS provides responses to substantive stakeholder and public comments, incorporates those comments and suggested revisions where necessary. Once this document is released and a Notice of Availability is published in the Federal Register, a 30-day no-action period will follow. Following the 30-day no-action period, the alternative or actions constituting the selected alternative will be documented in a record of decision that will be signed by the Regional Director of the Southeast Region. For further information regarding this document, please contact Everglades National Park at the address below or at the following number: (305) 242-7700.

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National Park Service
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Florida

EVERGLADES NATIONAL PARK

ACQUISITION OF FLORIDA POWER & LIGHT COMPANY LAND IN THE EAST EVERGLADES EXPANSION AREA

FINAL ENVIRONMENTAL IMPACT STATEMENT

NOVEMBER 2015

EXECUTIVE SUMMARY

PURPOSE OF AND NEED FOR ACTION

The National Park Service (NPS) is preparing an environmental impact statement (EIS) to evaluate the options for and impacts of acquiring land owned by the Florida Power & Light Company (FPL) in the East Everglades Expansion Area (EEEA) within the boundary of Everglades National Park (the park), or sufficient interest in this property, to allow for higher water levels in the area to facilitate ecosystem restoration efforts within the park. This includes the exchange of lands authorized in the Omnibus Public Land Management Act of 2009 (Public Law (PL) 111-11) and other reasonable alternatives.

The NPS must acquire the FPL parcel and several other properties, or sufficient interest in these properties, to allow for higher water levels in the area to facilitate ecosystem restoration efforts within the park – one of the primary objectives of the Modified Water Deliveries to the Everglades National Park (MWD) project and other long-term Everglades ecosystem restoration plans. The FPL parcel is a linear north-south corridor of between 330 feet and 370 feet in width and approximately 7.4 miles in length within the park. The parcel was purchased by FPL in the 1960s and early 1970s, prior to the expansion of the park, with the intention of supporting future transmission lines from the Turkey Point power plant, located south of the Biscayne National Park visitor center, to locations north of metropolitan Miami (FPL 2011). The NPS decision to be made at the conclusion of this process is whether to acquire FPL's lands within the park, or sufficient interest in this property, to allow for higher water levels in the area to facilitate ecosystem restoration efforts within the park, by exchange, direct purchase, or other means.

The purpose of the project is NPS acquisition of the existing FPL land within the park, or sufficient interest in the property, to facilitate hydrologic and ecologic restoration of the park and Everglades ecosystem. The need for the project can be summarized as follows:

- This action is needed to support the mission of the NPS and the park. The EEEA, which includes the existing FPL parcel, has been identified as vital to long-term protection of the park for ecosystem restoration purposes.
- The acquisition of the existing FPL parcel within the EEEA is needed to support the goals of restoring the Northeast Shark River Slough (NESRS) and to fulfill the purposes of the MWD project and the Comprehensive Everglades Restoration Plan.
- Acquisition of land within the EEEA is legally authorized. PL 101-229 (December 13, 1989) articulates that the Everglades is both nationally and internationally significant and sets forth specific goals and objectives for acquisition of properties in this area.
- Acquisition of land within the EEEA through an exchange of lands with FPL is also legally authorized by the Omnibus Public Lands Management Act of 2009 (PL 111-11).

OBJECTIVES IN TAKING ACTION

"Objectives" are specific purpose statements that describe what must be achieved to a large degree for the action to be considered a success. All of the alternatives selected for detailed analysis must meet project objectives to a large degree and support the purpose of and need for action. Alternatives proposing the acquisition and/or exchange of FPL land and/or land interests must:

- Ensure consistency with the Everglades National Park Protection and Expansion Act of 1989 (Expansion Act) and the 1991 Land Protection Plan (LPP) for the EEEA. This includes the following:
  - Increasing the level of protection of the outstanding natural values of the park and enhancing and restoring the ecological values, natural hydrologic conditions, and public enjoyment of such areas by adding the area commonly known as the NESRS and the East Everglades to the park (16 USC 410r-5) and
  - Assuring that the park is managed in a way that maintains the natural abundance, diversity, and ecological integrity of native plants and animals, as well as the behavior of native animals, as part of its ecosystem (16 USC 410r-5);
- Ensure consistency with the Congressional intent of the Omnibus Public Land Management Act of 2009 such that the Secretary of the Interior considers the land exchange with specified terms and conditions including appropriate environmental review of the impacts of the exchange;
- Support and facilitate implementation of ecosystem restoration projects including the MWD project, the Tamiami Trail Next Steps Project and the Comprehensive Everglades Restoration Plan; and
- Support the timely acquisition of existing FPL property within the EEEA, or sufficient interest in this property, to allow for higher water levels in the area to facilitate ecosystem restoration efforts within the park.

ALTERNATIVES CONSIDERED

The alternatives under consideration must include a "no-action" alternative to ensure that the NPS compares the potential impacts of the proposed action to the likely impacts of maintaining the *status quo*. The no-action alternative in this EIS assumes that the NPS would take no action to acquire FPL property within the EEEA or a flowage easement on it. In contrast, the action alternatives incorporate different approaches that the NPS would take to acquire lands or interest in lands within the FPL corridor. This EIS addresses both the potential impacts from the acquisition of FPL land in the park as well as the indirect impacts that could result from the subsequent construction and operation of transmission lines that could be built either inside or outside the park as a result of the alternative selected. Although the NPS does not have responsibility to choose or authorize where FPL builds transmission lines, it is foreseeable that FPL would build transmission lines, and each of the possible alternatives that NPS considers with respect to acquisition of the FPL corridor within the park has multiple possible outcomes or scenarios about where construction of the FPL transmission lines may ultimately occur. These transmission line construction scenarios depend in part on the alternative selected by the NPS regarding the land acquisition, but also on other factors that are beyond the NPS's control. NPS consideration of any transmission line construction scenarios in this EIS is not an admission or acknowledgement by the NPS or the U.S. Army Corps of Engineers (USACE) that use of these properties as a transmission corridor is permissible or suitable because FPL has not completed the USACE Clean Water Act (CWA) Section 404 permitting process for its proposed western transmission lines.

Based on the possible alternatives and transmission line construction scenarios, There are six alternatives that are fully described and analyzed in the draft EIS. There is a no-action alternative with a "no-build" scenario for analyzing baseline conditions (1a), as well as an alternative that analyzes no NPS action with a "build" construction scenario (1b). Each other alternative is assigned one scenario for analysis. For the sake of clarity, the NPS decided not to repeat the description and analysis of every one of the possible scenarios if it was already described under another scenario. It was determined that this would simplify the way the information is presented, and therefore improve the readability of the EIS.

In this way, the full range of possible construction scenarios is described. The following summarizes the alternatives analyzed in this EIS:

ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION

Under the no-action alternative, the NPS would not take action to acquire FPL property within the park or a flowage easement on it. There would be no change in the status of the 7.4-mile-long corridor containing 320 acres of FPL lands in the park, and the NPS would retain ownership of lands being considered for exchange. There would be no change to the authorized boundary of the park. The NPS and USACE would continue to lack a perpetual flowage easement on FPL's entire property in the EEEA necessary to implement higher water levels resulting from ecosystem restoration projects.

This alternative assumes that FPL would not construct transmission lines on its existing land in the park, in the exchange corridor, or in any area outside the park. This alternative could result if other necessary permits are denied by regulatory agencies or if FPL chooses not to build transmission lines. Although this scenario is not likely, it is included to represent a status quo baseline for National Environmental Policy Act (NEPA) purposes. The impacts of constructing transmission lines, as analyzed in other alternatives, is compared to this baseline.

ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN PARK

Under this alternative, the NPS would not take action to acquire FPL property within the park or a flowage easement on it. With respect to the action selected for acquisition, it is thus the same as alternative 1a. However, this alternative assumes that FPL would construct transmission lines on its existing land in the park (FPL's "West Secondary Corridor"). Although it represents the same management option as alternative 1a, this alternative is included because it is a potential but uncertain outcome if NPS takes no action. This alternative assumes that FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on its existing property within the park. It also assumes that the NPS would not be able to increase water levels on this property to achieve its long-term restoration objectives because it would not have acquired the right or interest to do so. In late 2013, FPL withdrew the West Secondary Corridor from its application for State of Florida site certification and from its application for a USACE Section 404 wetland fill permit. As a result, FPL is no longer seeking the federal, state and local permits needed to construct transmission lines in the West Secondary Corridor. Although this construction scenario is less likely than before, it is included to provide a full range of alternatives and assessment of impacts.

ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Under alternative 2, the FPL property (7.4-mile-long FPL corridor containing 320 acres of FPL lands) would be acquired directly by purchase or through the exercise of eminent domain authority by the United States. This alternative would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park and would allow for flowage of water on this property.

The construction scenario associated with this alternative assumes that FPL would likely acquire a replacement corridor east of the existing park boundary to meet its transmission needs because the option selected by NPS for land acquisition would leave FPL without a transmission corridor through the park. This alternative assumes that FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on lands FPL would likely acquire somewhere within this area east of the park. The impact analysis for alternative 2 assumes FPL is able to build entirely outside the park on lands within the FPL West Consensus and West Preferred Corridors.

ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Under alternative 3, the NPS would acquire fee title to the FPL property (7.4-mile-long corridor containing 320 acres of FPL lands) through an exchange for park property, as authorized by the exchange legislation. NPS land conveyed to FPL would consist of 260 acres along 6.5 miles of the eastern boundary of the EEEA. The values of lands exchanged would be equalized in accordance with the Omnibus Act. This alternative would result in a 260-acre decrease in lands within the authorized boundary on the east side of the park, and an increase of 320 acres of federally owned land within the authorized boundary (the former FPL corridor), for a net gain of 60 acres of federally owned park land. The NPS would also convey a 90-foot-wide perpetual nonnative vegetation management easement to FPL adjacent to the entire length of the 6.5-mile exchange corridor. The fee for fee land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. An essential condition for this exchange is that the lands conveyed to FPL would be subject to a perpetual flowage easement. FPL would be required to allow the United States the perpetual right, power and privilege to flood and submerge the property consistent with hydrologic restoration requirements. Also, the terms and conditions for this alternative allow for other utility related facilities in the corridor. As a result of the final order of the Site Certification Application (SCA) process, FPL must pursue the use of the West Consensus Corridor as the primary corridor in the west for the transmission lines associated with the Turkey Point Power Plant Units 6 and 7 project and avoid siting any transmission lines in the park. The FPL West Preferred Corridor would only be used for placement of FPL's western transmission lines in the event that an adequate right-of-way within the FPL West Consensus Corridor cannot be secured in a timely manner and at a reasonable cost. FPL shall reconvey to the NPS any and all acreage in the FPL West Preferred Corridor determined to be unneeded by FPL to build transmission lines. FPL success in acquiring interests and developing the West Consensus Corridor would minimize or eliminate the amount of property in the exchange corridor required for the western transmission lines. This information was not available in time to inform the draft EIS, and the requirement and commitment by FPL to avoid siting any transmission lines in the park was important in developing a revised fee for fee acquisition alternative. FPL shall reconvey to the NPS any and all acreage in the FPL West Preferred Corridor determined to be unneeded by FPL to build transmission lines.

The construction scenario associated with this alternative assumes that FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on lands FPL acquired by exchange. In this instance, FPL would be unsuccessful in acquiring adequate right of way within the West Consensus Corridor and would pursue full construction of transmission lines in the FPL West Preferred Corridor. Construction would need to meet the fee for fee terms and conditions that include additional requirements developed by the NPS for environmental protection. The construction scenario for alternative 3 assumes transmission line construction on the entire 6.5-mile corridor within the park. The NPS views this transmission line construction scenario as the worst-case impact scenario associated with this alternative.

ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Under alternative 4, the NPS would acquire fee title to the FPL property (7.4–mile-long corridor containing 320 acres of FPL lands) through an exchange for an easement on NPS property. The NPS would grant an easement to FPL on 260 acres of park land along 6.5 miles of the eastern boundary of the EEEA for potential construction of transmission lines, in accordance with the terms and conditions developed for this "easement for fee" exchange. Although the exchange corridor involved in this alternative is the same as that under alternative 3, under this easement for fee exchange, NPS would retain ownership of the corridor. No adjustments would be made to the boundary of the park. This alternative would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park (the former FPL corridor). The NPS would no longer have the unencumbered use of the FPL Utility Easement Area, which would potentially contain transmission lines, but would retain the right to carry out all other management activities as needed in this area. The NPS would also convey a 90-foot-wide perpetual easement to FPL adjacent to the entire length of the 6.5-mile exchange corridor to conduct nonnative vegetation management. The easement for fee land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. The main difference between the draft terms and conditions for this alternative and those for alternative 3 is that under the easement for fee conditions, FPL could use the FPL Utility Easement Area only for conservation or the potential construction of electric transmission lines and appurtenant facilities, not other utility-related facilities.

Similar to alternative 3, an essential condition for this exchange is that the FPL Utility Easement Area would be subject to a perpetual flowage easement. The United States would retain the perpetual right, power and privilege to flood and submerge the property consistent with hydrologic restoration requirements.

The construction scenario associated with this alternative would be the same as the one for alternative 3, except that NPS would retain ownership of the FPL Utility Easement Area. FPL's long-term use of the area would follow the slightly different easement for fee terms and conditions that include additional requirements developed by the NPS for environmental protection.

ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Under this alternative, the NPS would acquire a perpetual flowage easement on FPL's property within the EEEA through purchase, condemnation, or donation by FPL. FPL would retain ownership of its 7.4-mile-long corridor in the park during the term of the easement and could seek to site transmission lines there. The flowage easement would include the entire FPL property from Tamiami Trail to the 8.5-square-mile area, and the flowage allowed under this easement would allow sufficient water flow over this area to support ecosystem restoration projects. There would be no change to the authorized boundary of the park, although NPS would retain the current goal of acquiring this property over the long term.

The construction scenario associated with this alternative would be the same as alternative 1b (FPL construction on its existing land in the park), except that NPS would acquire a long-term, perpetual flowage easement that provides sufficient flowage for completion of Everglades restoration projects. FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on its existing property within the park. The NPS would be able to increase water levels on this property including over the area that is used for construction of the transmission lines to achieve its long-term ecosystem restoration objectives.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS, in accordance with the U.S. Department of the Interior (DOI) NEPA regulations (43 CFR part 46) and the Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, defines the environmentally preferable alternative as the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources" (43 CFR 46.30). Alternative 2, the direct acquisition alternative, was identified as the environmentally preferable alternative by the NPS. This determination was based on available scientific data compiled for the draft EIS and the comparative analysis of impacts of the various alternatives. An analysis of available data and relative impacts made it clear that alternative 2 best meets the requirements of the environmentally preferable alternative.

NPS PREFERRED ALTERNATIVE

Having considered all available information including public comments on the draft EIS, and discussions with the utilities including property rights concerns, the NPS has identified its preferred alternative as alternative 3, the fee-for-fee land exchange alternative as described in chapter 2, with modifications from the draft EIS. Alternative 3 was identified as the preferred alternative for its ability to allow the park to achieve the majority of its restoration goals identified in the purpose and need of the EIS in a timely manner while considering relative costs to the government.

The identification of alternative 3 as the NPS preferred alternative is contingent on several assumptions, including FPL's acceptance of mitigation measures identified in a final terms and conditions. In the event that an adequate right-of-way within the FPL West Consensus Corridor can be secured in a timely manner and at a reasonable cost, FPL shall reconvey all lands not necessary for construction of transmission lines in the FPL West Preferred Corridor to the NPS, reducing impacts to park resources and allowing for hydrologic projects in the region to move forward.

ISSUES RELATING TO THE PROJECT

Several issues of concern were identified through both internal and public scoping. Internal scoping identified preliminary alternatives and issues relating to potential effects of the proposed land exchange and the foreseeable indirect effects of construction and operation of the transmission line infrastructure. These issues were discussed with the public at a scoping meeting held on June 22, 2011, and comments were solicited through distribution of a public scoping newsletter and posting on the NPS website. During the public scoping period, the park received 10,120 correspondences containing 39,739 individual comments. The comments received were reflective of a public that is passionate about the future of park resources, their uses, and their management. The most common comment received expressed opposition to installation of any transmission lines in or adjacent to the park, representing 74 percent of all comments. The second most prevalent comment expressed opposition to any land exchange with FPL, representing 25 percent of all comments. Thus, approximately 99 percent of all comments expressed opposition to all transmission line construction or completion of the land exchange for the purposes of constructing a transmission line. Commenters also contributed ideas for new alternatives and raised specific concerns regarding resource protection and visitor enjoyment of the park. As a result of this scoping effort, additional issues and alternatives were identified for further analysis in this EIS.

ENVIRONMENTAL CONSEQUENCES

Those issues identified during internal and public scoping formed the basis for the 15 impact topics discussed in the EIS. The summary of environmental consequences considers the actions being proposed

and the cumulative impacts to resources from actions both inside and outside the park. The potential environmental consequences of the actions are addressed for the following topics: hydrology, water quality, soils, vegetation and wetlands, floodplains, soundscapes, wildlife, special status species (both federally listed and state listed species), visual resources, wilderness, visitor use and experience, adjacent land uses and policies, tribal lands (including Indian trust resources), socioeconomics, and park operations and management. Table 3 in chapter 2 summarizes impacts by topic and alternative. The following presents some of the major conclusions of the consequences, focusing on the most severe long-term adverse impacts and beneficial effects. This does not address all topics and impacts; please see the full impact analysis in "Chapter 4: Environmental Consequences," for a complete representation of the impacts.

Alternative 1a: This alternative is the "no action" baseline alternative. This alternative would result in major long-term adverse impacts due to the inability to increase water levels the EEEA and complete the planned Everglades ecosystem restoration projects, which adversely impacts most natural resource topics, visitor use and experience and wilderness to a major level. It would have a major adverse impact because of the conflict with existing NPS land use policies relating to acquisition of the FPL corridor. This alternative would not involve transmission line construction.

Alternative 1b: This alternative would have the same adverse effects on natural resources as alternative 1a and would add the impacts of transmission line construction and operation. The construction and continued presence of the transmission lines in the FPL corridor within the EEEA would result in long-term major adverse impacts on hydrology, water quality, soils, vegetation and wetlands, floodplains, special-status species, visual resources, visitor use and experience, wilderness, and adjacent land use/policy. Construction of transmission lines in this location would present high risks to avian species, especially Everglades snail kite and wood stork, due to the proximity of the lines to nesting and foraging locations.

Alternative 2: This acquisition alternative would have long-term benefits to most resources and values, because it would allow for increased water levels in the EEEA and completion of the planned Everglades ecosystem restoration projects. Also, the transmission line would not be built in the park, but in an area outside the park east of its boundary; therefore, impacts on park resources and values would be eliminated or reduced. This area has already been hydrologically segmented by canals and development and generally has a reduced quality of wetland habitat. Impacts would vary based on the location selected for the corridor, but many impacts considered as major adverse in the park would be reduced to moderate or less in this area. For the analysis in EIS, the West Consensus Corridor, as developed by FPL and the Miami-Dade Limestone Products Association, Inc. (MDLPA) was used for potential development and the impacts of transmission line construction and presence were assessed in that area. No major impacts were identified except for possible conflict with adjacent land use or policies, depending on the location of the corridor.

Alternative 3: The "fee for fee" land exchange, as analyzed, would have the same long-term benefits as alternative 2 because of the ability to increase water levels and proceed with the planned Everglades ecosystem restoration projects. The worst-case assumption of construction of the transmission lines entirely within the exchange corridor would have long-term major adverse impacts on soils, vegetation and wetlands, wildlife, special-status species, visual resources, and adjacent land use/policy. Construction would be guided by the terms and conditions developed to provide for resource protection, and these terms and conditions would allow for other utility related used (pipelines, communication facilities). At whatever point FPL is able to construct outside of NPS lands and within the West Consensus Corridor, impacts to park resources would be reduced and would be similar to those described under alternative 2.

Alternative 4: The “fee for easement” land exchange alternative would have the same impacts as alternative 3 except that no other utilities could be built in the corridor, which would lessen the risk of impacts to natural resources or other park values such as soundscapes that could occur from future construction. Also, this alternative would retain ownership of the exchange corridor with the NPS and not reduce the acreage of the park, and the park would approve the actions taken by FPL, as guided by the terms and conditions of the exchange.

Alternative 5: The flowage easement would have the same long-term benefits as alternative 2 because the flowage easement would provide for increased water levels and the ability to proceed with the planned Everglades ecosystem restoration projects. Impacts of transmission line construction would be the same as described for alternative 1b.

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Acronyms

ACHP	Advisory Council on Historic Preservation
ARA	Avian Risk Assessment
BMP	Best Management Practice
C&SF	Central and Southern Florida
CEQ	Council on Environmental Quality
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
CFR	Code of Federal Regulations
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DOI	Department of the Interior
EA	Environmental Assessment
EEEA	East Everglades Expansion Area
EIS	Environmental Impact Statement
EMF	electromagnetic field
EPA	U.S. Environmental Protection Agency
ERTP	Everglades Restoration Transition Plan
ESA	Endangered Species Act
Expansion Act	Everglades National Park Protection and Expansion Act of 1989
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FFWCC	Florida Fish and Wildlife Conservation Commission
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FNAI	Florida Natural Areas Inventory
FONSI	Finding of No Significant Impact
FPL	Florida Power & Light Company
GIS	geographic information system
GMP	general management plan
kV	kilovolt
KOP	key observation point
LPP	Land Protection Plan
MDLPA	Maimi-Dade Limestone Products Association, Inc.
MWD	Modified Water Deliveries
NEPA	National Environmental Policy Act
NESRS	Northeast Shark River Slough
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System

NPS	National Park Service
NRC	Nuclear Regulatory Commission
PEPC	Planning, Environment, and Public Comment
PL	Public Law
ROD	Record of Decision
SCA	Site Certification Application
SFNRC	South Florida Natural Resource Center
SFWMD	South Florida Water Management District
SHPO	State Historic Preservation Office
SRS	Shark River Slough
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WCA	Water Conservation Area

CHAPTER 1

Purpose of and Need for Action

CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

INTRODUCTION

This "Purpose of and Need for Action" chapter explains what this project intends to accomplish and why the National Park Service (NPS) is taking action at this time. The NPS is preparing an environmental impact statement (EIS) to evaluate the options for and impacts of acquiring land owned by the Florida Power & Light Company (FPL) in the East Everglades Expansion Area (EEEA) within the boundary of Everglades National Park (the park), or sufficient interest in this property, to allow for flooding of the area to facilitate ecosystem restoration efforts within the park. This includes the exchange of lands authorized in the Omnibus Public Land Management Act of 2009 (Public Law (P.L.) 111-11) and other reasonable alternatives.

The NPS is preparing an EIS to evaluate the options for and impacts of acquiring land owned by the FPL in the EEEA within the boundary of Everglades National Park (the park), or sufficient interest in this property, to allow for flooding of the area to facilitate restoration efforts within the park.

The NPS must acquire the FPL parcel and several other properties, or sufficient interest in these properties, to allow for higher water levels to facilitate ecosystem restoration efforts within the park – one of the primary objectives of the Modified Water Deliveries to the Everglades National Park (MWD) project and other long-term Everglades ecosystem restoration plans. The FPL parcel is a linear north-south corridor of between 330 feet and 370 feet in width and approximately 7.4 miles in length within the park. The parcel was purchased by FPL in the 1960s and early 1970s, prior to the expansion of the park, with the intention of supporting future transmission lines from the Turkey Point Power Plant, located south of the Biscayne National Park visitor center, to locations north of metropolitan Miami (FPL 2011).

The NPS decision to be made at the conclusion of this process is whether to acquire FPL's lands within the park, or sufficient interest in this property (to allow for raising water levels the area to facilitate ecosystem restoration efforts within the park), by exchange, direct purchase, or other means. This EIS addresses potential impacts to the natural and human environment that may result from the acquisition of FPL land in the park and the indirect impacts that could result from the subsequent construction and operation of transmission lines that could possibly be built either inside or outside the park as a result of the NPS decision that will be made.

PROJECT BACKGROUND

Everglades National Park was authorized by Congress in 1934. A fundamental purpose for the park's establishment was provided in the enabling legislation (appendix A):

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

Because park lands could be acquired only through public or private donation, land acquisition proceeded slowly over the ensuing years. Through the sustained efforts of many supporters, and critical funding

provided by the state of Florida, the park was eventually established 13 years later. President Harry S. Truman dedicated the park on December 6, 1947.

Everglades National Park was the first national park in the United States set aside solely for its biological resources rather than its scenic or historic values. The park was established as a permanent wilderness, preserving essential primitive conditions, including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna. More than 60 years later, protection of the park's natural resources and of the ecosystem remains a primary focus of park management.

From the original 460,000 acres at the time of the park's establishment in 1947, boundary changes expanded the park to 1.4 million acres by 1958. The Everglades National Park Protection and Expansion Act of 1989 (P.L. 101-229) (Expansion Act) added the EEEA (109,506 acres) to the park, bringing the Northeast Shark River Slough (NESRS) within the park boundary (figure 1). A copy of the Expansion Act is included in appendix B. The EEEA is located just south of the Tamiami Trail in Miami-Dade County. Because of the park expansion, the approximately 7.4-mile north-south parcel owned by FPL is now contained within the park's boundary. Long-range planning for the EEEA seeks to acquire all lands within the area and to restore more natural hydrologic conditions and revitalize habitat and ecosystem health in the park. The Expansion Act also authorized the MWD project. The purpose of the project is, to the extent practicable, restoration of more natural flows of water into the park, including flood protection provisions for adjacent agricultural and residential areas. The park now encompasses 1,509,000 acres, including the largest legislated wilderness area (1,296,500 acres) east of the Rocky Mountains, the Marjory Stoneman Douglas Wilderness.

The EEEA contains the headwaters of the NESRS and Taylor Slough, which, along with western Shark Slough, are the primary sources of water flow to the park. Historically, water flowed gradually from the Lake Okeechobee basin in a southerly direction through the Everglades into Florida Bay and the Gulf of Mexico, with most of the water moving through the Shark River Slough (SRS). During the rainy season (June through October), water levels rises and fills the slough and often inundates the majority of the surrounding Everglades landscape. During the drier winter months, water recedes toward the center of the slough, allowing the edges to gradually dry. This naturally occurring ebb and flow is crucial to the survival of much of the region's wildlife and maintenance of natural plant communities. When the park was established, only half of the SRS was included within the park boundary, with the eastern portion remaining outside the park in the area known as the East Everglades.

The Expansion Act authorized the NPS and the U.S. Army Corps of Engineers (USACE) to acquire lands within the EEEA to help achieve the goals and objectives set forth in the Expansion Act. The purpose for expanding the park includes the following:

- Increasing the level of protection of the outstanding natural values of the park;
- Enhancing and restoring the ecological values, natural hydrologic conditions, and public enjoyment of such areas by adding the area commonly known as the NESRS and the East Everglades; and
- Ensuring that the park is managed to maintain the natural abundance, diversity, and ecological integrity of native plants and animals, as well as the behavior of native animals, as a part of their ecosystem.

FIGURE 1: EVERGLADES NATIONAL PARK AND VICINITY MAP

The Expansion Act also authorized the MWD project "…to improve water deliveries into the park and shall, to the extent practicable, take steps to restore the natural hydrologic conditions within the park." This initiative is currently underway. A specific goal of the MWD project is to restore the historic hydrologic conditions within the SRS basin by redistributing flows from West SRS to NESRS. The existing FPL corridor lies within the NESRS – an area considered critical for ecosystem restoration efforts. Both the FPL West Secondary and the FPL West Preferred Corridors are considered critical to ecosystem restoration efforts. The area outside the park is not considered critical to ecosystem restoration efforts.

In 1991, the NPS completed a Land Protection Plan (LPP) and environmental assessment (EA) for the EEEA to ensure the restoration and enhancement of the Everglades ecosystem in the EEEA (NPS 1991). (Note that the EEEA is also referred to as "the Addition," however, throughout this EIS it is called the EEEA.) The plan and subsequent Finding of No Significant Impact (FONSI) concluded that in order to enhance and to restore the ecology and hydroperiod of the East Everglades and the SRS basin, it would be necessary to acquire fee ownership of all lands contained within the EEEA. Therefore, in the long term, lands not owned by the NPS would not be compatible with this objective. A copy of the LPP is included in appendix B.

To implement the restoration of water flow provisions outlined in the Expansion Act, the USACE issued a 1992 General Design Memorandum which identified hydrologic modifications necessary to achieve more natural flows (USACE 1992). The General Design Memorandum, and a 2008 Limited Reevaluation Report and EA, identified the need to construct a bridge and associated road raising to improve water flows under the Tamiami Trail (U.S. Highway 41) (USACE and NPS 2008). Construction of this 1-mile bridge was completed in March 2013; the road raising was completed in December 2013. Additionally, the USACE must prepare a water control plan that would guide decisions to allow more natural flows under the bridge to the expansion area. However, additional water flows resulting from implementation of these projects cannot occur until the FPL parcel, which is currently undeveloped, and five other commercial properties within the expansion area are acquired or flowage easements are granted by the property owners. In addition, the USACE must acquire a flowage easement on the Airboat Association of Florida property located immediately adjacent to the park, south of Tamiami Trail. Acquisition of fee title or flowage easements is needed because these properties would be affected by higher water levels upon restoration of flows. Such acquisitions are authorized by the United States under the Expansion Act.

In 1996, the NPS began negotiations with FPL for the parcel they own in the EEEA. However, the federal government and FPL were unsuccessful in reaching an agreement on the direct acquisition of FPL's property by the United States.

Between 2006 and 2008, the NPS, USACE, FPL, and the South Florida Water Management District (SFWMD) identified approximately 260 acres of NPS property at the eastern edge of the park that could be considered a suitable land exchange for the abovementioned FPL parcel. This land was identified because it was believed that the potential future construction and operation of transmission lines at this location would have fewer adverse effects on the natural and human environment than if the same facilities were built and operated on FPL's land within the park. In addition, it would serve to accomplish the hydrologic restoration objectives described previously. To facilitate construction of the 1-mile bridge, FPL granted four easements to USACE. These easements included a perpetual easement for the bridge and roadway; a perpetual easement for the channel under the bridge; a temporary flowage easement; and a temporary construction easement. The temporary flowage easement expired on August 22, 2013, and the temporary construction easement expired on October 31, 2013 (Goral pers. comm. 2013).

In July 2008, the NPS and FPL executed an agreement to exchange the NPS boundary parcel for FPL's land in the EEEA contingent upon federal legislation ratifying this agreement and authorizing the

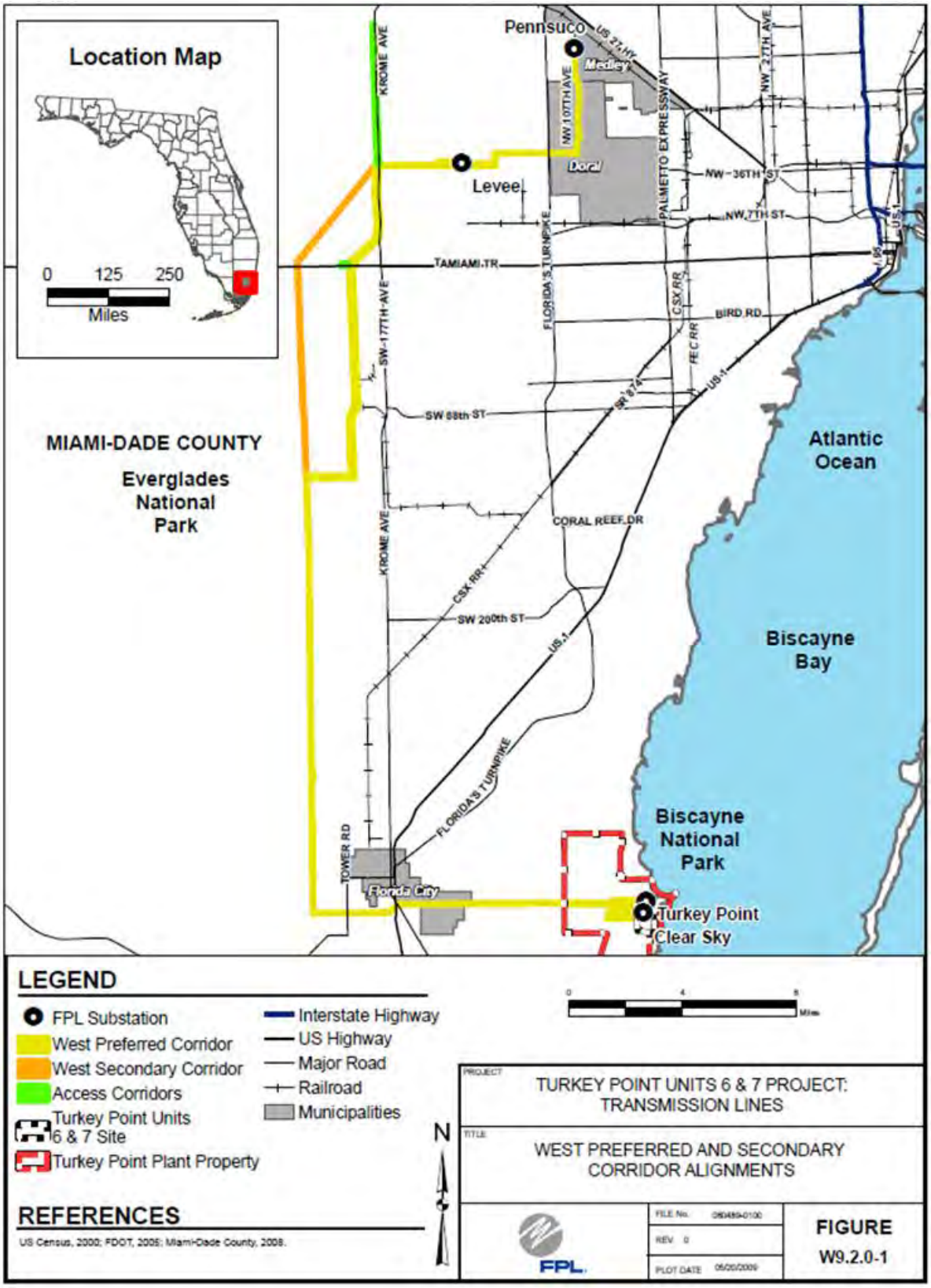
exchange (contingent agreement) (FPL and NPS 2008). FPL also conditioned negotiations with the USACE for easements on FPL's land needed for the 1-mile bridge project, on obtaining agreements with all other parties necessary to complete the exchange. FPL then completed real estate agreements with these landowners to secure a relocated transmission line corridor. Copies of these agreements and the 1 mile bridge easements discussed above are included in appendix C.

In August 2008, legislation was introduced in Congress to authorize the land exchange. The final text (Section 7107(b) of the Omnibus Public Land Management Act of 2009) identified the 260-acre parcel at the eastern edge of the EEEA as potential land to be exchanged (P.L. 111-11). The act authorized, but did not mandate, the Secretary of the Interior to exchange lands with FPL. This decision was left to the Secretary of the Interior's discretion subject to conditions necessary for protection of resources, the appraisal and equalization of land values, and analysis of potential environmental impacts under the National Environmental Policy Act (NEPA). Sec. 7107(b) of the Omnibus Act is included in appendix B.

The FPL West Preferred and West Secondary Corridors would both contain two 500-kilovolt (kV) single-circuit transmission lines and one 230-kV single-circuit transmission line.

In June, 2009, FPL filed a Site Certification Application (SCA) seeking State of Florida approval to construct two new nuclear generating units (Turkey Point Units 6 and 7) and supporting facilities at the Turkey Point Nuclear Generating Station near Homestead, Florida. The filing included transmission facilities to interconnect and integrate the new generation to the transmission grid. These transmission facilities included what was identified as the "FPL West Preferred Corridor," which includes the 260-acre parcel at the eastern edge of the EEEA, as described above, and an alternate corridor, identified as the "FPL West Secondary Corridor," which includes the 7.4-mile-long parcel that FPL owns within the park. The FPL West Preferred and FPL West Secondary Corridors would both contain two 500-kilovolt (kV) single-circuit transmission lines and one 230-kV single-circuit transmission line. The 500-kV lines would connect the Clear Sky Substation located at the Turkey Point Power Plant to the existing Levee Substation in northern Miami–Dade County. The 230-kV line would connect the Clear Sky Substation to the existing Pennsuco Substation in northern Miami-Dade County, but would not connect to the Levee substation (see figure 2). For the sake of clarity, these corridors are referred to as the "FPL West Preferred Corridor" and "FPL West Secondary Corridor" throughout this document, although the terms are strictly based on FPL's designation in their siting application and do not reflect a preference by the NPS.

NPS began an EA of the potential land exchange in June 2009. The focus of the EA was the major federal action of exchanging lands with FPL as described in the Omnibus Act; however as part of the NEPA process, the NPS must consider the potential for changes in land use as a result of the land exchange. Therefore, as part of the EA preparation, NPS completed a peer-reviewed study of the potential impacts to endangered wood storks and wading birds from the reasonably foreseeable construction and operation of transmission lines on lands that would be conveyed to FPL by the exchange (NPS 2010e). NPS also conferred with the U.S. Fish and Wildlife Service (USFWS) and other resource agencies related to these potential effects. After careful consideration of public and agency comments and the issues and analyses developed during the EA process, a number of potentially significant environmental impacts associated with reasonably foreseeable construction and operation of transmission lines on the exchange lands were identified. Therefore, in accordance with NEPA regulations, the NPS initiated this EIS in May 2011 to evaluate the potential effects on the environment from acquiring FPL's lands in the park by exchange, direct purchase, and other reasonable alternatives.



Source: FPL 2009a.

FIGURE 2: FPL WEST PREFERRED AND FPL WEST SECONDARY CORRIDORS

The Omnibus Act provides that the potential land exchange be subject to terms and conditions as the Secretary of the Interior may require. This EIS also serves to develop the appropriate terms and conditions for the land exchange alternatives.

As a related but distinct matter, FPL is seeking approval, through the Nuclear Regulatory Commission (NRC), USACE, and the State of Florida, to construct two additional nuclear reactors at its Turkey Point facility (Turkey Point 6 and 7 project), adjacent to Biscayne National Park. The NRC released the draft EIS in February 2015, in cooperation with the USACE, for a new FPL license and Clean Water Act (CWA) Section 404 permit. The NPS is a cooperating agency in the preparation of this NRC EIS.

PURPOSE OF AND NEED FOR ACTION

"Purpose" is an overarching statement of what the project must do to be considered a success.

> The purpose of the project is NPS acquisition of the existing FPL land within the park, or sufficient interest in the property, to facilitate hydrologic and ecologic restoration of the park and Everglades ecosystem.

"Need for Action" describes why action is required. It summarizes the most important points of the planning issues and provides the reasons why the project is needed at this time.

- This action is needed to support the mission of the NPS and the park. The EEEA, which includes the existing FPL parcel, has been identified as vital to long-term protection of the park for ecosystem restoration purposes.
- The acquisition of the existing FPL parcel within the EEEA is needed to support the goals of restoring the NESRS and to fulfill the purposes of the MWD project and the Comprehensive Everglades Restoration Plan (CERP).
- Acquisition of land within the EEEA is legally authorized. P.L. 101-229 (December 13, 1989) articulates that the Everglades is both nationally and internationally significant and sets forth specific goals and objectives for acquisition of properties in this area.
- Acquisition of land within the EEEA through an exchange of lands with FPL is legally authorized by the Omnibus Public Lands Management Act of 2009 (P.L. 111-11).

OBJECTIVES

"Objectives" are specific purpose statements that describe what must be achieved to a large degree for the action to be considered a success. All of the alternatives selected for detailed analysis must meet project objectives to a large degree and support the purpose of and need for action. Alternatives proposing the acquisition and/or exchange of FPL land and/or land interests must

- Ensure consistency with the Everglades National Park Protection and Expansion Act of 1989 (Expansion Act) and the 1991 LPP for the EEEA. This includes the following:
  - Increasing the level of protection of the outstanding natural values of the park and enhancing and restoring the ecological values, natural hydrologic conditions, and public enjoyment of such areas by adding the area commonly known as the NESRS and the East Everglades to the park (16 USC 410r-5) and

  - Assuring that the park is managed in a way that maintains the natural abundance, diversity, and ecological integrity of native plants and animals, as well as the behavior of native animals, as part of its ecosystem (16 USC 410r-5);
- Ensure consistency with the Congressional intent of the Omnibus Public Land Management Act of 2009 such that the Secretary of the Interior consider the land exchange with specified terms and conditions including appropriate environmental review of the impacts of the exchange;
- Support and facilitate implementation of ecosystem restoration projects including the MWD project, the Tamiami Trail Next Steps Project and the CERP; and
- Support the timely acquisition of existing FPL property within the EEEA, or sufficient interest in this property, to allow for higher water levels in the area to facilitate ecosystem restoration efforts within the park.

PURPOSE AND SIGNIFICANCE OF THE PARK

The direction for the alternatives considered in this plan is based on the national park's purpose and significance, special mandates, and servicewide laws and policies. The purpose statement describes why Everglades National Park was established as a national park. Significance describes the qualities that make the national park special.

PARK PURPOSE

The purpose statement conveys the reasons that the area was set aside as a national park. Grounded in an analysis of park legislation and legislative history, purpose statements also provide primary criteria against which the appropriateness of plan recommendations, operational decisions, and actions are tested.

The purpose of Everglades National Park is as follows:

- Everglades National Park is a public park for the benefit and enjoyment of the people. It is set apart as a permanent wilderness preserving essential primitive conditions, including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna.

PARK SIGNIFICANCE

Significance statements capture the essence of the national park system unit's importance to the nation's natural and cultural heritage. They describe the unit's distinctiveness and describe why an area is important within regional, national, and global contexts. This helps managers focus their efforts and limited funding on protection and enjoyment of attributes that are directly related to the purpose of the park unit.

Everglades National Park is nationally and internationally significant because it

- Is a unique subtropical wetland that is the hydrologic connection between central Florida's freshwater ecosystem and the marine systems of Florida Bay and the Gulf of Mexico. It is the only place in the United States jointly designated an International Biosphere Reserve, a World Heritage Site, a Wetland of International Importance, and a Specially Protected Area under the Cartagena Convention.
- Comprises the largest subtropical wilderness reserve in North America. The park contains vast ecosystems, including freshwater marshes, tropical hardwood, pine rockland, extensive mangrove

estuaries, and seagrasses, which support a diverse mix of tropical and temperate plants and animals.

- Serves as sanctuary for the protection of more than 20 federally listed and 70 state-listed threatened and endangered species, as well as numerous species of special concern. Many of these species face tremendous pressure from natural forces and human influences in the south Florida ecosystem.
- Provides important foraging and breeding habitat for more than 400 species of birds (including homeland to world-renowned wading bird populations), and functions as a primary corridor and refuge for migratory and wintering bird populations.
- Includes archeological and historical resources spanning approximately 6,000 years of human history, revealing adaptation to and exploitation of its unique environment.
- Preserves natural and cultural resources associated with the homeland of American Indian tribes of Florida (including the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, and other American Indian groups such as the Independent Traditional Seminole Nation of Florida).
- Preserves the remnants of a nationally significant hydrologic resource that sustains south Florida's human population and serves as a global experiment in ecosystem restoration.
- Provides the public with the opportunity to experience Everglades wilderness for recreation, reflection, and solitude in proximity to a major metropolitan area.

RELATIONSHIP TO LAWS, EXECUTIVE ORDERS, AND POLICIES

APPLICABLE FEDERAL LAWS, EXECUTIVE ORDERS, AND STATE LAWS

National Park Service Organic Act of 1916—By enacting the NPS Organic Act of 1916, Congress directed the U.S. Department of the Interior (DOI) and the NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1). The Organic Act and its amendments provide the NPS with direction when making resource decisions that balance resource preservation and visitor recreation.

The General Authorities Act of 1970, as amended by the Redwoods Act of 1978—The Redwoods Act reasserted the systemwide standard of protection established by Congress in the original Organic Act. The 1978 amendment stated that "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, except as may have been or shall be directly and specifically provided by Congress."

National Environmental Policy Act of 1969, as Amended—NEPA was passed by Congress in 1969 and took effect on January 1, 1970. It requires that every federal agency conduct an in-depth study of potential impacts of "major federal actions having a significant effect on the environment" and alternatives to those actions. NEPA is implemented through Council on Environmental Quality (CEQ) regulations (40 CFR 1500–1508) (CEQ 1981). The NPS has adopted procedures to comply with NEPA and CEQ regulations. These procedures are found in *Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2011a) and its accompanying handbook (NPS 2001).

Clean Water Act—The Federal Water Pollution Control and Prevention Act, commonly known as the CWA, is the primary federal law in the United States governing water pollution. The objectives of the CWA include restoration and maintenance of chemical, physical, and biological integrity of the nation's waters (33 USC 1251(a)).

In 1993, the U.S. Environmental Protection Agency (EPA) and the USACE completed a *Technical Summary Document for The Advance Identification of Possible Future Disposal Sites and Areas Generally Unsuitable for Dredge and Fill Material in North East Shark River Slough (NESRS).* The EPA and USACE determined that the NESRS west of the L-31N levee is an area unsuitable for dredging or filling and that filling these wetlands even partially would likely fail to comply with the Guidelines to Section 404 of the CWA. The purpose of this advance notification was to warn applicants of the difficulty of obtaining a Section 404 permit to fill these wetlands and to encourage applicants to seek alternative solutions that will not result in wetland losses. This document is available in the public documents section on the project website at http://parkplanning.nps.gov/projectHome.cfm?projectID=37220.

Endangered Species Act of 1973 (ESA), as amended— This act requires all federal agencies to consult with the Secretary of the Interior on all projects and proposals with the potential to impact federally endangered or threatened plants and animals. It also requires federal agencies to use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species and to ensure that any agency action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat.

Wilderness Act of 1964—The Wilderness Act states, "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." Despite the great similarity between the NPS Organic Act and the Wilderness Act, Congress applied the Wilderness Act to NPS to strengthen its protective capabilities. Though the text of the enabling statute describes the park as a wilderness, this does not mean that the entire park is designated wilderness within the meaning of the Wilderness Act. The status of the park under the Wilderness Act is described below.

Under the Wilderness Act, the park must apply the 'minimum requirement' concept to all management activities that affect the wilderness resource. This concept is intended to minimize impacts on wilderness values and resources. Managers may authorize (using a documented process) the generally prohibited activities or uses listed in Section 4(c) of the Wilderness Act if deemed necessary to meet the minimum requirements for the administration of the area as wilderness and where those methods are determined to be the 'minimum tool' for the project.

National Parks Omnibus Management Act of 1998—The National Parks Omnibus Management Act of 1998 (16 USC 5901 et seq.) is fundamental to NPS park management decisions. This act provides direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information.

National Historic Preservation Act (NHPA) of 1966, as Amended—Section 106 of this act requires federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places. All actions affecting the park's cultural resources must comply with this legislation.

Executive Order 11990 – Protection of Wetlands—This executive order, enacted in 1977, directs federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Executive Order 11988 – Floodplain Management—This executive order, issued in 1977, directs federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 13112 – Invasive Species—This executive order requires federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species may cause.

Outstanding Florida Waters—All waters that are a part of the Everglades are defined as Outstanding Florida Waters. Section 403.061 (27), Florida Statutes, grants the Florida Department of Environmental Protection (FDEP) power to establish rules that provide for a special category of water bodies within the state to be referred as "Outstanding Florida Waters" which shall be worthy of special protection because of their natural attributes. FPL would require a permit from FDEP as part of any transmission line construction that may result from the NPS land acquisition or exchange alternative selected (see chapter 5 in this document). In general, the FDEP cannot issue permits for direct pollutant discharges to Outstanding Florida Waters that would lower ambient (existing) water quality or indirect discharges that would significantly degrade the waters. Permits for new dredging and filling must be clearly in the public interest, taking into consideration whether the

- Activity would adversely affect the public health, safety, or welfare or property of others;
- Activity would adversely affect the conservation of fish and wildlife, including endangered or threatened species, or their habitats;
- Activity would adversely affect navigation or water flows or cause harmful erosion or shoaling;
- Activity would adversely affect the fishing or recreational values or marine productivity in the vicinity of the activity;
- Activity would be of a temporary or permanent nature;
- Activity would adversely affect or enhance significant historical and archeological resources under the provisions of Sec. 267.061 Florida Statutes; and/or
- Current condition and relative value of functions being performed by areas affected by the proposed activity (373.414(1)(a), Florida Statutes).

NATIONAL PARK SERVICE MANAGEMENT POLICIES AND DIRECTOR'S AND SECRETARY OF THE INTERIOR ORDERS

National Park Service Management Policies—NPS *Management Policies 2006* establishes servicewide policies for the preservation, management, and use of park resources and facilities. These policies provide guidelines and direction for management of resources within the park. NPS *Management Policies 2006* provides general principles for the maintenance of natural resources in the park by "preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006a).

In addition to determining the environmental consequences of implementing alternatives under study in a NEPA document, NPS *Management Policies 2006* (Section 1.4) requires analysis of potential effects to determine whether the alternatives would impair the park's resources and values. The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of resources and values, including the opportunities that would otherwise be present for the enjoyment of those resources and values. An impact on any resource or value may constitute impairment. An impact would be more likely to constitute impairment if it results in a moderate or major adverse effect on a resource or value whose conservation is

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the area;
- Key to the natural or cultural integrity of the area or to opportunities for enjoyment of the area; or
- Identified as a goal in the area's general management plan (GMP) or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the area; visitor activities; or activities undertaken by concessioners, contractors, and others operating in the park. Pursuant to the NPS Guidance for Non-Impairment Determinations and the NPS NEPA Process, a non-impairment determination for the selected alternative will be appended to the Record of Decision (ROD).

Section 1.6 of NPS *Management Policies 2006* discusses the importance of cooperative conservation efforts beyond the park boundary to help the NPS fulfill its mandate to preserve the natural and cultural resources of park unimpaired for future generations. Activities proposed for adjacent lands may significantly affect park programs, resources, and values. Conversely, NPS activities may have impacts outside the park boundary. Recognizing that parks are integral parts of larger regional environments, and to support its primary concern of protecting park resources and values, the NPS works cooperatively with others to

- anticipate, avoid, and resolve potential conflicts;
- protect park resources and values;
- provide for visitor enjoyment; and
- address mutual interests in the quality of life of community residents, including matters such as compatible economic development and resource and environmental protection.

The Service does these things because cooperative conservation activities are a vital element in establishing relationships that will benefit the parks and in fostering decisions that are sustainable.

Section 1.6 directs that,

> The Service will use all available tools to protect park resources and values from unacceptable impacts…Superintendents will encourage compatible adjacent land uses and seek to avoid and mitigate potential adverse impacts on park resources by actively participating in the planning and regulatory processes of other federal agencies and tribal, state, and local governments having jurisdiction over property affecting, or affected by, the park. If a decision is imminent that will result in unacceptable impacts on park resources, superintendents must take appropriate action, to the extent possible within the Service's authorities and available resources, to manage or constrain the use to minimize impacts.

NPS *Management Policies 2006* also identifies the need to bring logic, analysis, public involvement, and accountability into the decision-making process (Section 2.1.1). NPS *Management Policies 2006* (Chapter 6) requires the NPS to review roadless and undeveloped areas, including new areas or expanded boundaries within the national park system to determine whether they are suitable for preserving wilderness. The purpose of Chapter 6 of the NPS *Management Policies 2006* is to provide accountability, consistency, and continuity within the NPS wilderness management program, and to otherwise guide servicewide efforts in meeting the letter and spirit of the 1964 Wilderness Act. Chapter 6 of the NPS *Management Policies 2006* addresses all aspects of wilderness management and preservation of designated wilderness in units of the national park system. Chapter 6 of the NPS *Management Policie*s *2006* requires integrating wilderness considerations into all planning documents to guide the preservation, management, and use of wilderness area in the park and ensuring that wilderness is unimpaired for future use and enjoyment as such. According to Section 6.1, the purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use. The NPS *Management Policies 2006* as it relates to wilderness is discussed in more detail in chapter 4 of this document.

Director's Order 41: Wilderness Preservation and Management, and Reference Manual 41—Director's Order 41 interprets the Wilderness Act and consolidates its requirements and all applicable NPS *Management Policies 2006* to set guiding principles for all NPS units to determine wilderness suitability and appropriately manage those lands. Lands identified as being suitable for wilderness designation, wilderness study areas, proposed wilderness, and recommended wilderness must also be managed to preserve their wilderness character and values in the same manner as "designated wilderness" until Congress has acted on the recommendations. Director's Order 41 and Reference Manual 41 provide guidance for applying the minimum requirement concept to protect wilderness, as well as guidance for the overall management, interpretation, and uses of wilderness.

Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making and Handbook—Director's Order 12 (NPS 2011a) and the accompanying handbook (NPS 2001) provide guidance for the NPS to comply with NEPA. Director's Order 12 and the handbook set forth a planning process for incorporating scientific and technical information and establishing a solid administrative record for NPS projects. Director's Order 12 requires that impacts to park resources be analyzed in terms of their context, duration, and intensity.

Environmental Compliance Memorandum No. ECM97-2—This memorandum provides guidance on implementation of 512 DM Chapter 2, Departmental Responsibility for Indian Trust Resources, and Executive Order No. 13007, Indian Sacred Sites. Chapter 2 requires that for any anticipated impacts to an Indian trust resource from a proposed project or action by a federal agency, the impacts must be addressed explicitly in all planning, decision, and operational documents. Accordingly, the agency must identify and evaluate during the scoping/planning process any anticipated direct or indirect effects on Indian trust resources. If any impact on Indian trust resources is identified, the agency must consult with the affected tribe(s) on a government-to-government basis. Executive Order No. 13007 requires that any executive branch agency with responsibility for federal lands shall, to the extent practicable, permitted by law and not inconsistent with agency functions, (1) accommodate access to and ceremonial use of Indian scared sites by Indian religious practitioners, and (2) avoid adversely affecting the physical integrity of the sacred sites. In addition, where appropriate, the agencies shall maintain the confidentiality of the sacred sites. The executive order also carries with it the intent that agencies must ensure that any anticipated effects on Indian sacred sites are identified and evaluated in the scoping/planning process for any proposed federal project and clearly described in the environmental documents for the project. If any impact on Indian sacred sites is identified, the agency must consult with the affected tribe(s) on a government-to-government basis.

PARK-SPECIFIC LEGISLATION

Everglades National Park Enabling Legislation, Purpose, and Significance—On May 30, 1934 Congress passed an act authorizing a park of 2,164,480 acres to be acquired through public and private donations (45 Stat. 1443). The park was to be "…wilderness where no development…or plan for the entertainment of visitors shall be undertaken which would interfere with the preservation of the unique flora and fauna and the essential primitive natural conditions now prevailing in the area." It took another 10 years to acquire the lands, but in 1947, the park was established.

Everglades National Park is a public park for the benefit and enjoyment of the people. It is set apart as a permanent wilderness preserving essential primitive conditions, including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna.

Everglades Wilderness Act of 1978—In 1978, Congress designated almost 1.3 million acres of wilderness in Everglades National Park under the terms of the Wilderness Act. Originally named "Everglades Wilderness," the name was changed to "Marjory Stoneman Douglas Wilderness" in 1997.

Everglades National Park Protection and Expansion Act of 1989—The following legislative direction is contained within the Expansion Act:

- Congress determined that there are significant adverse effects to the ecosystem from external sources and that the ecosystem should be restored.
- The act directs the Secretary of the Interior to manage the park "in order to maintain the natural abundance, diversity and ecological integrity of the native plants and animals, as well as the behavior of native plants and animals as part of their ecosystem."
- The act directs the Secretary of the Army's water programs to improve water delivery into the park and to restore natural systems in conjunction with the Central and Southern Florida (C&SF) Project. The C&SF project, which was first authorized by Congress in 1948, is a multi-purpose project that provides flood control, water supply for municipal, industrial, and agricultural uses, prevention of saltwater intrusion, water supply for the Everglades, and protection of fish and wildlife resources. The primary system includes about 1,000 miles of levees, 720 miles of canals, and almost 200 water control structures (USACE 2005).
- The act directs the Secretary of the Army to protect natural values in all work performed on the C-111 canal.
- In the EEEA, land acquisition is to be accomplished using 80 percent federal and 20 percent State of Florida funds.
- The act provides for assistance to the State of Florida in land acquisition of the park.
- The act requires the Secretary of the Interior to consult with the USACE on the C&SF project.
- The act authorizes the implementation of the MWD project to restore, to the extent practicable, the natural hydrologic conditions of the Everglades.
- The Secretary of the Interior is authorized to acquire lands and interests in land by donation, purchase with donated or appropriated funds, or exchange.

Section 7107 of the Omnibus Public Lands Management Act of 2009—This act identified a series of parcels at the eastern edge of the EEEA as potential land to be exchanged for the FPL-owned parcel. The act authorized the Secretary of the Interior to exchange NPS land for the FPL property and to convey a perpetual easement on a corridor of land contiguous to the NPS exchange land for the purpose of vegetation management. The land exchange shall be subject to such terms and conditions as the Secretary of the Interior may require.

RELATIONSHIP TO OTHER PROJECTS AND PLANS

The following plans, policies, and actions occurring at or near the park were considered during the development of this EIS. These actions have the potential to contribute to the indirect or cumulative impacts of the potential land acquisition and subsequent development of the transmission corridor and are addressed in "Chapter 4: Environmental Consequences" in this document.

CENTRAL AND SOUTHERN FLORIDA PROJECT

The C&SF project, which was first authorized by Congress in 1948, is a multi-purpose project that provides flood control, water supply for municipal, industrial, and agricultural uses, prevention of saltwater intrusion, water supply for Everglades National Park, and protection of fish and wildlife resources. The project is operated jointly by the USACE and the local sponsor, the SFWMD. The primary system includes about 1,000 miles of levees, 720 miles of canals, and almost 200 water control structures. These features have divided the former Everglades into areas designated for urban and agricultural development, and areas for fish and wildlife benefits, natural system preservation and water storage. The natural areas consist of three Water Conservation Areas (WCAs) located north of Tamiami Trail (U.S. Highway 41) and Everglades National Park to the south. The USACE and the SFWMD are continuously evaluating the project, making modifications to the system and the operations of the system in order to meet the purposes of the project.

- **Everglades Restoration Transition Plan (ERTP)**—The ERTP is the current operating plan for selected project features which directly impact the WCAs and Everglades National Park, replacing the Interim Operational Plan, which was the operational plan that was in place from approximately 2002 to 2012. The ERTP defines water management operating criteria for C&SF project features near Everglades National Park and the constructed features of the MWD and C-111 South Dade projects. This plan incorporates more flexible operating criteria than were used in the Interim Operational Plan to better manage WCA 3A, with objectives that include improving conditions in the WCA 3A for the endangered Everglades snail kite, wood stork and wading bird species and their habitat, while maintaining protection for the endangered Cape Sable seaside sparrow. The ERTP ROD was signed in October 2012. ERTP was intended to be a temporary operational plan to bridge the gap between the Interim Operational Plan and a Water Control Plan for the MWD project and the C-111 South Dade project. The USFWS biological opinion for ERTP expires on January 1, 2016. Either a new biological opinion and/or a revision to the operational plan will be required to continue operations under ERTP after that date. As a result of completing 1-mile bridge and road removal, the USACE and NPS are implementing up to 3.6 percent increased flows into the EEEA due to the larger conveyance capacity of the opening under the 1-mile bridge, and USACE has determined this does not require a flowage easement from FPL (Goral pers. comm. 2013).
- **Water Quality Improvement Projects**—The State of Florida and the EPA have agreed upon new water quality improvement projects for the Everglades. Based on extensive scientific and technical discussions, these projects and strategies will expand water quality improvement projects in an important step forward toward achieving the phosphorus water quality standard

established for the Everglades. Under these strategies, the SFWMD is implementing a technical plan to complete six projects that will create more than 6,500 acres of new stormwater treatment areas and 110,000 acre-feet of additional water storage through construction of flow equalization basins. Flow equalization basins are a storage feature used to capture and store peak stormwater flows. They will provide a more steady flow of water to the stormwater treatment areas, helping to maintain desired water levels needed to achieve optimal water quality treatment performance.

The strategies also include additional phosphorus source controls upstream of the stormwater treatment areas – where pollution is reduced at the source – in areas of the eastern Everglades where phosphorus levels in stormwater runoff have been historically higher. In addition, a science plan will ensure continued research and monitoring to improve and optimize the performance of water quality treatment technologies. Design and construction of the treatment and storage projects will be completed in three phases with completion set for 2024.

EVERGLADES RESTORATION PLANS

Regional Everglades restoration plans, most involving water management projects in south Florida to modify and add to C&SF project features, have the potential to alter or improve hydrology and water quality in or near the EEEA and surrounding area. Should all these projects be successfully implemented over the next 30 years, their cumulative impact is expected to improve degraded ecological conditions currently experienced in the park. These projects are described below.

- **Modified Water Deliveries Project**—The MWD project was initiated by Congress as part of the Expansion Act, which authorized the park to acquire 109,506 acres including NESRS. The act also directed the USACE to modify the C&SF project to help restore natural hydrology by providing a way for additional water to flow from WCA 3, north of the Tamiami Trail, into the park. Project features should allow for improved quantity, quality, timing, and distribution of water flows into NESRS while mitigating for potential flooding impacts from the project to the 8.5-square-mile area. Construction of the 1-mile Tamiami Trail bridge was completed in March 2013 and the raising of the remainder of the 10.7-mile highway corridor to allow increased water flow under the Tamiami Trail and into the park was completed in December 2013. In addition, a seepage control feature in the 8.5-square-mile area is expected to be completed in early 2017. An operational plan for the MWD project remains to be developed; however, pilot testing of operational changes is expected to begin in 2015 and a comprehensive water control plan for the MWD project and C-111 South Dade projects is expected to be completed no later than 2019. As a result of completing 1-mile bridge and road removal, the USACE and NPS are implementing up to 3.6 percent increased flows into the EEEA due to the larger conveyance capacity of the opening under the 1-mile bridge, and USACE has determined this does not require a flowage easement from FPL (Goral pers. comm. 2013).

The two components of the MWD project that have not been initiated—the conveyance features to improve flows from WCA 3 to NESRS, and the combined operational plan—will be addressed through the Central Everglades Planning Project (CEPP) described below.

- **Tamiami Trail Modifications: Next Steps Project**—The Tamiami Trail Modifications: Next Steps project was approved in February 2011 and authorized by Congress later that year. The Next Steps project builds on the 1-mile bridge and Tamiami Trail road improvements discussed under the MWD project. The selected alternative for this project includes an additional 5.5 miles of bridging and additional road raising within the 10.7-mile section of Tamiami Trail adjacent to the NESRS. The additional bridging would allow for much greater (i.e., unconstrained) water flows into the park and provide additional hydrological and ecologic restoration of significant

park resources. A 2.6-mile western bridge is currently in pre-design. The State of Florida recently committed up to $90 million to support construction of this bridge, and the President's Fiscal Year 2014 budget proposal includes $30 million for this bridge; however, Congressional appropriation (or other alternative funding) is needed to fully fund the balance of the project. Currently, preliminary design and permitting have been completed and an invitation to bid on a design-build contract was announced in July 2015. Construction is expected to begin in late 2015.

- **Canal 111 (C-111) Project Modifications**—The C-111 project modifications to the C&SF project, referred to as the C-111 project, were authorized by the Water Resources Development Act of 1996 based on the legislative direction contained in the Expansion Act. This project consists primarily of a series of detention basins between Everglades National Park and the southern end of the L-31N canal, pumps to fill the detention basins from the L-31N canal, and modifications to the L-31W and C-111 canals to restore wetlands in the lower C-111 basin. The C-111 project also provided for operational changes in the L-31N and C-111 canals to maintain flood protection for the developed areas to the east

Although the MWD, Next Steps, and C-111 projects will improve ecological conditions in the park, they were never intended to address regional environmental degradation. The CERP was authorized to accomplish restoration of the Greater Everglades ecosystem.

- **Comprehensive Everglades Restoration Plan**—The CERP, authorized by the Water Resources Development Act of 2000, is a framework to restore, protect, and preserve the water resources of central and south Florida while providing for other water-related needs. CERP is implemented by a partnership of the USACE, SFWMD, and many other federal, state, local, and tribal partners. It provides a framework for restoration of the Everglades while providing for other water-related needs of the region, including water supply and flood protection. The CERP includes more than 60 elements designed to capture, store, and redistribute fresh water previously lost to tide, and to regulate the quality, quantity, timing, and distribution of flows. The USACE is the lead agency for the federal government and the SFWMD is the local sponsor. Implementation of this restoration plan could take more than 30 years to complete and cost at least $16 billion. A number of CERP projects are intended to provide improvements to flows in and around the park. The projects listed below have the most direct relationship to the park.
  - **WCA 3 Decompartmentalization**—WCA 3 is immediately north of the park, with WCA 3A and 3B separated by the L-67A and L-67C levees and canals. The compartmentalization and constriction of historically broad wetlands, altered hydroperiods, reduction of wildlife, and degradation of water quality are among the environmentally detrimental effects resulting from construction of the C&SF project. This project would reduce barriers to sheet flow such as canals and levees to the extent practicable. The goal is to restore historical sheet flow distributions, depth patterns, hydroperiods, and hydrologic connectivity in the various landscapes within WCA 3 and in the NESRS within the park. The Decomp Physical Model project is a small-scale preliminary pilot project intended to test the Decomp concepts. The Decomp Physical Model has been constructed and operated for a 2-year period with a final test to be completed in 2016. Portions of the Decomp project are planned for implementation through CEPP. The remainder of the Decomp project may be implemented after the revised CERP schedule and any project modifications are determined.
  - **Everglades National Park Seepage Management**—The goal of Everglades National Park seepage management is to reduce eastward water seepage from the Everglades system for the benefit of wetland communities within the park. Because of the effects of existing canals, pump stations, and other water control structures providing flood control and water supply, it has long been recognized that controlling fresh water seepage out of natural system areas is necessary to restore ecological function to the park. In addition, increased stages in NESRS

as a result of restoration projects would result in increased seepage and the potential for increased flooding in the developed areas to the east. The project would likely include a suite of measures including detention ponds, in-ground seepage barriers, and modifications to adjacent canal water level management to maintain surface and groundwater in the park. Due to costs of the proposed pilot project, the CERP pilot seepage management project has been put on hold, delaying implementation of the CERP Everglades National Park seepage management project. However, a non-CERP pilot project was constructed in 2012 under the auspices of the state-authorized Lake Belt Mitigation Committee. This 2-mile-long, 35-foot-deep seepage barrier along the L-31N canal adjacent to NESRS was built to mitigate for the impacts of rock mining adjacent to the park and the WCAs. Current plans are to build an additional 3 to 5 miles of seepage barrier if the evaluation of this project indicates that it is working as predicted. This would essentially complete a portion of the original CERP seepage management project.

- **C-111 Spreader Canal Project**—This project operated by the SFWMD, is designed to rehydrate southeastern coastal marshes by restoring more natural overland sheet flow, restoring natural flows to Florida Bay via Taylor Slough, and returning coastal zone salinities in eastern Florida Bay to pre-drainage conditions The first phase of this project is intended to provide a more natural hydropattern in Taylor Slough by reducing eastward groundwater losses to the C-111 canal system, including features that extend the existing seepage management aspects of the MWD and C-111 projects southward, with additional detention areas and the use of a canal that runs along the park boundary. This project is also intended to minimize damage to Barnes Sound/Manatee Bay and provide flood protection to adjacent agricultural lands. Loss of freshwater from the park into the canal system is frequently observed, and in the wet season, water that would normally flow through Taylor Slough bypasses the park. This project would alleviate the problem of significant diversion of water from Taylor Slough. The project ROD was signed in June 2012. The project is currently in operation, and monitoring is underway to understand the ecological and water management responses.
- **CERP Master Recreation Plan**—The Master Recreation Plan focuses on opportunities to provide recreational features as CERP projects are designed, planned, and implemented. The plan provides guidance for identifying, evaluating, and addressing the impacts of CERP implementation on existing recreational use in the south Florida ecosystem and identifying and evaluating potential new recreation, public use, and public educational opportunities.
- **Central Everglades Planning Project**—The CEPP was initiated in 2011 for the purpose of expediting the delivery of increased clean water to the Central Everglades and Everglades National Park, including Florida Bay. The final CEPP Project Implementation Report was completed in 2014. Pending CEPP authorization and any schedule changes, associated with authorization, CEPP may begin implementation as early as 2019. As currently formulated, CEPP is expected to cost $1.8 billion, including contingency costs.
- **Water Control Plan—**A new operational plan will be needed for operating the completed modifications of the C&SF project described above. The USACE does not have a planned date for completion of the operational plan as it is dependent on other planned restoration projects associated with either the CEPP or the CERP. In addition to the new operational plan, tests of operational changes are planned and are likely to be conducted in coming years.

FPL TURKEY POINT 6 AND 7 PROJECT

FPL proposes using the property which it would receive through a land exchange as part of a new transmission corridor to service a proposed expansion of electrical generating capacity at its Turkey Point

Power Plant. Turkey Point is located 25 miles south of Miami on Biscayne Bay, adjacent to the Biscayne National Park Convoy Point Visitor Center, and 15 miles east of Everglades National Park. The following project components have been considered during the development of this EIS.

- **Turkey Point Power Plant expansion**—In June 2009, FPL filed applications with the NRC for a Combined Operating License, with the USACE for a dredge and fill permit, and with the State of Florida (for Site Certification under the Florida Electrical Power Plant Siting Act) for two new nuclear power plants at its Turkey Point site (Units 6 and 7). These new units would produce an estimated 2,200 megawatts of electricity. The applications include approximately 89 miles of new transmission lines in two corridors required to interconnect the new nuclear units into FPL's transmission system, as described below.
- **Western transmission corridor**—FPL's proposed western transmission corridor would be completed from the Clear Sky substation at Turkey Point to the Pennsuco Substation northeast of the park. This is the corridor whose path in the vicinity of the park would be affected by the NPS action taken regarding acquisition of FPL's land. Initially, two options were submitted for the western corridor: a 51-mile FPL West Preferred Corridor (including NPS lands being considered for exchange) and a 52-mile FPL West Secondary Corridor on lands currently owned by FPL inside the park. Both corridor options pass through Everglades National Park and eastern WCA 3B. As currently proposed, either western corridor option would include the installation of two 500-kV transmission lines, one 230-kV transmission line and related towers, guy wires, fill pads, and access roads. If FPL lands inside the park are relocated by an exchange, the connecting corridor easements north of Tamiami Trail, held by SFWMD and Florida's Board of Trustees of the Internal Improvement Trust Fund, would also have to be relocated. Relocation would also require easements from the SFWMD and private landowners across lands in the 8.5-square-mile area east of the park boundary. FPL has completed real estate agreements with these parties to secure a contiguous replacement corridor (FPL West Preferred Corridor). Copies of these agreements and a figure that shows the various land interests are included in appendix C. The FPL West Consensus Corridor represents a third western corridor option; the FPL West Secondary Corridor was withdrawn (as described below).
- **Eastern transmission corridor upgrades and expansion**—FPL plans to upgrade and expand their eastern power transmission corridor that leads north from the Turkey Point Power Plant and runs through portions of Biscayne National Park, southern suburban areas of Miami, and along U.S. Highway 1 to downtown Miami. This corridor would include one 230-kV transmission line.

FPL must obtain state and federal approvals for the Turkey Point Power Plant Units 6 and 7 project. These include the following:

- **State of Florida Site Certification**—The certification process is a legal proceeding overseen by an Administrative Law Judge from Florida's Division of Administrative Hearings. The FDEP administers the processing of FPL's SCA. The SCA Siting Board decision on certification was issued in May 2014 (see expanded discussion below). Certification (licensing) supersedes and encompasses all state and local permits and approvals. Certification does not supersede federal permitting processes. Details about the certification process are available at the FDEP website: http://www.dep.state.fl.us/siting/apps.htm#ppn1.
- **Proposed Alternate Transmission Corridors**—The certification process provides opportunity for parties to propose alternate transmission corridors for certification. In December 2012, the National Parks Conservation Association and the Miami-Dade Limestone Products Association, Inc. (MDLPA) filed proposed alternate western transmission corridors for consideration in the certification process. MDLPA submitted two corridors and National Parks Conservation

Association submitted one corridor. The stated purposes of the corridors are to avoid and minimize impacts of transmission lines on Everglades National Park by relocating the FPL West Preferred Corridor to an area east of the park. The FDEP and FPL accepted the proposed corridors for consideration in the certification process. Maps and descriptions of the proposed corridors are included in appendix D.

On August 30, 2013, FPL entered into an agreement with the MDLPA to join in support of a "West Consensus Corridor" as its preferred choice for the construction of transmission lines between the Clear Sky and Pennsuco substations. The West Consensus Corridor is an assemblage of the southern and northern sections of FPL's West Preferred Corridor and the alternate corridor filed in the State of Florida's site certification proceeding by the MDLPA on December 10, 2012, known as the "MDLPA 2 Corridor." The agreement was formally introduced in the State of Florida's site certification hearing. A copy of the FPL / MDLPA agreement and map of the West Consensus Corridor is included in appendix D.

On October 3, 2013, at the site certification hearing, FPL announced it is withdrawing the West Secondary Corridor from its application for site certification. Citing the agreement with the MDLPA, and the intention to pursue certification of the FPL West Consensus Corridor as its preferred western route, FPL stated it will no longer seek certification of the FPL West Secondary Corridor. As a result, FPL is no longer pursuing the state and local government permits needed to construct transmission lines in the FPL West Secondary Corridor.

On May 19, 2014, Florida's Governor and Cabinet, sitting as the Siting Board, issued a Final Order of Certification approving FPL's application to construct and operate two new nuclear generating units within FPL's Turkey Point plant property, as well as new electrical transmission lines and other off-site facilities. The location, construction, and operation of electrical transmission lines was certified for the West Consensus Corridor (see figure 4 later in this chapter) as the primary corridor and the FPL West Preferred Corridor as a back-up if an adequate right-of-way within the West Consensus Corridor cannot be secured in a timely manner[1] and at a reasonable cost[2]. The final order also included additional conditions of certification. The Siting Board's final order is currently under appeal.

Upon completion of a final non-appealable final order, FPL shall make all reasonable efforts to secure the necessary authorizations, approvals, and property rights to support the timely siting, construction, operation, and maintenance of transmission lines within the West Consensus Corridor, subject to the final conditions of certification and the terms and conditions of the August 30, 2013, agreement between FPL and the MDLPA regarding the West Consensus Corridor (appendix D). The FPL West Preferred Corridor would only be used for placement of FPL's western transmission lines in the event that an adequate right-of-way within the West Consensus Corridor cannot be secured in a timely manner and at a reasonable cost. In accordance with the final order and its conditions of certification, FPL shall diligently pursue the placement of transmission lines in the West Consensus Corridor to the east of the L-31N canal to avoid siting any transmission lines in Everglades National Park. In areas where FPL is unable to build and maintain its structures east of the L-31N canal (outside of the park), FPL shall only use the minimum amount of land west of the L-31N canal (inside the current boundaries of the park) that is necessary to build and maintain the structures, and FPL shall return to installing structures to the east side of the L-31N canal at the first available and practicable location.

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[1] "Timely manner" is defined as within 36 months from the date of the final non-appealable site certification.

[2] "Reasonable cost" is defined as total costs that are no greater than the total projected costs, including costs for land acquisition, construction, and mitigation of the FPL West Preferred Corridor, plus ten percent.

- **Nuclear Regulatory Commission Combined Operating License**—The NRC initiated an EIS under NEPA for FPL's Combined Operating License Application in 2010. The NRC EIS is evaluating alternative power plant sites and potential impacts of the entire Turkey Point 6 and 7 project including two new reactors, transmission lines, and related facilities. The USACE and the NPS are cooperating agencies in the EIS process. A substantial schedule delay has occurred while FPL and NRC work to resolve technical issues regarding the alternative power plant sites in FPL's application. The draft EIS was issued in 2015 and the completion date for the final EIS is anticipated in 2016.

  On November 5, 2013, FPL submitted an amendment to its Combined Operating License Application Environmental Report to the NRC. The amendment summarizes the environmental and land use characteristics for the West Consensus Corridor, consistent with the analysis of the FPL West Preferred and FPL West Secondary Corridors presented in the its Combined Operating License Application Environmental Report. FPL also advised the NRC and the USACE that it plans to remove the West Secondary Corridor from consideration as part of its Section 404 wetland fill permit application. As a result, FPL stated that the West Secondary Corridor need not be considered as part of the NRC EIS.

- **USACE Clean Water Act Permit**—The USACE is separately reviewing the FPL CWA Section 404 permit application for the Turkey Point Power Plant Units 6 and 7 project. USACE is working with FPL and NRC on the alternative power plant sites issues. USACE has also requested that FPL consider alternative western transmission corridors that would avoid adverse impacts to Everglades National Park. As noted above, FPL notified the USACE on November 5th, 2013 that it plans to remove the West Secondary Corridor from consideration as part of its Section 404 permit application. A USACE decision on the 404 permit would follow completion of the final NRC EIS. The EPA has the right to restrict or prohibit wetland fill under Section 404c of the CWA, either in response to a permit application or before a permit application has been submitted. In essence, the EPA has the authority to prevent or restrict the USACE from issuing a Section 404 permit. In the EEEA, some wetlands have already been identified by the EPA as generally unsuitable for fill under Section 404c (USEPA and USACE 1993).

PARK MANAGEMENT PLANS AND PROJECTS

Land Protection Plan for the East Everglades Addition—This 1991 plan determined that all lands in the East Everglades Addition are needed for ecosystem restoration, it set priorities for acquisition, and it gave examples of compatible and incompatible land uses. Land acquisition is integral to the restoration of the hydroperiod and sheet flow of the SRS. The plan determined that no private uses of the land will be compatible with this goal over the long term.

The undisturbed, privately owned tracts needed to enhance and restore the ecosystem through restoration of the hydrologic system constituted the top priority for protection. State and other nonfederal public lands comprised the second priority group, and the commercial tracts along U.S. Highway 41 constituted the third priority group. Third-party mineral rights were included in the fourth priority grouping.

Activities that would disturb the ecosystem, interfere with restored hydrologic systems, or prevent public enjoyment of the Addition would be considered incompatible uses. Residential, commercial, or industrial construction or agricultural activities would not be compatible. Major additions to existing developments or agricultural activities, as well as the construction of utility lines and roads, also would not be compatible.

The LPP identified that hunting and off-road vehicle use (e.g., airboats and all-terrain vehicles), except as authorized in the enabling legislation, would not be compatible with the purpose of the Addition. A copy of the LLP is included in appendix B.

Acquisition of Lands in the EEEA under the Expansion Act—Since the 1989 Expansion Act and 1991 LPP were adopted, the NPS Lands Office has pursued a variety of methods in accordance with legislation to acquire lands in the EEEA. Thousands of small, privately-owned parcels in the EEEA have been purchased from willing sellers or acquired through the use of eminent domain. As of July 2015, in addition to the FPL parcel, five properties within the park boundary, all serving commercial uses, remain to be acquired before restoration flows can be implemented in NESRS. The remaining properties within the park include three commercial airboat operations (Coopertown Airboat, Gator Park, Everglades Safari Park) and two AM radio properties (Lincoln Financial Media, Salem Communications). The NPS must acquire either fee title or flowage easements on these properties before increased flows can be brought into the park. In addition, the USACE must acquire a flowage easement on the Airboat Association of Florida property adjacent to but outside the park. Figure 3 shows the locations of these properties. Congress has appropriated $25 million for the acquisition of these properties (excluding the FPL tract). The timing of acquisition of these properties in currently uncertain as the federal government negotiates with the properties owners.

Everglades National Park GMP / East Everglades Wilderness Study / EIS—The park is in the process of developing the draft GMP / East Everglades Wilderness Study / EIS, which will include a range of options for resource protection and visitor use in the park over the next 20 years. As part of the GMP process, in order to identify activities desired by park visitors as well as concerns regarding park management, information was collected from the general public and interested parties. The Wilderness Study, which is integrated into the GMP, has found that significant portions of the EEEA are eligible for wilderness designation. The study has found that approximately 102,100 acres are eligible, including the FPL parcel. The draft GMP/EIS public review and comment period concluded in May, 2013. The final GMP/EIS was released on August 28, 2015, and approval of the ROD is anticipated in 2015.

South Florida and Caribbean Parks Exotic Plant Management Plan and Environmental Impact Statement—In 2010, the NPS completed an exotic vegetation management plan, EIS and ROD for the control of nonnative plant species in nine south Florida and Caribbean park units. The plan includes NPS goals and methods for the continued control and reduction of nonnative plant species throughout the Everglades (NPS 2006b). Lands adjacent to the eastern boundary of the park include commercial production of ornamental landscape plants, many of which can become invasive in the subtropical climate found in south Florida. Incompatible land uses in the EEEA prior to its inclusion in the park boundary have also facilitated nonnative plant species growth in the area. As a result, the EEEA and eastern park boundary have been a focus of exotic vegetation management in the park for some years.

Everglades National Park Fire Management Plan—The park is currently developing a fire management plan and EA that identifies alternatives for implementing NPS and federal wildland fire policies within the park. The EA to accompany the fire management plan will assess the impacts of those alternatives on the natural and human environment. Fire management is an integral part of the park's natural and cultural resource management program and supports the park's management objectives and goals for the future condition of park resources, including the EEEA. Managing the role of fire in park ecosystems is one of the highest natural resource management priorities in the park. Under the fire management plan, park staff implements a variety of fire management techniques, also called treatments, to accomplish land and resource condition objectives and reduce risk to firefighters, public health and safety, and private property. Strategies for implementation would be based on knowledge gained from fire and fuels research, resource monitoring, and decades of experience in the Everglades ecosystem. The draft Fire Management Plan EA was published for public review and comment in October 2014. Approval of the NEPA decision document and final Fire Management Plan are anticipated in 2015.

FIGURE 3: LOCATION OF PRIVATELY OWNED PARCELS IN THE EEEA

Research, surveys, and monitoring in the EEEA—Park staff and other resource scientists routinely conduct research activities and surveys to monitor park resources within the EEEA. Such activities include the monitoring of hydrologic conditions in the NESRS and special-status species (e.g., wood stork, snail kite, Cape Sable seaside sparrow) use and numbers in the EEEA. This also includes colonial and wading bird surveys and counts.

GENERAL PROJECT AREA AND SCOPE OF THE ANALYSIS

The general project area for analysis includes not only the EEEA but also the area where the transmission lines could be located.

As discussed in the "Purpose of and Need for Action" section, the focus of this EIS is the acquisition of the FPL corridor located within the park for ecosystem restoration purposes. However, the indirect effects of the proposed action include several different scenarios that involve the potential construction of reasonably foreseeable transmission lines either in corridors inside or outside the park based on various FPL submissions during the site certification process. Because of this, the general project area for analysis includes not only the EEEA but also the area where the transmission lines could be located. That area is shown on figure 4, and includes the areas in and around the two FPL transmission corridors (the FPL West Preferred Corridor, which includes the proposed exchange corridor, and the FPL West Secondary Corridor; see figure 2) and the West Consensus Corridor. The rationale for the area of possible construction is that if the NPS acquires FPL's property without providing a replacement corridor within the park, FPL would likely seek to build transmission lines within an area outside of the park to the east. In the draft EIS, for purposes of analysis, the NPS determined an "area of possible relocated corridor," which represented an area of highest potential where FPL would seek to build transmission lines outside the park based on the most recent information from the state site certification process at that time. As a result of the Final Order of Certification described above in the section "FPL Turkey Point 6 and 7 Project," the most likely location of transmission lines outside of the park would be within the portion of the FPL West Consensus Corridor that is located outside the park boundary, and within the portion of the FPL West Preferred Corridor that is located outside the park boundary. The site certification approval does not automatically mean that FPL will be able to construct transmission lines within the FPL West Consensus Corridor and there is still uncertainty regarding where transmission lines outside the park would ultimately be located, should the NPS acquire the FPL land within the park boundary. The use of the FPL West Consensus Corridor and the FPL West Preferred Corridor as a potential location for construction of transmission lines is used only as a reasonable assumption for the purposes of analysis based on the information available at the time of this EIS.

The project area is the general area where these corridors and area diverge and then rejoin north of the park. That includes lands traversed by the FPL West Preferred and FPL West Secondary Corridors in what is known as the 8.5-square-mile area east of the park, in WCA 3B and the Pennsuco Wetlands north and east of the park, and the West Consensus Corridor outside and east of the park. The NPS land acquisition action would likely influence which corridor FPL might build future transmission lines in and where the impacts of transmission line construction and operation may result. Although this area covers most of the issues and impact topics discussed below, it should be noted that the areas of analysis were extended beyond this boundary for resources that could be affected outside this boundary, such as birds with extensive foraging areas and local socioeconomics, as noted under descriptions for those resources in chapters 3 and 4 of this document.

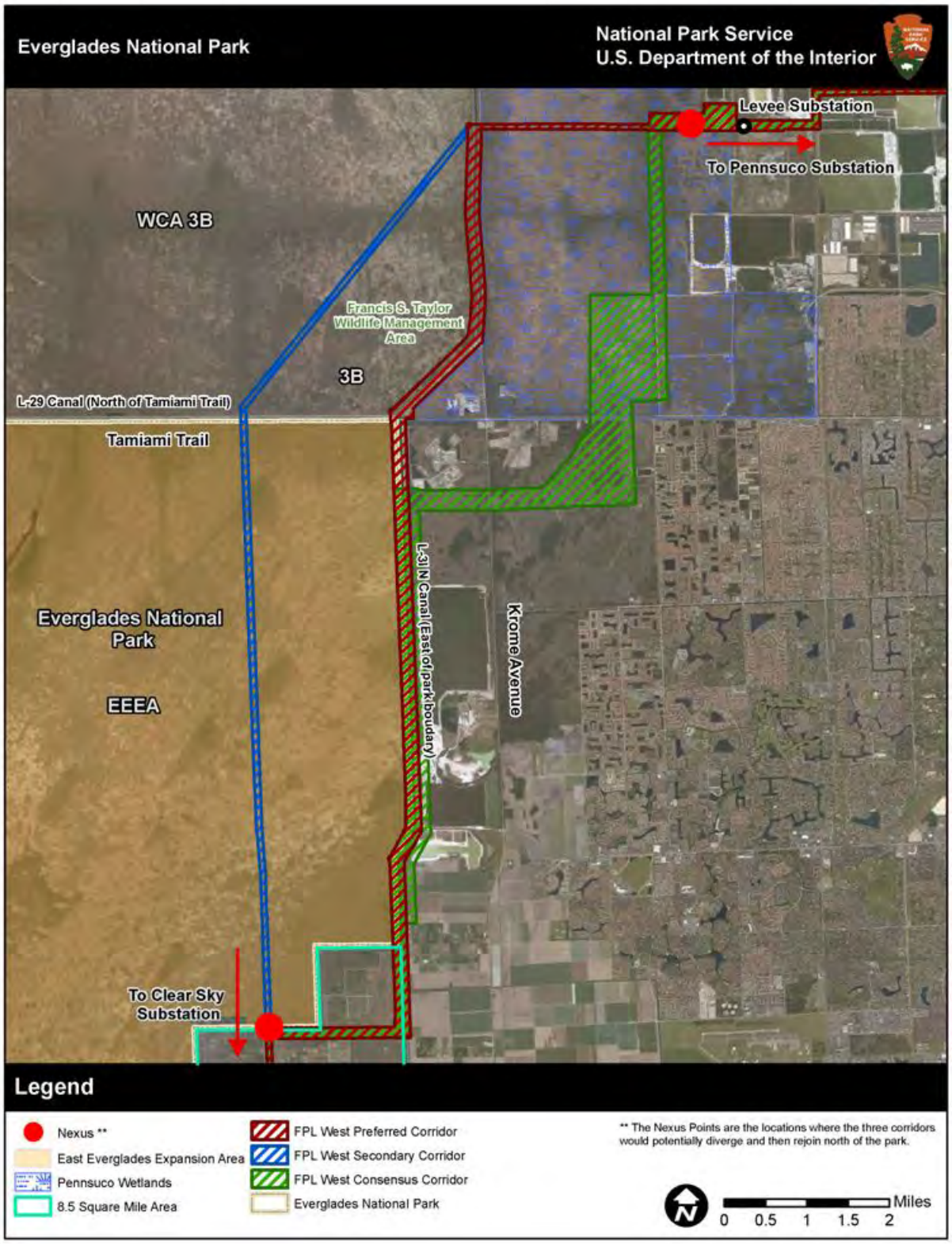


FIGURE 4: GENERAL PROJECT AREA

The FPL West Consensus Corridor alignment follows the FPL West Preferred Corridor until it reaches a point approximately 6 miles south of Tamiami Trail. There, the FPL West Consensus Corridor expands the width of the corridor by 600 feet to the east of the FPL West Preferred Corridor for a distance of about 5 miles until it reaches a point 1 mile south of Tamiami Trail. This segment includes approximately 200 acres of land within the current boundary of Everglades National Park on the west side of the L-31N canal, SFWMD lands, and rock-mining lands on the east side of the L-31N canal. Then, the FPL West Consensus Corridor turns to the east for about 2.5 miles. Then it turns northeast through the Bird Drive Basin and passes through the Pennsuco wetlands north of Tamiami Trail to intersect with the FPL West Preferred Corridor. The FPL West Consensus Corridor differs from the FPL West Preferred Corridor in that it is wide enough to potentially allow FPL to locate the full right-of-way on the east side of the L-31N canal to avoid siting transmission lines within the current boundary of Everglades National Park. The alignment through the Bird Drive Basin and Pennsuco wetlands would locate transmission lines farther to the east of significant wading bird colonies in Everglades National Park and WCA 3B.

SCOPING PROCESS AND PUBLIC PARTICIPATION

INTERNAL AND AGENCY SCOPING

NEPA regulations require an "early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). To determine the scope of issues to be analyzed in depth in this EIS, meetings were conducted with park staff, NPS Southeast Regional Office staff, NPS Denver Service Center staff, neighboring land management agencies, and other interested parties. All agencies involved during internal or agency scoping are listed below.

To determine the scope of issues to be analyzed in depth in this EIS, meetings were conducted with park staff, NPS Southeast Regional Office staff, NPS Denver Service Center staff, neighboring land management agencies, and other interested parties.

Federal Agencies

- U.S. Nuclear Regulatory Commission
- U.S. Army Corps of Engineers
- U.S. Bureau of Indian Affairs
- U.S. Fish and Wildlife Service (South Florida Ecological Services Office).
- U.S. Environmental Protection Agency
- Department of Interior, Office of the Assistant Secretary for Fish, Wildlife and Parks, Office of the Solicitor
- National Park Service Washington Office and Southeast Regional Office
- Advisory Council on Historic Preservation

Tribal Governments

- Miccosukee Tribe of Indians of Florida
- Seminole Tribe of Florida
- Seminole Nation of Oklahoma

State Agencies

- Florida Department of Environmental Protection
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Transportation
- Florida State Historic Preservation Office
- South Florida Water Management District
- South Florida Regional Planning Council

Local Agencies

- Miami-Dade County Department of Regulatory and Economic Resources
- Miami-Dade County Department of Planning and Zoning

PUBLIC SCOPING

On June 7, 2011, Everglades National Park requested public scoping comments on a public scoping newsletter that was distributed by mail and posted on the NPS website. Scoping comments were accepted through July 25, 2011. A public scoping meeting was held on June 22, 2011. During the public scoping period, the park received 10,120 correspondences containing 39,739 individual comments. There were 9,714 form letters received. Public comments submitted during scoping for the EA in 2009 have been carried forward to this project and considered as part of scoping for this EIS.

The comments received were reflective of a public that is passionate about the future of park resources, their uses and management. The most common comment received expressed opposition to installation of any transmission lines in or adjacent to the park, representing 74 percent of all comments. The second most prevalent comment expressed opposition to any land exchange with FPL, representing 25 percent of all comments. Thus, approximately 99 percent of all comments expressed opposition to all transmission line construction or completion of the land exchange for the purposes of constructing a transmission line.

Commenters also contributed ideas for new alternatives and raised specific concerns regarding resource protection and visitor enjoyment of the park. As a result of this scoping effort, additional issues and alternatives were identified for further analysis in this EIS.

The issues identified during internal and public scoping are presented below and in chapter 5 in this document, which contains more details about agency and public scoping activities that were an integral part of the planning process. The final scoping report and public meeting transcript are available on the internet at the project website: (http://parkplanning.nps.gov/EVER).

ISSUES AND IMPACT TOPICS

Impact topics are used to assess the potential environmental consequences of project alternatives. Candidate impact topics were identified based on legislative requirements, executive orders, topics specified in Director's Order 12 (NPS 2011a) and accompanying handbook (NPS 2001), NPS *Management Policies 2006* (NPS 2006a), additional guidance from the NPS, other agencies, public concerns, and resource information specific to the park. Specific impact topics were identified to facilitate a focused discussion allowing issues to be addressed and environmental consequences of project

alternatives to be compared. A brief rationale for the selection of each impact topic is presented below. Additionally, the rationale for dismissing specific topics from further consideration is also presented. The following text discusses the issues, which are the basis for the impact topics discussed in chapters 3 and 4 in this document.

IMPACT TOPICS ANALYZED IN THE ENVIRONMENTAL IMPACT STATEMENT

Impact topics analyzed in this EIS will include those resources of concern that could be affected by any one or more project alternatives for acquisition of the existing FPL land within the park. For this EIS, the foreseeable indirect effects of construction and operation of power transmission infrastructure were considered when identifying impact topics. The development of power transmission infrastructure would be reasonably foreseeable because FPL has submitted site certification documents, to state and local regulatory agencies, requesting approval and permits for two 500-kV lines and one 230-kV power transmission line within the FPL West Preferred Corridor. A certification decision by the Governor and Cabinet, functioning as the Siting Board, was completed in May 2014. As a result, potential impacts associated with such actions were considered when identifying impact topics. All resources described below are included and described in detail in chapters 3 and 4 in this document.

Hydrology—The proposed project area is within the NESRS, the main historic Everglades ecosystem waterway that conveyed flows from the north into the park. Increasing flows in the NESRS is critical to restoration of the Everglades ecosystem, and the disposition of the FPL parcel or the proposed exchange corridor within the EEEA affects the ability of the park to support the goals of restoring the NESRS. In addition, construction of a transmission corridor and its associated access and spur roads and fill pads could affect overland flows, depth, timing and groundwater movement in and near the project area over both the short and long term.

Water Quality—As noted under Hydrology, the proposed project area is within the NESRS and the disposition of the FPL parcel or the proposed exchange corridor within the EEEA affects the ability of the park to support the goals of restoring the NESRS. In addition, the construction and installation of transmission line pole pads could affect local water quality over both the short and long term. Construction activities, long-term changes to surface flows and conditions, and expanded exotic vegetation management could affect local water quality in and downstream from the transmission corridor.

Soils—Construction activities associated with the installation of a new transmission line would disturb the soil profile and could have potential short- and long-term impacts on soil productivity.

Vegetation and Wetlands— Executive Order 11990, Protection of Wetlands, directs federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Director's Order 77-1 (NPS 2002) addresses wetland protection. Everglades National Park is the only place in the United States jointly designated as an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance. These designations are based largely on the unique hydrologic and wetland environment found in the Everglades ecosystem. Currently, Everglades National Park is listed as a World Heritage Site in Danger due to habitat degradation within the park. Construction activities, excavation, placement of fill, expanded exotic vegetation management and potential reintroduction and control of exotic species, and long-term changes in local hydrologic conditions could affect wetlands and vegetation communities in the both the FPL and potential exchange corridors.

Floodplains—Executive Order 11988: Floodplain Management instructs federal agencies to avoid, to the extent possible, the short- and long-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of development in floodplains wherever there is a practicable alternative. Director's Order 77-2 (NPS 2003) addresses development in floodplains.

If transmission corridors were constructed in or adjacent to the park, floodplain functions could be affected over the long term. The presence of transmission structures, fill pads, and access roads would interfere with historic overland flows associated with the Everglades floodplain. The presence of the transmission corridor within or adjacent to the park would have the potential to affect natural floodplain functions, such as groundwater recharge, at the specific locations of fill pads and access roads. During construction activities and until vegetation was reestablished on the site, the potential for erosion would temporarily increase.

Soundscapes—Soundscapes are the ambient or natural occurring sounds found in a given environment. In much of the EEEA, the undeveloped nature of the area results in a soundscape dominated by natural sounds – breezes, insects, birds, and other wildlife. However, along and in the area south of the Tamiami Trail and along the L-31N canal, nearby vehicle and private and commercial airboat traffic, development, and aircraft overflights introduce manmade sounds to the environment. In the short term, construction activities would disturb the natural soundscapes in areas of the park. In addition, the long-term presence of large-scale transmission lines would introduce a continuous, man-made sound that would be audible above the ambient soundscape in the project area.

Wildlife—Construction activities and the long-term presence of large-scale transmission lines have the potential to affect a variety of wildlife species. During construction activities, wildlife would not likely find the construction area suitable habitat due to noise and disturbance. Over the long term, avian species could be affected by guy wires, transmission lines, and structures present in flight paths. Foraging and nesting areas could also be impacted by wetland fill.

Special-status Species—Several species listed as protected under the ESA as well as those warranting special protection by the State of Florida have the potential to be affected by the acquisition of the FPL parcel within the EEEA and both the construction and operation of the transmission corridor. For example, the endangered wood stork and Everglade snail kite nest or forage in and near the project area. On December 26, 2012, the USFWS proposed to have the wood stork reclassified from endangered to threatened due to the substantial improvement in the species' overall status. However, because of its large size and flight pattern, the wood stork, in particular, is susceptible to adverse impacts from transmission structures. Additionally, there is concern about the long-term protection of several species of colonial and wading birds that also occur in and near the project area.

Viewshed (Visual Resources)—The EEEA is generally undeveloped and the lack of topography and low vegetation provide expansive views of the horizon and skyline. High profile structures and development east of the park currently along Tamiami Trail are clearly visible for distances of several miles or more in the area. Construction of a transmission corridor within or near the park boundary would include long-term presence of 80- to 150-foot transmission structures that would be readily visible on the landscape, affecting the park's viewshed resource.

Wilderness—The EEEA was studied for wilderness eligibility as part of the GMP process. The draft GMP/East Everglades Wilderness Study/EIS was released for public comment on February 27, 2013. Areas found eligible for wilderness designation are managed as wilderness under NPS policy. Construction of a transmission line in this area would show the presence of the "hand of man" in the form of large, long-term utility structures and could adversely affect the undeveloped quality of wilderness

character. If such structures were constructed in or adjacent to the park, the eligibility of portions of the EEEA to be designated as wilderness could be affected.

Visitor Use and Experience / Recreation Resources—The EEEA receives approximately 300,000 visitors annually, including those who enter the park as part of a commercial airboat tour and those visiting the Chekika area. The L-31N canal levee is included as part of the greenway/trail system in Miami-Dade County, and bicyclists and pedestrians often use this area for recreational purposes. High-profile structures are currently clearly visible for distances of several miles or more in the area. The presence of the proposed transmission lines could diminish visitor experiences in the EEEA by interfering with views, natural sounds, and wilderness values, and limiting visitor use, access and enjoyment in areas of the park.

Adjacent Land Uses and Policies—The NPS action taken regarding acquisition of the FPL parcel in the park would affect the overall route of the proposed transmission lines from the Turkey Point Power Plant to areas north of the park. Transmission corridor alignments outside the park could affect adjacent landowners, residents, and businesses, including the Miccosukee Tribe, the USACE, SFWMD, and Miami-Dade County. If the NPS were to acquire the corridor without exchange, FPL would likely relocate the proposed transmission corridor outside the park boundary. In such event, land uses along the selected alignment could also be affected. This topic also addresses land use policies in the park that could be affected by the presence of transmission lines in or adjacent to the park.

Tribal Lands Including Indian Trust Resources—Section 1.11.3 of the NPS *Management Policies 2006* defines trust resources as "those natural resources reserved by or for Indian tribes through treaties, statutes, judicial decisions, and executive orders, which are protected by a fiduciary obligation on the part of the United States" (NPS 2006a). In considering the exchange, the NPS will identify and evaluate the potential effects of the proposed alternatives on tribal trust resources. Requirements for protection of these resources can be found in Section 1.11.3 of the NPS *Management Policies 2006* as well as in the Secretary of the Interior's Secretarial Order No. 3206, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, the ESA, and the DOI Environmental Compliance Memorandum No. ECM97-2 (DOI 1997).

There are land areas held in trust for the Miccosukee Tribe that are in the vicinity of the proposed action; therefore, this topic has been included for full analysis.

Socioeconomics—In the event that FPL must obtain land outside the park for a new transmission line corridor, nearby rural, suburban and urban communities in south Florida could be affected by the land acquisition and transmission line infrastructure. The main socioeconomic effects of concern include effects on neighboring land values and the effects on FPL ratepayers. Construction of the proposed transmission lines would also support jobs in the local economy on a short-term basis.

Park Operations and Management—A variety of park operations and management activities in the EEEA could be affected by both the acquisition of the FPL parcel and the construction and operation of a large-scale transmission corridor within or adjacent to the boundary of the park. Resource monitoring and surveys, fire management, and exotic plant control are among the important management activities that take place in and near the project area. The long-term presence of the transmission lines would interfere with aerial survey, exotic plant management access, visitor and resource protection, and fire management response. A vegetation management easement would need to be added to the exchange corridor for FPL management of exotic vegetation adjacent to its transmission line, if the FPL West Preferred Corridor was used for transmission line construction.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Impact topics were dismissed from further analysis for the following reasons:

- Resources or values do not occur in the analysis area;
- Resources or values would not be affected by the proposal, or the likelihood of impacts is not reasonably expected; or
- Through the application of mitigation measures, there would be negligible effects (i.e., no measurable effects) from the proposed actions, there is little controversy on the subject or reasons to otherwise include the topic.

A brief rationale for the dismissal of the following impact topics is provided below. If impacts to these resources would occur, they would be no more than negligible, localized, or most likely undetectable.

Air Quality—The park has a Class I clean air status. Areas with such a designation are subject to the most stringent regulations with very limited increases in pollution permitted. The high air quality in the Everglades is a valuable park resource, encouraging visitation by providing clean air and high visibility to compliment the unique ecosystem experience. The Clean Air Act of 1963 (42 USC 7401) requires federal land managers to protect air quality and the NPS *Management Policies 2006* direct air quality to be analyzed when planning park projects and activities.

The action to acquire FPL's land would result in no activities that would affect air quality. However, construction activities associated with the development of a power transmission corridor – regardless of the selected alternative – would result in limited air quality impacts from material haul truck vehicular movements and fugitive dust. A construction management plan would be put in place which would mitigate adverse effects from construction vehicles by restricting idling time, among other activities. As a result, construction activities associated with the action alternatives would not measurably contribute to adverse air quality conditions or affect visitors and/or staff. Should transmission lines be constructed in or adjacent to the park, wetland conditions of the project area would limit generation of fugitive dust during construction. If dust were generated during construction, best management practices (BMPs) for dust suppression would be initiated.

Cultural Resources—The NHPA (16 USC 470 et seq.), NEPA, NPS 1916 Organic Act, the NPS *Management Policies 2006* (NPS 2006a), Director's Order 12 (Conservation Planning, Environmental Impact Analysis and Decision-making), and NPS Director's Order 28 (Cultural Resources Management Guideline) require the consideration of impacts on any cultural resources that might be affected, and, in particular, on cultural resources either listed in or eligible to be listed in the *National Register of Historic Places* (NRHP). The process and documentation for preparing this EIS will be used to comply with Section 106 consultation of the NHPA of 1966.

Consultation with the Florida State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) began for this EIS process with the submittal of letters to the SHPO and the ACHP describing the land exchange project, dated June 8, 2011. Tribes (Miccosukee Tribe of Indians of Florida, Seminole Tribe of Florida, Seminole Nation of Oklahoma) were also notified by letters that were prepared and sent from June 8–10, 2011. Copies of these letters are contained in appendix E of this EIS. An interagency meeting held on June 26, 2012 to discuss possible routes outside the park included representation from the Miccosukee Tribe. Tribal and agency consultation correspondence is available in appendix E.

Potential impacts of the land exchange and foreseeable construction of transmission lines in the corridors in the park include disturbance of soils and underlying rock material that may affect previously unknown archeological resources. The NPS also considers effects on historic structures, ethnographic resources, cultural landscapes, and museum collections in its assessment of cultural resources. All of these types of cultural resources are included in the discussion below.

Effects on Cultural Resources in the Park—There are no known cultural resources of any kind on NPS lands being considered for exchange (i.e., along the FPL West Preferred Corridor). In July 2009, New South Associates conducted an archeological and historical Phase I survey of the 6.5-mile exchange corridor on behalf of FPL. New South Associates identified no cultural resources within the corridor during the investigation. New South Associates determined that the construction of the transmission lines would have no effect on cultural resources listed, or eligible for listing, on the National Register of Historic Places. The Florida SHPO reviewed New South Associates' report and concurred with these determinations on October 1, 2009. The NPS knows of no ethnographic resources or cultural landscapes in this area, and no museum collections would be affected. In addition, a USACE 404 permit with Section 106 consultation and avoidance/mitigation measures would be needed prior to any construction of transmission lines in this corridor. In its SCA, FPL has indicated that following selection of the final right-of-way to be used within the certified transmission line corridor, they will conduct a survey of sensitive cultural resource areas within the right-of-way in consultation with the Florida Department of State, Division of Historic Resources. Also, if cultural resources are discovered during construction activities on NPS property, FPL will be required to immediately inform the Park Superintendent (or representative) and work with the Florida SHPO to define appropriate mitigation measures. Any artifacts found on NPS lands are recognized as the property of the NPS.

There are also no known cultural resources of any kind on FPL's property in the expansion area within the FPL West Secondary Corridor, but there has not been a 100 percent inventory in this area to date. A survey of these lands would need to be conducted prior to any construction of transmission lines. In its SCA, FPL has indicated that following selection of the final right-of-way to be used within the certified transmission line corridor, they will conduct a survey of sensitive cultural resource areas within the right-of-way in consultation with the Florida Department of State, Division of Historic Resources. A USACE 404 permit with Section 106 consultation and avoidance/mitigation measures would be needed prior to any construction of transmission lines in this corridor.

Effects on Cultural Resources outside the Park—Construction of transmission lines in those sections of the FPL West Preferred or FPL West Secondary Corridors located outside the park could potentially impact cultural resources. The park does not have data on cultural resources in those portions of the corridors; therefore potential impacts from construction of transmission lines in them is unknown/uncertain. However, a USACE 404 permit with Section 106 consultation and measures to avoid/mitigate impacts would be needed prior to construction of transmission lines in either corridor outside the park. Also, a Preliminary Cultural Resources Report for the Turkey Point 6 and 7 Associated Linear Facilities is included as Appendix 10.7.2.2 of FPL's SCA. This report provides a preliminary assessment of known cultural resources within and adjacent to the entire length of the FPL West Preferred and FPL West Secondary Corridors for the proposed transmission lines. Following selection of the final right-of-way within the certified transmission line corridor, FPL will conduct a survey of cultural resources within that right-of-way in consultation with Florida Department of State, Division of Historic Resources (Florida SHPO). A July 13, 2009 letter from the SHPO to FPL concurs with FPL's Cultural Resource Assessment Survey Work Plan for the Turkey Point 6 and 7 Associated Linear Facilities outlined in the letter. The work plan outlines the surveys, inadvertent finds plan and consultation that would occur prior to construction of transmission lines.

Construction of transmission lines in the West Consensus Corridor could potentially impact cultural resources. Three cultural resources studies conducted in the project area between 2005 and 2009 documented the presence of an archeological site within or adjacent to the FPL West Consensus Corridor on the east side of the L-31N canal (Janus Research 2009; New South Associates 2009; Koski, Sheffield, and Loubser 2005). However, the location of the route FPL would use, and the potential effects on cultural resources, are uncertain at this time. The park does not have complete data on cultural resources in the West Consensus Corridor, but a survey of cultural resources would be required and a USACE 404 permit with Section 106 SHPO consultation and avoidance/mitigation measures would be needed prior to any construction of transmission lines in a relocated corridor. Based on the siting work conducted to identify the West Consensus Corridor, no historical structures or features were identified, and there are no NPS-recognized cultural landscapes, ethnographic resources, or museum collections associated with lands outside the park.

Conclusion—Based on the information provided above, especially the lack of any such resources in the exchange corridor, the lack of any cultural landscapes and ethnographic resources in this area of the park, the lack of information about cultural resources outside the park in the West Consensus Corridor, and the provisions in place for archeological/cultural resources survey and review required through the permitting process for any route location, the topic of cultural resources was not carried through for detailed analysis.

Climate Change—Climatologists are unsure about the long-term results of global climate change, but it is evident that the planet is experiencing a warming trend that affects ocean currents, sea levels, polar sea ice, and global weather patterns. Although these changes are likely to affect climate patterns in the parks, it would be speculative to predict localized changes in temperature, precipitation, or other weather changes, in part because there are many variables that are not fully understood and others which are not currently defined. In addition, the action taken by the NPS regarding acquisition of FPL land within the park would neither affect nor be affected by climate change.

Ecologically Critical Areas—The unique and ecologically critical resources of the Everglades will be addressed in other impact topics, including hydrology and water quality, wetlands, and special-status species.

Energy Requirements and Conservation Potential—The NPS reduces energy costs, eliminates waste, and conserves energy resources by using energy-efficient and cost-effective technology. Energy efficiency is incorporated into the decision-making process during the design and acquisition of buildings, facilities, and transportation systems that emphasize the use of renewable energy sources. Although FPL's actions would be in response to regional energy usage, no part of the federal action alternatives would include actions that would require increased energy usage.

Environmental Justice—Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, as amended, directs all federal agencies to develop an environmental justice strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. CEQ has oversight responsibility of the federal government's compliance with Executive Order 12898 and NEPA. CEQ, in consultation with the EPA and other agencies, has developed guidance to assist federal agencies with NEPA procedures so that environmental justice concerns are effectively identified and addressed.

A description of environmental justice developed by the EPA follows:

> …fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and

> enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. …The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and to identify alternatives that may mitigate these impacts.

According to guidance from CEQ (1997a) and the EPA (USEPA 1998), agencies should consider the composition of the affected area to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by a proposed action and, if so, whether there may be disproportionately high and adverse environmental effects to those populations. Minority and low-income populations are near the alternative corridors. Impoverished populations were determined by identifying 2010 census block groups with populations where more than 20 percent of the population falls below the poverty threshold (U.S. Census Bureau 2010a). Minority populations were determined by identifying the 2010 census blocks where minority populations were 10 percent more than the Miami-Dade County minority population, which is approximately 85 percent. Therefore, a census block was identified as a minority block if more than 95 percent of its population was identified as a minority.

Within Miami-Dade County, there are 38,790 census blocks and 1,594 census block groups. Of the 1,594 block groups in the county, 421 block groups (26 percent) have 20 percent of the population living below the poverty threshold. There are 16 total block groups within 1 mile of the West Consensus Corridor, as defined in figure 4. Of those 16 block groups, none were identified with impoverished populations.

Within Miami-Dade County, there are 38,790 census blocks, of which 10,698 (27 percent) have populations with minorities accounting for over 95 percent of their residents. There are 348 census blocks within 1 mile of the West Consensus Corridor, and in 61 of these blocks (17.5 percent) more than 95 percent of the population is identified as minority. The remaining census blocks have either no populations or populations with minorities accounting for less than 95 percent of the total populations.

As described in the section on Indian Trust Resources, the Miccosukee Tribe has resources held in trust, including a casino property, in the vicinity of the FPL West Preferred Corridor. To ensure a conservative analysis, the Miccosukee Tribe is considered to be a minority community that could be affected by one or more of the alternatives considered.

No residential areas associated with the Miccosukee Tribe are expected to be impacted by the possible locations of the transmission corridor. The commercial gaming facility and tobacco store are the only establishments that may be indirectly impacted by the land exchange. The potential for the construction of a transmission line in the viewshed of the gaming facility is addressed in the visual impacts analysis. Overall impacts to tribal lands are fully analyzed in chapter 4.

Environmental justice is dismissed as an impact topic for the following reasons:

- The impacts associated with implementation of the proposed alternatives would not disproportionately adversely affect any minority or low-income population or community since there are many more non-environmental justice populations than environmental justice populations residing within 1 mile of the West Consensus Corridor.
- Implementation of the proposed alternatives would not result in any identified effects that would be specific to any Indian, minority, or low-income community.

- Any impacts to the socioeconomic environment would not appreciably alter the physical or social structure of the nearby communities.

Sacred Sites—The NPS has considered the requirements of Executive Order No. 13007, dated May 24, 1996, regarding the duties of agencies with respect to sacred sites. For purposes of the Executive Order, "sacred site" means "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." NPS staff, in consultation with the Miccosukee Tribe of Indians of Florida, Seminole Tribe of Florida, and the Seminole Nation of Oklahoma, identified no lands requiring additional analysis of impacts arising from this Executive Order.

Health and Safety—Health and safety including electric and magnetic fields and general health and safety issues are discussed below.

Electromagnetic Fields (EMFs)—EMFs are produced when electricity is passing through an object, (i.e., a transmission line) and results in a field of electrically charged particles. Electric fields are essentially constant and do not change with demand fluctuation on the electric system. Magnetic fields are created by current (measured in Amperes) flowing in a conductor. Magnetic fields are quite variable and change proportionally with demand changes in the electric system. Both of these fields are commonly produced by electrical wires. Electric fields are measured in Volts per meter (V/m); these fields are easily shielded by common materials. Many years of research conclude that electric fields are much less of a health concern. Magnetic fields are typically measured in Gauss (G); these fields are more difficult to shield and pass through most materials (NIEHS 2002).

Since the late 1970s, concerns have been raised about the possible health effects regarding the impact of EMF associated with high-voltage transmission lines on human health. Due to their size and visibility, transmission lines have attracted a large amount of media attention related to health and safety. Numerous studies have been performed by epidemiologists, biologists, and other experts in the field to determine if there is a measurable connection between human health and high-voltage transmission lines. Since 1977 over 130 reviews by expert scientific panels, public health organizations and governmental bodies have examined the scientific evidence on EMF (NIEHS 2002). None of these organizations has found that exposure to power frequency EMF causes or contributes to cancer or any other disease or illness. Their reviews generally conclude that while some epidemiology studies report an association with childhood leukemia, which warrants further research, the scientific studies overall have not demonstrated that EMF causes or contributes to any type of cancer or other disease.

The State of Florida established limits on electric and magnetic field exposure from electric facilities in 1989. The Florida legislature granted the FDEP exclusive jurisdiction to regulate EMF associated with electric facilities and required it to establish rules regulating EMF exposure from those facilities. Future facilities built in the FPL transmission corridors must comply with the Florida EMF regulations specified in Section 62-814 Florida Administrative Code (F.A.C.) (the Florida EMF Rule). The FDEP regularly reviews the EMF science and has not made any changes in the state's EMF standards.

Public use in the vicinity of the FPL transmission lines would likely be incidental and not involve exposure for extended periods, and all Florida EMF regulations would be followed. Because there is no conclusive evidence that EMFs result in adverse health effects and the lines would operate below all standards set by the state of Florida, this topic was not carried forward for further analysis in this EIS.

General Health and Safety—The acquisition of the FPL parcel would have no effects related to health and safety; however, this action would likely result in FPL implementing a power transmission development project as described in chapter 2 in this document. During construction, workers would be exposed to physical hazards from the use of heavy equipment, power saws, falling vegetation, exposure to herbicides, insect stings and animal bites, noise exposure, trips and falls, and heat stress. It is expected that proper training, health and safety planning, daily safety briefings, and observance of safety practices would minimize or eliminate the safety risks associated with construction in the construction zone.

It is also expected that the general public would be protected by appropriate notices, signage, and access limitations. FPL must comply with the standards of the National Electrical Safety Code, as required by the Public Service Commission, in Section 25-6.0345, F.A.C., in the construction of transmission and distribution facilities. The Florida legislature has determined that the standards prescribed by the National Electrical Safety Code constitute "acceptable and adequate requirements for the protection of the safety of the public, and compliance with the minimum requirements of the code shall constitute good engineering practice by the utilities." When in operation, the prospective subsequent FPL facilities will comply in all respects with the National Electrical Safety Code standards.

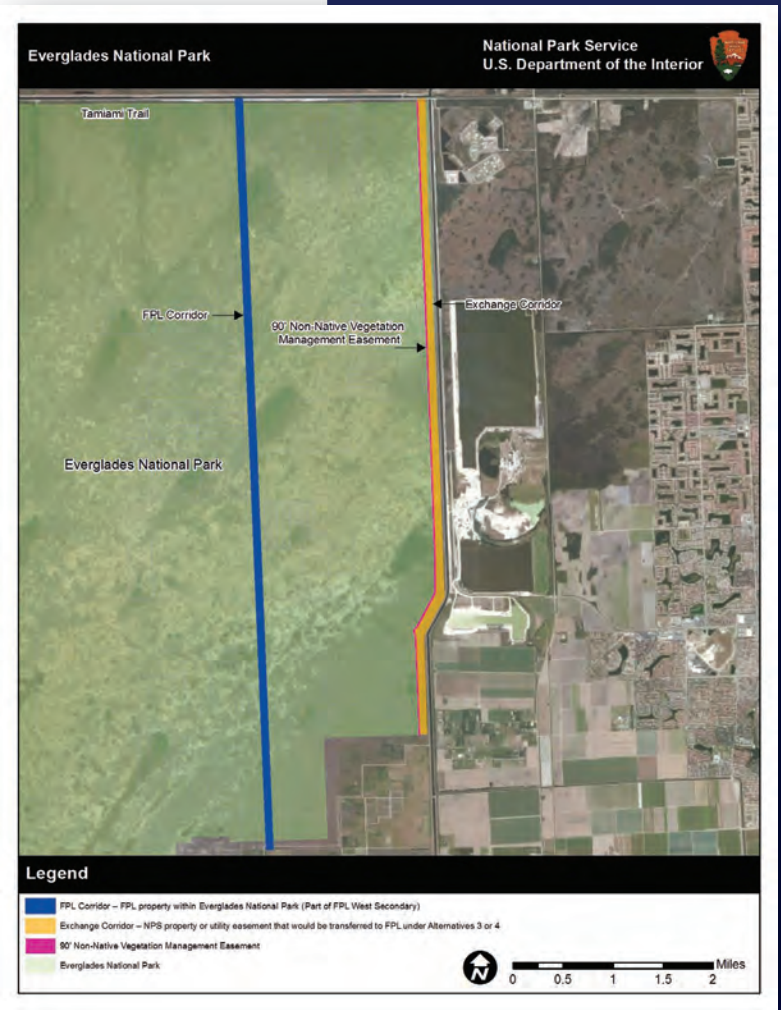
FPL standards require that fences and gates within a transmission line be grounded to mitigate shock hazards. FPL would provide this grounding as part of its construction activities.

Fixed-wing aircraft and helicopters are both used to conduct operations within the EEEA such as inventory and monitoring activities, search and rescue missions, and fire management. These flights would frequently occur in the vicinity of any transmission lines constructed in that area; however, the presence of the lines would be known and identified during pre-flight preparation, similar to precautions taken for other above-ground utility lines in the area surrounding the park boundary. Hazards related to this would be minimized through careful planning of flight activities in the vicinity of any transmission lines, and identification of transmission lines as potential flight hazards on aviation charts and with lighting, as necessary in accordance with FAA guidelines.

Therefore, the topic of health and safety was not carried forward for detailed analysis.

Natural or Depletable Resource Requirements and Conservation Potential—The NPS uses sustainable practices to minimize the short- and long-term environmental impacts of development and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically-responsible materials and techniques. This topic was dismissed because project impacts are addressed specifically under hydrology, vegetation and wetlands, wildlife, and special-status species.

Prime Farmland—Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Unique agricultural land is land other than prime farmland that is used for production of specific high-value food and fiber crops. Both categories require that the land is available for farming uses. Land within the park is not available for farming and therefore does not meet the definitions. The agricultural lands outside the park in the West Consensus Corridor are not classified as prime farmland by the Natural Resources Conservation Service (NRCS 2013). One soil unit in the area outside the park is classified as "farmland of unique importance," and impacts to this soil are addressed in the soils section of the EIS.



CHAPTER 2
Alternatives

CHAPTER 2: ALTERNATIVES

INTRODUCTION

Chapter 2 describes the range of alternatives that meet the National Park Service (NPS) purpose and need for the project. As described in chapter 1, the purpose of the federal action is to acquire Florida Power & Light Company (FPL) property, or sufficient interest in this property, within the East Everglades Expansion Area (EEEA). This action by the NPS is needed to facilitate the hydrologic and ecologic restoration of Everglades National Park and the Everglades ecosystem. This chapter includes a summary of the alternatives development process and a description of each alternative for acquisition of the existing FPL land within the park.

This chapter also discusses alternatives for acquisition of the FPL property that were considered, but eliminated from further consideration, and addresses selection of a preferred alternative and environmentally preferable alternative. Finally, this chapter includes a table that summarizes the main features or components of each alternative (table 1); a table that summarizes the effectiveness of each alternative in meeting project objectives, which are listed in chapter 1 (table 2); and a table that summarizes the impacts of the alternatives on the natural and human environment (table 3), which are discussed in detail in chapter 4.

ALTERNATIVES DEVELOPMENT PROCESS

The National Environmental Policy Act (NEPA) implementing regulations provide guidance on the consideration of alternatives in an environmental impact statement (EIS). These regulations require federal agencies to consider the environmental effects of the proposed action and a range of alternatives (40 CFR 1502.14). The range of alternatives includes reasonable alternatives that must be rigorously and objectively explored, as well as other alternatives that are eliminated from detailed study. To be "reasonable" an alternative must meet the stated purpose of and need for the project and must be technically and economically feasible.

The alternatives were developed based on an understanding of the purpose, need, and objectives for acquiring FPL property, as well as input from FPL, the public, and government agencies obtained during the scoping phase for the environmental assessment (EA) in 2009 and this EIS in 2011. NPS staff (resource managers from the park, Naples Lands Acquisition Office, Southeast Regional Office, and Washington Office) and U.S. Department of the Interior (DOI) staff (from the Solicitor's office and Assistant Secretary for Fish and Wildlife and Parks) defined the range of alternatives based on the objectives of this EIS, congressional legislation, and scoping input.

The alternatives were developed based on an understanding of the purpose, need, and objectives for acquiring FPL property, as well as input from FPL, the public, and government agencies obtained during the scoping phase for the EA in 2009 and this EIS in 2011.

RELATIONSHIP BETWEEN NPS ACQUISITION ALTERNATIVES AND TRANSMISSION LINE CONSTRUCTION SCENARIOS

As described in chapter 1, this EIS addresses potential impacts on the natural and human environment that may result from the acquisition of FPL land in the park and the indirect impacts that could result from the

subsequent construction and operation of transmission lines that could be built either inside or outside the park as a result of the NPS action taken. Although the NPS does not have responsibility to choose or authorize where FPL builds transmission lines, it is reasonably foreseeable that FPL will build transmission lines, as indicated by the state site certification process. Each of the possible actions NPS could select with respect to acquisition of the FPL corridor within the park (alternatives), has several possible options (scenarios) where the FPL transmission lines may ultimately be constructed.

Below are the alternatives and possible transmission line construction scenarios discussed in this chapter.

Although the NPS does not have responsibility to choose or authorize where FPL builds transmission lines, it is reasonably foreseeable that FPL will build transmission lines, as indicated by the ongoing state site certification process.

ALTERNATIVES

1a: No NPS Action – No FPL Construction (NPS takes no action, FPL neither builds transmission lines nor provides flowage easement on their lands)

For impact comparison purposes, this alternative is the environmental baseline to which all others are compared.

1b: No NPS Action – FPL Construction in the Park (NPS takes no action, FPL builds transmission lines in the park but does not provide NPS with flowage easement)

2: NPS Acquisition of FPL Land

3: Fee for Fee Land Exchange

4: Easement for Fee Land Exchange

5: Perpetual Flowage Easement on FPL Property

TRANSMISSION LINE CONSTRUCTION SCENARIOS

a: No construction

b: Construction on the existing FPL corridor through the park (FPL West Secondary Corridor)

c: Construction on the exchange corridor at the edge of the park (FPL West Preferred Corridor)

d: Construction on a corridor outside of the park (FPL and MDLPA West Consensus Corridor and FPL West Preferred Corridor)

These transmission line construction scenarios depend in part on the alternative that is selected by the NPS regarding the land acquisition, but also on factors that are beyond the control of the NPS. Even though these outcomes are not part of the alternative selected by the NPS, they have been considered in this EIS because they represent the range of indirect impacts that could ultimately result from the action taken by the NPS. Some of the alternatives could result in multiple scenarios, and some of the scenarios could occur under multiple alternatives. For the sake of clarity, the NPS decided not to repeat the description and analysis of every one of the possible scenarios if it is already described under another alternative.

The scenario of no construction is analyzed under alternative 1a, and serves as the environmental baseline. The scenario of construction on the existing FPL corridor through the park is analyzed under alternative 1b, as a possible (albeit unlikely) result of NPS taking no action. The scenario of construction on the exchange corridor at the eastern edge of the park is analyzed under alternatives 3 and 4 (and differs

slightly between the two alternatives, due to the different terms and conditions under those two alternatives). Alternative 5 analyzes a different (and probably also unlikely) version of the scenario that includes construction through the park, under which FPL would construct transmission lines while providing NPS with a flowage easement.

Although other possible scenarios could result under some alternatives, these scenarios are not described further in this document. For example, "no construction" might also result under alternatives 2, 3, 4, and 5 (in which case impacts would be the same as described in alternative 1a). Similarly, construction on a corridor outside the park could result under alternatives 1, 3, 4, and 5 (in which case impacts would be the same as described in alternative 2). It was determined that removing these duplicative analyses would simplify the way the information is presented, and therefore improve the readability of the EIS.

NPS consideration of any transmission line construction scenarios in this EIS is not an admission or acknowledgement by the NPS or the U.S. Army Corps of Engineers (USACE) that use of these properties as a transmission corridor is permissible or suitable because FPL has not completed the USACE Clean Water Act (CWA) Section 404 permitting process for its proposed western transmission lines. The following sections describe the no-action and action alternatives, together with their associated construction scenarios. The impacts of the alternatives, and their respective construction scenarios, are described in chapter 4.

ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION

Under alternative 1a, the NPS would not take action to acquire FPL property within the park or a flowage easement on it. There would be no change in the status of the 7.4-mile-long corridor containing 320 acres of FPL lands in the park, and the NPS would retain ownership of lands being considered for exchange. Figure 5 shows the location of the FPL corridor within the boundary of Everglades National Park. The NPS and USACE would continue to lack a perpetual flowage easement on FPL's entire property in the EEEA necessary to implement higher water levels from ecosystem restoration projects.

Under alternative 1a, the NPS would not take action to acquire FPL property within the park. FPL would not construct transmission lines on its existing land in the park, in the exchange corridor, or in any area outside the park.

Transmission Line Construction Scenario

For the purposes of analysis of impacts in chapter 4, this alternative assumes that FPL would not construct transmission lines on its existing land in the park, in the exchange corridor, or in any area outside the park. This alternative could result if other necessary permits are denied by regulatory agencies or if FPL chooses not to build transmission lines. This alternative is included to represent a *status quo* baseline for NEPA purposes. The impacts of constructing transmission lines, as analyzed in other alternatives, will be compared to this baseline.

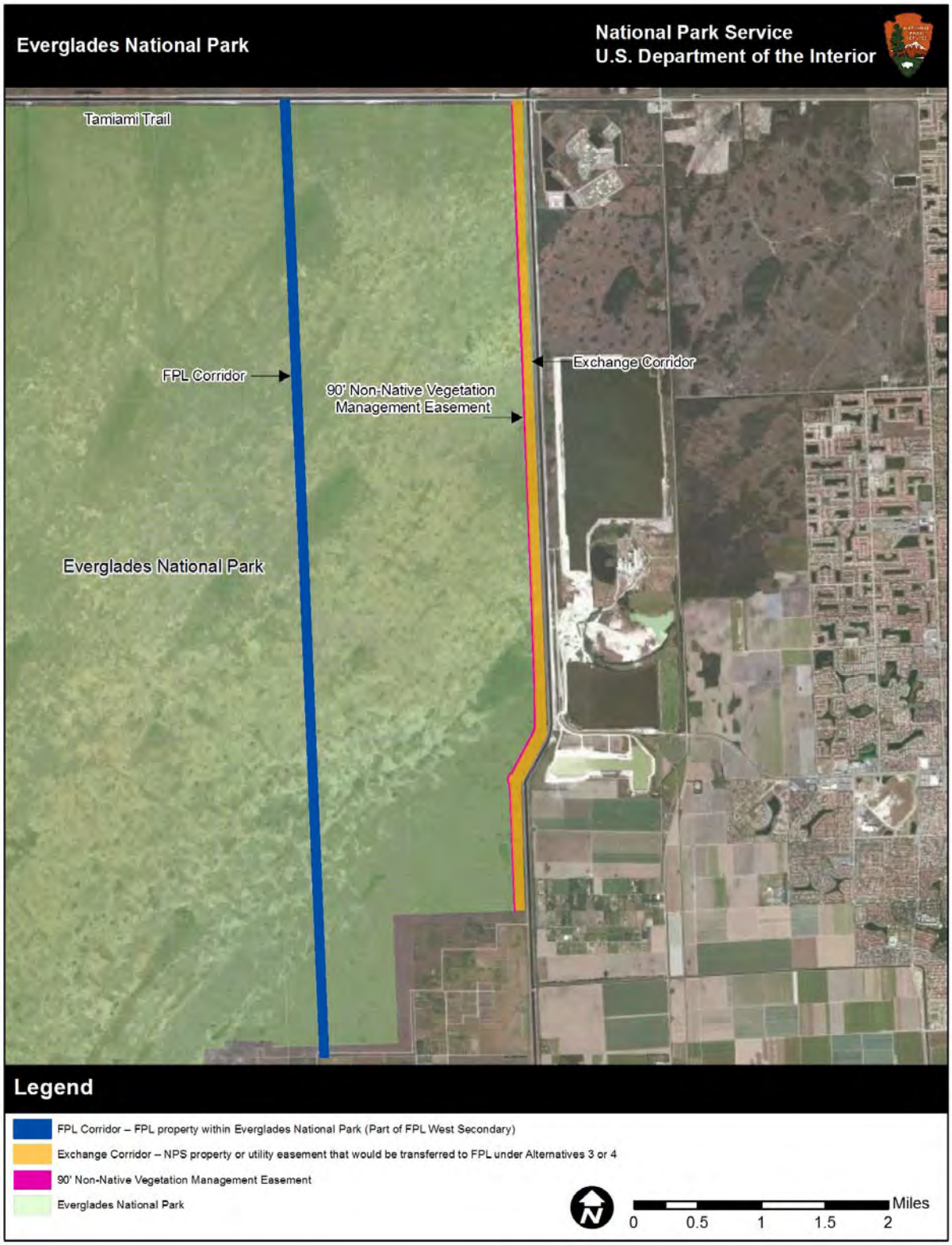


FIGURE 5: EVERGLADES NATIONAL PARK SHOWING VARIOUS CORRIDORS AND AREAS ADDRESSED IN ALTERNATIVES 1–5

ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Under this alternative, the NPS would not take action to acquire FPL property within the park or a flowage easement on it. With respect to the NPS management option selected, it is thus the same as alternative 1a.

Transmission Line Construction Scenario

This alternative differs from alternative 1a, however, because it assumes that FPL would construct transmission lines on its existing land in the park and therefore, the impacts would be very different. Although it represents the same management option, this alternative is included because it is a potential but uncertain outcome if NPS takes no action and allows for the analysis of the impacts of such construction, should FPL be able to secure all federal, state, and local permits necessary to construct these lines in this location (in the FPL West Secondary Corridor; see figure 5). Based on FPL's withdrawal of the West Secondary Corridor from its application for site certification and from its application for a Section 404 permit, this scenario is less likely than before; however it is included to provide a full range of alternatives and assessment of impacts.

Under alternative 1b, the NPS would not take action to acquire FPL property within the park but FPL would proceed to construct two 500-kV lines and one 230-kV transmission line within the park boundary.

Under alternative 1b, FPL would proceed to construct two 500-kilovolt (kV) lines and one 230-kV transmission line within the park boundary in this corridor, approximately 7.4 miles long. The characteristics of the transmission infrastructure and construction methods would be as described in FPL's Site Certification Application (SCA), summarized in appendix F, and would include associated federal, state, and local permit requirements. The NPS would not be able to increase water levels on this property to achieve its long-term restoration objectives because it would not have acquired the right or interest to do so. Alternative 1b was developed for the purposes of analyzing this scenario.

ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Under alternative 2, the FPL property (7.4-mile-long FPL corridor containing 320 acres of FPL lands) would be acquired directly by purchase or through the exercise of eminent domain authority by the United States. This alternative would result in an increase of 320 acres of NPS-owned land within the park. Figure 5 shows the FPL corridor that would be acquired by the NPS under this alternative.

Alternative 2 would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park. FPL would likely acquire a replacement corridor east of the existing park boundary to meet transmission needs.

Transmission Line Construction Scenario

For the purposes of analysis of impacts in chapter 4, the construction scenario associated with this alternative assumes that FPL would likely acquire a replacement corridor east of the existing park boundary to meet its transmission needs because the NPS alternative selected would leave FPL without a transmission corridor through the park. Figure 4 in chapter 1 shows the FPL and MDLPA West Consensus Corridor, which represents an area of highest potential where FPL would seek to build transmission lines outside the park based on the May 2014 Final Order of Certification. Beginning at a point approximately 6 miles south of Tamiami Trail and looking southward,

there is a 0.35-mile segment of the FPL West Preferred Corridor where this scenario assumes FPL would be able to construct transmission lines on lands within the FPL West Preferred Corridor to the east of the park boundary. In this scenario, FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on lands FPL would likely acquire somewhere within this area east of the park. FPL would proceed to construct two 500-kV lines and one 230-kV transmission line in this corridor. It is assumed that the characteristics of the transmission infrastructure and construction methods would be as described in the SCA in appendix F. The impact analysis for alternative 2 assumes FPL is able to build entirely outside of the park on lands within the FPL West Consensus and West Preferred Corridors.

ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Alternative 3 would result in a net gain of 60 acres of federally owned park land. FPL would proceed to construct two 500-kV lines and one 230-kV transmission line in the FPL West Preferred Corridor.

This alternative has been revised since release of the draft EIS based on the completion of the site certification process described in chapter 1 and meetings with FPL to refine this alternative further. Under the revised alternative 3, the NPS would acquire fee title to the FPL property (7.4-mile-long corridor containing 320 acres of FPL lands) through an exchange for park property, as authorized by the exchange legislation. NPS land conveyed to FPL would consist of 260 acres along 6.5 miles of the eastern boundary of the EEEA. For the purposes of this alternative, the values of the land involved in the land exchange under consideration are considered equal in accordance with Section 7107(b)(2)(C) of the Omnibus Public Land Management Act of 2009. The NPS would no longer own or have control over the 260-acre exchange corridor; lands currently within Everglades National Park would become FPL property once the land exchange was completed. This alternative would result in a 260-acre decrease in lands within the authorized boundary on the east side of the park, and an increase of 320 acres of federally owned land within the authorized boundary (the former FPL corridor), for a net gain of 60 acres of federally owned park land. The NPS would also convey a 90-foot-wide perpetual nonnative vegetation management easement to FPL adjacent to the entire length of the 6.5-mile exchange corridor. This easement would be for the purposes of removing fire-prone exotics which pose a fire risk to FPL's facilities, including but not limited to melaleuca and Australian pine, in accordance with the FPL's Vegetation Management Program. Figure 5 depicts the proposed exchange corridor and the FPL corridor within the park. Figure 6 is a larger scale depiction of the contiguous nonnative vegetation management easement next to the exchange corridor (land that would be subject to the land exchange with FPL), and the outer boundaries of the entire FPL West Preferred Corridor.

The primary revision in this alternative from the draft EIS to the final EIS is related to updated transmission line siting requirements included in the state site certification process that were not available in time for the draft EIS. As described in chapter 1, in accordance with the final order, FPL must pursue the use of the West Consensus Corridor as the primary corridor in the west for the transmission lines associated with the Turkey Point Power Plant Units 6 and 7 project and avoid siting any transmission lines in the park. The FPL West Preferred Corridor would only be used for placement of FPL western transmission lines in the event that an adequate right-of-way within the FPL West Consensus Corridor cannot be secured in a timely manner and at a reasonable cost. FPL's success in acquiring interests and developing the West Consensus Corridor would minimize or eliminate the amount of property in the exchange corridor required for the western transmission lines. This information was not available in time to inform the draft EIS, and the requirement and commitment by FPL to avoid siting any transmission lines in the park was important in developing a revised fee for fee acquisition alternative.

FIGURE 6: PORTION OF EXCHANGE CORRIDOR SHOWING THE CONTIGUOUS VEGETATION MANAGEMENT EASEMENT

The NPS and FPL still propose to exchange lands as originally described in the draft EIS. However, one of the key changes in this alternative from the draft EIS to final EIS is a commitment that FPL shall reconvey to the NPS any and all acreage in the FPL West Preferred Corridor determined through the execution of the final order and its conditions of certification, to be unneeded by FPL to build transmission lines. In this instance, after completing the process described below, FPL would return to the NPS land in the FPL West Preferred Corridor that it would no longer need to complete the transmission line requirements. Compensation to FPL for the reconveyance of any lands would come as fair market value wetland mitigation credits from the Hole-in-the-Donut wetland mitigation program. The park boundary would be adjusted after the reconveyance is complete to reflect final land ownership between FPL and NPS. This commitment would be identified in a binding exchange agreement between the two parties.

For the purposes of completing development of the western transmission lines, FPL would adhere to the West Consensus Corridor development activities and timelines described in the final order and the terms and conditions of the August 30, 2013, agreement between FPL and the MDLPA regarding the West Consensus Corridor. Through this process, FPL would identify the final transmission line alignment and determine the portions of the exchange corridor or adjacent vegetation management easement (surplus exchange property) not required to support the western transmission lines associated with the Turkey Point Power Plant Units 6 and 7 project and reconvey in fee simple to the United States all of its rights, title, and interest in the surplus exchange property. Any easement property would be automatically extinguished wherever and whenever adjacent lands in the FPL West Preferred Corridor are no longer owned or controlled (under lease) by FPL.

The final order established an expected sequence of events as well as a process to document compliance with the final order for the purposes of pursuing the West Consensus Corridor. The NPS would participate in the review of FPL submittals that demonstrate the good faith that FPL would exercise to fulfill the sequence of events and compliance with state and local regulatory requirements related to the acquisition of interests within the West Consensus Corridor. These submittals to NPS would provide NPS additional opportunities to ensure that the minimum necessary lands within the park are used for the construction and operation of transmission lines within the West Consensus Corridor.

The fee for fee land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. The purpose of the agreement would be to ensure that any electric transmission lines or other utility-related facilities (such as pipelines and communications facilities) that may be built on the property to be conveyed to FPL are designed, constructed, and operated to avoid or minimize impacts on park resources, to the maximum extent practicable, including, but not limited to hydrology, wetlands, flora and fauna (including threatened and endangered species), cultural resources, tree islands, wilderness character, visitor experiences, and viewshed and visual aesthetics. An essential condition for this exchange is that the lands conveyed to FPL would be subject to a perpetual flowage easement. FPL would be required to allow the United States the perpetual right, power, and privilege to flood and submerge the property consistent with hydrologic restoration requirements.

The terms and conditions are an integral component of this alternative and are intended to address NPS requirements and the requirements of the exchange legislation. NPS and DOI staff developed draft terms and conditions in consultation with FPL, South Florida Water Management District (SFWMD), and Miami-Dade County staff on their technical feasibility. They are not intended to alter the conditions and requirements of any other applicable local, state, or federal law or regulation. It is not the intent of the NPS to address or modify the applicable certification or permit requirements of local, state, or other federal agencies. NPS would seek to be consistent with known requirements of other agencies. NPS anticipates that the final terms and conditions would be included in the Record of Decision (ROD) that is

signed concluding the NEPA process for this project. If the final negotiated terms and conditions are significantly different than those included in the ROD, additional NEPA analysis may be required. Updated terms and conditions for alternative 3 are provided in appendix G.

Transmission Line Construction Scenario

For the purposes of analysis of impacts in chapter 4, the construction scenario associated with this alternative assumes that FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on lands FPL acquired by exchange (in the FPL West Preferred Corridor; see figure 5). In this instance, FPL would be unsuccessful in acquiring adequate right of way within the West Consensus Corridor and would pursue full construction of transmission lines in the FPL West Preferred Corridor as a back-up as described in the final order. FPL would proceed to construct two 500-kV lines and one 230-kV transmission line in this corridor. The characteristics of the transmission infrastructure and construction methods would be as described in the SCA, summarized in appendix F, and associated federal, state, and local permit requirements, and also as stipulated in the fee for fee terms and conditions that include additional requirements developed by the NPS for environmental protection (see appendix G). The construction scenario for alternative 3 assumes transmission line construction on the entire 6.5-mile corridor within the park. The NPS views this transmission line construction scenario as the worst-case impact scenario associated with this alternative.

Since the West Consensus Corridor was certified as the primary corridor for the west transmission lines, FPL will be pursuing the development and property rights interests in this corridor upon receipt of a final non-appealable order. If FPL is successful in pursuing the West Consensus Corridor, it is possible that a large portion of the west transmission line would be built to the east of the park. In that case, some portion within the exchange corridor would be reconveyed to the NPS with no construction of transmission lines occurring on the reconveyed corridor. In areas where the transmission lines are located outside the park, the impacts from construction of transmission lines would likely be less than described under alternative 3 and more similar to the impacts described for alternative 2.

ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Alternative 4 would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park. Transmission line construction would be the same as alternative 3, except that NPS would retain ownership of the FPL Utility Easement Area.

Under alternative 4, the NPS would acquire fee title to the FPL property (7.4-mile-long corridor containing 320 acres of FPL lands) through an exchange for an easement on NPS property. The NPS would grant an easement to FPL on 260 acres of park land (hereafter called FPL Utility Easement Area for this alternative) along 6.5 miles of the eastern boundary of the EEEA for potential construction of transmission lines, in accordance with the terms and conditions developed for this “easement for fee” exchange. Although the exchange corridor involved in this alternative is the same as that under alternative 3, under this easement for fee exchange, NPS would retain ownership of the corridor and would continue to have control over the 260-acre exchange corridor. This alternative would result in an increase of 320 acres of NPS-owned land within the authorized boundary of the park (the former FPL corridor). The NPS would no longer have the unencumbered use of the FPL Utility Easement Area, which would potentially contain transmission lines, but would retain the right to carry out all other management activities as needed in this area. The NPS would also convey a 90-foot-wide perpetual easement to FPL adjacent to the entire length of the 6.5-mile exchange corridor to conduct nonnative vegetation management. Figure 5 depicts the proposed land exchange corridor and the contiguous nonnative vegetation management easement, as well as the FPL corridor within the park. Figure 6 is a larger scale

depiction of the nonnative vegetation management corridor, the exchange corridor, and the entire FPL West Preferred Corridor.

The easement for fee land exchange would be subject to terms and conditions that are to be agreed upon between NPS and FPL and incorporated into a binding exchange agreement. The purpose of the agreement would be to ensure that any power transmission lines and infrastructure on the FPL Utility Easement Area are designed, constructed, and operated to avoid, or minimize impacts on park resources, to the maximum extent practicable, including but not limited to, hydrology, wetlands, flora and fauna (including threatened and endangered species), cultural resources, tree islands, wilderness character, visitor experiences, and viewshed and visual aesthetics.

Similar to alternative 3, an essential condition for this exchange is that the FPL Utility Easement Area would be subject to a perpetual flowage easement. The United States would retain the perpetual right, power, and privilege to flood and submerge the property consistent with hydrologic restoration requirements.

The proposed terms and conditions are an integral component of this alternative and are intended to address NPS requirements. NPS and DOI staff developed draft terms and conditions in consultation with FPL, SFWMD, and Miami-Dade County staff on their technical feasibility. They are not intended to alter the conditions and requirements of any other applicable local, state, or federal law or regulation. It is not the intent of the NPS to address or modify the applicable certification or permit requirements of local, state, or other federal agencies. The NPS would seek to be consistent with known requirements of other agencies. The NPS anticipates that the final terms and conditions would be negotiated with FPL after the ROD is signed concluding the NEPA process for this project. If the final negotiated terms and conditions are significantly different than those included in the ROD, additional NEPA analysis may be required. The draft terms and conditions for alternative 4 are provided in appendix H.

Transmission Line Construction Scenario

For the purposes of analysis of impacts in chapter 4, the construction scenario associated with this alternative would be the same as the one for alternative 3, except that NPS would retain ownership of the FPL Utility Easement Area. This alternative assumes that FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on lands FPL acquired by exchange (in the FPL West Preferred Corridor; see figure 5). However, FPL’s long-term use of the area would follow the slightly different easement for fee terms and conditions that include additional requirements developed by the NPS for environmental protection (appendix H).

ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Under this alternative, the NPS would acquire a perpetual flowage easement on FPL's property within the EEEA through purchase, condemnation, or donation by FPL. FPL would retain ownership of its 7.4-mile-long corridor in the park during the term of the easement and could seek to site transmission lines there. The flowage easement would include the entire FPL property from Tamiami Trail to the 8.5-square-mile area, and the flowage allowed under this easement would allow sufficient water flow over this area to support ecosystem restoration projects. The NPS would retain the current goal of acquiring this property over the long term.

Under alternative 5, the NPS would acquire a perpetual flowage easement on FPL's property. FPL would proceed to construct two 500-kV lines and one 230-kV transmission line within the park boundary.

Transmission Line Construction Scenario

For the purposes of analysis of impacts in chapter 4, the construction scenario associated with this alternative would be the same as the one for alternative 1b (FPL construction on its existing land in the park), except that NPS would acquire a long-term, perpetual flowage easement that provides sufficient flowage for completion of Everglades restoration projects. FPL would be able to secure all federal, state, and local permits necessary to construct transmission lines, associated fill pads, and access roads on its existing property within the park (in the FPL West Secondary Corridor; see figure 5). However, the NPS would be able to increase water levels on this property including over the area that is used for construction of the transmission lines to achieve its long-term restoration objectives. Based on FPL's withdrawal of the FPL West Secondary Corridor from its application for site certification and from its application for a Section 404 permit, this scenario is less likely than before; however it is included to provide an assessment of impacts of this potential outcome.

COST

The FPL property located within Everglades National Park is part of the FPL West Secondary Corridor currently under review in the state's site certification process and the USACE dredge and fill permit process described in chapter 1. Because the state and federal permitting processes will not be completed until 2014 or later, estimating the current cost of acquiring FPL's property within the park is difficult and uncertain. A final determination of cost would be obtained once the NPS selects an acquisition alternative in the final EIS and ROD. Costs could vary considerably, depending on the acquisition alternative selected and how the FPL property is valued. Specific to the action alternatives, the following additional cost information is provided:

Alternative 2: NPS Acquisition of FPL Land

If the FPL property were to be directly acquired, the value of the property would depend on many factors. These include current sales of similar property, the appraiser's determination of highest and best use, and the status of the property as determined in the State and Federal permitting processes. The result could range from the value of vacant, undeveloped land to the value of a fully entitled utility corridor. Since the FPL property is part of a larger parcel which consists of the entire 39-mile linear corridor running from the Turkey Point Power Plant on the south to the Levee substation on the north, the estimate for a direct purchase could be based on a diminution in value of the larger corridor, which could result from the severance of the 7.4-mile portion within the EEEA. Because of these uncertainties, it is estimated that the cost of acquisition could approach one hundred million dollars. If FPL and NPS were unable to agree on

just compensation for acquisition, then NPS could pursue initiation of a condemnation action. The value of the FPL property would then be determined in federal court proceedings after the opportunity for a trial on the issue. If the determination of just compensation were to exceed funds available for acquisition, an additional appropriation would have to be obtained.

Alternative 3: Fee for Fee Land Exchange

For the fee for fee exchange, values of each property would be equal or equalized according to the authorizing legislation. See Public Law (P.L.) 111-11. Estimated values would be determined through appraisals which would consider the final conditional requirements contained in an agreement for exchange. In the event that the final appraised value of the FPL lands exceeds the final appraised value of the NPS lands, the values may be equalized by donation, payment using donated or appropriated funds, or the conveyance of additional parcels of land to FPL.

In the event that such final appraisals determine that the value of NPS lands exceeds the value of FPL lands, there will be no equalization payment since such values would be construed as equal in accordance with P.L. 111-11. Given the requirement that FPL shall reconvey to the NPS any and all acreage in the exchange corridor determined through the execution of the final order and its conditions of certification, any lands determined to be unneeded to build transmission lines would be returned to the NPS. Compensation to FPL for the reconveyance of any lands would come as agreed upon wetland mitigation credits from the Hole-in-the-Donut wetland mitigation program.

Alternative 4: Easement for Fee Land Exchange

The cost to the federal government of a fee for easement exchange would be based on whether the appraised value of the FPL lands exceeds the appraised value of the easement to be conveyed to FPL on NPS lands. These values would be determined through appraisals which would consider the final conditional requirements contained in an agreement for exchange.

Alternative 5: Perpetual Flowage Easement on FPL Property

Just compensation for acquisition of a perpetual flowage easement on FPL’s property has not been estimated. NPS anticipates that just compensation for the acquisition of a flowage easement would be less costly than fee-simple acquisition (as described under alternative 2). FPL would retain an ownership interest in its land. FPL would retain the right to seek state and federal permits for transmission lines on its property.

ALTERNATIVES OR ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED

Comments received from the public during scoping recommended that the NPS seek to acquire FPL’s property in the expansion area though a donation. The park superintendent subsequently discussed this option with FPL representatives. This alternative was determined to be infeasible because FPL is not willing to donate its property to the NPS.

CONSISTENCY WITH SECTIONS 101 (B) AND 102(1) OF THE NATIONAL ENVIRONMENTAL POLICY ACT

NEPA requires an analysis of how each alternative meets or achieves the purposes of the act (Section 101(b)). Each alternative analyzed in a NEPA document must be assessed as to how it meets the following purposes:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (42 USC 4331).

The following provides a comparative description of how the alternatives, considering both direct and associated indirect impacts, would or would not achieve these purposes.

Purpose 1: Everglades National Park is a unit of the national park system. As the trustee of the land, the NPS would continue to fulfill its obligation as trustee of the area for future generations. Alternatives 1a, 1b, and 5 (perpetual flowage easement) would not support this purpose well, because these alternatives would allow for the continued presence of the FPL-owned corridor in the EEEA, with the possibility of future use by FPL. Alternative 1a assumes for analytical purposes that FPL would not build in the corridor or elsewhere, but that scenario may be unlikely, and in any event NPS's lack of control and uncertainty would not help achieve this purpose. Alternatives 2 through 4 would bring the FPL corridor under NPS protection. However, alternatives 3 and 4 (land exchanges) would result in NPS not owning or having complete control over the corridor at the eastern edge of the EEEA, which would slightly diminish the achievement of this purpose. Under alternative 3, FPL could reconvey a portion of the corridor back to the NPS, allowing NPS to regain ownership of the land. Alternative 2 would best meet this purpose, because it would result in removal of the FPL corridor from the park and there would be no construction on or immediately adjacent to the park. All of the action alternatives would create conditions that would allow the enhancement of the Northeast Shark River Slough (NESRS) and Everglades National Park and increased potential ecological connectivity, but the anticipated increase to environmental protection increases with NPS ownership of all lands currently in its domain and the absence of any connected transmission line impacts in the park.

Purpose 2: The alternatives would meet this purpose similar to the way they meet Purpose 1, based on the difference in NPS ownership of the land in the park and the presence of the transmission lines. For alternatives 1b and 5, the presence of a transmission line corridor in the middle of the EEEA and the park would not contribute to a productive or aesthetically pleasing surrounding. There would also be some concerns about safety since the corridor would not be under NPS control. Alternative 5 would ensure that sufficient flowage was present to proceed with Everglades restoration projects, which contribute to productive and aesthetically pleasing surroundings, but the indirect effects of a transmission line would

detract from those benefits. Alternatives 2 through 4 would allow for the NPS to ensure safe, healthful, productive, and pleasing environment within its boundary by having the NPS gain control over the FPL corridor. The most benefits related to this purpose would arise from acquisition without any land exchange (alternative 2). Although alternatives 4 and 5 would have benefits obtained from the acquisition of the FPL corridor, the indirect effects of transmission line construction in or along the eastern border of the park would decrease the ability to meet this purpose. However, moving the potential for future transmission line construction to the edge of the park, rather than having this indirect effect in the middle of the park, would help to ensure safer and aesthetically pleasing surroundings within the main body of the EEEA and the park.

Purpose 3: Similar to purpose 2, alternatives 1b and 5 would not totally meet this purpose, since an indirect effect could involve the presence of a transmission line in the middle of the EEEA. If the transmission line were developed, this would attain a wide range of beneficial uses (assuming that the transmission of power is considered a beneficial land use as it serves an important purpose), but there would be degradation and some risk to health and safety, and other undesirable consequences. The acquisition alternative (alternative 2) could lead to the construction of transmission lines outside the park, thereby eliminating degradation to park resources and values, and allowing for a wide range of beneficial uses of the environment for power transmission in an area where resources are not as pristine or undisturbed as in the park. All of the action alternatives would result in some environmental degradation (e.g., permanent impacts on soils, wetlands, and habitats of wildlife and special status species). Alternatives 1b and 5 would allow for continued FPL presence in the park and cannot proceed without environmental degradation; alternative 1b would not allow for flowage that is essential for attaining a wide range of beneficial uses in the EEEA. Alternatives 3 and 4 would include a wide range of beneficial uses of the environment, but with environmental degradation due to the construction of the transmission lines. However, these alternatives have terms and conditions that limit or reduce that degradation and other unintended consequences. Under alternative 3, FPL would construct transmission lines outside of the park to the maximum extent possible, limiting the environmental degradation from construction within the park.

Purpose 4: All of the alternatives would provide for protection of cultural and historic aspects of the area because of surveys that would be mandated or that have already been done. The exchange corridor under alternatives 3 and 4 has been surveyed and found not to contain cultural resources of concern, and there are terms and conditions relating to the construction in the exchange corridor that would limit impacts on cultural and natural resources. The indirect effects of alternatives 3, 4, and 5 would involve some level of adverse effects to natural aspects of the park's heritage, such as uninterrupted views across the marshland of the park, and the ability to escape highly urbanized areas without reminders of that landscape, and may limit some individual choices regarding visitor use in the areas of the transmission lines. Regarding individual choice, alternative 1a would allow for preservation of cultural and natural aspects, but would not necessarily allow for a variety of individual choices by all parties involved in this project because it may ultimately lead to the development of transmission lines that are an indirect consequence of the action taken by the NPS. Alternatives 1b and 5 would allow for more choices, but may not preserve all natural aspects of the environment if the indirect effects of transmission lines are adverse. Alternative 2 (the acquisition alternative) would best allow for the preservation of these aspects of the park's heritage both in the FPL corridor area and in the entire EEEA, but would limit individual choice about the location of the transmission lines on the private lands outside the park. The land exchange alternatives (3 and 4) would allow for preservation of these aspects of the park's heritage in the FPL corridor area, but would allow for less preservation at the edge of the EEEA. Under alternative 3, land unused by FPL would be reconveyed back to the park, allowing for continued land preservation.

Purpose 5: Alternative 1b would not lend itself to a balance between population and resource use, because it would allow for a continuing nonconforming use in the park and would not take action to

remedy that. All alternatives for land exchange (alternatives 3 and 4) aim to strike a balance between population and resource use by limiting impacts on park resources while allowing for a use important to the population of southern Florida by moving the construction of the transmission lines to the park boundary. Alternative 1a and the acquisition alternative (alternative 2) would provide protection for the park, but could be said to have limited benefits regarding a balance between population and resource use in the area of possible relocated corridor outside the park. Alternative 5 would strike a balance with its allowance for flowage needed for Everglades restoration projects, but still would include many indirect adverse effects related to the construction of a transmission line in the park.

Purpose 6: None of the alternatives directly addresses the recycling of depletable resources, although the indirect effect of building transmission lines would require fuels that are depletable, with little difference among the alternatives. Alternative 1a would have the least impact of all the alternatives and meet this purpose the best. All action alternatives involving acquisition or exchange would result in enhancing the quality of renewable natural resources in the park by allowing for NPS management and protection of the wetlands and wildlife of the EEEA, but alternative 3 would result in removal of the eastern corridor from NPS control initially, with the potential for FPL to reconvey unused lands back to the park. Alternative 4 would result in the use of the land for transmission lines and would not meet this purpose as well as alternative 2. Alternative 5 would allow for flowage to support the restoration projects and the renewable natural resources of the Everglades, but would have an indirect effect of transmission line construction that would detract from this benefit.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS, in accordance with DOI NEPA Regulations (43 CFR 46) and the Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, defines the environmentally preferable alternative as the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources" (43 CFR 46.30). Alternative 2, the direct acquisition alternative, was identified as the environmentally preferable alternative by the NPS. This determination was based on available scientific data compiled for the draft EIS and the comparative analysis of impacts of the various alternatives. An analysis of available data and relative impacts made it clear that alternative 2 best meets the requirements of the environmentally preferable alternative. Even with the reasonably foreseeable construction of transmission lines outside the park to the east associated with alternative 2, this alternative allows for the greatest degree of hydrologic and ecologic restoration of the park and Everglades ecosystem. Alternative 1a would not allow for acquisition of the existing FPL parcel within the EEEA, and therefore would not support the goals of restoring the NESRS and fulfilling the purposes of the Modified Water Deliveries (MWD) project and the Comprehensive Everglades Restoration Plan (CERP). All other alternatives (alternatives 1b, 3, 4, and 5) would result in construction of transmission lines within the EEEA boundary and would disrupt the hydrologic and ecologic restoration efforts within and around the park and/or cause adverse impacts on park resources and values.

NPS PREFERRED ALTERNATIVE

The Council on Environmental Quality (CEQ) regulations for implementing NEPA require that an agency identify its preferred alternative or alternatives in a draft EIS if one exists (1502.14(e)). The preferred alternative is the alternative "which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors" (Question 4a of the CEQ's "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (1981).

Having considered all available information including public comments on the draft EIS, and discussions with the utilities including property rights concerns, the NPS has identified its preferred alternative as alternative 3, the fee-for-fee land exchange alternative as described in this chapter with modifications from the draft EIS. Alternative 3 was identified as the preferred alternative for its ability to allow the park to achieve the majority of its restoration goals identified in the purpose and need of the EIS in a timely manner while considering relative costs to the government.

The identification of alternative 3 as the NPS preferred alternative is contingent on several assumptions, including the FPL's acceptance of mitigation measures identified in a final terms and conditions. In the event that an adequate right-of-way within the FPL West Consensus Corridor can be secured in a timely manner and at a reasonable cost, FPL shall reconvey all lands not necessary for construction of transmission lines in the FPL West Preferred Corridor to the NPS, reducing impacts to park resources and allowing for hydrologic projects in the region to move forward.

TABLE 1: SUMMARY OF THE ALTERNATIVES

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Action Taken by the NPS					
No action would be taken to acquire the FPL property (the 7.5-mile-long corridor) or a flowage easement on it within the boundary of the park.	No action would be taken to acquire the FPL property (the 7.5-mile-long corridor) within the boundary of the park or a flowage easement on it.	The FPL property within the boundary of the park would be acquired in fee.	The FPL property within the boundary of the park would be acquired in fee in exchange for giving FPL fee title ownership of the exchange corridor, and an adjacent 90 foot wide vegetation management easement.	The FPL property within the boundary of the park would be acquired in fee in exchange for giving FPL an easement for potential construction of transmission lines in the exchange corridor, and an adjacent 90 foot wide vegetation management easement.	The NPS would obtain a perpetual flowage easement over the FPL property within the boundary of the park that would allow for sufficient flow to support ecosystem restoration projects.
Terms and Conditions Linked to the Action					
None.	None.	None.	Terms and conditions would be established to protect park resources and values (see appendix G).	Terms and conditions would be established to protect park resources and values (see appendix H). NPS would retain approval rights for a number of FPL's stewardship plans for the FPL Utility Easement Area.	Terms would be incorporated in the perpetual flowage easement to ensure adequate flowage for resource protection.

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Gain or Loss of NPS Property within Everglades National Park					
None.	None.	NPS gain of 320 acres in the former FPL corridor location.	NPS gain of 320 acres in the former FPL corridor location, and a loss of 260 acres in the exchange corridor – net NPS gain of 60 acres. FPL would seek to construct outside of the park boundary as soon as technically feasible and would reconvey unused lands back to NPS, resulting in the potential for additional net acreage gained.	NPS gain of 320 acres in the former FPL corridor location; no loss of property in the exchange corridor, but loss of unencumbered use where transmission lines could be built.	None.
Flowage in the EEEA					
No long-term flowage easement over the FPL property would be executed. Result: no additional flowage would be allowed over the EEEA.	No long-term flowage easement over the FPL property would be executed. Result: no additional flowage would be allowed over the EEEA.	Long-term additional flowage could occur over the EEEA, because the NPS would own the land.	Lands conveyed to FPL would be subject to a perpetual flowage easement as a condition of the exchange. FPL would allow the United States the right to flood and submerge lands conveyed to FPL consistent with hydrologic restoration requirements.	The FPL Utility Easement Area would be subject to a perpetual flowage easement as a condition of the exchange. The United States would retain the right to flood and submerge this area consistent with hydrologic restoration requirements.	Perpetual flowage easement over the FPL property would allow the United States the right to flood and submerge this area consistent with hydrologic restoration requirements.

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Cost					
None.	None.	Uncertain. Cost to acquire could range from the value of vacant, undeveloped land to the value of a fully entitled utility corridor based on final appraisals. Since the FPL property is part of a larger utility corridor, it is estimated that the cost of acquisition could approach one hundred million dollars. If FPL and NPS could not agree on just compensation, a court would determine value.	Uncertain. Values of FPL property and NPS land would be equal or equalized per authorizing legislation (P.L. 111-11). The value of the FPL property could range from the value of vacant, undeveloped land to the value of a fully entitled utility corridor based on final appraisals. This is likely to be the lowest cost alternative.	Uncertain. The cost to the NPS would be based on whether the appraised value of the FPL lands exceeds the appraised value of the easement to be conveyed to FPL on NPS lands. This alternative is likely to cost more than alternative 3 but less than alternative 2.	Uncertain. Just compensation for acquisition of a perpetual flowage easement on FPL's property has not been estimated. NPS anticipates that just compensation for the acquisition of a flowage easement would be less costly than fee-simple acquisition (as described under alternative 2).

TABLE 2: ANALYSIS OF HOW THE ALTERNATIVES MEET PROJECT OBJECTIVES

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Objective: Ensure consistency with the Everglades National Park Protection and Expansion Act of 1989 (Expansion Act) and the 1991 Land Protection Plan (LPP) for the EEEA. This includes the following: • Increasing the level of protection of the outstanding natural values of the park and enhancing and restoring the ecological values, natural hydrologic conditions, and public enjoyment of such areas by adding the area commonly known as the NESRS and the East Everglades to the park (16 USC 410r-5), and • Assuring that the park is managed in a way that maintains the natural abundance, diversity, and ecological integrity of native plants and animals, as well as the behavior of native animals, as part of its ecosystem (16 USC 410r-5).					
Because no acquisition or land exchange would occur, protection of the NESRS and EEEA would not be increased. There would be no perpetual flowage easement, so the ability to complete Everglades restoration projects would be in jeopardy. Although this alternative assumes for analytical purposes that no transmission lines would be built in the park, in the exchange corridor, or in any area outside the park, that scenario appears to be unlikely. Continuation of FPL ownership means that there would be the possibility of a transmission line being built in the corridor, which would have adverse effects on park resources. This alternative does not meet the objective.	Because no acquisition or land exchange would occur, protection of the NESRS and EEEA would not be increased. There would be no perpetual flowage easement, so the ability to complete Everglades restoration projects would be in jeopardy. This alternative assumes that a transmission line would be built in the corridor, which would have adverse effects on park resources. This alternative does not meet the objective.	Acquisition would be consistent with direction provided by the Expansion Act and the 1991 LPP for the East Everglades Addition. It would increase the level of protection of the park's resources and values. This alternative would facilitate Everglades restoration efforts by removing an obstacle that prevents hydrologic restoration in NESRS. Restoration currently planned under the MWD project would result in ecological benefits across 109,000 acres of Everglades National Park. This alternative would also facilitate future restoration efforts including Tamiami Trail Next Steps, Central Everglades Planning Project (CEPP), and CERP, which may result	This alternative reduces potential impacts on NESRS by moving transmission line impacts on an area adjacent to more developed and less pristine areas east of the park. Protection of the NESRS and EEEA would be increased because this alternative provides for NPS ownership of the heart of the NESRS, which allows for flowage and restoration projects to occur. This alternative would facilitate Everglades restoration efforts by removing an obstacle that prevents hydrologic restoration in NESRS. Restoration currently planned under the MWD project would result in ecological benefits across 109,000 acres of Everglades National Park. This alternative would also facilitate future restoration efforts including Tamiami Trail Next Steps, CEPP, and	This alternative would have similar attributes with regard to this objective as alternative 3. With continued park ownership of the exchange corridor, there would be more assurance that that part of the EEEA could be managed in accordance with park goals, and development would be limited to transmission lines (no other utility uses, which are permitted in alternative 3). This alternative partially meets the objective.	Because there would be no acquisition of the FPL corridor within the boundary of the park, there would be no increased protection for the NESRS and EEEA with regard to ownership, but the flowage easement would allow the Everglades restoration projects to be completed. Continuation of FPL ownership with flowage permitted means that there is the possibility of transmission lines being built in the corridor, which would have adverse effects on park resources. Hydrological functions and values would be preserved with the flowage easement; however, if construction were to commence, there would be adverse impacts.

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		in benefits throughout much of the greater Everglades including nearly all of the freshwater wetlands in Everglades National Park, and extending into Florida Bay. This alternative fully meets the objective.	CERP, which may result in benefits throughout much of the greater Everglades including nearly all of the freshwater wetlands in Everglades National Park, and extending into Florida Bay. The land that is exchanged would be removed from park protection and could be used for transmission lines and other utility uses, and these impacts would occur immediately adjacent to the eastern edge of the park, so this alternative does not avoid all adverse impacts on ecological values of the park. Construction and operation of transmission lines, and possibly other utilities, in the exchange corridor would cause major adverse impacts to park resources and values that would be inconsistent with the Expansion Act and LPP, however these impacts would be reduced to the extent that construction could be conducted outside the park boundary. Wetlands of international importance would be filled for access roads and tower pads that would segment the exchange corridor and adjacent SFWMD wetlands from NESRS and disrupt		This alternative partially meets the objective.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
			sheetflow on those lands. Endangered wood storks could experience a population level decline due to habitat loss or degradation and the risk of mortality from line collisions or electrocutions. The presence of the transmission lines and other utilities would permanently degrade the scenic viewshed and visitor enjoyment of the EEEA. This alternative partially meets the objective.		
Objective: Ensure consistency with the Congressional intent of the Omnibus Public Land Management Act of 2009 such that the Secretary of the Interior consider the land exchange with specified terms and conditions and after appropriate environmental review of the impacts of the exchange.					
The NPS would consider a land exchange under this or any alternative. Since the Omnibus Act conveys discretion to the Secretary of the Interior in effecting a land exchange, this and all alternatives meet this objective by the letter of the act and by the preparation of this EIS.	See alternative 1.	See alternative 1.	See alternative 1.	See alternative 1.	See alternative 1.
Objective: Support and facilitate implementation of the MWD project, the Tamiami Trail Next Steps Project, and the CERP.					
No long-term flowage easement over the FPL property would be executed. The lack of flowage would not support and facilitate any restoration efforts within	No long-term flowage easement over the FPL property would be executed. The lack of flowage would not support and facilitate any restoration efforts within	Current FPL land would be acquired through fee purchase, and this acquisition was directed by Congress to meet the objectives of the MWD project to improve the	The land exchange would support restoration objectives for the EEEA and give the NPS the ability to accommodate enhanced flows associated with restoration projects, thus	Same as alternative 3.	The perpetual flowage easement would allow hydrologic functions to be restored in the EEEA, but would still allow a transmission line to be constructed within the

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
the EEEA and Shark River Slough (SRS). This alternative would not meet the objective.	the EEEA and SRS. This alternative would not meet the objective.	hydrologic conditions of the NESRS. The hydrologic functions of the acquired lands would be restored. The CERP is consistent with the MWD project. This alternative fully meets the objective.	providing ecosystem benefits in to 109,000 acres in NESRS. A perpetual flowage easement would be a condition of the exchange. FPL would grant the United States the right to allow for higher water levels consistent with restoration requirements. The flowage easement would help to meet the objectives of the MWD project to improve the hydrologic conditions of the NESRS. The removal of 260 acres of wetlands from the park and subsequent development of access roads and transmission lines would disconnect this area from NESRS and disrupt sheetflow in the exchange corridor and adjacent SFWMD wetlands. These impacts would impede restoration of hydrologic functions in the exchange corridor and adjacent SFWMD wetlands along the eastern edge of NESRS. These impacts would be inconsistent with the objectives of the MWD, Next Steps, and CERP projects. This alternative partially meets the objective.		EEEA. This alternative meets the objective to a large degree.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Objective: Support the timely acquisition of existing FPL property within the EEEA, or sufficient interest in this property, to allow for flooding of the area to facilitate restoration efforts within the park.					
The existing FPL property within the EEEA or sufficient interest would not be acquired. This alternative would not meet the objective.	The existing FPL property within the EEEA or sufficient interest would not be acquired. This alternative would not meet the objective.	The FPL property within the EEEA would be acquired, but it may take additional time to acquire the FPL property without an exchange as part of the transaction, because this would put FPL in the position of potentially purchasing land in the West Consensus Corridor. This alternative may fully meet the objective, depending on the timing for completing all related land acquisitions and prerequisites needed to allow higher water stages in the EEEA.	The FPL property within the EEEA would be acquired, and it is expected that this could be accomplished in a timely manner and faster than alternative 2 because of the exchange benefits to FPL. This alternative fully meets the objective.	Same as alternative 3.	Sufficient interest in the FPL property within the EEEA to allow for flooding of the area to facilitate restoration efforts within the park would be acquired. This alternative fully meets the objective.

TABLE 3: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Hydrology					
NPS action: long-term indirect major adverse impacts because NPS would be unable to increase water levels in the NESRS, preventing restoration on a regional scale and obstructing implementation of regional ecosystem restoration activities. **Transmission lines: no impacts** (no transmission assumed)	**NPS action: long-term indirect major adverse impacts**, same as alternative 1a. **Transmission lines: long-term major adverse impacts**, because of the disruption of sheetflows due to construction of transmission lines and access roads and forcing of water through the culverts, and the likelihood that there would be reduced hydroperiods downstream of the culverts. Also localized **long-term negligible to minor adverse impacts and short-term moderate adverse impacts** related to small to large-scale interrupted hydrologic processes that would occur during construction.	**NPS action: long-term indirect beneficial impacts** because acquisition and change in ownership would provide additional protection to the land and NPS could allow the enhanced flows across the corridor called for in the ecosystem restoration plans. **Transmission lines: short- and long-term negligible to moderate impacts** in the area of possible relocated corridor from construction and temporary blockage of flow across the corridor, and longer-term fragmentation of the hydrologic processes around the new transmission lines. Impacts from transmission line construction inside the park would be avoided.	**NPS action: substantial indirect long-term beneficial impacts** from the ability to increase water levels across the acquired FPL property and implement flow-related ecosystem restoration activities. **Transmission lines: long-term moderate adverse impacts**. The transmission lines would be located adjacent to the L-31N levee, so impacts on hydrology throughout the NESRS would be less than if the lines were built in the existing FPL corridor further west. The hydroperiod would be maintained, but sheetflow patterns would be disrupted by the transmission line platforms. Localized **long-term negligible to minor adverse impacts** at the culverts where water is channelized and scour could occur. **Short-term minor to moderate adverse construction-related impacts** related to small to large-scale interrupted hydrologic processes.	**NPS action: indirect long-term beneficial impacts**, same as alternative 3. **Transmission lines: long-term moderate adverse impacts** similar to alternative 3. Localized **long-term negligible to minor adverse impacts** at the culverts where water is channelized and scour could occur. **Short-term minor to moderate adverse construction-related impacts** related to small to large-scale interrupted hydrologic processes would also occur.	**NPS action: substantial indirect long-term beneficial impacts** from the easement and the ability for the NPS to increase water levels across the FPL property and implement flow-related ecosystem restoration activities. **Transmission lines: long-term minor to major adverse impacts**, similar to alternative 1b with localized **negligible to minor adverse impacts** related to scour around the culverts, and **short-term moderate adverse construction-related impacts** related to small to large-scale interrupted hydrologic processes.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Water Quality					
NPS action: long-term indirect minor adverse impacts from the absence of a flowage easement that would prevent or delay implementation of flow-dependent ecosystem restoration projects. **Transmission lines: no impacts** (no transmission line construction assumed)	**NPS action: long-term indirect minor adverse impacts**, same as alternative 1a. **Transmission lines: long-term major adverse impacts** because construction of the transmission lines without a flowage easement in the FPL corridor would permanently hinder the implementation and success of ecosystem restoration projects. There would also be **short-term minor to moderate adverse impacts** related to construction activities.	**NPS action: long-term beneficial impacts** because acquisition of the FPL corridor would allow the flow of additional water across the property. **Transmission lines**: similar to, but less intense than those described under alternative 1b with indirect, **long-term negligible to minor adverse, and short-term negligible to minor adverse** for construction activities. Impacts from transmission line construction inside the park would be avoided.	**NPS action: long-term beneficial impacts** as the result of being able to accommodate enhanced restoration flows, and placing a large area of connected land into NPS ownership, allowing for management of park resources, including water quality, consistently with park objectives. **Transmission lines: long-term minor adverse impacts, and short-term minor to moderate adverse impacts**. Impacts would be similar in nature to those discussed under alternatives 1b and 2 related to the construction of transmission lines in the FPL West Preferred Corridor.	**NPS action: long-term beneficial impacts**. Same as alternative 3 except no other utilities could be built in the corridor, which would lessen the risk of additional water quality impacts. **Transmission lines: long-term minor adverse impacts, and short-term minor to moderate adverse impacts**, same as alternative 3.	**NPS action: long-term beneficial impacts** from the flowage easement. **Transmission lines: long-term major adverse impacts, and short-term minor to moderate adverse impacts** related to the construction, similar to alternative 1b, although increased flows would attenuate some of these adverse impacts downstream of the culverts and transmission lines.
Soils					
NPS action: long-term indirect major adverse impacts because of the lack of additional flowage and resultant loss of peat soils. **Transmission lines: no impacts** (no transmission line construction assumed)	**NPS action: long-term indirect major adverse impacts**. Same as alternative 1a. **Transmission lines: long-term major adverse impacts** from a permanent loss of about 182 acres of soils (180 in wetlands) including 89 acres in the park; also **short- and long-term**	**NPS action: long-term indirect beneficial impacts** from the acquisition itself and the ability to increase water levels over the area, which contributes to the development of soils. **Transmission lines: long-term moderate adverse impacts** from transmission line	**NPS action: long-term indirect beneficial impacts** from having all the EEEA under NPS ownership, resulting in the ability to go forward with Everglades ecosystem restoration projects and the enhancement of resource conservation and values of the park, including soil resources. However, these gains would be offset to	**NPS action: long-term indirect beneficial impacts**. Same as alternative 3, but with easement terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of soils and gain in land and	**NPS action: long-term indirect beneficial impacts** from having a perpetual flowage easement agreement. **Transmission lines: long-term major adverse impacts** from the permanent loss of about 182 acres of soils (180 in wetlands) including 89 acres in the

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	minor to moderate adverse impacts from construction, and negligible impacts from line maintenance.	construction east of the park, which would result in the loss of about 187 acres of soils (149 in wetlands) outside the park. The severity of impacts would depend on where the transmission lines were located within the area of possible relocated corridor, and some soils in this area have been disturbed, drained, or cleared of vegetation. Impacts on soils would be greater along the eastern/ northern portions of the area and reduced along the western/ southern portions. There would also be **minor adverse impacts** on designated unique farmland soils in the southern portion of the route outside the park. Impacts from transmission line construction inside the park would be avoided.	some degree by **long-term indirect moderate adverse impacts** occurring from the removal of 260 acres of soils from the park and associated park management activities. **Transmission lines: major adverse impacts** from the construction of the transmission lines in the FPL West Preferred Corridor with a resulting permanent loss of about 194 acres of soils (181 in wetlands) including 80 acres in the park. There would also be **long-term minor adverse impacts** on unique farmland soils located in an agricultural area south of the park, and **short-term minor to moderate adverse construction-related impacts**.	soils in the park. **Transmission lines: long-term major adverse impacts** same as alternative 3 with impacts on soils within the footprint of towers and roads resulting in a loss of about 194 acres of soils (181 in wetlands) including 80 acres in the park. There would be **long-term minor adverse impacts** on designated unique farmland soils outside the park; and **short-term minor to moderate adverse construction-related impacts**.	park. Also **short- and long-term minor to moderate adverse impacts** from construction and **negligible impacts** from line maintenance.
Vegetation and Wetlands					
NPS action: long-term indirect major adverse impacts because of the retention of ownership of land in the EEEA by FPL and continued habitat degradation	**NPS action: long-term indirect moderate to major adverse impacts** because FPL would retain ownership of land in the EEEA, as described under	**NPS action: substantial indirect long-term beneficial impacts** from the acquisition of FPL property in the EEEA, which would remove a	**NPS action: substantial indirect long-term beneficial impacts** from having a net gain in wetland acreage to the park and having the main body of EEEA wetlands reconnected	**NPS action: indirect long-term beneficial impacts**. Same as alternative 3, but with easement terms and conditions that result in the reduced risk of having	**NPS action: substantial indirect long-term beneficial impacts** from having a perpetual flowage easement agreement.

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from altered hydrology. Habitat restoration and exotic species management within the park would be hindered by the lack of a flowage easement, or sufficient interests in these properties, to increase water levels across the FPL West Secondary Corridor, thereby having a negative impact on vegetation and wetlands. **Transmission lines: no impacts** (no transmission line construction assumed)	alternative 1a. **Transmission lines: localized short and long-term major adverse impacts** from the construction and operation of the transmission lines in the FPL West Secondary These impacts would include a permanent loss of about 180 acres of wetlands, of which 89 acres are within the park boundary.	large area of non-NPS land in the interior of the park, ensuring that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur. **Transmission lines: short- and long-term negligible to moderate adverse impacts** from the construction of the transmission lines in the area of possible relocated corridor. Depending on the location of the lines; impacts could be less due to fewer wetland acres in this area compared to the areas crossed by the other FPL corridors and the relative quality of the wetlands. On hypothetical corridor, would have 149 acres of wetland loss. Impacts from transmission line construction inside the park would be avoided.	in NPS ownership, resulting in the ability to go forward with ecosystem restoration without any potential future obstacles from the FPL parcel. Placing the majority of the EEEA under NPS ownership would enhance the conservation of the resources and values of the park, including vegetation and wetlands. There would be a net gain of 60 acres, but a loss of 260 acres in the exchange corridor, which is a direct **long-term, major adverse impact and negligible to minor adverse impacts** from the loss of the ability to maintain wetlands/vegetation per NPS standards. **Transmission lines: short and long-term major adverse impacts** from the construction of the transmission lines in the FPL West Preferred Corridor (about 181 acres of wetlands lost, including 80 in the park).	additional utility facilities in the exchange corridor and associated disturbance or removal of wetlands. (There would be no major adverse impacts related to the land exchange because the acreage of vegetation would remain the same within the park.) **Transmission lines: short and long term major adverse impacts** same as described under alternative 3, because there are no substantial differences in the terms and conditions under this alternative and no expected differences in how wetlands would be treated under an easement compared to in fee, given the mitigation that FPL included in its SCA and expected conditions in the required resource stewardship plan. The park would have slightly more control over vegetation management in the exchange corridor than under alternative 3.	Transmission lines - short and long-term major adverse impacts (same as alternative 1b).

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Floodplains					
NPS action: long-**term indirect major adverse impacts** related to the lack of a flowage easement and the inability to proceed with flow-dependent ecosystem restoration projects that would prevent moving additional water into the park. **Transmission lines**: **no impacts** (no transmission line construction assumed)	**NPS action**: **long-term indirect major adverse impacts** related to the lack of a flowage easement and the inability to proceed with flow-dependent ecosystem restoration projects that would prevent moving additional water into the park. **Transmission lines**: **long term moderate adverse impacts** on floodplain functions and values related to the construction of the transmission lines without a flowage easement in the FPL corridor.	**NPS action**: **long-term indirect beneficial impacts** from placing ownership of this area solely with the NPS and the ability to continue flow-dependent ecosystem restoration projects. **Transmission lines**: **long-term negligible adverse impacts** related to transmission line construction and presence in an area that has already been segmented hydrologically and disconnected from the natural floodplain. Impacts from transmission line construction inside the park would be avoided.	**NPS action**: **long-term indirect beneficial impacts** of acquiring the FPL land, which would enhance the conservation of the resources and values of the park, including floodplains and their values and functions, and allow for flow-dependent ecosystem restoration projects to proceed. **Transmission lines**: **long-term moderate adverse impacts** from construction and presence of transmission lines in the FPL West Preferred Corridor due to increased compartmentalization and the effects of the disrupted sheetflows on floodplain values, such as habitat.	**NPS action**: **long-term indirect beneficial impacts.** Same as alternative 3, except no other utilities could be built in the corridor, which would lessen the risk of additional floodplain impacts. **Transmission lines**: **long term moderate adverse impacts** -same as described under alternative 3.	**NPS action**: Similar to alternative 2, there would be **long-term indirect beneficial impacts** because the accommodation of enhanced flows would improve floodplain function and values. **Transmission lines**: long-**term moderate adverse impacts** on floodplain functions and values related to the construction of the transmission lines (like alternative 1b except that the flowage easement would allow for enhance flows to accommodate flow-related ecosystem restoration actions).
Soundscapes					
NPS action: no impacts on soundscapes. **Transmission lines: no impacts** (no transmission line construction assumed)	**NPS action: no impacts** on soundscapes. **Transmission lines: short term, moderate, adverse impacts** as a result of construction activities and **long term**, **minor adverse impacts** from corona discharge during wet weather. There would be **short-**	**NPS action: no impacts** on soundscapes. **Transmission lines: short term, moderate, adverse impacts** as a result of construction activities and **long term, negligible to minor, adverse impacts** from corona	**NPS action: no impacts** on soundscapes. **Transmission lines**: same as alternative 2 but in different location - **short term, moderate, adverse impacts** as a result of construction activities and **long term, negligible to minor, adverse impacts** from corona discharge	**NPS action: no impacts** on soundscapes. **Transmission lines: Same as alternative 3** except that no other utilities could be built in the corridor, which would lessen the risk of additional noise-related impacts of construction of these facilities.	**NPS action: no impacts** on soundscapes. **Transmission lines** – **same as alternative 1b.**

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	term moderate adverse construction-related impacts in residential areas and **long-term negligible adverse impacts** from maintenance activities.	discharge during wet weather. There would be **short-term moderate adverse construction-related impacts** in residential areas and **long-term negligible adverse impacts** from maintenance activities. The geographic extent of impacts in the park and in residential areas would vary considerably depending on the exact route alignment.	during wet weather. There would be **short-term moderate adverse construction-related impacts** in residential areas and **long-term negligible adverse impacts** from maintenance activities.		
Wildlife					
NPS action: long-term indirect moderate to major indirect adverse impacts due to continued FPL ownership of land within the park and the lack of a flowage easement. FPL ownership of land within the park and the inability to increase water levels across the FPL West Secondary Corridor is expected to hinder habitat restoration efforts. **Transmission lines: no impacts** (no transmission line construction assumed)	**NPS action: long-term indirect moderate to major indirect adverse impacts** because of the inability to increase water levels across the FPL property, which is expected to hinder habitat restoration efforts. **Transmission lines: Short- to long-term minor to moderate adverse impacts**. Short-term impacts would typically be related to construction or maintenance activities and would generally be minor. **Long-term moderate adverse**	**NPS action: long-term indirect beneficial impacts** due to removal of a large area of non-NPS ownership of land in the interior of the park. This would ensure that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur. **Transmission lines:** short**- and long-term minor to moderate adverse impact**s on species dependent on wetland habitats and impacts on wading birds	**NPS action**: substantial **indirect long-term beneficial impacts** because the exchange would remove a large area of non-NPS ownership of land in the interior of the park, ensuring that no other development would be proposed in the FPL corridor and that the various Everglades restoration projects could be implemented. **Transmission lines: long-term major adverse impact** of removing 260 acres of habitat from the park. Types of impacts on wildlife from transmission line construction under alternative 3 would be	**NPS action: indirect long-term beneficial impacts -** as described under alternative 3 but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of wildlife habitat. **Transmission lines**: same as alternative 3, impacts on wildlife would be **short- to long-term, minor to moderate adverse**, and impacts on wildlife species may be reduced, especially for avian and bat species,	**NPS action: indirect long-term beneficial impacts** from having a flowage easement that would allow ecosystem restoration projects that benefit park resources to proceed over time, similar to alternative 1b, but with **long-term minor to moderate adverse impacts f**rom the continued inability to manage the corridor as NPS lands. **Transmission lines:** Short **and long-term minor to moderate adverse impacts** (like alternative 1b).

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	impacts would be from permanent habitat loss due to transmission line structure pads and access roads. Avian collisions with transmission lines, guy wires, and structures and electrocution would be additional sources of **long-term moderate adverse impacts**. Certain groups of birds are more susceptible to collision and electrocution due to their behavior or morphology and may be impacted more from the construction and operation of the transmission lines than other groups of birds.	are expected to be less in the West Consensus Corridor compared to construction within the park because of the reduced quality of the wetlands compared to those within the park, but species that utilize habitat outside the park would be adversely affected.	similar to those described for alternative 1b (**Short- to long-term minor to moderate adverse impacts)**. However, impacts on wildlife would be reduced because the FPL West Preferred Corridor is generally less desirable habitat compared to the West Secondary Corridor, due to its proximity to already disturbed upland and wetland areas outside the park. Impacts on wading bird species are also expected to be less than alternative 1b because of the increased distance from the transmission lines to known nesting colonies. NPS acquisition of the FPL West Secondary Corridor would allow for application of NPS policies and procedures in this area. NPS would no longer control the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange would minimize impacts on wildlife to the maximum extent practicable.	due to requirements imposed by the terms and conditions of the land exchange.	
Special-status Species					
NPS action: alternative 1a would result in a **wide range of impacts**	**NPS action**: impacts on special-status species would be **varied as**	**NPS action: long-term beneficial impacts** on special-status species	**NPS action: long-term beneficial impacts** on special-status species since	**NPS action: long-term beneficial impacts** essentially the same as	**NPS action: long-term beneficial impacts** on special-status species

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on special-status species, as described for the individual species in the analysis in chapter 4. Impacts on these species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 in chapter 4 of the draft EIS. In general, the lack of a flowage easement or sufficient rights to increase water levels over the FPL West Secondary Corridor would have effects on many listed species in the area. Due to the potential degradation and loss of foraging habitat from the lack of hydrologic restoration in the EEEA, alternative 1a would have **moderate to major adverse impacts** on many avian species, especially wood storks and Everglade snail kites – **major adverse impacts** are predicted for these two species. The park would continue to coordinate with the U.S. Fish and Wildlife Service	**noted in the analysis in chapter 4.** The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28. Impacts from the lack of a flowage easement or sufficient rights to increase water levels over the FPL West Secondary Corridor would be the same as described for alternative 1a- **moderate to major adverse impacts** on many avian species, especially wood storks and Everglade snail kite (**major adverse impacts**) - same as alternative 1a. **Transmission lines**: in general, construction and operation of transmission lines in the FPL West Secondary Corridor would have effects on many listed species in the area and have **high risks to avian species, especially wood storks and Everglade snail kites (major adverse**	since this would mean no impediments to water restoration projects could occur from future use of this parcel. Impacts on special-status species would be **varied as noted in the alternative 2 analysis**. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 in chapter 4 of the draft EIS. **Transmission lines**: in general, construction and operation of transmission lines in the West Consensus Corridor east of the park would have effects on many listed species in the area. Alternative 2 would have **lower risks to wood storks and Everglade snail kites** than construction on the FPL corridors due to the location of the lines farther away from nesting and foraging locations. Impacts on	this would mean no impediments to water restoration projects could occur from future use of this parcel. Alternative 3 would result in a **wide range of impacts on special-status species, as described for the individual species in the analysis in chapter 4.** The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 in chapter 4 of the draft EIS. **Transmission lines**: in general, construction and operation of transmission lines in the FPL West Preferred Corridor would have effects on many listed species in the area and has **high risks to wood storks and Everglade snail kites (major adverse impacts for wood stork)** due to proximity of the lines to nesting and foraging locations. The park would continue to coordinate with the USFWS and state resource agencies, to participate in the Turkey Point Power Plant Units 6	described for alternative 3 except that no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on special status species. A **wide range of impacts would occur on special-status species, as described for the individual species in the analysis for alternative 3**. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 in chapter 4 of the draft EIS. **Transmission lines**: in general, construction and operation of transmission lines in the FPL West Preferred Corridor would have effects on many listed species in the area and have **high risks to wood storks and Everglade snail kites (major adverse impacts for wood stork)** due to proximity of the lines to nesting and foraging locations. The park would	since this would mean no impediments to ecosystem restoration projects could occur from future use of this parcel. A **wide range of impacts would occur on special-status species** from transmission line construction, as described for the individual species in the analysis for alternative 1b. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 in chapter 4 of the draft EIS. **Transmission lines**: in general, construction and operation of transmission lines in the FPL West Secondary Corridor would have impacts on many listed species in the area and have **high risks to avian species,** especially wood storks and Everglade snail kites (**major adverse impacts**), due to

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(USFWS) and state resource agencies, to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. **Transmission lines: no impacts** (no transmission line construction assumed)	**impacts**), due to proximity of the lines to nesting and foraging locations. The park would continue to coordinate with the USFWS and state resource agencies, to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable.	species that are known to inhabit disturbed or open areas would be expected to be higher due to the location of the lines farther away from known nesting and foraging locations. The routing of the corridor east about one mile south of the Tamiami Trail helps to decrease (but not eliminate) the risk to wood stork, snail kite, and wading birds that nest in the northeast corner of the park. The park would continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable.	and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable.	continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable.	proximity of the lines to nesting and foraging locations. The park would continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable.

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Viewshed (Visual Resources)					
NPS action: no impacts on viewshed. **Transmission lines: no impacts** (no transmission line construction assumed)	**NPS action: no impacts** on viewshed. **Transmission lines: short term, minor to moderate, adverse impacts** during construction and **long term, ranging from minor to major and adverse** from the introduction of three transmission lines into a wilderness-like setting. The intensity of the adverse impact would vary with the location in the park and be greatest for recreationists such as canoeists near the Tamiami Trail and for others as they approach this area and the transmission lines from trails or on the roadway.	**NPS action: no impacts** on viewshed. **Transmission lines**: impacts range from **negligible to moderate adverse impact**, **depending on where the transmission lines were built i**n the West Consensus Corridor. **Short-term minor to moderate adverse impacts** during construction. Generally, impacts on park visual resources would be greater where the West Consensus Corridor is adjacent to the park boundary and minimal where the corridor turns east away from the park. Impacts on visual resources viewed from residential locations would be greater along portions of the line that occur closer to the West Consensus Corridor. In the park, alternative 2 would contribute **long-term adverse negligible impacts**.	**NPS action: no impacts** on viewshed. **Transmission lines: short-term minor to moderate adverse impacts** during construction and **minor to major adverse impacts** from the introduction of three transmission lines in the current eastern park boundary. The most severe impacts would be where the transmission lines cross the Tamiami Trail and from the L-31N canal.	**NPS action: no impacts** on viewshed. **Transmission lines**: Impacts would be the same as described under alternative 3, with potential for slightly less adverse impacts under this alternative from the restriction to only three transmission lines with no other utility infrastructure within the corridor. Indirect impacts on visual resources would result from the construction of the transmission lines on the eastern edge of the park and would include **short-term minor to moderate adverse impacts** during construction and **minor to major adverse impacts** from the introduction of three transmission lines within the current eastern park boundary. The most severe impacts would be where the transmission lines cross the Tamiami Trail and from the L-31N canal.	**NPS action: no impacts** on viewshed. **Transmission lines**: impacts would be the same as described under alternative 1b and include **short term, minor to moderate, adverse impacts** during construction and **long term, adverse impacts ranging from minor to major** from the introduction of three transmission lines into a wilderness-like setting. The intensity of the adverse impact would vary with the location in the park and be greatest for recreationists such as canoeists near the Tamiami Trail and for others as they approach this area and the transmission lines from trails or on the roadway.

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Wilderness					
NPS action: indirect long-term major adverse impacts because the FPL corridor would remain under FPL ownership, which precludes the area from being managed as part of a designated wilderness area, would result in the inability to restore natural water conditions to the area, preventing the reestablishment of wilderness character, and allows the introduction of disturbances to wilderness quality. **Transmission lines: no impacts** (no transmission assumed)	**NPS action: indirect long-term major adverse impacts** because the FPL corridor would remain under FPL ownership, which precludes the area from being managed as part of a designated wilderness area and allows the introduction of disturbances to wilderness quality. **Transmission lines: short-term moderate adverse impacts** during construction and **long term major adverse impacts** on wilderness characteristics from the presence and operation of the lines.	**NPS action: indirect long-term beneficial impacts** because the acquisition gives the NPS the ability to manage the acquired area consistent with wilderness goals. **Transmission lines: short-term negligible to moderate adverse impacts and long-term negligible to moderate adverse impacts**, depending on the location of the lines in the area and the proximity to the park.	**NPS action: indirect long-term beneficial impacts** because the exchange would result in flow restoration that would benefit wilderness character and the ownership of this area being placed solely with the NPS, who could then manage the corridor as wilderness. **Transmission lines: short-term moderate adverse impacts** on the wilderness character of the EEEA from construction. The continued presence of the transmission lines in the FPL West Preferred Corridor would result in **long-term moderate adverse impacts** on the wilderness character of the EEEA, This could affect the wilderness designation of adjacent lands in the park.	**NPS action: indirect long-term beneficial impacts**; essentially the same as described under alternative 3, with benefits occurring from the land exchange itself, except that no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on wilderness in this area. **Transmission lines**: same as alternative 3; adverse impacts would include **short- and long-term moderate adverse impacts** on the wilderness character of the EEEA.	**NPS action: indirect beneficial impacts** from having a long-term flowage easement agreement, but with **long-term indirect moderate adverse impacts** would occur as a result of the corridor remaining under FPL ownership, which would preclude the area from being managed as wilderness and overshadow any flowage benefits to wilderness character of the area. **Transmission lines: short-term moderate and long-term major adverse impacts** on wilderness characteristics (like alternative 1b).
Visitor Use and Experience / Recreation Resources					
NPS action: indirect long-term major adverse impact because The lack of a flowage easement on the FPL property would prevent the implementation of ecosystem restoration activities. The resulting degradation of natural	**NPS action: indirect long-term major adverse impacts** would result from the inability to flow higher water levels across the FPL property. **Transmission lines: short-term moderate to major adverse impacts** during construction and	**NPS action: indirect long-term beneficial impacts** because the acquisition would allow ecosystem restoration projects to proceed and visitors to experience an improved ecosystem **Transmission lines: short-term minor to**	**NPS action: indirect long-term beneficial impacts** from the exchange of property which would allow ecosystem restoration projects to proceed and visitors to experience an improved ecosystem. **Transmission lines: short-term minor to moderate**	**NPS action: indirect long-term beneficial impacts** from the fee for easement exchange of property in the EEEA (like alternative 3). **Transmission lines: short-term minor to moderate adverse impacts** during	**NPS action: indirect long-term beneficial impacts** from the acquisition of a flowage easement on the FPL property in the EEEA, allowing ecosystem restoration projects to proceed and visitors to experience an improved

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resources would prevent visitors from experiencing a healthy ecosystem and enhanced wildlife viewing opportunities in the EEEA and the Water Conservation Areas (WCAs) north of Tamiami Trail. **Transmission lines: no impacts** (no transmission line construction assumed)	long-term moderate to **major adverse impacts** from the introduction of three transmission lines into a backcountry setting as well as from noise and visual impacts along the L-29 canal and the lack of a restored ecosystem.	**moderate adverse impacts** during construction and **no impact to long-term moderate adverse impacts** from the introduction of three transmission lines in an area that is somewhat undeveloped and is highly used by recreational users along the western boundary of the West Consensus Corridor.	**adverse impacts** during construction and **long-term minor to moderate adverse impacts** on visitor use and experience and recreation resources from the introduction of three transmission lines along the L-31N canal (**moderate adverse** impacts on users and visitors along the L-31N canal; **minor adverse** impacts on visitors located in the park's interior).	construction and **long-term moderate adverse impacts** from the introduction of three transmission lines along the L-31N canal. Also, no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on visitor use and experience in this area.	ecosystem. **Transmission lines**: similar to as alternative 1b - **short-term moderate to major adverse impacts** during construction and **long-term minor to moderate adverse impacts** from the introduction of three transmission lines into a wilderness-like setting as well as from noise and visual impacts along the L-29 canal.
Adjacent Land Uses and Policies					
NPS action: indirect long-term major adverse impacts on land use policy at Everglades National Park through the retention of FPL lands within the park. These impacts would result because of the conflict with park's long standing management direction in the Expansion Act and the LPP to acquire private properties in the expansion area and the elimination of incompatible uses from the area. **Transmission lines:**	**NPS action: indirect long-term major adverse impacts** on land use policy at Everglades National Park – same as 1a. **Transmission lines: major adverse impacts** on land use at Everglades National Park from transmission line construction through the park.	**NPS action: indirect long-term beneficial impacts** would occur as a result of fulfillment of the park's long standing management direction to acquire private properties in the expansion area and the elimination of incompatible uses from the area. **Transmission lines: long-term minor to possibly major adverse impacts** on land uses/policies in the area of relocated corridor, depending on the location of the corridor in the area; with	**NPS action: indirect long-term beneficial impacts** would accrue to land use from the change in land ownership from FPL to NPS; however, **major adverse indirect impacts** would also occur from removing 260 acres of land deemed critical to the park per the 1989 Expansion Act. **Transmission lines: Indirect long –term major adverse impacts** on land use would occur as a result of the subsequent construction of transmission lines along the FPL West Preferred Corridor because there are conflicts with County Comprehensive Plan	**NPS action: indirect long-term beneficial impacts** would accrue to land use from the fulfillment of the direction to acquire the FPL parcel in the park. **Transmission lines: indirect long-term major adverse impacts** would occur as a result of land use incompatibility issues following construction of transmission lines along the FPL West Preferred Corridor, although there would be some additional control by way of easement, as the park must approve any FPL	**NPS action: indirect long-term beneficial impacts** would accrue to land use from acquiring the flowage easement but still have not acquired the corridor-**major adverse impact**. **Transmission lines: indirect long-term major adverse impacts** on land use from the introduction of a three transmission lines into a park-like setting and the presence of an incompatible land use within the park and in conflict with the county comprehensive development master

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
no impacts (no transmission line construction assumed).		careful siting and coordinated planning, would expect impacts to be **minor to moderate adverse**.	language regarding transmission lines in the East Everglades Area of Critical Environmental Concern and the lines would be immediately adjacent to the park.	construction in the easement.	plan designation of the area as an area of critical environmental concern.
Tribal Lands Including Indian Trust Resources					
NPS action: no impacts on tribal lands. **Transmission lines: no impacts** (no transmission line construction assumed).	**NPS action: no impacts** on tribal lands. **Transmission lines: long-term moderate adverse impacts** from the construction of transmission lines through the EEEA and WCA 3B management areas.	**NPS action: no impacts** on tribal lands. **Transmission lines: long-term minor adverse impacts** on tribal lands, including Indian trust resources due to the proximity to tribal lands and the change in viewshed from the casino property.	**NPS action: no impacts** on tribal lands. **Transmission lines: long-term moderate to major adverse impacts** on tribal lands, including Indian Trust resources due to the change in viewshed to the west from the Indian Gaming and Resort Facility property and other Indian Trust and tribal lands in that area.	**NPS action: no impacts** on tribal lands. **Transmission lines: long-term moderate to major adverse impacts** on tribal lands, including Indian Trust resources due to the change in viewshed to the west from the Indian Gaming and Resort Facility property and other Indian Trust and tribal lands in that area. Also, no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on views in this area.	**NPS action: no impacts** on tribal lands. **Transmission lines: long-term minor to moderate adverse impacts** on tribal lands, including Indian Trust resources due to the change in viewshed to the west from the Indian Gaming and Resort Facility property.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Socioeconomics					
NPS action: no impacts on socioeconomics. **Transmission lines: no impacts** (no transmission line construction assumed).	**NPS action: no impacts** on socioeconomics. **Transmission lines: short-term beneficial impacts** during construction on jobs and income in the region and **short-term negligible impacts** on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 1b.	**NPS action: no impacts** on socioeconomics. **Transmission lines: short-term beneficial impacts** on jobs and income during construction and possible **short-term minor adverse impacts** on adjacent residents and property values. Future FPL electrical generation and transmission development costs combined with the additional right-of-way costs under this alternative could have an adverse impact on electrical infrastructure development costs, although the extent of this effect is uncertain at this time. The impact of these costs on electricity rates is also uncertain.	**NPS action: no impacts** on socioeconomics. **Transmission lines: short-term beneficial impacts** on jobs and income in the region and **short-term minor impacts** on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 3.	**NPS action: no impacts** on socioeconomics. **Transmission lines: short-term beneficial impacts** on jobs and income in the region and **short-term minor impacts** on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 4.	**NPS action: no impacts** on socioeconomics. **Transmission lines: short-term beneficial impacts** on jobs and income in the region and short-term and possibly **long-term negligible impacts** on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 5.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Park Operations and Management					
NPS action: continued **minor to moderate adverse impacts** from the inability to manage the EEEA as one contiguous parcel. **Transmission lines: no impacts** (no transmission line construction assumed).	**NPS action: long-term minor to moderate adverse impacts** from the FPL retention of property in the EEEA. **Transmission lines: long-term minor to moderate adverse impacts** from the construction of transmission lines in the FPL West Secondary Corridor; also **short- and long-term minor to moderate adverse impacts** both during the construction phase and following the completion of the lines.	**NPS action: long-term beneficial impacts** from the consolidation of ownership in the EEEA as well as **short-term negligible to minor adverse impacts**. **Transmission lines: no impacts** (no transmission line construction on NPS land).	**NPS action:** long-term **beneficial impacts and negligible to minor adverse impacts** as described in alternative 2. **Transmission lines: short-term minor to moderate adverse impacts** during the construction phase and **long-term negligible to minor adverse impacts** following the completion of the lines.	**NPS action:** Impacts would be the same as under alternative 3, with **beneficial impacts** from the land exchange except that this is an easement agreement that may require more staff involvement to monitor use of park property, so **long-term minor adverse impacts**. **Transmission lines: short-term minor to moderate adverse impacts** during the construction phase and **long-term negligible to mostly minor adverse impacts** following the completion of the lines.	**NPS action: same as alternative 1b; and additional long-term minor to moderate impacts f**rom the FPL retention of property in the EEEA and additional oversight and monitoring of easement. **Transmission lines: short- and long-term minor to moderate adverse impacts** both during the construction phase and following the completion of the lines.

CHAPTER 3
Affected Environment

CHAPTER 3: AFFECTED ENVIRONMENT

The "Affected Environment" chapter describes existing conditions for those elements of the natural and cultural environments that would be affected by the implementation of the alternatives considered in this environmental impact statement (EIS). Impacts for each of these topics are analyzed in "Chapter 4: Environmental Consequences."

Many affected environment topics are focused on the potential transmission line routes going into or around the park that are reasonably foreseeable outcomes associated with the proposed action. These resources are described for the project area (see figure 4, chapter 1) and generally include the areas in and around the Florida Power & Light Company (FPL) West Secondary and West Preferred Corridors and the West Consensus Corridor to the east of the park. These descriptions address the resources that would be affected leading from and to the points of nexus for these routes, as shown in figure 4, in what is referred to as the 8.5-square-mile area east of the park and in the Water Conservation Area (WCA) 3B area to the north. The affected environment for birds and socioeconomics has a much broader area described due to the nesting, foraging, and flight patterns of the species and larger economic impacts of the land transfer.

HYDROLOGY

The Everglades once covered nearly 4,000 square miles from Lake Okeechobee to Florida Bay and the Gulf of Mexico. The original Everglades were a flow-way from Lake Okeechobee southward. Shallow water derived from direct rainwater and from overflows from Lake Okeechobee moved southward as sheet flow, rather than as channelized flow as with rivers and streams (NPS 2010c).

The natural hydrologic regime and the ridge and slough landscape that once characterized all of the Everglades are highly degraded in Northeast Shark River Slough (NESRS) (NPS 2010c). This is largely the result of the placement of canals, levees, and other hydrological engineering structures in key areas throughout the greater Everglades ecosystem. Development for urban uses, agriculture, water supply, and flood control are all forces that continue to impact NESRS. In addition, operation of the hydrologic infrastructure to meet existing water supply and flood control demands continues to maintain a drier-than-normal condition in NESRS. Hydrologic features in the project area are shown in figure 7.

HISTORIC HYDROLOGY

The historic Everglades were part of a much larger natural landscape originating in south-central Florida in what is now known as the Upper Chain of Lakes near Kissimmee, Florida. The lake system formed the headwaters of the Kissimmee River, a 100-mile-long, meandering, low gradient river that emptied into Lake Okeechobee. During high water events, the lake, much larger than its present-day surface area of approximately 1,090 square miles, would spill over its southern rim, into the northern part of the Everglades. This area was dominated by vast sawgrass plains. Eventually, the southward movement of water through the sawgrass plains formed the source of water for the ridge and slough landscape. The central feature of the historic Everglades hydrology was a 30-mile-wide expanse of relatively shallow water moving downstream through the low-gradient wetland landscape. The pattern of water flow was remarkable for its regional uniformity across such a broad expanse, and for the absence of any central drainage channel or of any dendritic drainage pattern. Pine flatwoods and pine rocklands formed most of the eastern boundary of this flow, and the western boundary was defined by the Immokalee Rise and the relatively higher wetlands and uplands of what is now the Big Cypress National Preserve. Much of the flow discharged south and west through Shark River Slough (SRS), one of the principal pathways for water to slowly drain southward from Lake Okeechobee. Its original course was southeast from the lake,

gradually curving south and then southwest (through what are now WCAs 2 and 3). It trends southwest inside Everglades National Park (the park) through the mangrove estuaries of the coast, into the Gulf of Mexico. South of and including the New River (Fort Lauderdale), the pine flatwoods were absent and the Atlantic Coastal Ridge became discontinuous, forming a series of islands separated by coastal rivers. These rivers thus resulted in a portion of the flow being discharged eastward into Biscayne Bay and the Atlantic Ocean. The remainder of the flow discharged southward through Taylor Slough into Florida Bay. Because of south Florida's porous geology dominated by limestone overlain by thick peat deposits, the boundaries between surface water and ground water flow were not always distinct (SCT 2003).

CURRENT HYDROLOGY

Hydrology in NESRS, and in the Everglades generally, has been drastically altered over the past century. The placement of canals, levees, and other hydrological engineering structures has a major ongoing effect on regional and local hydrology. Surface flow into NESRS from the north was substantially reduced by the construction of Tamiami Trail in the late 1920s. Levees and canals authorized and constructed from the late 1940s to the 1960s under the Central and Southern Florida (C&SF) project have divided the former Everglades into areas designated for urban and agricultural development, and areas for fish and wildlife benefits, natural system preservation, and water storage (USACE and NPS 2008). The natural areas consist of three WCAs located north of Tamiami Trail (U.S. Highway 41) and Everglades National Park. The WCAs are large areas set aside for water conservation and for Everglades wildlife. Water enters the WCAs from rainfall, from the agricultural area to the north, and from parts of the east coast region. The levees surrounding the WCAs cutoff all surface water flow into NESRS and still function to impound the Everglades. Subsequent modifications to the C&SF project resulted in the ability to move water from the WCAs into NESRS.

Contemporary Alterations to Flows in Northeast Shark River Slough

Hydrologic engineering in the Everglades began in earnest during the late 19th and early 20th centuries. During the 1890s, people drained over 50,000 acres of wetlands, opened the Kissimmee River for navigation, and linked the Caloosahatchee River to Lake Okeechobee. By 1917, four major canals traversed the Everglades from Lake Okeechobee to the Atlantic Ocean, short-circuiting the historic, north-to-south pattern of flow and greatly accelerating the removal of water from the Everglades (SCT 2003).

One of the most significant hydrologic alterations affecting NESRS was the construction of Tamiami Trail, which was completed in 1928. The construction of this roadway created an impediment to natural water flows within the Everglades, slowing and blocking water flow south into the southern Everglades. By impeding natural flows, Tamiami Trail created two separate landscape types, where once there had been a continuous landscape type. The construction of Tamiami Trail impounded and altered SRS, effectively creating a barrier through the Everglades between the northern Everglades and what would eventually become Everglades National Park, for which Tamiami Trail became the northern boundary (SCT 2003). Shortly after the completion of Tamiami Trail, bridges were installed along the road to allow water to flow beneath the roadway. Concrete culverts replaced the bridges in NESRS in 1952 and constituted the only path by which water traveled from the L-29 canal located along the north side of Tamiami Trail into NESRS (NPS 2010c) until 2013. Structure S333, completed in the early 1980s, currently provides the ability to move water from WCA 3A into the L-29 canal from where it can either flow into NESRS or through S334 to the urban area to the east. A 1-mile bridge along the Tamiami Trail was completed in 2013, providing additional conveyance capacity into NESRS from the L-29 canal.

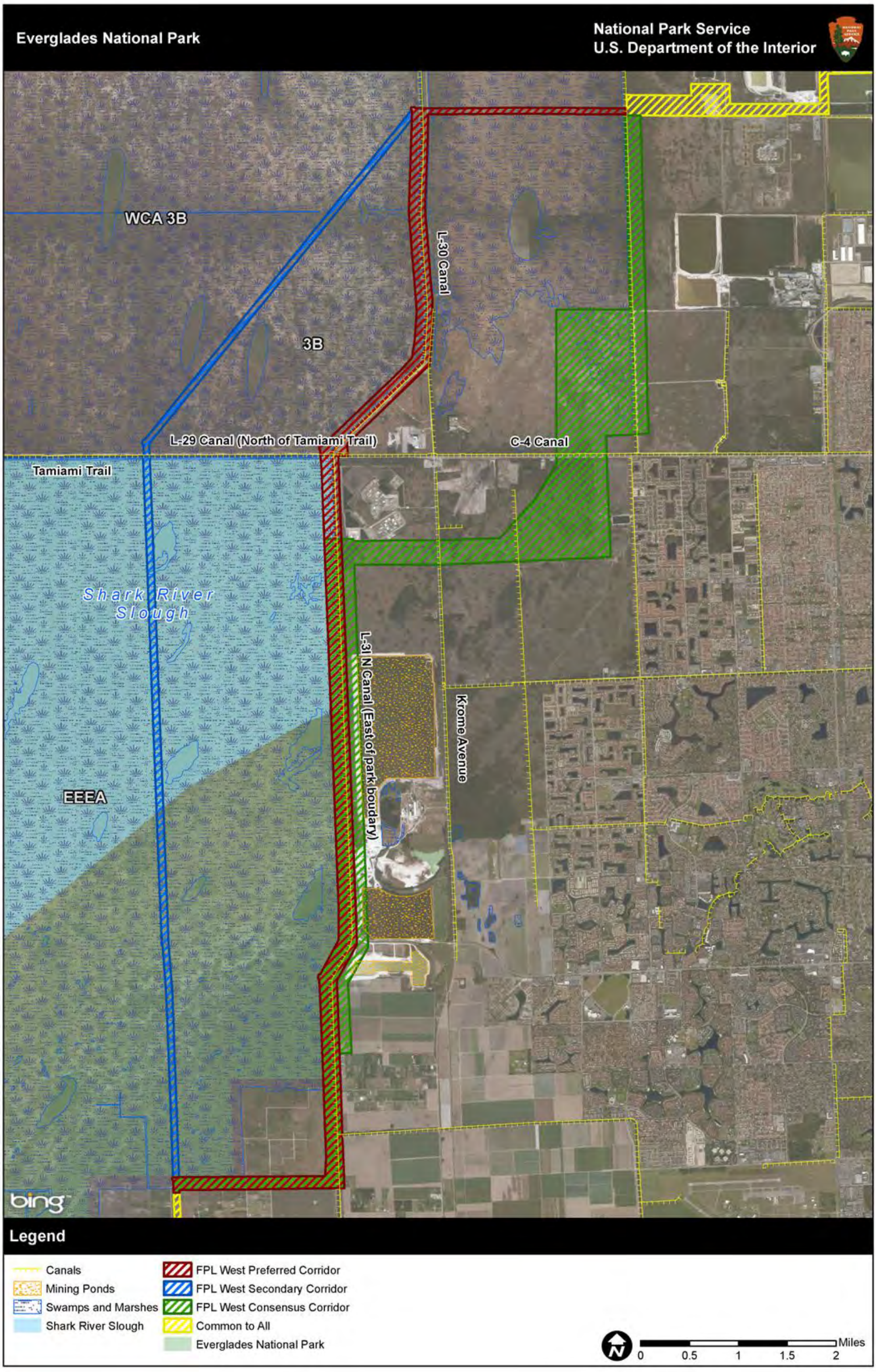


FIGURE 7: HYDROLOGIC FEATURES IN THE PROJECT AREA

Various levees and gated structures authorized under the C&SF project of 1948, combined with the flow-impeding effects of Tamiami Trail, now impose substantial alterations upon the volume, timing, and duration of flows to NESRS. On an annual average, seventy-eight percent of contemporary flows are now directed to the west through the S12 structures, and only 22 percent are directed through NESRS (NPS 2010c). Under natural conditions, the eastern half of SRS would have had approximately 65 percent of annual flows and the western half 35 percent (NPS 2010c). With such an immense alteration in annual flows, hydrology in NESRS does not currently resemble what might be expected under historic conditions.

Contemporary Sources of Flows in Northeast Shark River Slough

NESRS was over-drained for many years. Flows to the L-29 canal were cut off beginning with the completion of the initial C&SF project features in the 1960s until the completion of the S-333 water control structure of the early 1980s. The majority of the surface water now delivered to NESRS originates from surface water runoff, rainfall, and groundwater seepage from the WCAs created under the authority of the C&SF project. Thus, the hydrology of NESRS is ultimately dependent on flows from these WCAs. WCA 3A is the primary source of flows to all of SRS (western and northeast). Water from WCA 3A flows through the S-333 water control structure, into L-29 canal, and then through the concrete culverts and the 1-mile bridge beneath Tamiami Trail into NESRS (NPS 2010c).

Aquifer Recharge and Public Water Supply

The NESRS is part of the recharge area for the Biscayne Aquifer which is the sole source of potable water in Miami-Dade (M-D) and Broward Counties. The aquifer is exposed at the surface of this area or is covered by a thin layer of peat and plant material. Because the health, safety, and welfare of present and future residents of the Miami-Dade County depend upon protecting the hydrology and ecology of this area, the County designated it an Area of Critical Environmental Concern in 1981. This designation is discussed further in the “Adjacent Land Uses and Policies” section.

Hydrology East and Northeast of the Park Boundary

L-31N levee serves as the eastern edge of the park in this area as well as the existing hydrologic edge to the slough. The area to the east of the L-31N levee was once part of the SRS, but the hydrology has been greatly altered through drainage and changes in use. The southeastern portion of this area has been filled and converted to agricultural uses, and there is a large rock mine immediately east of the canal. The northeastern portion of this area, referred to as the Bird Drive basin, still consists of an isolated, degraded wetland cut off from the wetlands to the west and north by the L-31N and Tamiami canals, respectively. However, these areas east of the park boundary are still hydrologically connected to NESRS by groundwater flows in the Biscayne aquifer. The northern portion of the West Consensus Corridor, north of the Tamiami canal, contains the Pennsuco wetlands, but these wetlands have been largely cut off from the regional water circulation as a result of construction of canals and levees (Dade County 1989). However, like the Bird Drive basin, the Pennsuco wetlands are hydrologically connected to the marsh to the west by groundwater flows.

WATER QUALITY

WATER QUALITY WITHIN THE PARK BOUNDARY

Historically, the central and southern Everglades were a phosphorus-limited, oligotrophic system in which ambient levels of phosphorus were less than 10 parts per billion (Lodge 2005; McCormick et al. 1996) within a very slow-flowing system. Phosphorus limitation historically allowed for extreme competition for biologically available phosphorus.

There have been a variety of changes to water quality in the park that have resulted from hydrologic changes in the Everglades and the development that has occurred in south Florida since the late 19th century. Important water quality chemicals and parameters in the Everglades include nutrients, sulfate, mercury, pesticides, major ions and total dissolved solids (TDS), and dissolved organic matter (USACE 2005; NPS 2010c; Aiken et al. 2011; Aiken et al. 2003). Nutrients, specifically phosphorus, can be of particular concern when in excess given the Everglades' naturally phosphorus-limited and oligotrophic character.

Nutrients

NESRS faces a number of water quality problems that are a result of excessive nutrients in the system. All waters in the park were historically phosphorus-limited and, therefore, phosphorus pollution can have a very serious effect upon the biological resources of the park. Total phosphorus is currently a very serious concern throughout the Everglades, including in NESRS (Miller, McPherson, and Haag 1999; NPS 2010c). The ultimate effect of increased total phosphorus levels is eutrophication of the marsh that causes subtle, but important changes in soil chemistry, and a noticeable change in the plant and animal communities over time, with cascading ecological effects (Gaiser et al. 2005; Gaiser et al. 2007). Ultimately, this process can lead to the reduction or loss of a waterbody's value as habitat and/or as a recreational area. The major source of phosphorus pollution in the park is runoff from agricultural areas north and east of the park, and from urban lands (Miller, McPherson, and Haag 1999). Nutrient levels in SRS have been hovering just at the non-compliance point relative to the 1992 Consent Decree that was the result of the 1988 lawsuit by the federal government concerning water quality in the Everglades. In that decree, a phosphorus criterion was set at 10 ppb. The Consent Decree for specific total phosphorus criteria differs by regions within the Everglades Protection Area. For example, for SRS the long-term limit for the flow-weighted mean total phosphorus concentration ranges from < 8 to <13 ppb (NPS 2005).

The U.S. Environmental Protection Agency (EPA) water quality criteria, and Florida's water quality standards for total phosphorus in outstanding waters, such as the Everglades, maintain that total phosphorus is ecologically harmful when it reaches levels in excess of 10 (µg/L) (10 ppb) in this area (Miller, McPherson, and Haag 1999; FDEP 2009). Above this level, total phosphorus can cause an imbalance in levels of Everglades flora and fauna (NPS 2010c). Studies have demonstrated that the biological community structure in NESRS is altered even by very small (5 µg/L, or 5 ppb above ambient conditions) phosphorus inputs to the system due to increased total phosphorus loading (Gaiser et al. 2005; Gaiser et al. 2007). Within a spikerush/periphyton community in central SRS, a phosphorus input of this magnitude caused changes in the periphyton and floc in the Everglades after two months, soils after three years, fish after four years, and macrophytes in the fifth year (Gaiser et al. 2005; Gaiser et al. 2007).

The NESRS has had issues with total phosphorus pollution since the late 1990s. A 1996–1997 U.S. Geological Survey (USGS) water quality survey conducted along Tamiami Trail from the Big Cypress Swamp to the Everglades revealed that there were elevated levels of total phosphorus in the East Everglades Expansion Area (EEEA) (Miller, McPherson, and Haag 1999). Discharges to the park from the Bird Drive basin and Pennsuco Wetlands north and east of Tamiami Trail appear to be contributing

phosphorus to NESRS, which is impacting the composition of the biological community, since even minute contributions of phosphorus can change the biological community once the soils change (Gaiser et al. 2005; Gaiser et al. 2007). Data from 1991–2011 showed the following mean total phosphorus concentrations:

- 0.012 µg/L (12 ppb) at the S-333 monitoring station at the intersection of L-67 and L-29 (a mean total phosphorus concentration)
- 0.013 µg/L (13 ppb) at the SAFARI monitoring station along L-29, several miles to the east of S-333
- 0.013 µg/L (13 ppb) at the eastern-most L-29 monitoring station, TAMBR1 (SFWMD 2013).

Overall, there are multiple indicators that the portion of NESRS downstream of the Tamiami Trail culvert sets is being affected by elevated levels of nutrients, and the biological community of NESRS shows signs of having been affected by increased total phosphorus. Changes include the establishment of cattail plumes, and changes in the periphyton, soils, fish, and macrophytes (NPS 2010c).

Mercury

Mercury pollution is also an issue in the Everglades, both inside and outside the park. Mercury is a pollutant usually found in one of three forms, including the bioavailable form of methylmercury. Methylmercury is extremely toxic to fish, wildlife, and human beings and can cause a variety of growth problems, neurologic and behavioral disorders, and even organism death (Lodge 2010). It is a particularly harmful pollutant because it bioaccumulates and persists in the aquatic environment (Fink, Rumbold, and Rawlik 1999). Of the 21 basins surveyed nationwide in Miller, McPherson, and Haag (1999), the Everglades has the second highest ratio of methylmercury to mercury in sediment. Conversion of other forms of mercury to the bioavailable methylmercury enhances mercury uptake by organisms. The sources for mercury include atmospheric deposition, stormwater runoff, and groundwater deposition, with atmospheric deposition accounting for more than 95 percent of new mercury reaching the Everglades annually (Fink, Rumbold, and Rawlik 1999). Methylation of inorganic mercury occurs in the wetland and aquatic environment, and the Everglades is known to particularly favor the production of methylmercury (USGS 2000). Methylation is a complex process affected by a number of factors, and mercury can be converted among its three forms in the aquatic environment. Mercury can bind to soils and settle to the bottom, or be diffused into the water column and become resuspended, where it can be methylated. Factors such as higher concentrations of sulfate, and higher acidity in the water column or dissolved organic carbon can increase methylation. Methylation in the Everglades sediments is caused primarily by the activity of sulfate reducing bacteria (Gilmour et al. 2004). Methymercury forms largely in anaerobic sediments and then moves through the food chain. Availability of methylmercury and rates of methylation are also increased when soils are rewetted after periods of being dry (Gilmour et al. 2004).

SRS is a methylmercury “hot spot,” as evidenced by annual mercury medians for largemouth bass that exceeded the EPA guidance criterion for all years sampled between 1993 and 2008 (SFWMD 2009; NPS 2010c). Mosquitofish, sunfish, and largemouth bass throughout SRS continue to have very high mercury levels (SFWMD 2009). These findings continue to suggest that animals in the park are exposed to methylmercury levels exceeding the acceptable dose (SFWMD 2009).

Pesticides

Pesticide monitoring within South Florida Water Management District (SFWMD) has been ongoing since 1976, with the routine ambient monitoring program beginning in 1984 (Pfeuffer 2009). Pesticide levels are typical of what could be expected in an area of intensive historic and contemporary agricultural

activity (NPS 2010c).The most frequently detected pesticides in SRS (detected at monitoring sites along the L-29 canal from 2008 through 2011) are atrazine, ametryn, metribuzin, and simazine, hexazinone, norflurazon, and, along with the insecticide/degradate atrazine desethyl in water samples (NPS 2010c). In addition, insecticides and degradates of DDE, DDD, alpha endosulfan, beta endosulfan, and endosulfan sulfate have been found in the sediment samples taken from several locations (NPS 2010c; Pfeuffer 2011). For the most part, these contaminants are not at levels that exceed water quality thresholds. Arsenic has been detected in sediments along the Tamiami Trail during the construction of the 1-mile bridge at levels that exceeded the threshold levels for Miami-Dade County (Castro et al. 2013).

Dissolved Organic Matter

High dissolved organic matter concentrations provide food for bacteria to grow, reduce light penetration in the water, and enhance transport and cycling of hydrophobic compounds such as pesticides and trace elements such as mercury (Aiken et al. 2011; Aiken et al. 2003). Concentrations of dissolved organic matter along Tamiami Trail ranged from 4.8 to 26.9 mg/L. Dissolved organic matter concentrations at this level can affect a number of water chemistry processes in NESRS, including those that affect transport and cycling of pesticides and mercury, availability of nutrients, and influence pH in the aquatic environment (Aiken et al. 2011). There is a high natural production of natural carbon in the peat soils and wetlands of the Everglades, and relatively high carbon content in the shallow groundwater systems that underlie the Everglades (Aiken et al. 2011). There are similar water quality concerns in the wetlands in the area of analysis outside the park.

Water Quality in Waters East and Northeast of the Park

Water quality in WCA 3A north and northeast of the park is monitored by the SFWMD, and has similar water quality issues to the park. Data specific to the waters east of the park were not available, but because of current or past similarity of the waterbody types to NESRS, the same water quality parameters are of interest in the waters east of the park as they are in waters inside the park. However, due to the segmented hydrology east of the park, and the fact that these areas area also more proximate to developed areas (including residential, commercial, and agricultural areas), the water quality concerns are more pronounced, and include concerns about elevated phosphorus, pesticides, sulfate, mercury, and dissolved organic matter.

Everglades National Park as an Outstanding Florida Water

The State of Florida included Everglades National Park as an Outstanding Florida Water under Florida Administrative Code 62-302.700. The Florida Department of Environmental Protection (FDEP) requires that Outstanding Florida Waters receive special consideration in issues related to water quality (FDEP 2009).

SOILS

The soil map units identified by the Natural Resources Conservation Service in the area of analysis for soils are depicted on figure 8. A map unit consists of one or more soils for which the unit is named. Soils that are almost alike, except for differences in the texture of the surface layer or underlying material, make up a soil series. Soil series can be further divided into soil phases on the basis of slope, salinity, wetness, and other factors that influence their use. A description of the soil series found within the area of analysis is included in table 4.

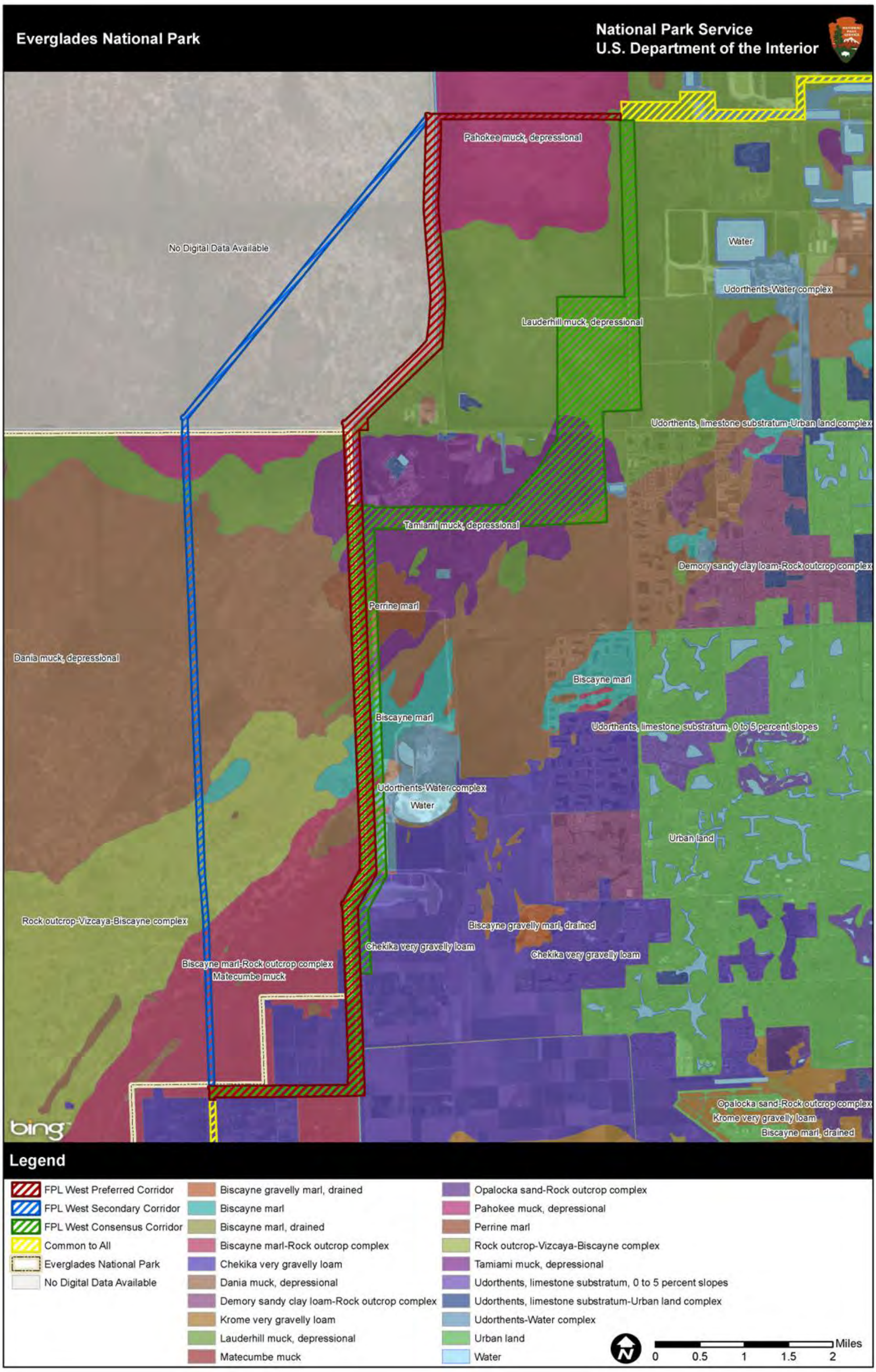


FIGURE 8: SOIL MAP UNITS

TABLE 4: SOIL SERIES DESCRIPTIONS

Soil Series	General Characteristics
Biscayne	The Biscayne series consists of shallow, poorly and very poorly drained, moderately permeable soils over limestone. They formed in recent calcareous deposits of dominantly silt-sized sediments that precipitated from marine or fresh water. Slopes range from 0 to 1 percent.
Perrine	The Perrine series consists of moderately deep, poorly drained soils in lowlands along the Atlantic Coast of Peninsular Florida. They formed in calcareous silty and loamy sediments of marine or freshwater origin over limestone. Slopes are less than 1 percent.
Chekika	The Chekika series consists of very shallow, somewhat poorly drained soils over limestone bedrock adjacent to the Miami Ridge. They were formed by the scarification of oolitic limestone outcrops and subsequent filling of cavities and solution holes by marly sediments. Slopes range from 0 to 2 percent.
Dania	The Dania series consists of shallow, very poorly drained, soils in fresh water marshes or swamps on the fringes of areas of deeper organic soils. They formed in thin deposits of well decomposed, hydrophytic herbaceous plant remains over sandy marine sediments overlying limestone bedrock. Slopes are less than 2 percent.
Lauderhill	The Lauderhill series consists of moderately deep, very poorly drained soils in fresh water marshes. They formed in well decomposed, hydrophytic, herbaceous plant remains overlying limestone bedrock. Slopes are 0 to 1 percent.
Pahokee	The Pahokee series consists of deep, very poorly drained soils in fresh water marshes. They formed in 36 to 51 inches of well decomposed, hydrophytic, herbaceous plant remains overlying limestone bedrock. Slopes are 0 to 1 percent.
Tamiami	The Absarokee series consists of moderately deep, well drained soils that formed in residuum or in colluvium derived from argillaceous sandstone and semiconsolidated shale, or in alluvium over bedrock. These soils are on sedimentary plains and hills. Slopes are 0 to 50 percent. Severe hazard of erosion on roads and trails.
Vizcaya	The Vizcaya series consists of very shallow and shallow, very poorly drained, slowly permeable soils over limestone. They formed in loamy, marine, or fresh water sediments. These soils are in broad, low freshwater marshes of the Everglades in Southern Peninsular Florida. Slopes are 0 to 2 percent

Source: USDA 2009a.

Within the area of analysis inside Everglades National Park, the soils are mainly characterized as muck (peat). Mucks, marls, and gravelly loams are present outside the park in the area of analysis. No digital soil data was available for the Everglades and Francis S. Taylor Wildlife Area, which is located just north of the park on the north side of Tamiami Trail. Soils in the WCAs are expected to be similar to those in NESRS, primarily composed of mucks. The soils present in the area of analysis are described in more detail in the sections below.

Soils in the East Everglades Expansion Area and Surrounding Wetlands

The soils in the EEEA are mainly characterized as peat or marl, although there may be areas of rock outcropping (NPS 2010c; U.S. Department of Agriculture, Natural Resources. 1996). Peat is formed over decades under anaerobic conditions during long periods of inundation, in which the volume of decaying plant material exceeds the ability of microbes to decompose it. The northeastern Everglades and SRS are typified by Loxahatchee peat, a peat type that occurs within the deepest marsh areas that contain remnants of slough vegetation, namely that of white water-lily (*Nymphaea odorata*) (Lodge 2005). Once exposed to air, microbe populations increase and decomposition accelerates, leading to soil loss. Such soil loss and soil subsidence has occurred in sawgrass marsh areas of the Everglades Agricultural Area north of the park as a result of early draining activities. According to Ingebritsen et al. (2005), the initial peat

thickness tapered southward from approximately 12 feet near Lake Okeechobee to about 5 feet near the southern boundary of the Everglades Agricultural Area. Subsidence from 3 to as much as 9 feet has occurred in cultivated areas, and uncultivated areas of similar size have subsided as much as 3 feet.

Marls (muds high in calcium) are formed by precipitation of calcite from large mats of submerged periphyton, a diverse assemblage of various algal groups and other microorganisms. These soils were formed in relatively shallow waters with a shorter period of inundation (50–150 days each year) than peat deposits and therefore have higher rates of microbial activity and decomposition of organic matter. Marls cover the extensive peat deposits of the central Everglades (NPS 2010c) and appear within portions of the EEEA in the area of analysis (see figure 8). Marl soils are typically very low in phosphorus content, take many years to form, and are sensitive to physical disturbance. While soils data is not available for WCA 3B, soils at this location are expected to be similar to those within the EEEA and/or adjacent Pennsuco wetlands.

Alteration of historic hydrology and degraded water quality has led to substantial changes in soil conditions throughout the project area. Degradation of ridge and slough patterning, due at least in part to loss of natural soil elevation differences, has been described in NESRS and WCA 3B (SCT 2003, McVoy et al. 2011). Soil subsidence of 1-2 feet has been suggested in the immediate vicinity of the project area (McVoy et al. 2011(for team reference, see pg 194, Figure 8.8)). Data showing loss of local soil elevation differences has been collected in WCA 3B (SCT 2003). Similar vegetation patterning in the Pennsuco wetlands indicates that soil elevation changes have occurred there as well. Unnatural deposition of suspended sediment resulting from the culverting of Tamiami Trail has also been suggested to have degraded soil conditions in the project area (SCT 2003). Based on the presence of cattail, Carolina willow and other plant species indicative of nutrient enrichment immediately south of Tamiami Trail, soils in the northern part of the project area within the park likely have phosphorus levels in excess of historical conditions. In addition to the changes in soils described above for wetlands in the EEEA, WCA 3B and Pennsuco, soils in the Bird Drive basin and surrounding agricultural lands have undergone greater levels of drainage, are more isolated from surrounding wetlands and have experienced significant physical disturbance from off road vehicles, rock mining and agricultural practices. As a result, soils in and around the Bird Drive basin are considered to be substantially more degraded than those in the EEEA, WCA 3B and Pennsuco wetlands. Future restoration projects, when implemented, have the potential to limit further degradation and may restore natural soil forming processes in the EEEA, WCA 3B and Pennsuco wetlands. Soils in the West Consensus Corridor are generally not anticipated to benefit from those restoration efforts.

Soils play an important role in the uptake of nutrients within nutrient-poor wetland systems such as the Everglades. Soils become phosphorus enriched following the capacity of the biota to uptake phosphorus from the water column or detritus (Gaiser et al. 2005). Marls and peat soils are susceptible to physical disturbances. Community structure has been shown to be altered by even minute phosphorus inputs to the system of as little as 5 µg/L above ambient conditions (to a spike rush/periphyton community in central SRS), which caused changes in soils after three years (Gaiser et al. 2005; Gaiser et al. 2007). Ross et al. (2003) reported tall sawgrass (*Cladium jamaicense*) stands in northern SRS that were associated with thicker soils than throughout the rest of the SRS, but within NESRS soils thin from west to east, becoming highly calcareous in drier eastern areas.

SOILS EAST OF THE PARK BOUNDARY

Portions of the West Consensus Corridor have been developed for industrial (mining), agricultural, residential, or commercial uses, which involved soil disturbance and possibly involved placement of fill material. Soils in the northern two-thirds of the area, through Bird Drive basin and north to the Levee substation, are similar to those described above for the EEEA, being mainly marls and mucks (peats).

Existing disturbances in these northern areas tend to be more industrial in nature, with high-intensity development occurring near the quarry and cement factory. Existing disturbances in the southern portion of the area consist of agricultural use and open fields. Soils in these areas are classified as very gravelly loams (NRCS 2010).

Prime or Unique Farmland Soils

Although the project area does not contain any prime farmland soils (see chapter 1), it does contain a soil type that could be classified as a unique farmland soil. The Natural Resource Conservation Service policy and procedures on unique farmland are published in the Federal Register, Vol. 43, No. 21, January 31, 1978. Unique farmland is land, other than prime farmland, that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce economically sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of crops are tree nuts, olives, cranberries, citruses and other fruits, and vegetables (NASS 2013). Unique farmland is not based on national criteria. One soil type that could be classified as a unique farmland soil is the Chekika very gravelly loam that occurs within a small portion of the EEEA and covers a more extensive area south and east of the park boundary (figure 8).

VEGETATION AND WETLANDS

Everglades National Park is the only place in the U.S. jointly designated as an International Biosphere Reserve, a World Heritage Site, and a Wetland of International Importance. These designations are based largely on the unique hydrologic and wetland environment found in the Everglades ecosystem. In 2010, Everglades National Park was relisted as a World Heritage Site in Danger because of serious and continuing degradation of its aquatic ecosystem (UNESCO 2010).

OVERVIEW OF NORTHEAST EVERGLADES VEGETATION/WETLANDS AND ECOLOGICAL FUNCTION

Hydrophyte: a plant that grows only in water or very moist soil.

The majority of the land in the park meets the Cowardin et al. (1979) definition of wetlands. Cowardin et al. (1979) define wetlands as transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Under the Cowardin et al. (1979) classification system, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year. The Everglades wetlands have been reduced in size and context over the last century; nearly 50 percent have been lost to draining for agricultural and other development (SFERTF 2008).

The northeast area of the EEEA, south of Tamiami Trail is part of the area known as the NESRS. As described in the “Hydrology” section, during pre-drainage conditions, NESRS was characterized by wide expanses of open water slough with elevated sawgrass ridges interspersed with tree islands (SCT 2003). The ridges and sloughs were organized in a pattern oriented parallel to the direction of flow. Historically, Everglades slough vegetation communities were characterized by floating, submerged, and some emergent species found in areas with the longest hydroperiods and deepest water that normally did not dry down.

According to the SFWMD land use and land cover data (SFWMD 2011a), which uses the Florida Department of Transportation's Florida Land Use, Cover, and Forms Classification System (FLUCFCS) (FDOT 1999), vegetation communities in the NESRS area now include freshwater marshes (both sawgrass and graminoid-prairie marsh), mixed wetland hardwoods, and mixed wetland shrubs. Hundreds of hardwood hammocks or tree islands, composed of mixed wetland hardwoods and/or mixed wetland shrubs, are found throughout this area. The hammocks range in size from a few square yards to several hundred acres, and support a variety of vegetation species including some state-listed species (NPS 2006b). Compartmentalization of the Everglades has reduced water deliveries, altered distribution, and altered cyclical patterns of water deliveries have reduced downstream sheet flows and suppressed the natural processes and functions within NESRS area. The L-29 canal and levee create a damming effect, severely restricting water deliveries into the park. Stage restrictions within the L-29 canal due to roadbed limitations and operational limitations further contribute to reduced water deliveries. The reduction and changes in water delivery to the park have affected wetland plant communities within NESRS area.

Although the ecosystem has been adversely affected by development and long-term water management activities, the remaining portions of the Everglades ecosystem are still considered to be high-quality wetlands by both the National Park Service (NPS) and the U.S. Army Corps of Engineers (USACE). These wetland communities provide a variety of ecological functions and values to the Everglades ecosystem. The primary functions of the wetlands in the project area include surface and subsurface water storage, support of the biogeochemical processes (nutrient cycling, peat accretion, etc.), support of freshwater marsh plant communities, and habitat for native fish and wildlife. Wetlands provide habitat for numerous wildlife species, including many special-status species. See the "Wildlife" and "Special-status Species" sections for more information on the animals that inhabit and depend on the wetland habitats of the project area.

In addition to wildlife support, the wetlands of the Everglades also provide a number of valuable functions such as surface water filtration and storage, flood abatement, erosion prevention, and natural water quality treatment. Mixed wetland hardwoods, shrubs, and sawgrass marsh provide water storage and support for biogeochemical processes, although the water storage function of the NESRS area has been degraded by the damming effect of the Tamiami Trail and altered sheet flow distribution and timing from the north. Nutrients (nitrogen and phosphorus) flowing into the wetlands are taken up by vegetation in the park and marsh vegetation slows surface water flow that can cause erosion thereby providing water quality benefits to downstream areas. Alterations in the natural hydroperiods and hydropatterns have changed the microtopography within the historic ridge and slough habitat of the NESRS area. Soil loss, as described above, also affects microtopography. These changes are discussed in more detail under the "Water Quality" and "Hydrology" sections.

VEGETATION AND WETLANDS IN THE AREA OF ANALYSIS

Native Vegetation in the EEEA and Surrounding Wetlands

Native plant species abundance, diversity, and community structure vary based on conditions such as topography, hydroperiod, water depth, drydown conditions, alterations in the natural fire regime, and complex intraspecific relationships. The vegetation is primarily composed of the native Everglades wetland species, and the majority of the area represents a relatively intact Everglades wetland plant community. Appendix I lists vegetation found within the FPL West Secondary and FPL West Preferred Corridors within the EEEA of the park. Cattail (*Typha* spp.), a weedy native species, is found immediately downstream of many culverts along Tamiami Trail and along the L-31N levee. An area of mixed wetland hardwoods, including pond apple and willow (*Salix* sp.), that is currently used as roosting and nesting sites for listed bird species also exists downstream, of the culverts along Tamiami Trail and along the L-31N levee.

Nonnative Vegetation in the EEEA

Nonnative vegetation is found within the northern region of the EEEA. Nonnative species such as Brazilian pepper (*Schinus terebinthifolius*), an invasive shrub species, occur in varying densities in disturbed, drier soils adjacent to roads and on tree islands where it grows at the bases of native trees. Melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina equisetifolia*), and old World climbing fern (*Lygodium microphyllum*) also occur in low densities in the forested wetlands. Extensive treatment of primarily Australian pine and melaleuca within the EEEA during the past decade has significantly reduced the amount of these species in the area. Invasive aquatic species including hydrilla (*Hydrilla verticillata*), water lettuce (*Pistia stratiotes*), torpedo grass (*Panicum repens*), and Peruvian primrosewillow (*Ludwigia peruviana*) occur in the deeper water associated with the culvert openings or canals.

Wetlands

The dominant habitat in the NESRS/EEEA is a ridge and slough wetland. The slight southerly gradient throughout the Everglades permits water to move slowly from the north to the south. The wetlands along the eastern boundary of the EEEA are known to have been altered by the hydrological effects of the adjacent canal, levee, and rock mining activities to the east, and other historical impacts on the natural flow in the area; however, wetlands within the park are less degraded than most wetland areas outside the park due to the size of the park and the limited development within the park. Wetlands within the EEEA are considered to be less degraded than wetlands outside the park due to their connectivity to other wetlands, low cover of invasive species and lack of physical disturbance to soils.

The majority of the vegetation cover in the area of analysis is classified as wetlands, including the West Consensus Corridor east of the park. The FLUCFCS land use/land cover data provided through SFWMD (2011a) were used to determine the vegetative cover in these corridors (table 5). Figure 9 depicts the wetlands and vegetative cover of the study area using the FLUCFCS classifications. FLUCFCS classifications are based on interpretation of aerial photography and ground-truthing was not conducted; therefore, some differences may exist between the FLUCFCS data and the current vegetative cover, especially in areas where exotic vegetation has been cleared or those that were incorrectly classified in the development of the map.

As shown in figure 9, the dominant vegetative cover type in the park is sawgrass marsh (FLUCFCS 6411). There are also areas of non-forested freshwater marsh (graminoid prairie-marsh FLUCFCS 6410); wet prairie (FLUCFCS 6430); some wetland hardwood areas (hammocks or tree islands),of mixed shrubs (FLUCFCS 6172) and wet melaleuca (6191), an exotic species; and channelized streams or waterways (FLUCFCS 5120) in the park within the FPL corridors. Areas of agricultural land for field crops (FLUCFCS 2140) can be found within the FPL West Preferred Corridor south of the park. Areas of dry prairie (FLUCFCS 3100) and shrub and brushland (FLUCFCS 3200) can also found in the FPL West Preferred Corridor south the park. Areas of shrub and brushland are found in the study area outside the park boundary in the FPL West Secondary Corridor in the area of analysis. A portion of the FPL West Preferred Corridor south of Tamiami Trail is located outside of the park; this includes the L-31N canal and some land east of the canal. Vegetative cover types in the portion of the FPL West Preferred Corridor outside of the park include channelized waterways and canals, Brazilian pepper, field crops, upland shrub and brushland, mixed shrubs, freshwater marshes (sawgrass), freshwater marshes (graminoid prairie-marsh), mixed wetland hardwoods, wet melaleuca, rock quarries, herbaceous (dry) prairie. North of the park boundary, the FPL West Secondary and FPL West Preferred Corridors traverse the Everglades and Francis S. Taylor Wildlife Management Area(in WCA 3B). In this area, the FPL West Secondary Corridor crosses mainly sawgrass marsh toward its nexus point with the FPL West Preferred Corridor. North of the park, in the Everglades and Francis S. Taylor Wildlife Management Area, the FPL West

Preferred Corridor crosses a mixture of mostly sawgrass marsh and graminoid prairie marsh before turning east and exiting the Everglades and Francis S. Taylor Wildlife Management Area. Between the Everglades and Francis S. Taylor Wildlife Management Area and the Levee Substation, the FPL West Preferred Corridor crosses mostly graminoid prairie marsh and a few areas of wet melaleuca.

TABLE 5: LAND COVER TYPES WITHIN THE CORRIDORS IN THE AREA OF ANALYSIS

Vegetative Cover/Land Use Type	FLUCFCS Code for Land Cover	FPL West Secondary Corridor	FPL West Preferred Corridor	West Consensus Corridor
Wetlands	**6000**			
Freshwater marshes – sawgrass	6411	X	X	X
Freshwater marshes – graminoid prairie-marsh	6410	X	X	X
Wet prairie	6430		X	X
Wet melaleuca	6191	X	X	X
Mixed Wetland Hardwoods	6170		X	X
Mixed shrubs	6172	X	X	X
Non-wetlands				
Urban and Built Up	**1000**			
Commercial and Services	1400			X
Rock Quarries	1630		X	X
Holding Ponds	1660			X
Agriculture	**2000**			
Improved Pasture	2110		X	
Field Crops	2150		X	X
Tree Crops	2220		X	X
Horse Farms	2510		X	X
Rangeland	**3000**			
Herbaceous (dry prairie)	3100	X	X	X
Shrub and Brushland	3200		X	X
Mixed Rangeland	3300			X
Upland Hardwood Forests	**4000**			
Melaleuca	4240			X
Brazilian pepper	4220		X	X
Barren (disturbed land)	7400			X
Roads and Highways	8140			X
Water (channelized streams)	5120	X	X	X

Source: SFWMD 2011a

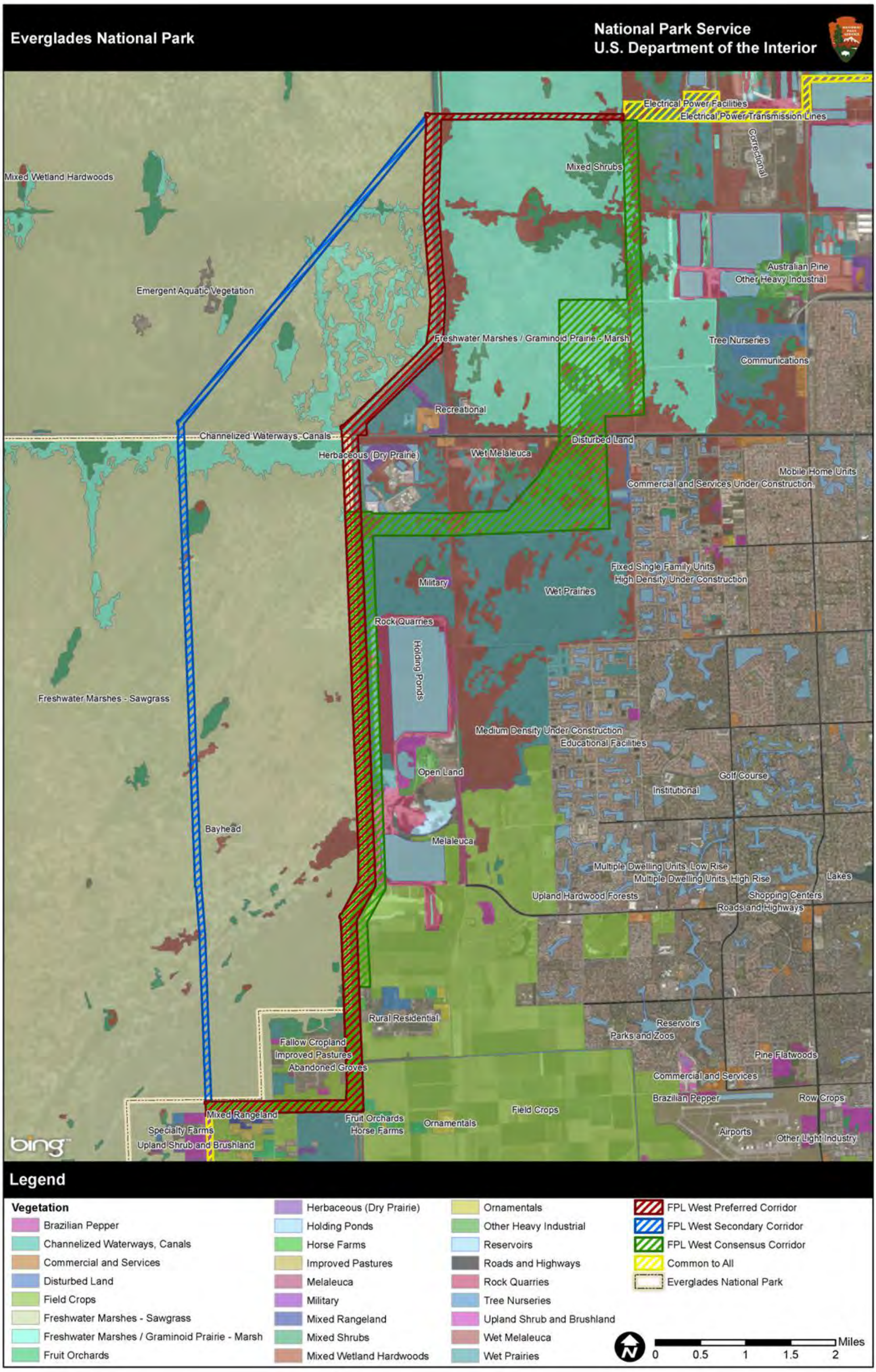


FIGURE 9: WETLANDS AND VEGETATIVE COVER MAP

Vegetation within the West Consensus Corridor

The West Consensus Corridor varies considerably in vegetation cover depending on land use and proximity to highways and developments. Based on the FLUCFCS land cover data and aerial photos of the area (see figure 9), the southern end is primarily agricultural, consisting of field crops (FLUCFCS 2150), tree crops (FLUCFCS 2220), and horse farms (FLUCFCS 2510). Refer to the "Adjacent Land Uses and Policies" section in this chapter for a full description and mapping of land uses. The central portion of the West Consensus Corridor contains rock quarries (FLUCFCS 1630), holding ponds (FLUCFCS 1660), correctional development (FLUCFCS 1760), and commercial development (FLUCFCS 1400). Patches of upland shrub and brushland (FLUCFCS 3200),mixed rangeland (FLUCFCS 3300), Brazilian pepper (FLUCFCS 4220), and melaleuca (FLUCFCS 4240) are evident in and near these disturbed areas. The northeast section of the West Consensus Corridor is less developed, with wet prairie (FLUCFCS 6430), mixed wetland hardwoods (FLUCFCS 6170), mixed shrubs (FLUCFCS 6172), and wet melaleuca (FLUCFCS 6191) prevalent in the Bird Drive basin. The Bird Drive basin wetlands were described in a study done in 1988 (McMahon 1988) and reported in 1989 (DERM 1989). At that time, disturbance from the use of all-terrain vehicles in the area was evident, as well as the colonization by the exotic melaleuca. Both of these conditions were noted in this area during recent field visits (Cunningham pers. comm. 2012). Along Tamiami Trail, there are some areas of disturbed land (FLUCFCS 7400) and commercial and services (FLUCFCS 1400).

The Pennsuco wetlands north of the Tamiami Trail are primarily freshwater graminoid marsh (FLUCFCS 6440) with mixed shrubs, wet melaleuca, and wet prairie. This wetland area is part of the Pennsuco Regional Mitigation Area. In 1995, the SFWMD began using Pennsuco as a regional off-site mitigation area, allowing permit applicants to make mitigation contributions for the acquisition, enhancement, and long-term management of Pennsuco lands as compensation for permitted wetland impacts (SFWMD n.d.). Disturbed lands (FLUCFCS 7400); roads and highways (FLUCFCS 8140); and, channelized streams, canals, or waterways (FLUCFCS 5120) are found throughout the West Consensus Corridor. Vegetative cover types listed in the paragraph above are discussed in more detail in table 6.

TABLE 6: DESCRIPTIONS OF VEGETATIVE COVER TYPES

Vegetative Cover Type	Description
Tree Crops (FLUCFCS 220)	Orchards and groves generally occur in areas with a specific combination of soil qualities and climatology factors. Water bodies, which moderate the effects of short duration temperature fluctuations, often are in close proximity to this type of agriculture.
Improved Pasture (FLUCFCS 2110)	This category in most cases is composed of land which has been cleared, tilled, reseeded with specific grass types, and periodically improved with brush control and fertilizer application.
Field Crops (FLUCFCS 2150)	Field crops are agronomic crops that, due to spacing or growth habit, do not exhibit a pattern of parallel rows on the photography. Examples in Florida are wheat, oats, hay, other grasses, sugar cane, and watermelons. In the SFWMD the primary field crop types are hay, grasses, and sugar cane.
Herbaceous (Dry Prairie) (FLUCFCS 3100)	This category includes upland prairie grasses which occur on non-wetland soils but may be occasionally inundated by water. These grasslands are generally treeless with a variety of vegetation types dominated by grasses, sedges, rushes and other herbs with some saw palmetto (*Sabal palmetto*) present.
Shrub and Brushland (FLUCFCS 3200)	Shrub and Brushland is used for areas that have over 67% shrub cover and less than 33% herbaceous cover. This land cover type usually grades into flatwoods, wet flatwoods, wet prairies (savannahs), marsh, stream swamps or hardwood hammocks along streams and creeks, or upland live oak (*Quercus virginiana*) or cabbage palm (*Sabal palmetto*) hammocks. Common species include gallberry (*Ilex glabra*), wax myrtle (*Myrica cerifera*), saltbush (*Baccharis halimifolia*), blueberries (*Vaccinium* spp.), rusty lyonia (*Lyonia ferruginea*), fetterbush (*L. lucida*) and other shrubs and brush, as well as various types of short herbs and grasses.

Vegetative Cover Type	Description
Mixed Rangeland (FLUCFCS 3330)	When more than one-third intermixture of either grassland or shrub-brushland range species occurs, the area is classified as Mixed Rangeland under FLUCFCS.
Brazilian Pepper (FLUCFCS 4220)	This exotic, pestilent tree species is commonly found on disturbed sites. Communities of these small, shrub-like trees are often established along borrow-pits, levees, dikes and in old disturbed fields.
Melaleuca (FLUCFCS 4240)	This exotic tree species occurs in almost pure stands. It is an aggressive competitor, invading and often taking over a site, forming a dense stand. Melaleuca generally is an indicator of a disturbed site.
Mixed Wetland Hardwoods (FLUCFCS 6170)	This category is for those wetland hardwood communities which are composed of a large variety of hardwood species tolerant of hydric conditions and exhibit an ill-defined mixture of species.
Mixed Shrubs (FLUCFCS 6172)	This class is used for wetland areas that are dominated by woody vegetation less than 20 feet in height. These areas are often associated with areas of transitional hydrology or regenerating swamps and are typically found in shallow depressions and the upper edges of poorly defined drainages (sloughs), rivers, creeks or streams. They also occur in seasonally or temporarily wet situations near man-induced disturbances such as an impoundment, road, railroad, or transmission line/pipeline corridor. This community is comprised of a mixture of various shrubs, most commonly wax myrtle (*Myrica cerifera*), saltbush (*Baccharis halimifolia*), buttonbush, and elderberry (*Sambucus canadensis*) with some aquatic and herbaceous vegetation or primrose willows (*Ludwigia* spp.) intermixed.
Wet Melaleuca (FLUCFCS 6191)	This class includes Melaleuca found growing in wetland environments such as marshes and wet savannahs. It is also found in low areas and can invade cypress swamps. Melaleuca tolerates most subtropical ecosystems, preferring wet to intermittently wet sites and can survive extended flooding, moderate drought, and some salinity.
Freshwater Marsh / Graminoid Prairie Marsh (FLUCFCS 6410)	Freshwater marshes where one or more of the species predominate, but have less than 66 percent coverage: sawgrass, cattail (*Typha domingenis*, *T. latifolia*, or *T. angustifolia*), arrowhead (*Sagittaria* sp.), maidencane (*Panicum hemitomon*), buttonbush (*Cephalanthus occidentalis*), cordgrass (*Spartina bakeri*), giant cutgrass (*Zizaniopsis miliacea*), switchgrass (*Panicum virgatum*), bulrush (*Scirpus americanus*, *S. validus*, or *S. robustus*), needlerush (*Juncus effuses*), common reed (*Phragmites communnis* or *P. australis*), and arrowroot (*Thalia dealbata* or *T. geniuclata*).On these sites, surface water is present for extended periods during the growing season, but is absent by the end of the growing season in most years. Periods of inundation are intermediate between deep marshes and wet prairies; sites are usually covered with water at least two months of the year and undergo prolonged periods of soil saturation.
Sawgrass Marsh (FLUCFCS 6411)	Freshwater marsh dominated by sawgrass (*Cladium jamaicensis*). Sawgrass marsh is widespread in Florida and is the predominant species in the Everglades, accounting for 70% of the landscape. Sawgrass grows equally well in water several feet deep and on moist ground several feet above the water table. Sawgrass may exceed 10 feet in height and form an impenetrable mass. Two categories of sawgrass are recognizable: dense and sparse. The dense type occurs on higher ground, and although it appears monotypic, it may include small areas of other tall emergent plants such as cattail (*Typha* spp.), ferns, and small shrubs. Unlike cattail, sawgrass is seldom found in highly disturbed situations.
Wet Prairie (FLUCFCS 6430)	This classification is composed predominately of grassy vegetation on hydric soils and is usually distinguished from marshes by having less water and shorter herbage. These communities are predominated by one or more of the following species: sawgrass, maidencane, cordgrasses (*Spartina bakeri* and *S. patens*), spike rushes (*Eleocharis* sp.), beak rushes (*Rhynchospora* sp.), St. Johns wort (*Hypericum* sp.), spiderlily (*Hymenocallis palmeri*), swamplily (*Crinum americanum*), yellow-eyed Grass (*Xeric ambigua*), and whitetop sedge (*Dichromena colorata*).

Invasive Plants

Many plant species have been introduced to Florida from countries around the world by past and recent settlers and visitors. These nonnative species spread rapidly, in part, because they have not evolved here and have no natural predators or diseases to keep their growth in check (NPS 2013b). It is estimated that approximately 250,000 acres of the park are infested with exotic species (SFERTF 2008). Exotic plant infestations in the park may be exacerbated by soil disturbance, increased nutrients, and hydrological

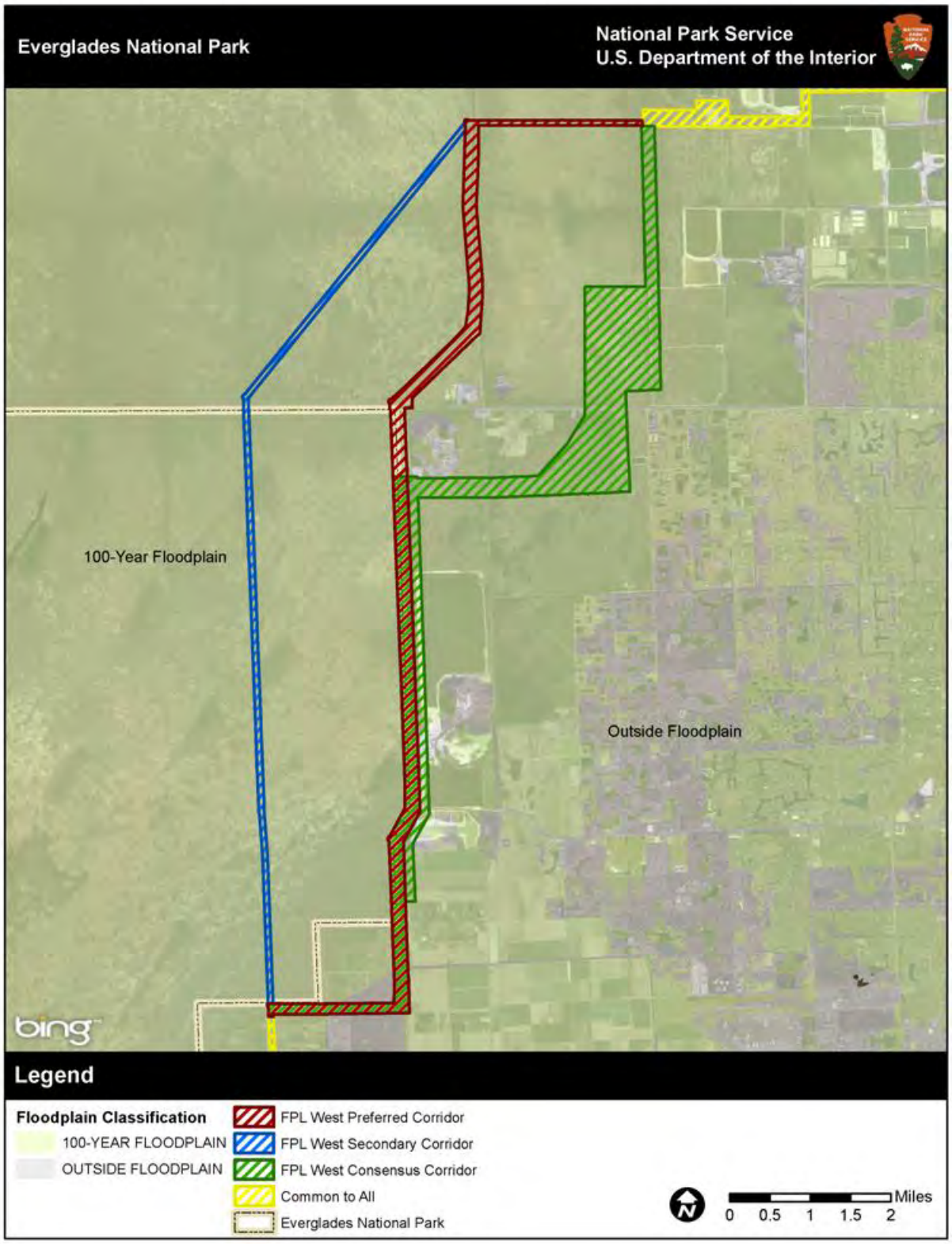
modification. Many exotic species are flourishing in a variety of habitats and are negatively affecting the Everglades ecology.

As noted above, exotic plants are found in and along the corridors within the park and are abundant in disturbed locations in the West Consensus Corridor. Primary exotic plants in the area of analysis include melaleuca and Brazilian pepper, which can occur in pure stands, but some areas of native hardwood wetland have been colonized by a mix of exotic species. According to available land use data, some of the forested wetlands within and adjacent to the boundaries of the FPL West Preferred Corridor were infested with invasive nonnative vegetation, including melaleuca and Brazilian pepper, but the park staff has been treating these and other species since the purchase of the property. Approximately 70 percent of the melaleuca has been treated with positive results, but some untreated areas remain, mainly those areas closest to the eastern boundary (NPS 2006b).

FLOODPLAINS

Floodplains are low-lying areas that are subject to periodic inundation due to heavy precipitation. These areas are generally adjacent to lakes, rivers, and streams. The periodic flooding and drying in these areas creates unique habitat that supports a wide variety of plant and animal species. Floodwaters often carry nutrient-rich sediments that contribute to a fertile environment for vegetation. Floodplains are also beneficial for wildlife by creating a variety of habitats for fish and other animals. In addition, floodplain functions include temporary storage of high flows, slowing flow velocity, providing groundwater recharge, and reducing downstream impacts of high flows such as flooding and erosion. Regulatory floodplains are those areas classified as 100-year floodplains, which have a 1 percent chance of flooding in a single year, 500-year floodplains, which have a 0.2 percent chance of flooding in a single year, and flood zones in high hazard areas, such as coastal areas or areas prone to flash flooding. Most of the land and wetlands in the Everglades National Park, and in the West Consensus Corridor east of the park are in the 100-year floodplain. A floodplain map is provided in figure 10.

Over the last 100 years, the construction of roads, canals, levees, and other structures throughout the Everglades has affected the natural floodplain processes and therefore altered the natural flood control and dynamics critical to floodplain function in the Everglades ecosystem. Regional water management has drained and dried vast stretches of the floodplain/wetland system. Transportation corridors (highway and railways) act as dams trapping flows while canals and levees convey flows against natural drainage patterns (away from Florida Bay to the Atlantic Ocean). Therefore, the existing condition of the floodplain and its associated functions and floodplain values in and within proximity of the project area are degraded from its natural conditions. Flooding flows north of the park are generally currently dammed behind the L-29 levee and Tamiami Trail which are then diverted to the east.



Source: FEMA 2012.

FIGURE 10: FLOODPLAIN MAP

It is NPS policy "to protect, preserve, and restore the natural resources and functions of the floodplains; avoid the long- and short-term environmental effects associated with the occupancy and modification of floodplains; and avoid direct and indirect support of floodplain development and actions that could adversely affect the natural resources and functions of floodplains or increase flood risks" (NPS 2006a). Further, it is the Federal Emergency Management Agency's policy to avoid adverse impacts associated with the occupancy and modification of floodplains (44 CFR 9). Authority for regulating this management is provided under Executive Order 11988, which established procedures to ensure that potential effects of floodplain hazards and floodplain management are considered when taking an action that may cause adverse impacts on floodplains. The NPS is under executive order and policy to reduce or eliminate development in floodplains. Because the majority of the project area is classified as a floodplain, it is not possible to completely avoid floodplains in the project area. However, the impacts on floodplain function and values may be significantly reduced depending on the where those impacts occur. Generally speaking, floodplain function and value increases significantly west of the current Everglades National Park boundary.

FLOODPLAIN WITHIN THE PARK

Within the park, floodplain function and values are in relatively good condition. Floodplain functions and values in the existing FPL property in the park are currently similar to the floodplain in the park property around it. Closer to roads such as the Tamiami Trail, floodplain functions have been disturbed and the disturbances have resulted in changed hydrologic function, vegetation, and other factors related to floodplain value.

FLOODPLAIN EAST OF THE PARK

Floodplain values have been compromised over time in the floodplain outside the park in the West Consensus Corridor; they have been more extensively fragmented by levees, industrial, and urban development, and are more disturbed and established with nonnative or invasive plant species, causing lower floodplain function and values in this area.

SOUNDSCAPES

Pursuant to NPS *Management Policies 2006* and Director's Order 47: Sound Preservation and Noise Management, an important component of the NPS mission is the preservation of natural soundscapes associated with national park units (NPS 2006a). Natural soundscapes exist in the absence of human caused sound. The natural soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Natural sounds are intrinsic elements of the environment and part of "the scenery and the natural and historic objects and the wild life" protected by the NPS Organic Act. They are vital to the visitor experience of many parks and provide valuable indicators of the health of various ecosystems. Noise is a concern because it can impede ecological function and diminish the ability of the NPS to accomplish its resource protection mission.

The preservation of natural soundscapes is also an important management objective for the Everglades because of the 1934 enabling legislation, which emphasized preservation of "unique flora and fauna and the essential primitive natural conditions." Consistent with the enabling legislation, the draft general management plan (GMP) describes the desired condition of natural soundscapes in the park as follows:

> Natural soundscapes, which are important to many vertebrate and invertebrate species, are preserved. (For example, bats and dolphins use reflected sound waves (echolocation) to navigate and to locate prey; frogs, birds, and insects rely on natural sounds to find mates or avoid predators.) Visitors have opportunities in most areas of the park to experience natural sounds.

Natural sounds are necessary for ecological functioning and occur within and beyond the range of sounds that humans can perceive. Many mammals, insects, and birds decipher sounds to find desirable habitat and mates, avoid predators and protect young, establish territories, and to meet other survival needs.

For many visitors, the ability to hear clearly the delicate and quieter intermittent sounds of nature, the ability to experience interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time are important reasons for visiting national parks.

NPS policies are focused on soundscape management within national parks and do not address the prevention of noise in residential areas. However, numerous other federal agencies have developed criteria for community noise exposure, including the Federal Highway Administration, Federal Transit Administration, Federal Aviation Administration, and U.S. Department of Housing and Urban Development, among others. Most community noise standards are based on dose-response studies of human annoyance in response to noise and take into account the increased sensitivity of residential areas to noise occurring at night relative to daytime noise.

SOUNDSCAPES TERMINOLOGY

The magnitude of noise is described by its sound pressure. Because the range of sound pressure varies greatly, the logarithmic scale decibel (dB) is used to relate sound pressure. Sound pressures described in decibels are often defined in terms of frequency-weighted scales. A sound level measurement is usually expressed as an A-weighted average energy value over a specified time interval. A-weighting provides a method of summing sound energy across the audible spectrum in a way that approximates human judgments of loudness, in other words, how loud people would perceive a sound to be. Sound levels expressed in A-weighted decibels are indicated with the abbreviation “dBA.” Several examples of sound pressure levels in the dBA scale are listed in table 7.

Because sound is described in a logarithmic scale (i.e., dBA), sound levels cannot be added by ordinary arithmetic. In fact, an increase of 3 dB represents a doubling of sound energy, so two trucks traveling side-by-side would be 3 dB louder than one. Decibels are often related to perceived loudness, and in some frequency bands a 10-dBA increase can result in sounds that seem twice as loud (FHWA 2011).

Key metrics used to quantify soundscapes are described below.

Natural Ambient Sound Level (L_{nat}): The sound level of all natural sounds in a given area, excluding all mechanical, electrical, and other human-caused sounds, is considered the natural ambient sound level.

L_x (Exceedance Percentile): This metric represents the sound pressure level (L), in dBs, exceeded *x* percent of the time for the specified measurement period. For instance, L_{90} is the sound pressure level exceeded 90 percent of the time. L_{50} is the same as the median; the middle value where half the sound levels are above and half below.

TABLE 7: DECIBEL LEVELS OF COMMON SOUND SOURCES

Sound	Noise Level (dBA)	Effect
Shotgun firing, jet takeoff (at 100–200 feet)	130	Painful
Turbo-prop at 200 feet, rock concert	110–140	Threshold of pain begins around 125 dB
Thunderclap (near)	120	Threshold of sensation begins
Stereo (over 100 watts)	110–125	Regular exposure to sound over 100 dB of more than one minute risks permanent hearing loss
Symphony orchestra, chainsaw, jackhammer	110	
Jet flyover (1,000 feet)	103	
Electric furnace, garbage truck, cement mixer	100	No more than 15 minutes of unprotected exposure recommended for sounds between 90–100 dB
Subway, motorcycle (at 25 feet)	88	Very annoying
Lawnmower/nearby thunder	85–90	85 dB is the level at which hearing damage (8 hrs) begins
Recreational vehicles	70–90	
Diesel truck (40 mph at 50 feet)	84	80 dB or higher is annoying, interferes with conversation, constant exposure may cause damage
Dishwasher, washing machine	75–78	70 dB or higher is intrusive, interferes with telephone conversation
Vacuum cleaner	70	
Automobile (45 mph at 100 feet)	60	Comfortable hearing levels are less than 60 dB.
Croaking raven (100 feet), conversation	50–65	
Quiet Office	50–60	
Refrigerator humming	40	Quiet
Daytime natural ambient in Everglades National Park (summer)	36	
Rustling leaves	20	Very quiet
Normal breathing	10	Barely audible
Lowest recorded natural ambient sound level during the winter in Yellowstone National Park backcountry.	0	Approximate threshold of human hearing at 1 kHz

Source: NIDCD n.d.

Energy Equivalent Sound Level (L_{eq}): Because environmental noise fluctuates from moment to moment, it is common practice to condense all of this information into a single number, called the "equivalent" sound level (L_{eq}). L_{eq} can be thought of as the steady sound level (or average sound level) that represents the same sound energy as the varying sound levels over a specified time period (typically 1 hour or 24 hours). The World Health Organization (WHO 1999) recommends "Where there are no clear reasons for using other measures, it is recommended that LA_{eq},T be used to evaluate more-or-less continuous environmental noises."

Day-Night Sound Level (L_{dn}): L_{dn} is the A-weighted L_{eq} for a 24-hour period with an added 10-dB penalty imposed on noise that occurs during the nighttime hours (between 10 p.m. and 7 a.m.). Many surveys have shown that L_{dn} is well correlated with human annoyance, and therefore this descriptor is widely used for environmental noise impact assessment (FTA 2006). American National Standards Institute Standard S12.9 Part 4 recommends using L_{dn} as the preferred descriptor of environmental noise. One limitation of L_{dn} is that people have difficulty relating an aggregate of perceived noise events to an

average noise level, especially when the time interval for averaging extends over long periods. The Federal Interagency Committee on Noise (FICON 1992) noted that criticism of L_{dn} (and other L_{eq} metrics) often stems from "lack of understanding of the basis for the measurement, calculation, and application of that metric."

SOUNDSCAPES IN EVERGLADES NATIONAL PARK AND ADJACENT UNDEVELOPED LAND

Soundscapes monitoring was conducted by NPS at a site considered generally representative of the area of the park within the project area.[3] The Shark Valley Road monitoring site (EVER002) is located approximately 3 miles south of the Shark Valley Visitor Center and 17.6 miles west of Krome Avenue in the Florida Power and Light Company Lands Environmental Impact Statement project area. The EVER002 site was monitored in the summer of 2008 (August 15 through September 8) and winter/spring of 2009 (February 23 and April 16). Detailed technical information on the soundscapes monitoring methodology and subsequent data analysis is provided in the NPS report *Baseline Ambient Sound Levels in Everglades National Park* (NPS 2012d).

In general, human-generated noise in the park is predominantly from vehicle traffic, aircraft overflights, visitor airboat use and administrative activities that involve motorboat, airboat, and/or aircraft use; these sounds usually emanate from developed areas, popular boating (or airboating) areas, campgrounds, and major roads (NPS 2010a). Aircraft overflights occur throughout the park and airboat use can occur in many areas. Natural sounds at the EVER002 site included wind and wind through foliage sounds and insects.

Table 8 summarizes the Shark Valley Road monitoring site characteristics during the daytime and nighttime, for both the summer and winter monitoring periods. The summer natural ambient during the daytime is 33.2 dBA, compared to 49.7 dBA at night. The winter/spring natural ambient was also higher at night compared to during the day. Nighttime natural ambient levels in both summer and spring were higher than during the daytime because of the high sound levels in the night and early morning hours resulting from insect and amphibian activity. The winter natural ambient was lower than the summer natural ambient at 28.4 dBA and 37.4 dBA in the daytime and nighttime, respectively. The higher natural ambient in summer was partially attributable to storms that occurred during monitoring period. Higher ambient sound levels at night due to insect and frog sounds do not imply that the nocturnal environment has a greater capacity to mask transportation and other low frequency noise. Most insect and frog sounds occupy high frequency bands, and sound energy in these bands do not interfere with human perception of low frequency sound.

TABLE 8: SHARK VALLEY (EVER002) SOUNDSCAPES METRICS (DBA)

	Daytime (7 a.m. – 7 p.m.)				Nighttime (7 p.m. – 7 a.m.)			
	L_{eq}	L_{50}	L_{90}	Natural Ambient	L_{eq}	L_{50}	L_{90}	Natural Ambient
Summer	52.2	40.4	30.7	33.2	53.8	51.1	40.2	49.7
Winter/Spring	44.8	36.7	23.8	28.4	46.3	40.1	21.7	37.4

Source: NPS 2012d.

[3] Vegetative cover directly affects how sounds propagate from a source to a receiver and the vegetative cover of the EVER002 monitoring site (emergent wetlands) is the same as the predominate vegetative cover for the areas of the park within the project area.

Wind and wind related sounds were the most dominant natural sound sources at this location, followed by water, birds and insects (NPS 2012d). Existing ambient L_{eq} sound levels including both natural and non-natural sounds were in the range of 45 to 54 dBA at the monitoring site.

On-site observations and off-site review of recorded audio data concluded that human sound sources were common during daytime hours (7 a.m. to 7 p.m.) in the summer season, accounting for 64 percent of the sounds heard at the EVER002 site (56 percent in the winter). Aircraft (general aviation, commercial jet, or military, not air tours) were audible 37 percent of the daytime during the summer; 17 percent during the winter. Sounds from visitors (e.g., motor vehicles, conversation, music, and watercraft use) were audible 27 percent of the daytime during the summer; and 39 percent during the winter (NPS 2012d). The EVER002 site was approximately 20 yards from the Shark Valley Road that includes motorized visitor tours (Shark Valley Tram) and bicycle traffic. Human sources of sound at this site included airboats, aircraft, vehicle sounds, and human voices (NPS 2012d).

The EVER002 monitoring results provide a snapshot of conditions within the interior of the park. Other locations within the park would have similar natural ambient levels (as demonstrated in NPS 2012d), but overall sound levels incorporating human-caused sounds would be different. For example, areas of the park adjacent to Tamiami Trail would experience greater traffic noise. Other undeveloped land outside the park boundary would also have natural ambient levels similar to those monitored in the park, with total sound levels varying based on proximity to noise sources such as roadways.

Overall, the data show the park is a very quiet place the majority of the time, with ambient sound levels (including natural and human caused sounds) less than 55 dBA L_{eq} (similar to quiet office; see table 7). Natural sounds such as wind, insects, amphibians are the dominate sounds. Human-caused sounds are audible most often during the daytime. Because of the low ambient level, the human caused sounds that are present can be detected at low levels over large distances from the sound sources.

SOUNDSCAPES IN TAMIAMI RESIDENTIAL COMMUNITIES

Soundscapes monitoring data for residential communities outside the park was not available. Existing L_{dn} was estimated based on population density. Natural ambient sound levels were not calculated for residential areas as this metric is only applicable to parks where the ability to appreciate natural sounds is expected. Human-caused sounds such as automobiles and lawn mowers are an accepted part of living in suburban areas.

The study area for the existing noise estimate was defined by selecting the 2010 U.S. census blocks comprising the portions of predominately residential neighborhoods closest to the potential transmission line corridors. These census blocks are within 1.5 and 3.5 miles of the West Consensus Corridor (see figure 11).

The study area included a mix of low-density residential areas, high-density residential areas, and large areas of undeveloped land. The study area included 1,149 census blocks and was approximately 46.6 square miles in size. The study area had a 2010 population of 89,394. As a result, the population per square mile was 1,918. Away from major roadways, EPA has determined L_{dn} can be estimated based on the following equation (USEPA 1974):

$$L_{dn} = 22 + 10\log(\text{people per square mile})$$

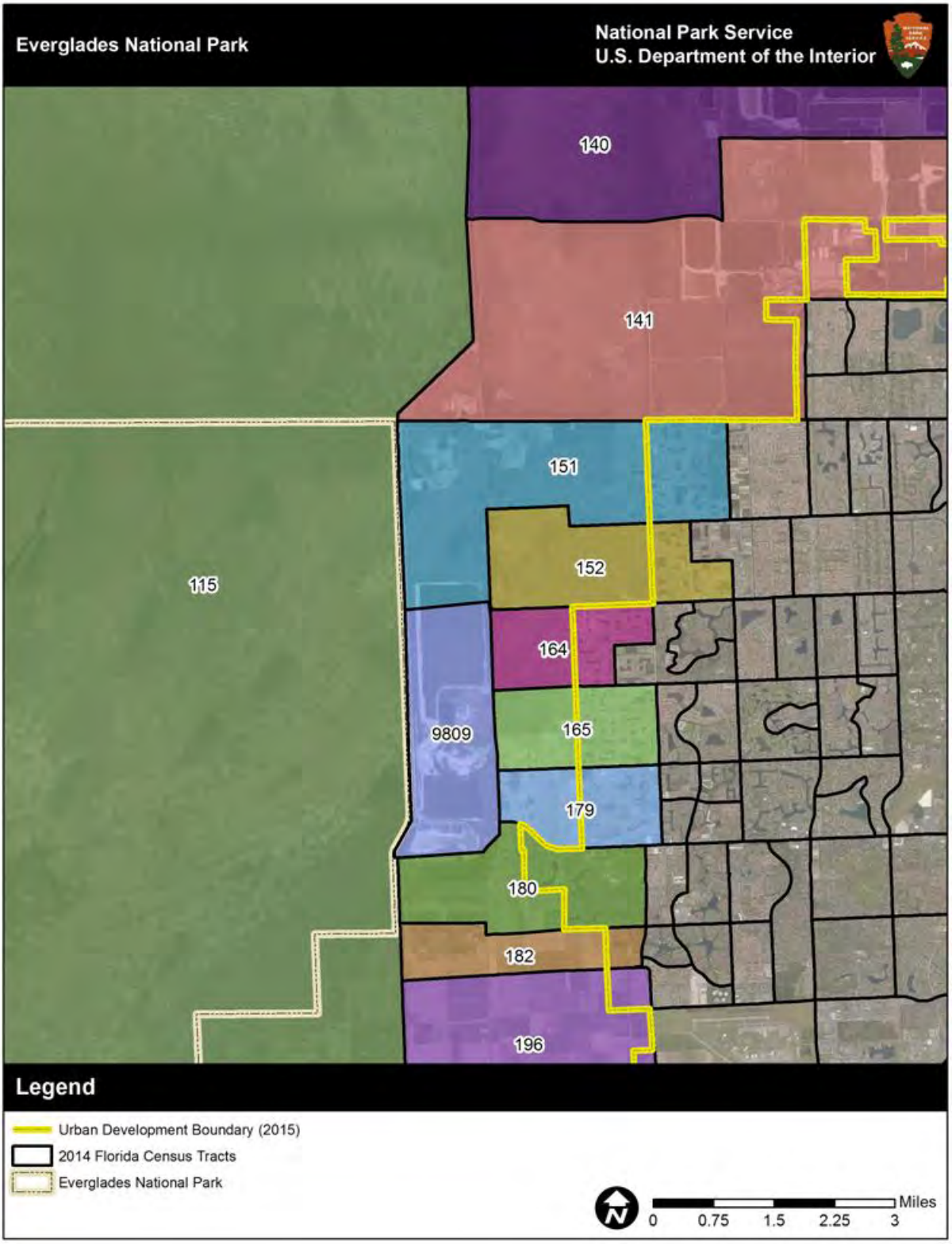


FIGURE 11: STUDY AREA FOR CALCULATION OF EXISTING RESIDENTIAL L_{DN} (2010 U.S. CENSUS BLOCKS)

Therefore, the estimated L_{dn} for the Tamiami residential areas located away from major roadways was 55 dBA. This is within the range of typical noise levels for suburban residential areas and below the 65 dBA L_{dn} noise impact threshold used by agencies such as the Federal Aviation Administration. L_{dn} would be higher for residences located close to major roads (e.g., 65 dBA at 100 feet from a major roadway). While actual L_{dn} would vary within different portions of the study area, the estimated existing L_{dn} (55 dBA) provides a reasonable and conservative (low) basis for assessing potential impacts.

WILDLIFE

The Everglades ecosystem consists of a low, flat plain that supports a variety of distinct and dynamic habitats. These habitats each support their own community of wildlife, including approximately 350 species of birds, more than 40 mammals, over 50 reptiles, and 15 amphibians (NPS 2010c).

Introduction of regional transportation corridors and water management systems fragmented wildlife habitat throughout the Everglades ecosystem. The once vast, naturally connected landscape has been fragmented into a mosaic of various-sized habitat patches. The Tamiami Trail, L-29 canal, and L-31N canal and levee, adjacent to the project area, serve as an effective barrier to wildlife movement, interfering with or preventing life functions of many native wildlife species. Large parcels may be suitable for populations of several species of small-sized animals, but very few remaining habitat patches are large enough to provide spatial needs of far-ranging species such as the Florida panther (*Felis concolor coryi*) (as discussed in the "Special-status Species" section) (USFWS 2008). The habitat within the FPL owned lands and along the L-31N levee are characterized as sawgrass and freshwater marsh. The marshlands serve as habitat for a wide range of wildlife species.

The construction and completion of Tamiami Trail in 1928 had substantial effects on the functions and processes in the marsh prairie habitat. Historically, the area adjacent to the Tamiami Trail was ridge and slough wetland. The altered hydrology has changed the area immediately adjacent to the road to a consistently flooded habitat that now has a mixed composition of native and nonnative vegetation species. Farther south of the Tamiami Trail, drier conditions have caused a shift from ridge and slough wetlands to sawgrass marsh in the EEEA. These changes in habitat have also altered associated wildlife species diversity and composition.

As described in the "Vegetation and Wetlands" section, the West Consensus Corridor east of the park varies considerably in vegetation cover (i.e., habitat) depending on land use and proximity to highways and developed areas. As shown in aerial of figure 7, the southern end of this corridor is primarily agricultural, with many areas planted in field crops. The center of this area crosses the western edge of a mining operation with mostly disturbed land. The north end of this corridor is less developed, with wet prairie and exotic wetland hardwoods prevalent in the Bird Drive basin area and primarily freshwater graminoid marsh in the Pennsuco wetlands north of the Tamiami Trail. The Bird Drive basin area, specifically, functions as a valuable short hydroperiod wetland, which is particularly important to wading birds (Richter 1988). Disturbance from the use of all-terrain vehicles is evident in the Bird Drive basin area (Cunningham pers. comm. 2012).

MAMMALS

Native Mammals

Mammals within the project area have adapted to changing wetland conditions, and in some cases may be distinguished from other North American populations by smaller size or other adaptive characteristics. For example, white-tailed deer (*Odocoileus virginianus*) in the Everglades are distinctive in their small size and adaptation to marsh habitats (Kushlan 1990). The marshlands are habitat for at least 10 mammal

species, including some of the most endangered land mammals in the state, the Florida panther and the Everglades mink, which is rare and generally found in sawgrass habitat but retreats from marshland during the dry season (both are discussed in the "Special-status Species" section) (Humphrey and Zinn 1982).

Other mammals expected to occur in the project area include mice, rodents, transient deer and mesocarnivores such as raccoons (*Procyon lotor*), otters (*Lutra canadensis*), and bobcats (*Lynx rufus*). Marsh rabbits (*Sylvilagus palustris*), short-tailed shrew (*Blarina brevicauda*), least shrew (*Cryptotis parva*), and cotton rat (*Sigmodon hispisus*) may also occur. Cotton mice (*Peromyscus gossypinus*) and rice rats (*Oryzomys palustris*) move between hammock islands, indicating that they would also occur in the freshwater marshes, even if only in transit. The round-tailed muskrat (*Neofiber alleni*), or Florida water rat, also inhabits freshwater marshes within the EEEA.

Nonnative Mammals

A variety of nonnative mammals can be found in the Everglades area of southern Florida including the domestic dog, cat, and goat, as well as feral hogs. Other nonnative species that maybe present in the area include vervet monkeys (*Chlorocebus aethiops*), house mouse (*Mus musculus*), nutria (*Myocastor coypus*), South American coati (*Nasua nasua*), Norway rat (*Rattus norvegicus*), black rat (*R. rattus*), and red fox (*Vulpes vulpes*) (ESCISMA 2009). Occurrences of additional new species are reported frequently.

West Consensus Corridor

Native mammals expected to occur in the West Consensus Corridor east of the park would be similar to those known to occur in habitat within the EEEA, except that species would likely be less abundant, except in the Everglades and Francis S. Taylor Wildlife Area and Pennsuco wetlands north of Tamiami Trail, due to greater disturbance (e.g., all-terrain vehicles, exotic species, agricultural activities, and proximity to development and mining operations). However, domestic cats, dogs, and goats and feral hogs may be more abundant in the West Consensus Corridor due to the proximity to residential areas. Mammals previously observed within the wetland habitat of Bird Drive basin include marsh rabbit, raccoon, river otter, bobcat, and white-tailed deer (Richter 1988).

BIRDS

Native Birds

Over 350 species of birds have been sighted throughout the Everglades (Lodge 2005). There are over 150 species of birds that breed or forage in the park year round, using both land and water habitats (NPS 2010e). Tree islands provide habitat for many resident and migratory birds. Migratory birds are protected under the provisions of the Migratory Bird Treaty Act. The park is located within the Atlantic Flyway, a major migratory route for birds that breed in temperate North America and winter in the Caribbean and South America (NPS 2010e). Some of these neotropical migrants are designated as migratory birds of management concern in the south Florida ecosystem by the U.S. Fish and Wildlife Service (USFWS) (NPS 2010e) and more than 20 of these are anticipated to occur within NESRS (NPS 2010e).

Species that may be found within the freshwater marsh and marl prairies include raptors (including the federally endangered Everglades snail kite, discussed in the "Special-status Species" section), wading birds, song birds, corvids, and ducks. Approximately 18 species of wading birds commonly use marshland habitat (Lodge 2005). The roseate spoonbill (*Platalea ajaja*), white ibis (*Eudocimis albus*), wood stork (*Mycteria americana*), and a few species of egrets (*Ardea alba*, *Bubulcus ibis*) and herons (*Ardea herodias*, *Egretta tricolor*, *Nycticorax nycticorax*) wade in the shallow marsh habitat foraging for

invertebrates and fish. Several of these species are considered state species of special concern and are addressed in the "Special-status Species" section. Wood storks (discussed in the "Special-status Species" section) and a variety of wading birds have rookeries in the Everglades but migrate to north Florida in the summer (Lodge 2005).

The wetland habitats downstream of the Tamiami Trail culverts provide tree canopy, loafing, nesting, roosting, and foraging areas for bird species. Canopy habitat components found at the park are edible forage, insect populations, tree cavities, and winter (dry season) cover. Songbirds such as warblers (*Dendroica* spp.) are common; water birds such as limpkins (*Aramus guarana*), that feed on snails, wade at the water's edge; and several species of egrets and herons, forage in this environment (Ewel 1990). Black vultures (*Coragyps atratus*) and turkey vultures (*Cathartes aura*) are found in the park year round, but are especially abundant in winter.

Nonnative Birds

Nonnative or invasive bird species known to occur in the Everglades area of south Florida include the common myna (*Acridotheres tristis*), Egyptian geese (*Alopochen aegyptiacus*), yellow-chevroned parakeet (*Brotogeris chiriri*), rock dove (*Columba livia*), Muscovy duck (*Cairina moschata*), monk parakeet (*Myiopsitta monachus*), black-hooded parakeet (*Nandayus nenday*), house sparrow (*Passer domesticus*), purple swamphen (*Porphyrio porphyrio*), Eurasian collared dove (*Streptopelia decaocto*), European starling (*Sturnus vulgaris*), and sacred ibis (*Threskiornis aethiopicus*) (ESCISMA 2009).

West Consensus Corridor

Several bird species are expected to utilize habitat in the West Consensus Corridor east of the park, along the L-31N canal and particularly in the wet prairie and exotic wetland hardwoods in the Bird Drive basin area and freshwater marshes in the Pennsuco wetlands north of the Tamiami Trail. As previously described in this section, the Bird Drive basin area, specifically, functions as a valuable short hydroperiod wetland, which is particularly important to wading birds because it provides shallow water and concentrated fish populations at a time when fish are dispersed through deep water in longer hydroperiod wetlands (e.g., SRS) (Richter 1988). Wading birds likely to occur in the West Consensus Corridor include great egret, little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), green-backed heron (*Butorides striatus*), white ibis, and tri-colored heron. In the past, several species of raptors have been observed in the Bird Drive basin and are likely to occur in a variety of habitat types east of the park. These species include bald eagle (*Haliaeetus leucocephalus*), American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and sharp-shinned hawk (*Accipiter striatus*) (Richter 1988). Nonnative and invasive bird species are more likely to occur in the West Consensus Corridor due to the higher degree of disturbance in this area and the proximity to residential and industrial development.

AMPHIBIANS AND REPTILES

A variety of amphibians and reptiles are found in the wetlands in and near the project area. The deep-water habitats of the canal outlets are home to Southern leopard frogs (*Rana sphenocephala*), pig frogs (*Rana grylio*), and newts (*Notophthalamus* spp.). Numerous other amphibian species can occur in the area including the green tree frog (*Hyla cinerea*), Florida cricket frog (*Acris gryllus*), oak toad (*Bufo quercicus*), Southern toad (*B. terrestris*), Eastern narrow-mouth toad (*Gastrophryne carolinensis*), squirrel tree frog (*H. squirella*), Florida chorus frog (*Pseudacris nigrata*), little grass frog (*P. ocularis*), Eastern spadefoot toad (*Scaphiophus holbrookii*), two-toed amphiuma (*Amphiuma means*), Everglades siren (*Pseudobranchus axanthus*), and greater siren (*Siren lacertina*) (NPS n.d.a).

More than 50 species of reptiles are known to inhabit the park (NPS n.d.b). Snakes can be locally abundant and include the green water snake (*Nerodia cyclopion*) and the cottonmouth (*Agkistrodon piscivorus*). Other snakes that may be present in the area include the Florida water snake (*N. fasciata*), brown water snake (*N. taxispilota*), Peninsula ribbon snake (*Thamnophis sauritus*), and the Eastern garter snake (*T. sirtalis*) (NPS n.d.b). Lizard and gecko species present in the area include the green anole (*Anolis caroliniensis*), Eastern glass lizard (*Ophisaurus ventralis*), and the Florida reef gecko (*Sphaerodactylus notatus*) (NPS n.d.b). Mud turtles (*Kinosternon baurii*) and red-bellied turtles (*Chrysemys nelsoni*) can also be found in ponded areas.

The American alligator (*Alligator mississippiensis*) is a dominant native predator in the Everglades. Its role in forming "gator holes" is important in maintaining ponded areas during dry periods in the marsh that support a variety of other species (Kushlan 1990). The American alligator is addressed further in the "Special-status Species" section.

Nonnative Amphibians and Reptiles

Nonnative amphibians known from the Everglades region of south Florida include the coqui (*Eleutherodactylus coqui*), greenhouse tree frog (*E. planirostris*), Cuban treefrog (*Osteopilus septentrionalis*), and cane toad (*Rhinella marina*) (ECISMA 2009). Numerous nonnative reptiles are known from the Everglades including, but not limited to, the Burmese python (*Python molurus* spp. *bivittatus*), African rock python (*P. sebae*), Nile monitor (*Varanus niloticus*), brown anole (*Anolis sagrei*), common boa (*Boa constrictor*), caiman (*Caiman* spp.), anacondas (*Eunectes* spp.), and green iguanas (*Iguana iguana*) (ECISMA 2009). Many of these nonnative reptiles are voracious predators that are changing the ecosystem dynamics of the Everglades region.

West Consensus Corridor

Similar species (as those found in the EEEA) of amphibians and reptiles are expected to occur in the wetland and marsh habitats north and east of the park. Amphibians and reptiles strongly associated with wetlands that have been observed in the past in Bird Drive basin area (and are likely to occur in other wet habitat east of the park) include pig frog, leopard frog, snapping turtle (*Chelydra serpentina*), mud turtle, banded water snake (*Nerodia fasciata*), Florida chicken turtle (*Deirochelys reticularia*), and alligator (Richter 1988). Other amphibians and reptiles observed in this area east of the park (not necessarily associated with wetlands) include southern toad (*Bufo terrestris*), Cuban tree frog (*Osteropilus septentrionalis*), Florida box turtle (*Terrapene carolina bauri*), and racer (*Coluber constrictor*) (Richter 1988). Nonnative species may be more numerous in areas outside the park due to higher levels of disturbance and increased proximity to human development.

FISH

Native Fish

At least 28 native fish species are expected to occur in the project area (Loftus 2000). Most Everglades marsh fish are minnow-sized, which provides an advantage in dry periods when water levels and availability are low (Kushlan 1990). Freshwater fish are an important resource in the Everglades food chain (DeAngelis, Trexler, and Loftus 2005). The diet of many animals, such as, the otter, alligator, and wading birds include the assemblage of fish species in the Everglades. Species common to the Everglades marsh habitat include the mosquitofish (*Gambusia holbrooki*), golden topminnow (*Fundulus chrysotus*), sailfin molly (*Poecilia latipinna*), and the least killifish (*Heterandria farmosa*). Small individuals of larger species, such as warmouth (*Lepomis gulosus*) and spotted sunfish (*L. punctatus*) can be found in fluctuating marshes.

In the deep-water habitats, such as canals and culverts, larger fish species can survive and dominate (Kushlan 1990). These fish include Florida gar (*Lepisosteus platyrhincus*) and bullhead catfish (*Ictalurus natalis* and *nebulosus*), which are common along Highway 41, as well as bluegill (*Lepomis macrochirus*) and largemouth bass (*Micropterus salmoides*). Sunfish (*Lepomis* spp.) may also occur, but are affected by fluctuating water levels. These larger species support the recreational fishery in the L-29 canal and culvert pools along the Tamiami Trail.

In 2006, Rehage and Trexler published native and exotic fish data collected in five canals in Everglades National Park—four in WCAs and one in the C-111 canal panhandle. This study revealed that impacts of water management structures on fish populations are multifaceted and impact the ability of species to migrate, local fish densities, and local predation. However, the net effects were limited to the immediate vicinity of the canals and the downstream areas affected by increased phosphorus levels. Canals and other manmade flow control structures generally affect the abundance of aquatic species, but have generally have little effect on community structure at distances greater than 16 feet (5 meters). In their study (Rehage and Trexler 2006), the abundance of all fish groups, including large species, was correlated with increased phosphorus levels. At distances greater than 5 meters from the canal, small fish density was similar to that of interior marshes. However, large fish densities (e.g., Florida gar) increased slightly at distances up to 3, 280 feet (1,000 meters) from the L-29 canal. In addition, culvert holes are known to contain a disproportionately higher number of large fish compared to natural marshes. Large and small fish concentrate in the culvert holes seasonally, where the small fish may be consumed by the large fish. Thus, culvert pools have the potential to disrupt the natural fish community found in these wetlands (Howard, Loftus, and Trexler 1995).

Nonnative Fish

The many canals and WCAs which retain water level throughout the year have allowed several nonnative fish species to enter and persist in the Everglades. More than 50 introduced fish species are found in the Everglades and south Florida (Trexler et al. 2000). Several species of these exotic fish are sought by anglers, such as tilapia (*Tilapia* spp.) and peacock bass (*Cichla ocellaris*). Other species commonly found in the aquarium trade, such as oscars (*Astronotus ocellatus*, a member of the cichlid family) and Mayan cichlids (*Cichlasoma uropthalmus*) are widely dispersed and can be locally abundant, especially in water management structures. Many introduced species prefer habitats that have warmer water temperatures and a longer hydroperiods, such as canals and culvert holes (Trexler et al. 2000).

Canals are preferred habitats for introduced fish species and provide thermal refuge during the cold season and provide water refuge during the dry season when marsh surfaces can become exposed (Trexler et al. 2000). Canals contain larger concentrations of nonnative fish species than wet prairies and alligator ponds distant from canals; this indicates that nonnative fish species may not be able to tolerate cold temperature stress and hydrologic fluctuations more typical of a natural marsh environment (Trexler et al. 2000). Marsh habitats connected to canals tend to have more nonnative fish than marshes not connected by canals (Trexler et al. 2000). Culvert pools provide few microhabitats that would be typical of a natural marsh environment (Howard, Loftus, and Trexler 1995). Exotic fish are known to concentrate in artificial culvert pools as water levels decline during the dry season and leave the culvert pools and enter the natural marsh upon reflooding conditions (Howard, Loftus, and Trexler 1995). Culvert pools are thought to alter the natural predator-prey dynamics because they harbor large, predatory fish species and do not provide an adequate environment for avian predators (Howard, Loftus, and Trexler 1995).

The interaction between native and nonnative species depends on local environmental conditions that can include habitat patches and water temperature. Environmental disturbances, including construction of water control measures, hurricanes, and tropical storms, can elevate water levels in the park and increase distribution of nonnative fish throughout the park (Trexler et al. 2000).

No native fish extinctions or widespread fish community disruptions resulting from the introduction of nonnative fish have been noted. However, it should not be inferred that nonnative fish species have no effect on native communities; over time, it is possible that nonnative fish species could adversely impact native fish community structure. Competitive interactions between native and nonnative species have been observed, and smaller, native species are subject to predation by larger nonnative species (Trexler et al. 2000).

West Consensus Corridor

Both native and exotic fish species are expected to occur in the L-31N canal. As described above, canals are preferred habitat for many introduced fish species. Small fish and tadpoles are common throughout the extensive flooded areas north and east of the park that would be crossed by this corridor, especially the Pennsuco wetlands and Bird Drive basin. Fish species that have been observed in the Bird Drive basin area, and are likely to occur in other wetland/marsh habitat east of the park, include Florida gar, golden shiner (*Notemigonus crysoleucas*), walking catfish (*Clarias batrachus*), flagfish (*Jordanella floridae*), mosquitofish, sailfin molly, warmouth sunfish, redear sunfish (*Lepomis microlophus*), bluegill sunfish (*Lepomis macrochirus*), black acara (*Cichlasoma bimaculatum*), and Mozambique tilapia (*Tilapia mossambica*) (Richter 1988).

INVERTEBRATES

Invertebrates expected to be in the project area include leeches, worms, insects, spiders, crustaceans, and mollusks. Many invertebrates, including the crayfish (*Procambarus alleni*, *P. fallax*), riverine grass shrimp (*Palaemonetes paludosus*), and several species of snails, are considered keystone species because of the dietary importance to many other animals in the Everglades (Lodge 2005). Notably, the Florida apple snail (*Pomacea paludosa*), is an important freshwater mollusk because it is the primary food source of the endangered Everglade snail kite. Inventories of most major taxonomic groups of invertebrates have not been conducted in the project area or the park in general. As a result, the vast majority of invertebrates that occur in the project area are not well known.

Nonnative Applesnails

The nonnative island applesnail (*Pomacea insularum*) has been documented in artificial habitats such as the L-29 canal and in the Old Tamiami Trail canal within the northern boundary of Everglades National Park. Egg masses are thought to disperse to downstream wetlands during high water conditions. The spiketop applesnail (*Pomacea bridgesi*), giant ramshorn snail (*Marisa cornuarietis*), Asian clam (*Corbicula fluminea*), and the red-rimmed melania (*Melanoides tuberculata*) are also known to occur near the project area (Kline pers. comm. 2008). It is thought that these species may be replacing the native applesnail within the Everglades. The native applesnail is the main food source for the endangered Everglade snail kite. The Everglade snail kite beak is designed to feed on the native applesnail and cannot readily feed on the spiketop applesnail because the shape of its shell does not match the kite's beak (Kline pers. comm. 2008). Research conducted thus far within and around the L-29 canal, discharge structures, and the downstream wetland habitats indicates that nonnative applesnails are found in higher abundances adjacent to artificial and disturbed habitats than within less disturbed downstream wetland habitats (Kline pers. comm. 2008).

West Consensus Corridor

Invertebrates expected to occur in the West Consensus Corridor north and east of the park would be similar to those that occur within the EEEA (especially those associated with wetland/marsh habitat).

Species observed in the Bird Drive basin area (and likely occurring in the Pennsuco Wetlands north of the Tamiami Trail), include crawfish, apple snail, and prawn (or riverine grass shrimp) (Richter 1988).

SPECIAL-STATUS SPECIES

Special-status species are defined as any species protected under the Endangered Species Act (ESA) and the Florida Endangered Species Act Chapter 379.2291 or described in Florida Administrative Code (F.A.C.) Chapter 68A-27. The area of analysis for protected species is bounded generally to the west by the western edge of the FPL West Secondary Corridor and to the east by the eastern edge of the West Consensus Corridor. The FPL Levee substation is at the northern border of the area of analysis. The southern boundary of the area of analysis is just south of the park where the various transmission line options diverge.

The area of analysis for selected avian species extends beyond the boundaries described above to account for the large foraging ranges of some species of wading birds. The area of analysis for avian species with large foraging areas extends east and north from the FPL levee substation to the Pennsuco Substation. The western edge of the avian area of analysis extends west from the FPL West Secondary and FPL West Preferred Corridors and includes the EEEA. The Clear Sky Substation is at the same latitude as the southern boundary of the avian area of analysis. The eastern boundary of the avian area of analysis is the eastern coastline of Florida.

The USFWS Information, Planning, and Conservation System and the Florida Natural Areas Inventory (FNAI) Biodiversity Matrix were queried to generate an initial list of species potentially found within the area of analysis. This list was narrowed using professional judgment to a group of species to be analyzed in detail after review of Chapter 9 of the FPL Site Certification Application (SCA) (FPL 2009b), the "FPL Turkey Point 6 & 7 Threatened and Endangered Species Evaluation and Management Plan," several older surveys specific to the Bird Drive basin area, species lists contained in the Institute for Regional Conservation online database, a geographic information system (GIS) layer of species observations in Miami-Dade County in the study area from the FNAI, and discussions with NPS biologists familiar with the park and the area of analysis. These species are discussed below. Those species that were dismissed from further analysis are also discussed, along with the reasons for the dismissal.

FEDERALLY LISTED SPECIES

The ESA prohibits the taking of any species listed by the USFWS as being either threatened or endangered. "Take" is defined under the ESA as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Through a special regulation, the USFWS clarified the definition of harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding or sheltering." This section, along with the impacts analysis in chapter 4 of this document, fulfills the NPS obligation under Section 7 to document federally listed species and determine the effects of the proposed NPS action on these species.

Table 9 lists the federal threatened and endangered wildlife species and candidate species that could potentially be found in the area of analysis. These species are discussed below.

TABLE 9: FEDERALLY LISTED ENDANGERED, THREATENED, AND CANDIDATE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE AREA OF ANALYSIS

Common Name	Scientific Name	Federal Status	State Status
Mammals			
West Indian manatee	*Trichechus manatus*	Endangered	Endangered
Florida panther	*Felis concolor coryi*	Endangered	Endangered
Florida bonneted bat	*Eumops floridanus*	Endangered	Endangered
Birds			
Wood stork	*Mycteria americana*	Threatened	Threatened
Everglades snail kite	*Rostrhamus sociabilis plumbeus*	Endangered	Endangered
Reptiles			
Eastern indigo snake	*Drymarchon corais couperi*	Threatened	Threatened

Animals

Six federally listed animal species have the potential to occur within the area of analysis. These species and their federal status are presented in table 9. The probability of occurrence for each species was ranked as low (not likely to occur), moderate (known to occur within the area of analysis but observations are few and infrequent), or high (known to occur within the area of analysis and observed frequently at least during portions of the year).

West Indian Manatee

The West Indian manatee was first listed as endangered in 1967. This large, herbivorous mammal lives in freshwater, brackish, and marine habitats and eats submerged, emergent, and floating vegetation. They do not use terrestrial habitats during any life stage. In Florida, manatees are commonly found from the Georgia/Florida border south to Biscayne Bay on the east coast and from Wakulla River south to Cape Sable on the west coast; they are also found throughout the waterways in the Everglades and in the Florida Keys (USFWS 1999). For the period of record of over 20 years, there is one record of a manatee using the L-29 canal adjacent to Tamiami Trail (NPS 2009b). This species has not been documented in the culvert pools south of Tamiami Trail (NPS 2009b). The West Indian manatee has a low likelihood of occurrence in the SFWMD canals within the area of analysis.

Florida Panther

In general, the Florida panther appears to prefer large, remote tracts with adequate prey, cover, and reduced levels of disturbance (USFWS 1999). Radio-collar data and ground tracking indicate that panthers use the mosaic of habitats available to them with forested cover types, particularly cypress swamp, pinelands, hardwood swamp, and upland hardwood forests being the habitat types most selected by panthers (USFWS 2008). Dense saw palmetto is preferred for resting and denning. Panther breeding may occur throughout the year, with a peak during the period of winter and spring. Panthers have a gestation period of around 90 to 95 days, litter sizes of one to four kittens, and a breeding cycle of two years for females successfully raising young to dispersal, which occurs around 18 to 24 months (USFWS 1999). The panthers' preferred prey species are the white-tailed deer and feral hogs (USFWS 2008). The puma (*Puma concolor*) is listed as threatened due to its similarity in appearance to the Florida panther.

As shown in figure 12, the area of analysis includes portions of the Florida panther primary zone that supports the sole breeding population of Florida panthers, as well as the secondary zone that includes lands that are contiguous with the primary zone and, although these lands are used to a lesser extent by panthers, they are important to the long-term viability and persistence of the panther in the wild (USFWS 2007a). No critical habitat has been designated for Florida panther under the ESA. Telemetry data indicate that Florida panthers have previously ranged adjacent to the Tamiami Trail (NPS 2009b). Panthers within the park are not currently radio collared. Additionally, panthers have been involved in vehicle collisions along the Tamiami Trail, which further supports their potential presence adjacent to and in the area of analysis (NPS 2009b). It is also possible there could be other uncollared Florida panthers within or adjacent to the area of analysis. Florida panthers observed within the area of analysis likely have home ranges that extend outside the area of analysis. The Florida panther has a moderate probability of occurrence within the area of analysis.

Florida Bonneted (Mastiff) Bat

The Florida bonneted (mastiff) bat was listed as endangered on October 2, 2013 (78 FR 61003–61043). The Florida bonneted bat is the largest bat species in Florida. Its range encompasses southern Florida, including Charlotte, Collier, and Lee counties on the Gulf Coast and Miami-Dade County on the Atlantic Coast (Timm and Arroyo 2008). The Florida Bonneted bat occurs in urban, suburban, and forested areas; it roosts in buildings (e.g., in attics, rock or brick chimneys of fireplaces, and especially under Spanish roof tiles, often in buildings dating from about 1920 to 1930); sometimes in tree hollows (including those made by woodpeckers), occasionally in foliage of palm trees (e.g., shafts of royal palm leaves); and has been found under rocks, in fissures in limestone outcrops, and near excavations (Timm and Arroyo 2008). Very little is known about the life history of Florida bonneted bats. Flying insects are thought to be the primary component of their diet. Loss of habitat, impacts on their prey base from pesticides and natural disasters such as hurricanes are thought to be serious threats to this species given the small size of the population and the low fecundity of the species (FFWCC 2011).

The Florida bonneted bat was recorded by NPS personnel during monitoring efforts in the vicinity of the L-31N canal (Tylan pers. comm. 2012). The Florida bonneted bat has a high probability of occurring within the park in the vicinity of the FPL West Preferred Corridor. There is a moderate probability of the Florida bonneted bat occurring within the park in the vicinity of the FPL West Secondary Corridor. There is also a moderate probability of the Florida bonneted bat occurring within the West Consensus Corridor.

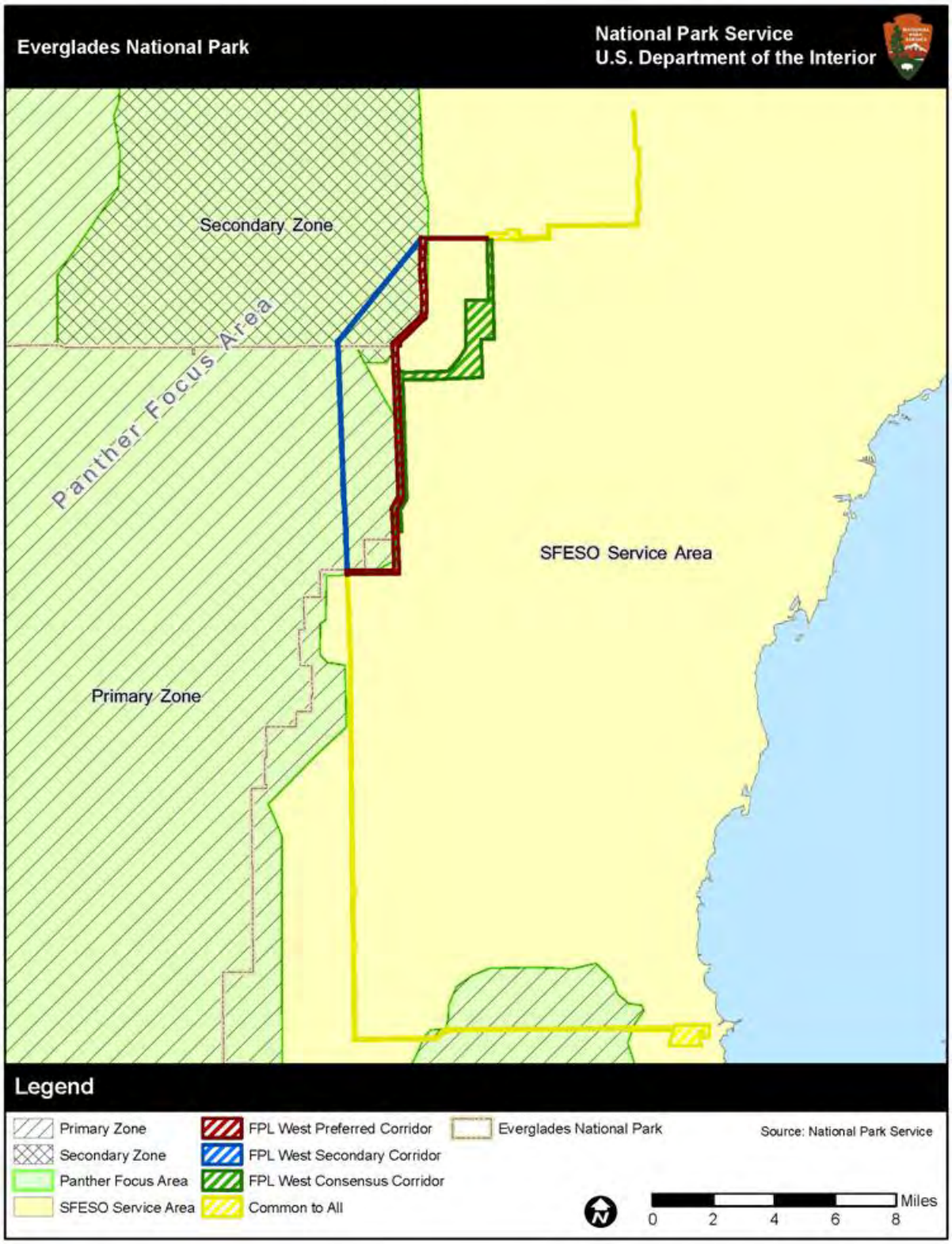


FIGURE 12: FLORIDA PANTHER FOCUS AREA AND ZONES OF IMPORTANCE IN SOUTH FLORIDA

Wood Stork

Wood storks are birds of freshwater and brackish wetlands, primarily nesting in cypress or mangrove swamps. They feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools, primarily on fish between 0.8 and 9.8 inches (2 and 25 centimeters) long (USFWS 1999). Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of falling water levels. The U.S. breeding population of the wood stork declined from an estimated 20,000 pairs in the 1930s to about 10,000 pairs by 1960 then to fewer than 5,000 breeding pairs in the 1970s and 1980s (USFWS 1999). The decline is believed to be due primarily to the loss of suitable feeding habitat, especially in south Florida rookeries, where repeated nesting failures have occurred despite protection of the rookeries. Feeding areas in south Florida have decreased by about 35 percent since 1900 because of human alteration of wetlands (USFWS 1999). Additionally, human-made levees, canals, and floodgates have greatly changed natural water regimes in south Florida (USFWS 1999). The wood stork was listed as endangered under the ESA in 1984. Since listing, breeding pairs have risen to a high of over 11,000 nesting pairs in Florida, Georgia, South Carolina, and North Carolina in 2006 (USFWS 2007b). The wood stork was downlisted from endangered to threatened status on June 30, 2014 (79 FR 37077–37103). Critical habitat for the wood stork has not been designated under the ESA.

Four wood stork rookeries are located within 5 miles of the corridors in the vicinity of Tamiami Trail: Tamiami East 1, Tamiami East 2, Tamiami West (sometimes listed as two locations including the Coopertown rookery), and 3B Mud East (NPS 2010a; Exponent 2013). Figures 13 and 14 depict the locations of these nests in relation to the transmission corridors. Some data sources do not split the Tamiami colonies into 4 distinct groups, which can confound data analysis. These rookeries are considered active because nesting has been recorded in the last 10 years (NPS 2010a). An estimated 30 wood stork colonies are located within 30 miles of the area of analysis and the core foraging area of multiple colonies includes the area of analysis. The core foraging area, as defined by the USFWS for South Florida wood stork colonies, is an 18.6-mile radius around each colony (USFWS n.d.). There is a high probability of wood storks occurring in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. The Tamiami East 2 colony is approximately 1,136 feet to the east of the FPL West Secondary Corridor, while the 3B Mud East colony is approximately 1,576 feet to the west of the FPL West Preferred Corridor. The nearest wood stork colony to the West Consensus Corridor is approximately 1,237 feet (0.8 miles) to the northwest (Tamiami Trail East 1), and wood storks are expected to occasionally forage in this area. The Tamiami Trail East 1 wood stork colony is 2.99 miles to the west of the hypothetical route along the eastern side of the area of possible relocated corridor, which had been used for analysis purposes in the draft EIS in the avian risk assessment (ARA) conducted as part of this EIS (Exponent 2013). The ARA and an addendum are included as appendix J of this document. Because the West Consensus Corridor was developed after the draft EIS and supporting studies were completed, the ARA does not address that corridor specifically. Based on the proximity of Tamiami East 1 and 2 to the area where the West Consensus Corridor turns due east from the L-31N canal alignment, there is a moderate probability of wood storks foraging in wetlands within the West Consensus Corridor.

Note that the numbers of nesting wood storks at each colony will vary from year to year. Tamiami West is relatively large and consistently used; 3B Mud East is smaller and is not occupied by wood storks every year (NPS 2011b). Data from 2009 through 2011 shows that 3B Mud East had 7 nests, while Tamiami East 1 and 2 had 10–15 and 20–30 bird nests in a year, respectively. Data for the Tamiami West colonies combined indicate a range of 100 to 1,300 nests in one year. Table 10 presents the number of nests at the Tamiami East 1, Tamiami East 2, Tamiami West (Coopertown), and 3B Mud East colonies for the years 1992 through 2011. The highest nest count for Tamiami East 1 during this period was recorded in 2000 with 400 nests, while the high count for Tamiami East-2 was 30 nests in 2010. The highest number of nests recorded at Tamiami West (Coopertown) was 1,400 in 2001. The greatest number of nests observed at 3B Mud East during the period of 1992-2011 was 130 in 2004.

TABLE 10: WOOD STORK COLONY NESTING DATA 1992–2011

Year	Tamiami East 1	Tamiami East 2	Tamiami West (Coopertown)	3B Mud East
1992	20–150	0	30–100	0
1993	0	0	0	0
1994	0	0	0	0
1995	0	0	0	0
1996	0	0	150–180	0
1997	0	0	20–220	0
1998	0	0	0	0
1999	50	0	75–1374	0
2000	400	0	0	0
2001	0	0	1400	0
2002	0	0	200–450	0
2003	0	0	20–400	0
2004	0	0	50	130
2005	0	0	5–110	20
2006	0	0	150–400	15
2007	0	0	50–75	0
2008	0	0	0	0
2009	10	20	240–1300	7
2010	15	30	650	0
2011	0	0	100–600	0

Source: NPS 2010e; NPS 2011b.

The wood stork population is listed as endangered, primarily due to loss, fragmentation, and degradation of the wetland habitats that they depend on. Since listing, the wood stork population has shown signs of improvement, and the range has been expanding northward. In 2012, the USFWS proposed downlisting the wood stork from endangered to threatened in recognition of the expansion of the stork's population. However, the recovery plan for the wood stork identifies that to be delisted, improvements in nesting success are needed in the Big Cypress and Everglades regions. Although there have been improvements in wood stork nesting in the Everglades region, the majority of increases in wood stork nesting have been observed further north, outside of the species' historic range in the southeastern United States. In the Everglades, nesting success tends to be irregular, with occasional "big" nesting years interspersed with several poor years, and in the big years, the success of the South Florida colonies is significant. For example, in 2001, the Tamiami West colony supported approximately 25 percent of all wood stork nesting in the United States (NPS 2011b; 77 FR 247). As a result, increases in risk, particularly to adult storks, could substantially reduce productivity and nesting from current rates.

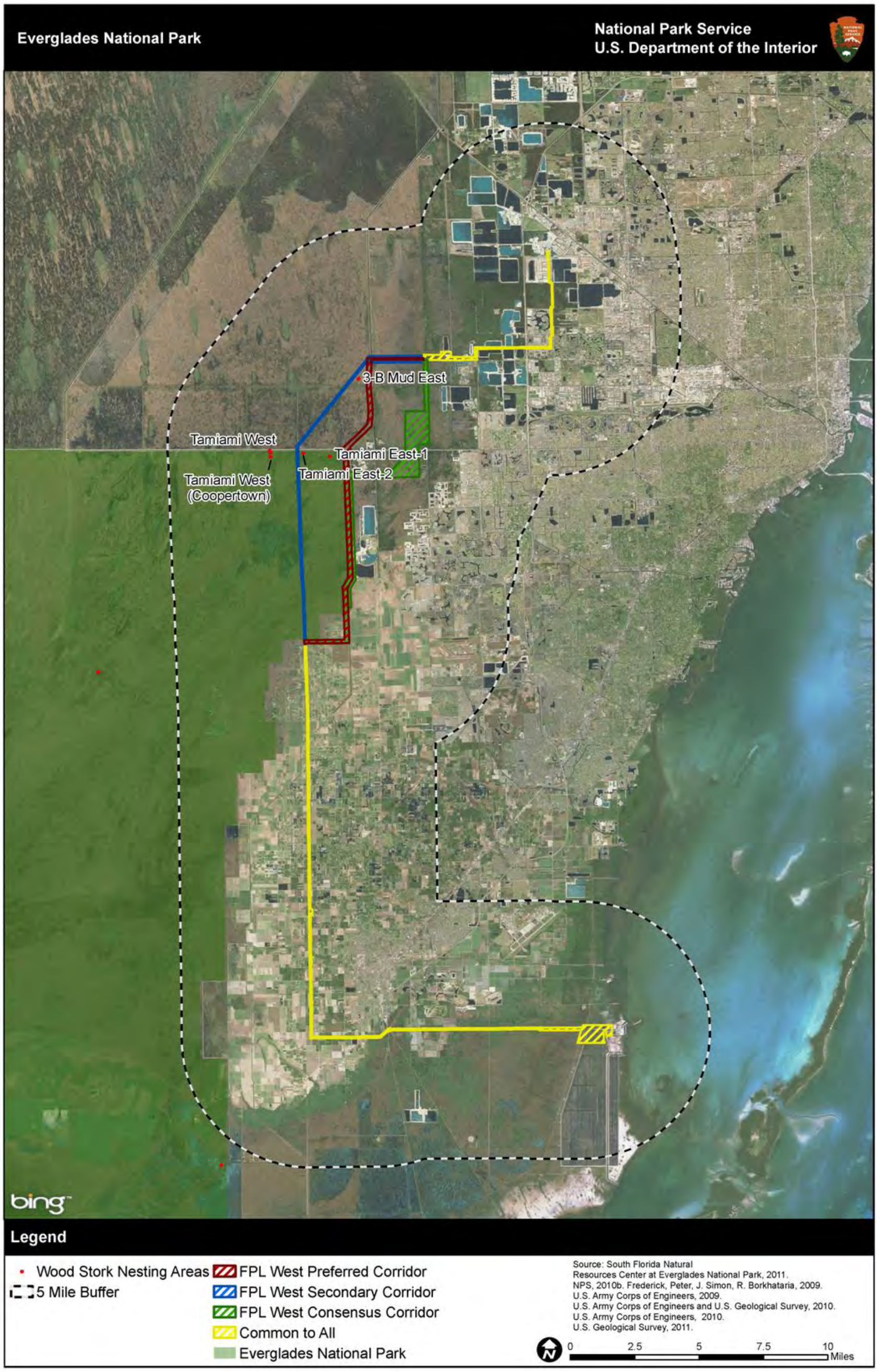


FIGURE 13: WOOD STORK COLONY AND NESTING DATA

FIGURE 14: WOOD STORK NESTING LOCATIONS IN THE VICINITY OF THE FPL WEST PREFERRED CORRIDOR AND WEST CONSENSUS CORRIDOR

Everglade Snail Kite

The Everglade snail kite is an endangered raptor that inhabits the freshwater marshes and marl prairies of the Florida peninsula. Its population is currently estimated at less than 1,000 birds (NPS 2010a). The Everglade snail kite feeds almost exclusively on the applesnail (*Pomacea paludosa*), so the continued existence and availability of this snail primarily decides the fate of the snail kite. The applesnail lives in freshwater wetlands with sparsely distributed emergent vegetation consisting predominantly of grass and sedge species. Managing the hydrology of these marshes is important to the survival of the snails. Multiple Everglade snail kite nest have been observed in or within 1,000 feet of the FPL West Secondary and FPL West Preferred Corridors (NPS 2010a) (figure 15). Figure 16 provides a close-up view of the nests closest to the FPL West Preferred Corridor. The area of analysis falls within the USFWS Everglade Snail Kite Consultation Area, but it is not within ESA designated critical habitat (USFWS 2003). There is a high probability of Everglade snail kite foraging and nesting in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors since there are nest records from within and near these corridors. The closest recorded Everglade snail kite nest to the West Consensus Corridor is within 864 feet (0.16 mile) of the corridor, just northwest of the area where the West Consensus Corridor turns east, away from the alignment along the L-31N canal. Although this routing redirects the corridor away from snail kite nests that are just west of the canal and to the north, there is still a moderate probability of Everglade snail kite foraging within the West Consensus Corridor. Additional information on Everglade snail kites can be found in the ARA (appendix J); however, the analysis in the ARA does not include distances to the West Consensus Corridor.

The Everglade snail kite population in Florida has been in decline throughout its range since approximately 2000. Since that year, the total estimated population has declined by approximately 80 percent, from an estimated 3,400 kites in 2000, to around 700 since 2008. At these low population levels, the species is considered vulnerable to extinction, and survival of adults and young is critically important because nest success is often irregular. For example, in 2011 and 2012, fewer than 20 nests successfully fledged young within the Everglades wetlands. Any factors that may increase mortality of adult kites, decrease nesting success, or reduce the suitability of nesting habitat, could result in population-level effects.

Eastern Indigo Snake

The eastern indigo snake is the longest of the Native North American snakes, with a heavy body and shiny blue-black coloring. This, docile, non-venomous snake has declined in numbers over the last 100 years because of a loss of habitat, pesticide use, and collection for the pet trade. The USFWS has categorized the species as declining with strict enforcement of anti-collection laws needed (USFWS 2008). The eastern indigo snake is known to use many habitat types ranging from wetlands to uplands, and including disturbed areas (USFWS 2012a). In upland (xeric) areas, eastern indigo snakes are strongly associated with gopher tortoise (*Gopherus polyphemus*) burrows (USFWS 2012a). In south Florida, eastern indigo snakes are known to occupy agricultural sites, such as sugar fields, which were created in former wetland areas (USFWS 2012a).

The eastern indigo snake uses the burrows of other animals for denning or to lay eggs. The preferred diet of these snakes is frogs, other snakes, toads, salamanders, small mammals, and birds. In summer, the eastern indigo snake ranges widely (over 125 to 250 acres) in search of prey, but in winter the snake generally stays close to the den (within 25 acres). The USFWS (2004) conducted a year-long road kill survey along Tamiami Trail and found many reptiles and amphibians but had no documented indigo snakes in the survey. There is a low probability of eastern indigo snakes occurring within the area of analysis because of the rarity of the species, the type of wetlands present, and the level of disturbance of the upland areas.

Federally Listed Animal Species Dismissed from Further Analysis

Elkhorn coral (*Acropora palmata*) staghorn coral (*Acropora cervicornis*), smalltooth sawfish (*Pistis pectinata*), green sea turtle (*Chelonia midas*), hawksbill sea turtle (*Eretmochelys imbricata*), and the leatherback sea turtle (*Dermochelys coriacea*) are marine species. Since the area of analysis does not include marine waters, these species were dismissed from further analysis. The gulf sturgeon (*Acipenser oxyrinchus desotoi*), another aquatic species, was dismissed because habitat for this species does not exist within the area of analysis.

The American crocodile (*Crocodylus acutus*) is not found within the area of analysis and was dismissed from further analysis. Since the American alligator (*Alligator mississippiensis*) is listed as threatened due to similarity of appearance to the American crocodile and the crocodile is not found within the area of analysis, the American alligator was dismissed from further analysis.

Bartram's hairstreak butterfly (*Strymon acis bartrami*) and Florida leafwing butterfly (*Anaea troglodyta floridalis*), two species that are candidates for listing under the ESA, were dismissed from further analysis since habitat for these species does not exist within the area of analysis. The Miami blue butterfly (*Cyclargus thomasi bethunebakeri*) and the Schaus swallowtail butterfly (*Heraclides aristodemus ponceanus*) do not occur in the study area and were dismissed from further analysis. The Cassius blue butterfly (*Leptotes cassius theonus*) and the ceraunus blue butterfly (*Hemiargus ceraunus antibubastus*) were listed as threatened due to similarity of appearance to the Miami blue butterfly. These species are dismissed from further analysis since only collecting and possessing these species is prohibited in their listing; take due to other legal activities is not prohibited.

Habitat for the Cape Sable seaside sparrow (*Ammadramus maritimus mirabilis*) does not exist within the area of analysis; therefore, the species was dismissed from further analysis.

Plants

Four federally listed or candidate species have the potential to occur within the area of analysis. These species and their status under the ESA are presented in table 11. The probability of occurrence for each species was ranked as low (not likely to occur due to lack of or disturbed preferred habitat), moderate (known to occur within the area of analysis but observations are few and preferred habitat is disturbed), or high (known to occur within the area of analysis and preferred habitat is present).

TABLE 11: FEDERALLY LISTED ENDANGERED, THREATENED, AND CANDIDATE PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE AREA OF ANALYSIS

Common Name	Scientific Name	Federal Status	State Status
Blodgett's silverbush	*Argythamia blodgettii*	Proposed Threatened	Endangered
Garber's spurge	*Chamaesyce garberi*	Threatened	Endangered
Sand flax	*Linum arenicola*	Candidate	Endangered
Tiny polygala	*Polygala smallii*	Endangered	Endangered

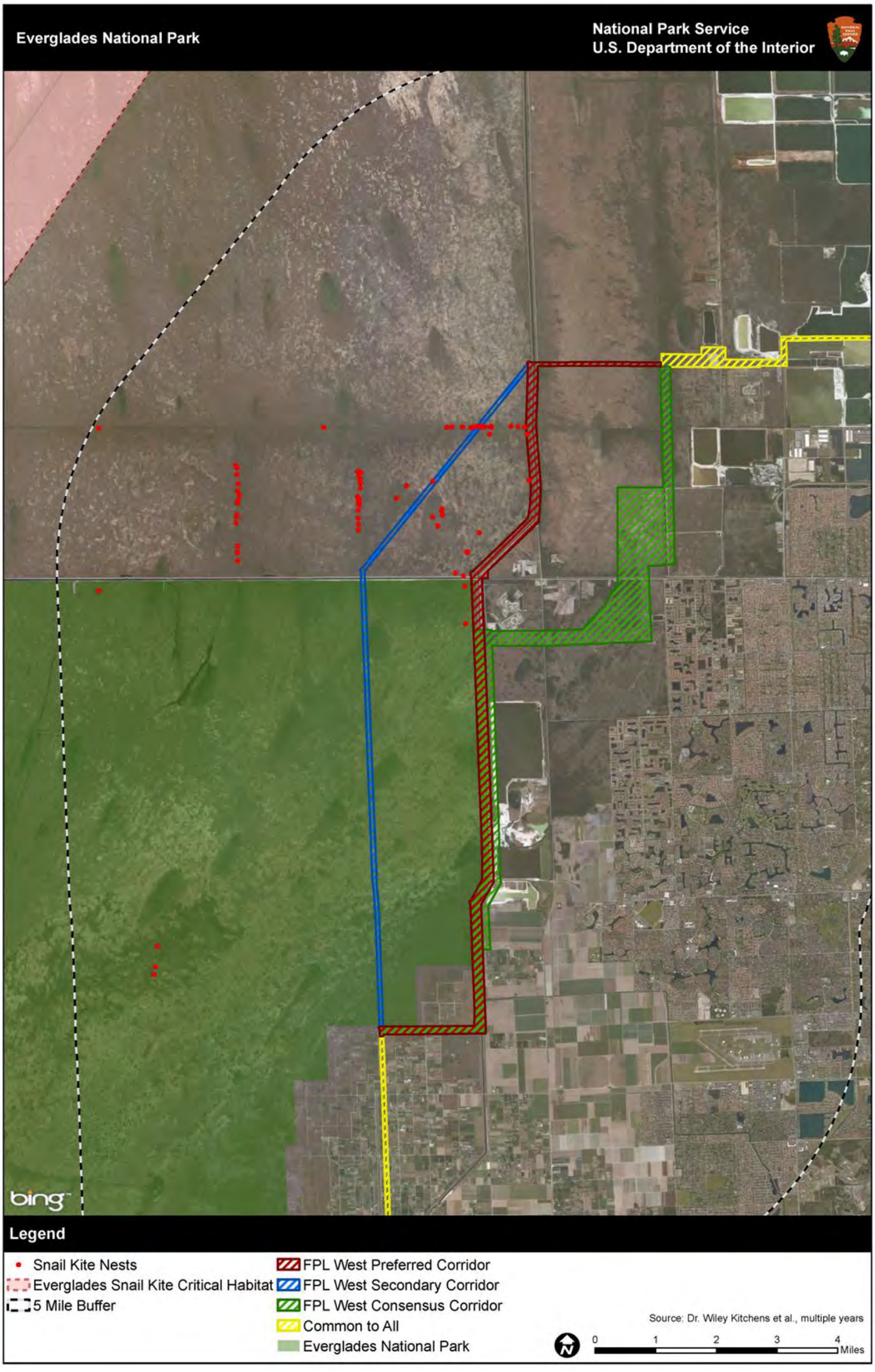


FIGURE 15: SNAIL KITE NESTING LOCATIONS

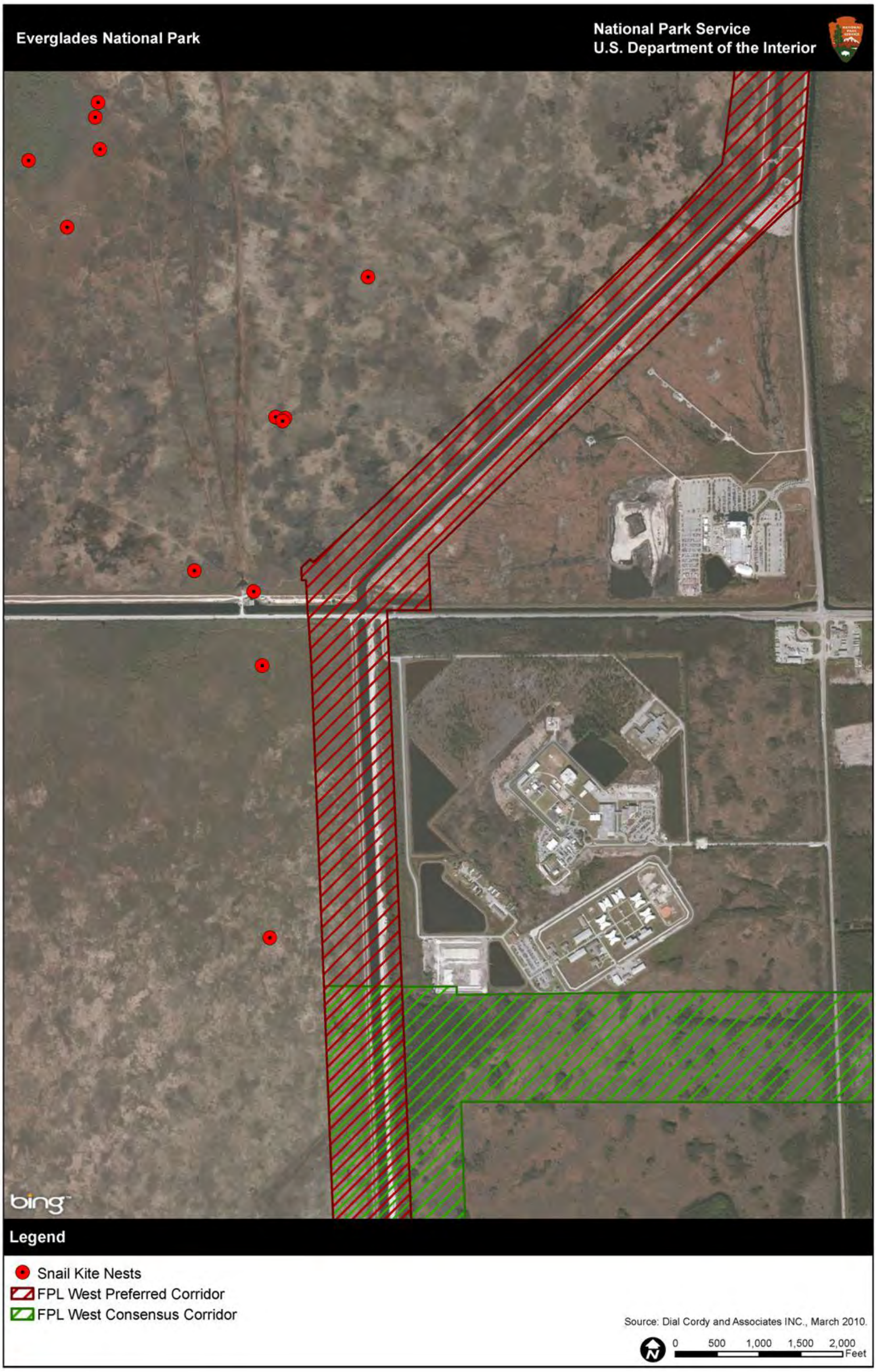


FIGURE 16: SNAIL KITE NESTING LOCATIONS IN THE VICINITY OF THE FPL WEST PREFERRED CORRIDOR AND WEST CONSENSUS CORRIDOR

Blodgett's Silverbush

On September 28, 2015, the USFWS published a proposed rule to list Blodgett's silverbush as threatened under the ESA. Blodgett's silverbush is also a state endangered plant. It is reported from Monroe and Miami-Dade Counties and Everglades National Park in coastal rock barren, disturbed upland, pine rockland, and pine hammock habitats (Gann, Bradley, and Woodmansee 2013). The FNAI has one report from 2005 of Blodgett's silverbush plants in the vicinity of the area of analysis in pineland and pine rockland habitat (figure 17) (FNAI 2012b); however, this location is more than 1 mile from the area of analysis. Blodgett's silverbush is unlikely to occur within the FPL West Secondary and FPL West Preferred Corridors due to lack of habitat. Blodgett's silverbush has a moderate likelihood of occurrence in disturbed uplands in the West Consensus Corridor.

Garber's Spurge

Garber's spurge is a federally threatened and a state endangered species. Garber's spurge is reported from Monroe and Miami-Dade Counties and Everglades National Park in beach dune, coastal rock barren, disturbed upland, and pine rockland habitats (Gann, Bradley, and Woodmansee 2013). Garber's spurge is unlikely to occur within the FPL West Secondary and FPL West Preferred Corridors due to lack of habitat. Garber's spurge has a low likelihood of occurrence in disturbed uplands in the West Consensus Corridor.

Sand Flax

Sand flax is a candidate for listing under the ESA and a state endangered species. It is reported from Monroe and Miami-Dade Counties in disturbed uplands, marl prairie, and pine rocklands (Gann, Bradley, and Woodmansee 2013). Sand flax is unlikely to occur within the FPL West Secondary and FPL West Preferred Corridors due to lack of habitat. Sand flax has a low likelihood of occurrence in disturbed uplands in the West Consensus Corridor.

Tiny Polygala

Tiny polygala is both federally and state endangered. It is reported from Broward, Martin, Miami-Dade, and Palm Beach Counties in disturbed upland, pine rockland, sandhill, scrub, and scrubby flatwoods habitats (Gann, Bradley, and Woodmansee 2013). Tiny polygala is unlikely to occur within the FPL West Secondary and FPL West Preferred Corridors due to lack of habitat. Tiny polygala has a low likelihood of occurrence in disturbed uplands in the West Consensus Corridor.

Federally Listed Plant Species Dismissed from Further Analysis

Florida bristle fern (*Trichomanes punctatum* ssp. *floridanum*), Beach jaquemontia (*Jacquemontia reclinata*), Cape Sable thoroughwort (*Chromolaena frustrata*), Carter's mustard (*Warea carteri*), crenulate lead-plant (*Amorpha crenulata*), deltoid spurge (*Chamaesyce deltoidea* ssp. *deltoidea*), hairy deltoid spurge (*Chamaesyce deltoidea* ssp. *adhaerens*), Everglades bully (*Sideroxylon reclinatum* ssp. *austrofloridense*), Florida pineland crabgrass (*Digitaria pauciflora*), Florida semaphore cactus (*Consolea corallicola*), Florida brickell-bush (*Brickellia mosieri*), Florida prairie-clover (*Dalea carthagenensis* var. *floridana*), pineland sandmat (*Chamaesyce deltoidea* ssp. *pinetorum*), Small's milkpea (*Galactia smallii*), Carter's flax (*Linum carteri* var. *carteri*) and Gulf licaria (*Licaria triandra*) were dismissed from further analysis. Habitat for these species does not occur in the area of analysis and/or the area of analysis is outside the known ranges of these species. Cape Sable thoroughwort, Everglades bully, Carter's flax, and Florida pineland crabgrass are reported from the park (Gann, Bradley, and Woodmansee 2013); however, habitat for these species is not believed to occur within the area of analysis.

There is one report of Okeechobee gourd (*Cucurbita okeechobeensis* ssp. *okeechobeensis*) from a canal bank in Miami-Dade County. However, the area of analysis is outside the primary range of this species and the probability of encountering this species in the area of analysis is very low; therefore, this species was excluded from further analysis. Johnson's sea grass (*Halophila johnsonii*) is a marine species. Since the area of analysis does not marine habitats, Johnson's sea grass was excluded from further analysis.

STATE-LISTED SPECIES

There are a variety of state-listed plant and animal species in Florida. The Florida Fish and Wildlife Conservation Commission (FFWCC) lists 63 animals as state threatened or species of species concern (FFWCC 2012b). The Florida Department of Agriculture lists 421 plant species as state endangered and 113 plant species as state threatened (Coile and Gardner 2003).

Animals

Eleven state-listed animal species are most likely to occur within the affected area. These species, and their state status, and brief descriptions of each species are outlined in the table 12.

TABLE 12: STATE-LISTED ANIMAL SPECIES WITH THE POTENTIAL TO OCCUR IN THE AREA OF ANALYSIS

Common Name	Scientific Name	State Status
Mammals		
Everglades mink	*Mustela vison evergladensis*	Threatened
Birds		
Florida sandhill crane	*Grus canadensis pratensis*	Threatened
White-crowned pigeon	*Patagioenas leucocephala*	Threatened
Limpkin	*Aramus guarauna*	Special Species of Concern
Little blue heron	*Egretta caerulea*	Special Species of Concern
Snowy egret	*Egretta thula*	Special Species of Concern
Tricolored heron	*Egretta tricolor*	Special Species of Concern
White ibis	*Eudocimus albus*	Special Species of Concern
Roseate spoonbill	*Platalea ajaja*	Special Species of Concern
Florida burrowing owl	*Athene cunicularia floridana*	Special Species of Concern
Reptiles		
Gopher tortoise	*Gopherus polyphemus*	Threatened

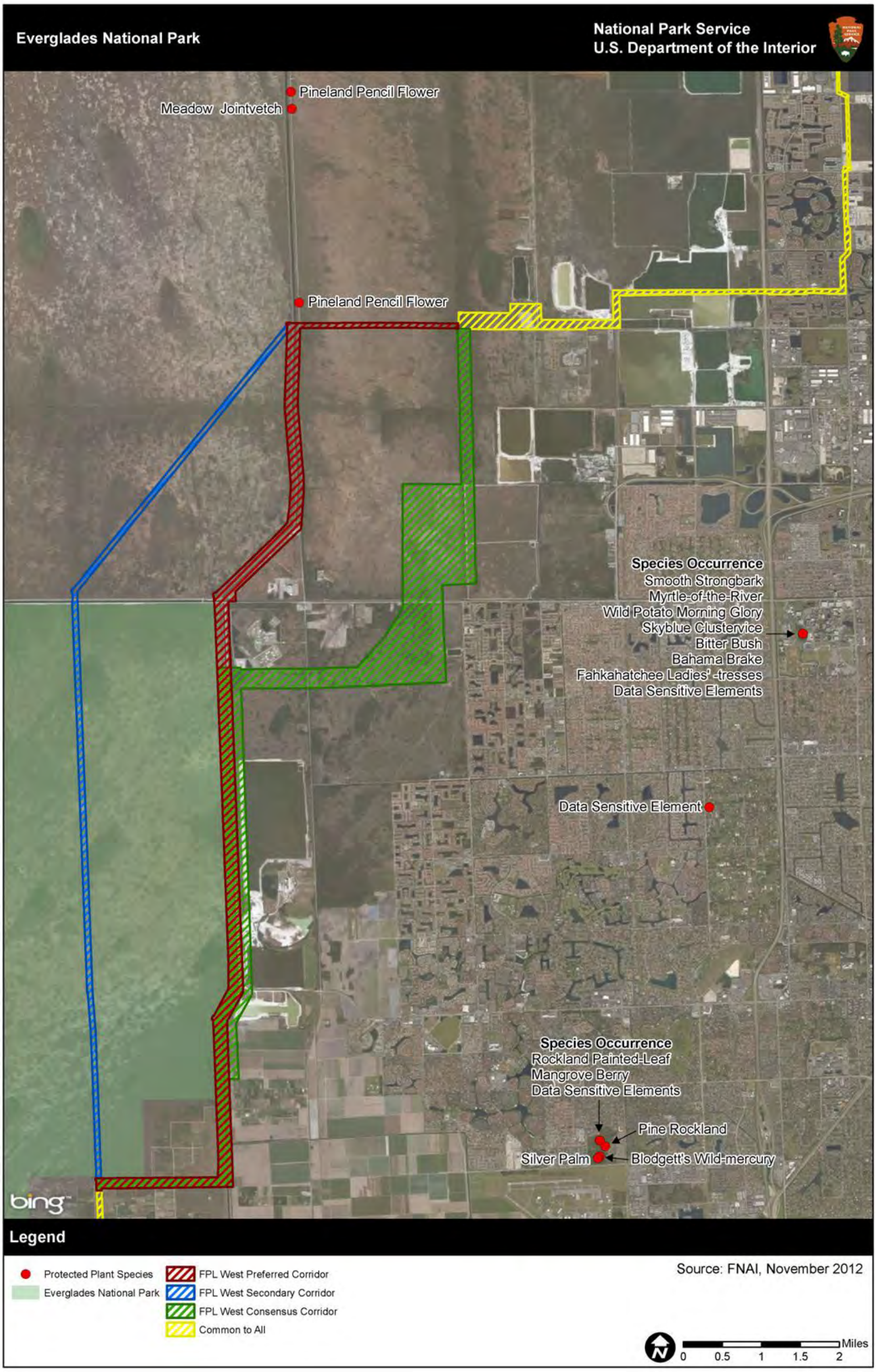


FIGURE 17: FLORIDA NATURAL AREAS INVENTORY REPORTS OF PROTECTED PLANT SPECIES

The **Everglades mink**, state-listed as threatened, is a subspecies of the southeastern mink. It occurs in southern Florida freshwater marshes in the Everglades and Big Cypress Swamp (FFWCC 2011b). The Everglades mink is difficult to detect and population size and extent of occurrence are poorly known (FFWCC 2011b). Its likelihood of occurrence is therefore considered moderate in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. There is a low likelihood for Everglades mink to occur in wetland areas within the West Consensus Corridor.

The **Florida sandhill crane** is a large bird that is state-listed as threatened by FFWCC. It co-mingles with the greater sandhill crane, which migrates to Florida. Sandhill cranes prefer shallow marshes for nesting and wet prairies and pastures for foraging. Unlike greater sandhill cranes, Florida sandhill cranes are non-migratory. They occur throughout peninsular Florida north to the Okefenokee Swamp in southern Georgia, although they are less common at the northernmost and southernmost portions of this range (FFWCC 2011c). The Florida sandhill crane is moderately likely to forage within the area of analysis.

The state-listed threatened **white-crowned pigeon** forages in fruit-bearing trees in hardwood hammocks in southern Florida. Its breeding range is restricted to Florida Bay, Biscayne Bay, and the Florida Keys, although a few individuals probably nest inland in Monroe and Miami-Dade counties (FFWCC 2011d). Nesting in Florida occurs almost exclusively on mangrove islands with nesting birds flying to islands to forage on fruit-bearing trees (FFWCC 2011d). The white-crowned pigeon is considered not likely to occur in the park in the vicinity of the FPL West Secondary Corridor. The species has a moderate likelihood of occurring in the vicinity of the FPL West Preferred Corridor and the West Consensus Corridor.

The **limpkin** is listed as a species of special concern. In the continental U.S., limpkins occur only in the state of Florida, where they are resident breeders (FFWCC 2011e). They inhabit freshwater wetlands that support an ample supply of their preferred prey, the apple snail (FFWCC 2011e). Limpkins are considered to have a high likelihood of occurrence in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. They are considered to have a moderate likelihood of occurrence in wetland areas in the West Consensus Corridor.

Little blue heron, listed as a species of special concern by FFWCC, is a wading bird found in wetlands throughout Florida. They are known to nest within the 3B Mud, Tamiami, and Grossman Ridge wood stork colonies (NPS 2010a). Figure 18 shows little blue heron nesting areas within 30 miles of the area of analysis. The little blue heron is considered highly likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. Little blue herons are considered moderately likely to occur in wetland habitats within the West Consensus Corridor. More information on little blue herons is provided in the ARA report (appendix J).

Snowy egrets are listed as a species of special concern by FFWCC. This species is widely distributed in Florida in both fresh and salt-water systems. Snowy egrets are known to nest within the 3B Mud, Tamiami, and Grossman Ridge wood stork colonies (NPS 2010a). Figure 19 shows snowy egret nesting areas within 30 miles of the area of analysis. Snowy egrets are considered highly likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. Snowy egrets are considered moderately likely to occur in wetland habitats within the West Consensus Corridor. More information on snowy egrets is provided in the ARA report (appendix J).

The **tricolored heron** (formerly called Louisiana heron) is a species of special concern as listed by FFWCC. It prefers estuarine habitats but can be found foraging in almost any wetland system. Tricolored herons are also known to nest within the 3B Mud, Tamiami, and Grossman Ridge wood stork colonies (NPS 2010a). Figure 20 shows tricolored heron nesting area within 30 miles of the area of analysis. Tricolored herons are considered highly likely to occur in the park in the vicinity of the FPL West

Secondary and FPL West Preferred Corridors. Tricolored herons are considered moderately likely to occur in wetland habitats within the West Consensus Corridor. More information on tricolored herons is provided in the ARA report (appendix J).

The **white ibis** is one of the most common wading birds in Florida, but is listed as a species of special concern by FFWCC. Large flocks of this bird are often seen foraging in shallow marshes or wet pastures. White ibis are also known to nest within the 3B Mud, Tamiami, and Grossman Ridge wood stork colonies (NPS 2010a). Figure 21 shows white ibis nesting area within 30 miles of the area of analysis. White ibis are considered highly likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. White ibis are considered moderately likely to occur in wetland habitats within the West Consensus Corridor. More information on white ibis is provided in the ARA report (appendix J).

The **roseate spoonbill** is a state-listed species of special concern that forages and nests in estuarine systems of south Florida (FNAI 2001a). Figure 22 shows roseate spoonbill nesting areas within 30 miles of the area of analysis. The roseate spoonbill is considered moderately likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. It has a low likelihood of foraging within wetlands in the West Consensus Corridor.

The small **Florida burrowing owl** is listed as a species of special concern by FFWCC. It lives in burrows in dry sandy soils associated with cattle pastures, prairies, sandhills, and ruderal areas (FNAI 2001b). It has moderate likelihood of occurrence in open, drier habitats along the FPL West Preferred Corridor. The Florida burrowing owl is not likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors due to the extensive wetlands in this area. There is a moderate likelihood of Florida burrowing owls occurring within upland areas within the West Consensus Corridor. Florida burrowing owls are known to occur at the Kendall-Tamiami Executive Airport, which south and east of the West Consensus Corridor (Tropical Audubon 2013).

The **gopher tortoise** is a burrowing terrestrial turtle that occurs in parts of all 67 counties in Florida. Gopher tortoises prefer high, dry sandy habitats such as longleaf pine-xeric oak sandhills, but can be found in any dry, sandy habitat. Gopher tortoises are state threatened species and must be surveyed before any land clearing or development takes place. Permits must be obtained from FFWCC prior to relocation. The gopher tortoise has been regulated in Florida since 1972 and has been fully protected since 1988. Despite the afforded protection, many gopher tortoise populations in Florida continue to decline (FFWCC n.d.). The USFWS found on July 27, 2011, that listing of the gopher tortoise was warranted, but precluded (76 FR 45130). The gopher tortoise is not likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors due to the extensive wetlands in this area. There is a low likelihood of gopher tortoises occurring within upland areas within the West Consensus Corridor.

State-listed Animals Dismissed from Further Analysis

The rim-rock crowned snake (*Tantilla ooliticus*) was dismissed from further analysis because the species is not known from the area of analysis and it is associated with the Barnacle area-rock ridge of Florida. Habitat for the Cape Sable seaside sparrow (*Ammadramus maritimus mirabilis*) is not present within the area of analysis; therefore, the species was eliminated from further analysis.

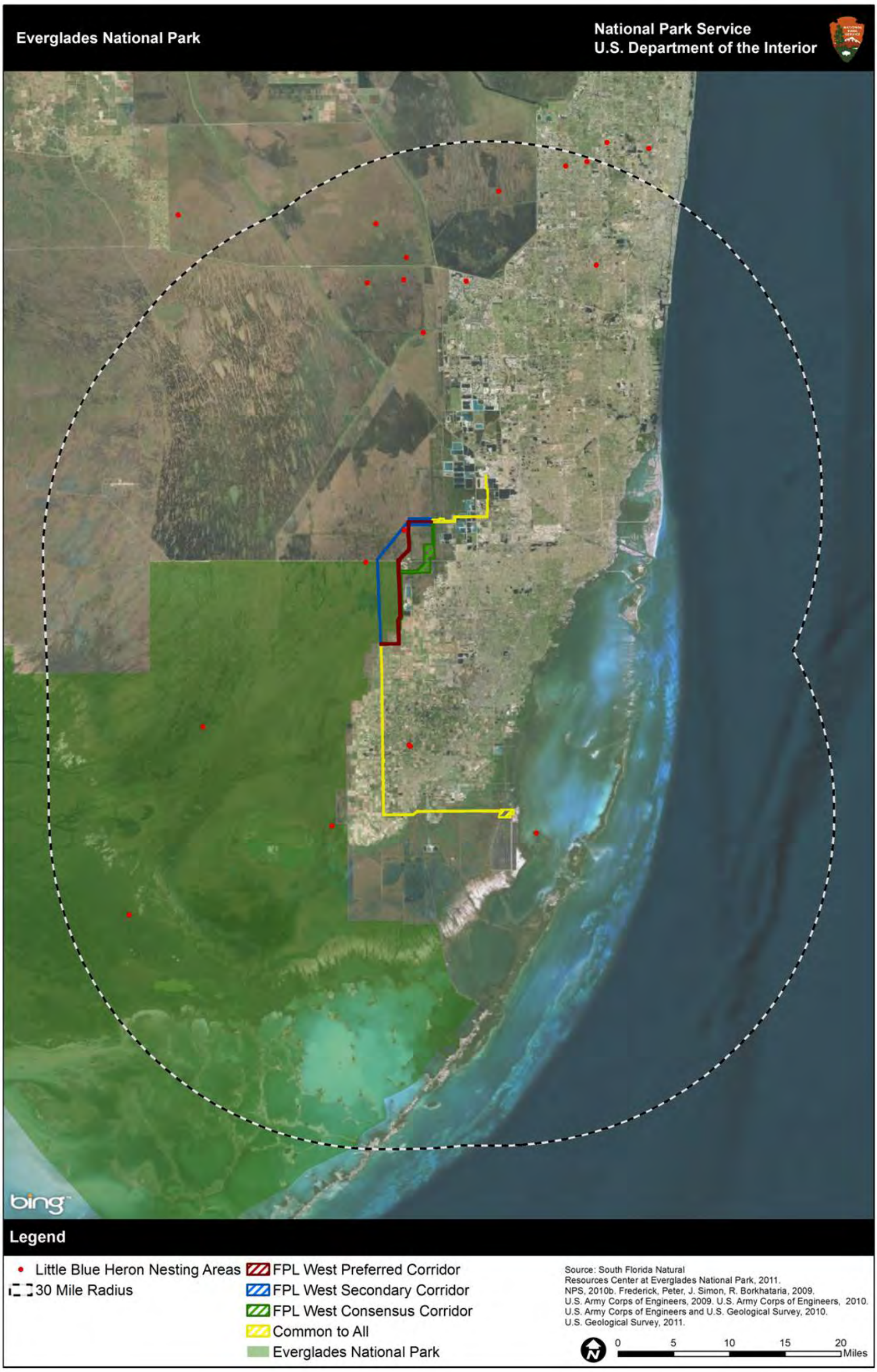


FIGURE 18: LITTLE BLUE HERON NESTING AREAS

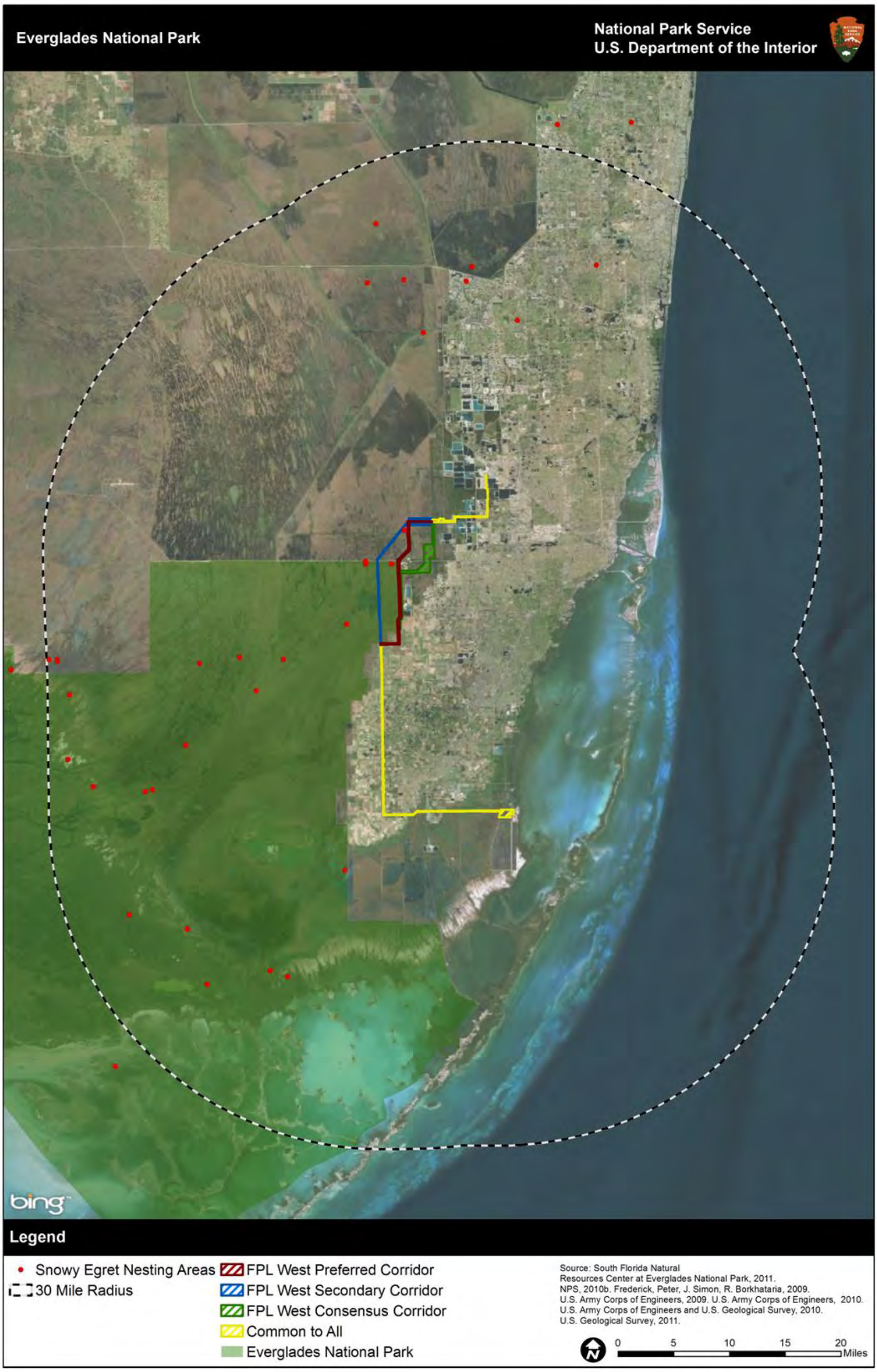


FIGURE 19: SNOWY EGRET NESTING AREAS

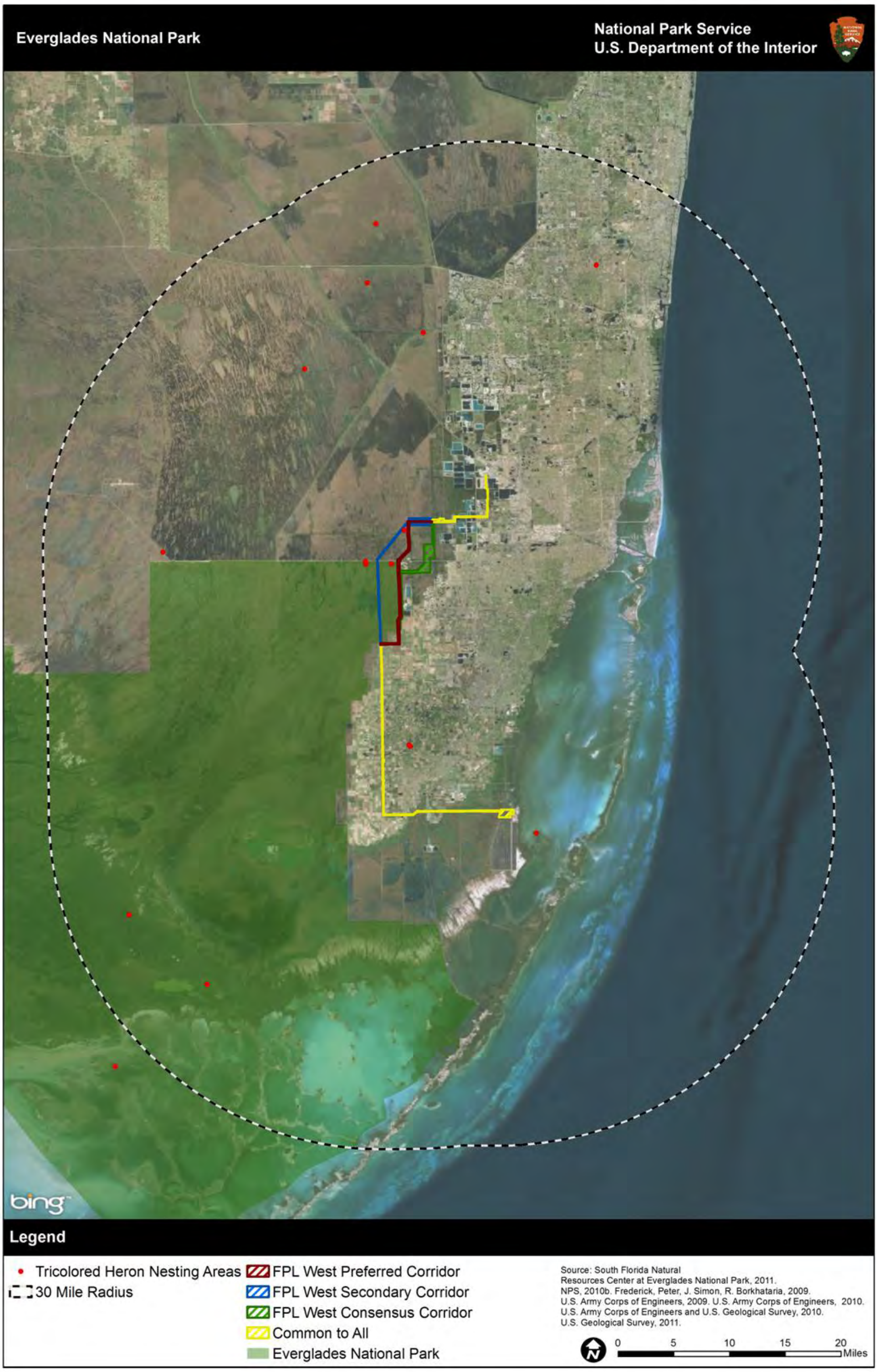


FIGURE 20: TRICOLORED HERON NESTING AREAS

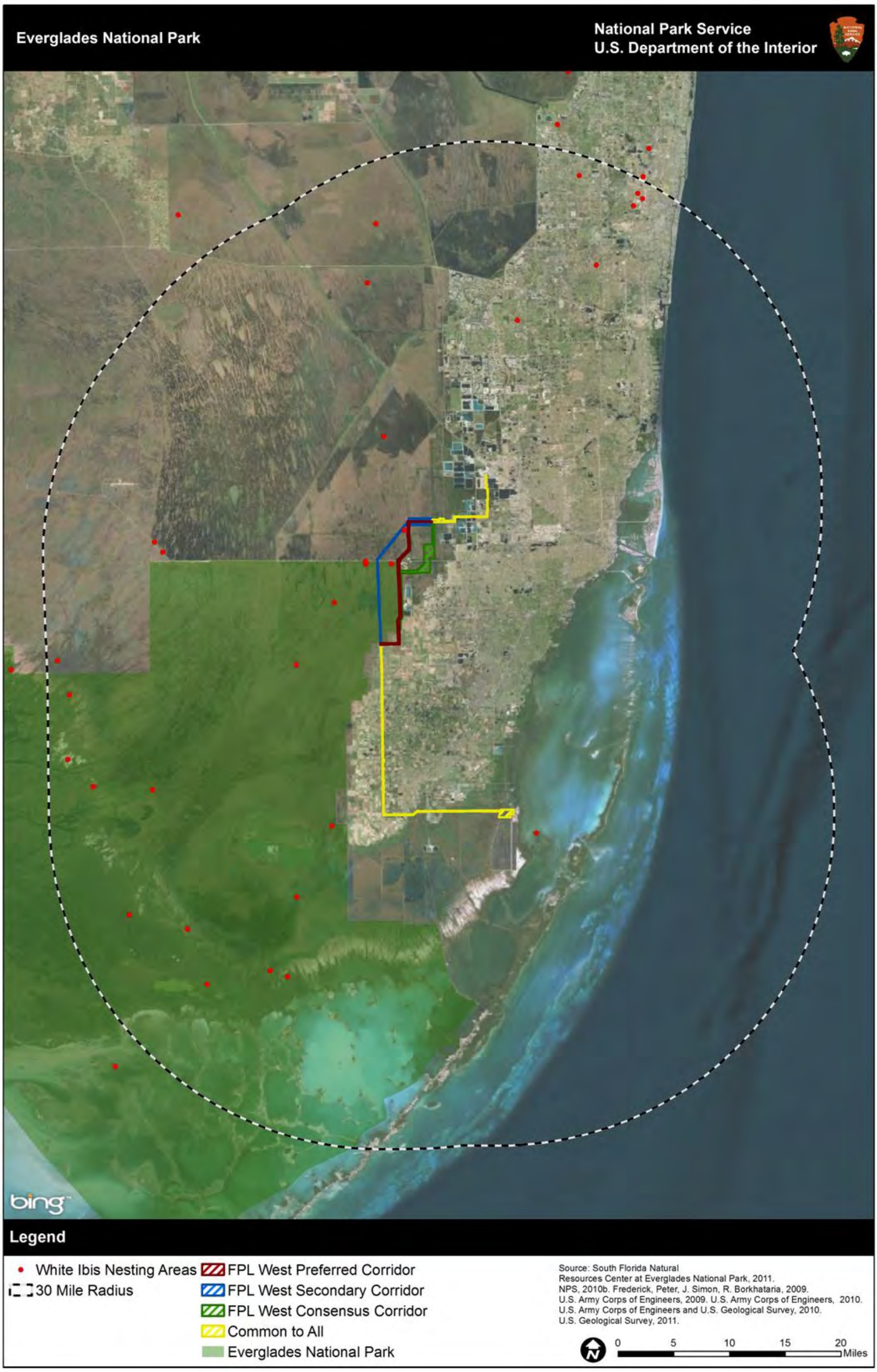


FIGURE 21: WHITE IBIS NESTING AREAS

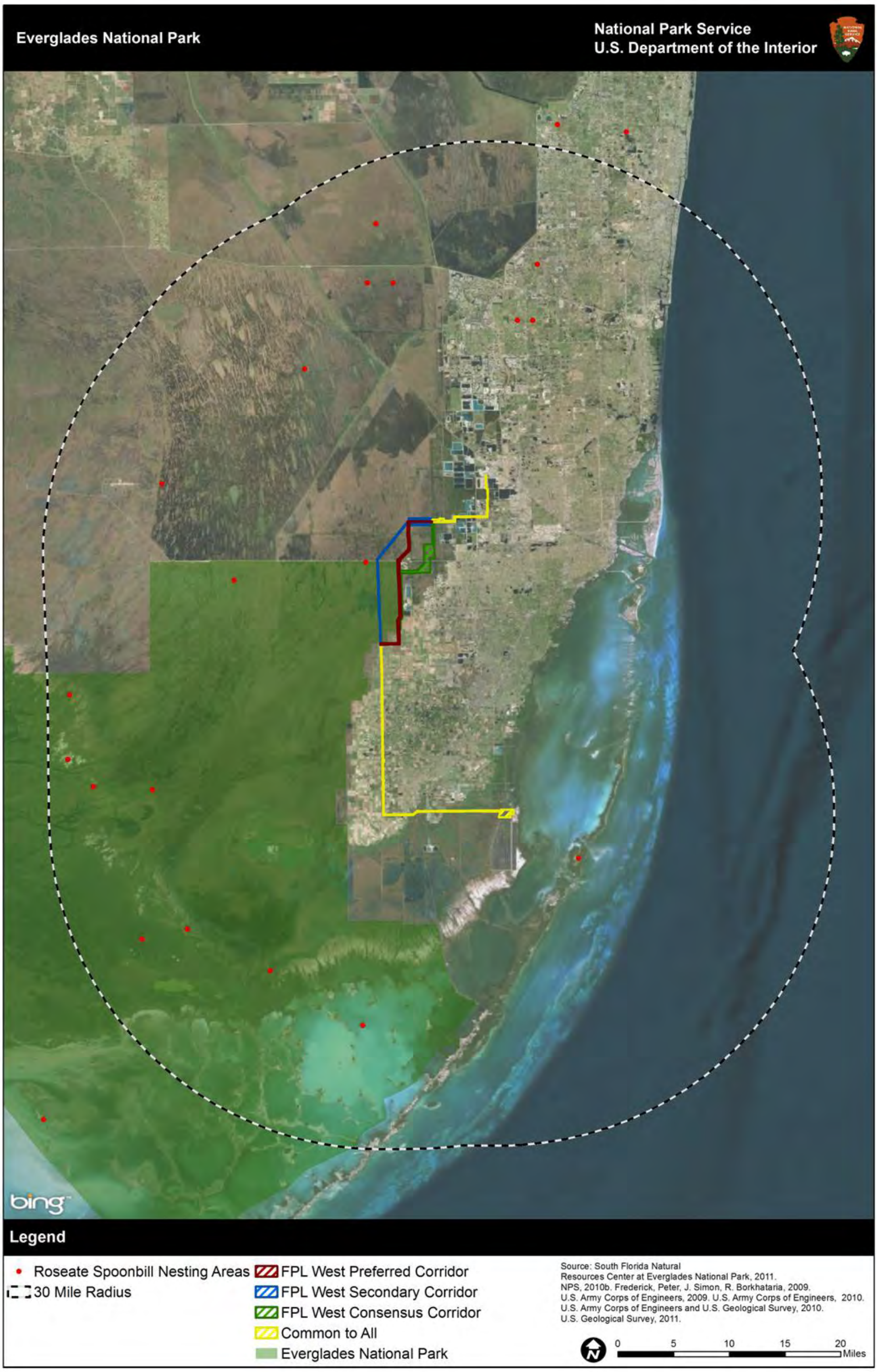


FIGURE 22: ROSEATE SPOONBILL NESTING AREAS

Plants

The state-listed plant species most likely to occur within the area of analysis are listed in table 13.

TABLE 13: STATE THREATENED AND ENDANGERED PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE AREA OF ANALYSIS

Common Name	Scientific Name	State Status
Meadow joint-vetch	*Aeschynomene pratensis*	Endangered
Southern frog-fruit	*Phyla stoechadifolia*	Endangered
Bahama ladder brake	*Pteris bahamensis*	Threatened
Pineland Jacquemontia	*Jacquemontia curtissii*	Threatened
Florida royal palm	*Roystnea elata*	Endangered
Eaton's Spikemoss	*Selanginella eatonii*	Endangered
Rockland-Painted Leaf	*Euphorbia pinetorum*	Endangered
Pineland allamanda	*Angadenia berteroi*	Endangered
Everglades (Pinelands) Pencil Flower	*Stylosanthes calcicola*	Endangered
Bahama saschia	*Saschia polycephala*	Threatened
Pineland noseburn	*Tragia saxicola*	Threatened
Small's flax	*Linum carteri* var. *smalli*	Endangered

Meadow joint-vetch is a state endangered plant that is reported from Collier, Miami-Dade, and mainland Monroe County, including Everglades National Park (Gann, Bradley, and Woodmansee 2013). It has been reported from marl prairie and dome swamp habitats (Gann, Bradley, and Woodmansee 2013). Meadow joint vetch has been previously observed within the FPL West Secondary Corridor (see appendix I). There is a is a low probability of occurrence of meadow joint-vetch in wet prairie areas of the FPL West Preferred Corridor and the West Consensus Corridor due to historical drainage and soil disturbance of these types of areas.

Southern frog-fruit is a state endangered plant that is reported from Broward County and Miami-Dade County, including the park and the Everglades and Francis S. Taylor Wildlife Management Area (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed wetlands and uplands, marl prairie, pine rockland, and swales (Gann, Bradley, and Woodmansee 2013). Southern frog-fruit is considered highly likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. This area was surveyed and no plants were observed. There is also a low probability of occurrence in the West Consensus Corridor. However, surveys have not been conducted along this corridor.

Bahama ladder brake is a state threatened plant that is reported from Broward, Collier, Monroe, Palm Beach, and Miami-Dade counties (including Everglades National Park) (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed uplands, marl prairie, pine rockland, rockland hammock, and sinkhole areas (Gann, Bradley, and Woodmansee 2013). FNAI has one report from 2007 of Bahama ladder brake (also known as Bahama brake) in the vicinity of the area of analysis, but the location is more than 1 mile from the area of analysis (figure 17) (FNAI 2012b). Bahama ladder brake was also found in the FPL West Preferred Corridor within Everglades National Park (Dean and Sadle pers. comm. 2012; see appendix I). Bahama ladder brake is considered moderately likely to occur in the FPL West Secondary Corridor and the West Consensus Corridor in disturbed uplands.

Pineland jacquemontia is a state threatened plant that is reported from Collier, Hendry, Martin, Monroe, and Miami-Dade counties (including Everglades National Park) (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed uplands, marl prairie, mesic flatwoods, and pine rockland (Gann, Bradley and Woodmansee 2013). Pineland jacquemontia is not documented in the area of analysis, but there is a low likelihood that the species could occur in the West Consensus Corridor on disturbed uplands such as canal levees. Pineland jacquemontia is not likely to occur in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors.

The **Florida royal palm** is an endangered tree species known from Collier, Martin, Monroe, Palm Beach, and Miami-Dade counties (including Everglades National Park) (Gann, Bradley, and Woodmansee 2013). The Florida royal palm has been found in disturbed wetlands, floodplain forest, rockland hammock, and strand swamp (Gann, Bradley, and Woodmansee 2013). There is a low likelihood for plants that have escaped cultivation to occur within the area of analysis.

Eaton's spikemoss is an endangered plant known from Monroe and Miami-Dade counties, including Everglades National Park (Gann, Bradley, and Woodmansee 2013). The species has been found in marl prairie and pine rockland habitats (Gann, Bradley, and Woodmansee 2013). It has a low likelihood of occurring on canal margins within the area of analysis.

Rockland-painted leaf (also known as **pineland poinsettia**) is state threatened species that is endemic to Monroe and Miami-Dade counties (NatureServe 2012). It is associated with herbaceous wetlands, woodlands, and pine rocklands over limestone (NatureServe 2012). There is a 1995 record of Rockland-painted leaf in the vicinity of the area of analysis, but it is greater than 1 mile away from the area of analysis and the population likely no longer exists due to the extensive residential development in the area (figure 17) (FNAI 2012b). There is a low probability that pineland-painted leaf could occur in disturbed uplands, such as canal margins, within the area of analysis.

Pineland allamanda is a state threatened plant reported from Monroe and Miami-Dade counties, including Everglades National Park (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed uplands, marl prairie, and pine rocklands (Gann, Bradley, and Woodmansee 2013). It has a high likelihood of occurring in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors and has been observed in the FPL West Preferred Corridor within the park (see appendix I). It has a moderate likelihood of occurring within the West Consensus Corridor.

Everglades (or Pinelands) pencil flower is a state endangered species that is reported from Miami-Dade (including the park) and Monroe Counties in disturbed uplands, marl prairie and pine rocklands (Gann, Bradley, and Woodmansee 2013). FNAI has two reports from 2006 of Everglades pencil flower within approximately 2 miles north of where the FPL West Secondary and FPL West Preferred Corridors join in the Everglades and Francis S. Taylor Wildlife Management Areas (figure 17). These locations are reported as being along a roadside right-of-way (FNAI 2012b). Examination of aerial photography indicates that these locations were likely along a dirt access road along a canal. Everglades pencil flower has a low likelihood of occurring in the park in the vicinity of the FPL West Secondary and FPL West Preferred Corridors. It has a moderate likelihood of occurring within the West Consensus Corridor.

Bahama saschia is a state threatened plant that is reported from Monroe County and Miami-Dade County, including Everglades National Park (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed upland and pine rockland (Gann, Bradley, and Woodmansee 2013). There is a moderate likelihood that Bahama saschia could occur in disturbed uplands within the West Consensus Corridor.

Pineland noseburn is a state threatened plant that is reported from Monroe County and Miami-Dade County, including Everglades National Park (Gann, Bradley, and Woodmansee 2013). It has been found in disturbed upland and pine rockland (Gann, Bradley, and Woodmansee 2013). There is a moderate likelihood that pineland noseburn could occur in disturbed uplands within the West Consensus Corridor.

Small's Flax

Small's flax is a state endangered plant that is reported from Collier County, Hendry County, Monroe County, and Miami-Dade County, including Everglades National Park (Gann, Bradley and Woodmansee 2013). It has been found in disturbed upland, disturbed wetland, marl prairie, and pine rockland (Gann, Bradley and Woodmansee 2013). There is a moderate likelihood that Small's flax could occur in disturbed uplands and disturbed wetlands, such as margins of canals, within the West Consensus Corridor.

State-listed Plant Species Dismissed from Further Analysis

Wright's anemia (*Anemia wrightii*), Porter's broad-leaved spurge (*Chamaesyce porteriana*), Cuban snake-bark (*Colubrina cubensis* var. *floridana*), Christmasberry (*Crossopetalum ilicifolium*), modest spleenwort (*Asplenium verecundum*), large-flowered rosemary (*Conradina grandiflora*), sheathing govenia (*Govenia floridana*), and holly vine fern (*Lomariopsis kunzeana*) were dismissed from further analysis because habitat does not exist for these species within the area of analysis and/or the area of analysis is outside the known ranges of these species.

VIEWSHED (VISUAL RESOURCES)

The study area for visual resources includes the area of potential visibility from various key observation points (KOPs) along Tamiami Trail, recreational air boat operations, the Blue Shanty, Shark Valley, and access roads and waterways within the northeastern extent of Everglades National Park. Major recreation and visitor areas (air boating operations, Blue Shanty, Shark Valley, Chekika area, and L-31N levee road) in this portion of the park were determined to be the most visually sensitive resources in the study area and of the highest visual concern. KOPs were determined in conjunction with the Everglades National Park staff. The photograph locations from the identified KOPs and the major recreation and visitor use areas are presented in figure 23. A number of photographs were taken from each of these KOPs and a representative sampling has been incorporated into this section in order to depict the existing visual character of the study area. These photographs and accompanying descriptions are provided below.

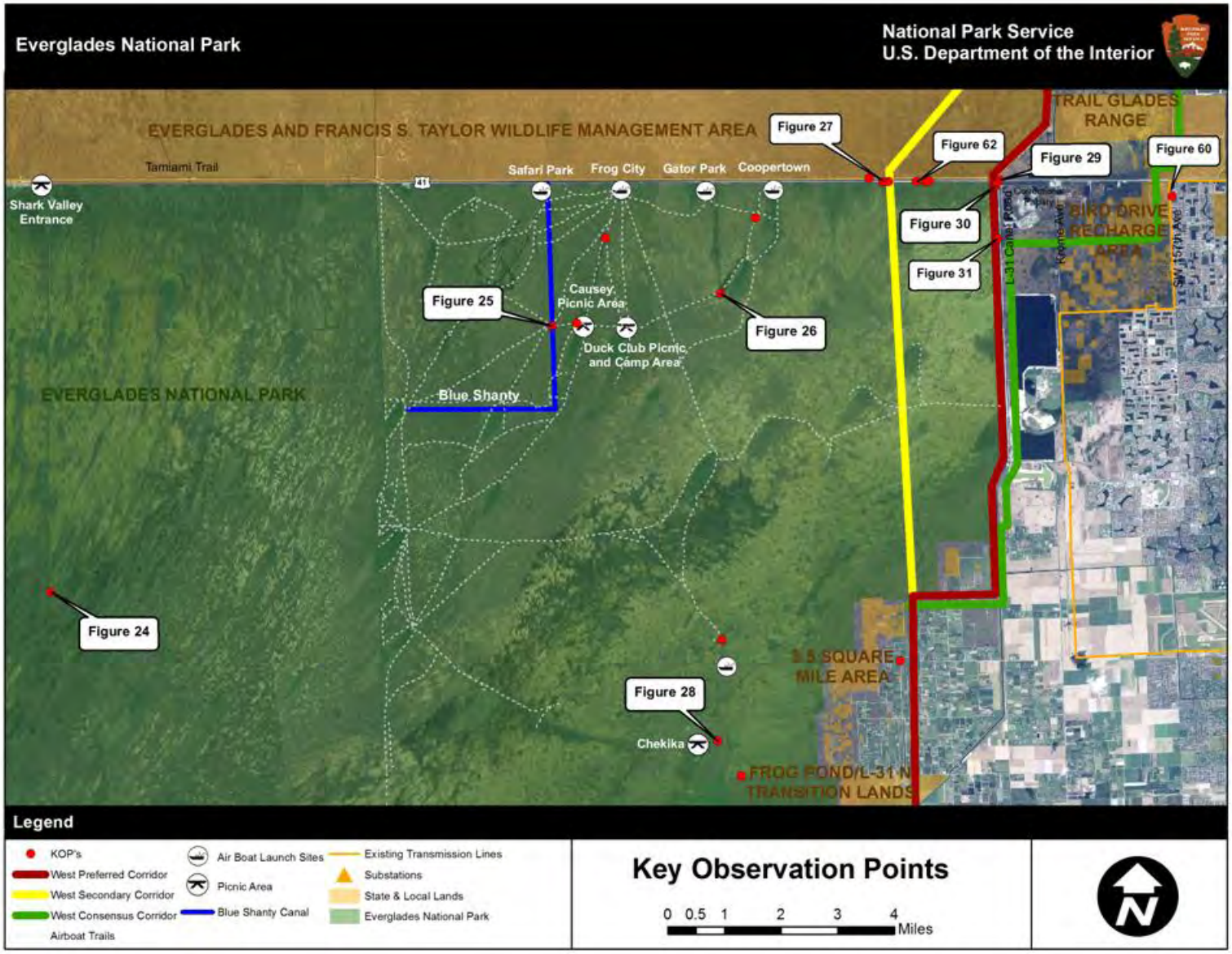


FIGURE 23: STUDY AREA OVERVIEW AND LOCATION OF PHOTOGRAPHS

DESCRIPTION OF LANDSCAPE CHARACTER

Visual character encompasses the patterns of landform (topography), vegetation, land use, and aquatic resources (i.e., lakes, streams, and wetlands). The visual character is influenced both by natural systems, human interactions, and use of land. In natural settings, the visual character attributes are natural elements such as vast open areas or scenic rivers and lakes, whereas rural or pastoral/agricultural settings may include manmade elements such as fences, walls, barns and outbuildings, and occasional residences. In a more developed setting, the visual character may include commercial or industrial buildings, residential neighborhoods, manicured lawns, pavement, and other utility infrastructure. The terrain in the study area is predominantly flat and three general landscapes characters were observed (natural, residential, and industrial). Dense residential development is located east of SW 157th Avenue, while generally open land, dominated by invasive species, is located directly west of SW 157th Avenue. The area between SW 157th Avenue and the eastern boundary of Everglades National Park includes scattered industrial and agricultural development, including major rock mining operations, especially between Krome Avenue and L-31N canal road. Additionally, the Miccosukee Resort is located just north of the Tamiami Trail and west of Krome Avenue. The Everglades National Park is located west of the L-31N canal road and is undeveloped natural lands, with a few recreational areas along the Tamiami Trail, with the exception of the access points to the airboat operations.

Prominent vertical features on the landscape include existing utility lines alongside Tamiami Trail, radio towers and other communications antennas, industrial and commercial facilities along the L-31N canal road and residential development along the eastern border of the study area. Land within the national park and comprised entirely of natural vegetation with marshland features preserved in-situ. Along the northernmost extent of Everglades National Park, low intensity development occurs along Tamiami Trail, which is interspersed with small structures along the roadside, including recreational air boating operations and radio and microwave towers (approximately 250 feet tall).

NATIONAL PARK SERVICE LANDS

The major areas of visual concern within NPS lands are from air boating routes (including the Blue Shanty), Shark Valley, the Chekika area, and the L-31N levee road, adjacent to the east boundary of the EEEA. As mentioned in the “Visitor Use and Experience / Recreation Resources” section, Shark Valley is located over 15 miles west from the project area and includes a tall observation tower. The tower looks out across the Everglades and provides expansive views of the surrounding landscape (figure 24).

FIGURE 24: SHARK VALLEY OBSERVATION TOWER

There are four private airboat tour companies providing naturalist-guided recreational water tours within the park. The visual landscape from the airboats tours is an important asset to the park. A site visit of each airboat routes and picnic areas served as an inventory of existing visual conditions. Views from the Blue Shanty (a major airboat canal), shown on figure 25, were extremely limited due to high vegetation in the immediate foreground and on either side of the canal. A similar scene is found at the entrance and exit of each of the airboat docks along Tamiami Trail. Once out of the initial entrance to each of the airboat operations, views of the landscape begin to open up in all directions (figure 26). In the heart of the Everglades taller vegetation, usually associated with hammocks, are scattered throughout the landscape and have the ability to block views from an airboat, particularly from the Causey and Duck Club picnic areas, which are popular destinations for commercial and individual airboater operators and the occasional canoeist.

FIGURE 25: VIEW FROM THE BLUE SHANTY

Coopertown Airboat is the closest operation (about 4 miles from L-31N canal road) to the potential corridors associated with any alternatives. Figure 26 depicts the east-facing view from the Coopertown Airboat route and within the Everglades National Park. From this observation point, viewers encounter expansive views of the landscape and associated sawgrass marsh continuing toward the horizon. Only very distant views of radio and communication towers (approximately 250 feet tall) and developed lands are available from this viewpoint. On a clear day these structures are more visible and are likely less visible on an overcast or cloudy day. The characteristically flat topography does not allow viewers to access vantage points above normal ground surface elevations and, as a result, distant views are occasionally blocked by vegetation in the immediate foreground or middleground.

FIGURE 26: EXISTING VIEW EASTWARD FROM WATERWAY WITHIN EVERGLADES

The Tamiami Trail is adjacent to, but not located within the park but it is located along the northern border of the park, providing southerly views of the Everglades. Currently, the Tamiami Trail is located at the same elevation as the park with vegetation in the foreground blocking most views of the park; however, the 1-mile bridge was completed and opened to traffic in May 2013, replacing approximately 1 mile of the Tamiami Trail roadway. The FPL corridor in the park bisects the 1-mile bridge about 2/3 of a mile across it traveling west on Tamiami Trail. The bridge offers wide, expansive views into the park. Figure 27 shows the view from the bridge, when it was under construction, looking southeast. The views looking south and southwest are is similar in nature to those in figure 27.

The Chekika area of Everglades National Park is located approximately 11 miles south of Tamiami Trail and described further under Visitor Use and Experience / Recreation Resources. It is identified as a KOP within the study area. Chekika is a large hammock that includes well-established vegetation of mature trees and other hammock vegetation, making the area visually isolated from the surrounding landscape. SW 237 Avenue (an access road in the park) is traveled by bicyclists, runners, fishermen, and walkers. Generally open vistas, in all directions, are possible from this roadway. Again, given the flat topography and vegetation, long vistas are often blocked by vegetation or building in the foreground and middle ground. Figure 28 was taken from the access road to Chekika looking east.

PRIVATE AND STATE LANDS

Private Lands

The majority of private lands are located between L-31N canal road and SW 157th Avenue. Private lands in this area are interspersed with state lands, with a higher concentration of state lands closer to SW 157th Avenue. Additionally, the Miccosukee Resort and the Everglades Correctional Institute are located on private lands and off of the Tamiami Trail and the L-31N canal road. The correctional institute itself is jointly owned by the USACE, the State of Florida, and Miami-Dade County, according to parcel data.

State Lands

The FFWCC administers the Francis S. Taylor Wildlife Management Area (land is owned by SFWMD), which is located on the north side of Tamiami Trail. The Florida State Department of Environmental Protection owns various conservation lands between Krome Avenue and 157th Avenue. These are illustrated in figure 23. Figure 29 shows views near the northwestern corner of Tamiami Trail and L-31N canal road. From this observation point, distant views are available for a northern portion of the park and southern portions of lands owned by the FFWCC. FFWCC lands are located north of Tamiami Trail in WCA 3A and 3B. NPS lands are located south of Tamiami Trail. The landscape topography is flat. The area currently includes industrial components within a larger natural landscape due to the existing quarry operation south of the highway. Immediately visible in the foreground are various components of existing utility infrastructure, including a communications tower, telephone lines and transmission lines.

Figures 30 and 31 depict the public viewpoint from the L-31N canal road at the eastern-most edge of Everglades National Park. From this observation point, close views of Everglades National Park are available to the west, and FFWCC lands can be seen in the distance north of Tamiami Trail. Manmade structures are readily visible on the landscape and include a communication tower and utility lines along Tamiami Trail. The topography is flat, and there are few other buildings on the landscape. Low growing trees and shrubs in the foreground have the ability to shield views to some extent.

FIGURE 27: EXISTING VIEW FROM 1-MILE BRIDGE (TAMIAMI TRAIL) LOOKING SOUTHEAST

FIGURE 28: EXISTING VIEW FROM CHEKIKA AREA LOOKING EAST

FIGURE 29: EXISTING VIEW WESTWARD FROM TAMIAMI TRAIL AT WESTERN EDGE OF STATE LANDS

FIGURE 30: EXISTING VIEW NORTHWARD ON L-31N CANAL AVENUE AT EASTERN EDGE OF NPS LAND

FIGURE 31: EXISTING VIEW WESTWARD ON L-31N CANAL AVENUE AT EASTERN EDGE OF NPS LAND

WILDERNESS

In 1978, Congress designated approximately 93 percent of area within the park at the time as the "Everglades Wilderness." The area was renamed the "Marjory Stoneman Douglas Wilderness Area" in 1997 (PL 105-82) in honor of the famous Everglades activist. The wilderness contains 1,296,500 acres (524,686 hectares) of the park's total 1,509,000 acres (610,671 hectares) and is the largest wilderness area east of the Rockies. These lands are now shielded from development encroachment and are managed to protect the flora and fauna of the Everglades ecosystem. The wilderness includes most of the park's undeveloped lands and inland waters, and extends out into Florida Bay as submerged wilderness.

At the same time that wilderness was originally designated within Everglades National Park, 81,900 acres (33,144 hectares) in several parcels were designated "Potential Wilderness," meaning they would be converted to wilderness if or when nonconforming uses end. In the interim, these lands are managed to protect their wilderness character. Existing wilderness and potential wilderness areas are managed under the Wilderness Act of 1964, the park's 1979 Master Plan, NPS *Management Policies 2006*, and the Everglades National Park Backcountry Management Plan (NPS 1981). Figure 32 outlines the park's designated and potential wilderness areas. A wilderness eligibility assessment for the EEEA is currently underway as part of the park's General Management Plan / East Everglades Wilderness Study project. The final document was released to the public in August 2015. The Record of Decision (ROD) is expected in the Fall of 2015. A discussion on wilderness in that specific location as well as a figure displaying potentially eligible wilderness are provided separately within the "Wilderness" discussion.

The Wilderness Act, passed on September 3, 1964, established a national wilderness preservation system, "administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness" (16 USC § 1131). Management will include the protection of these areas, the preservation of their wilderness character, and the gathering and dissemination of information regarding their use and enjoyment as wilderness (NPS 2006a, sec. 6.1). NPS management policies apply to eligible, study, proposed, recommended, and designated wilderness, regardless of category (NPS 2006a, sec. 6.3.1).

WILDERNESS CHARACTER

Wilderness character is ideally described as the unique combination of (1) natural environments that are relatively free from modern human manipulation and impacts; (2) opportunities for personal experiences in environments that are relatively free from the encumbrances and signs of modern society; and (3) symbolic meanings of humility, restraint, and interdependence in how individuals and society view their relationship to nature (Landres et al. 2008). Using the definition of wilderness from Section 2(c) of the Wilderness Act of 1964, four qualities of wilderness make its idealized character relevant, as follows (Landres et al. 2008):

- **Untrammeled**—Wilderness is essentially unhindered and free from the actions of modern human control or manipulation.
- **Natural**—Wilderness ecological systems are substantially free from the effects of modern civilization.
- **Undeveloped**—Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation.
- **Solitude or Primitive and Unconfined Recreation**—Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation (Landres et al. 2008).

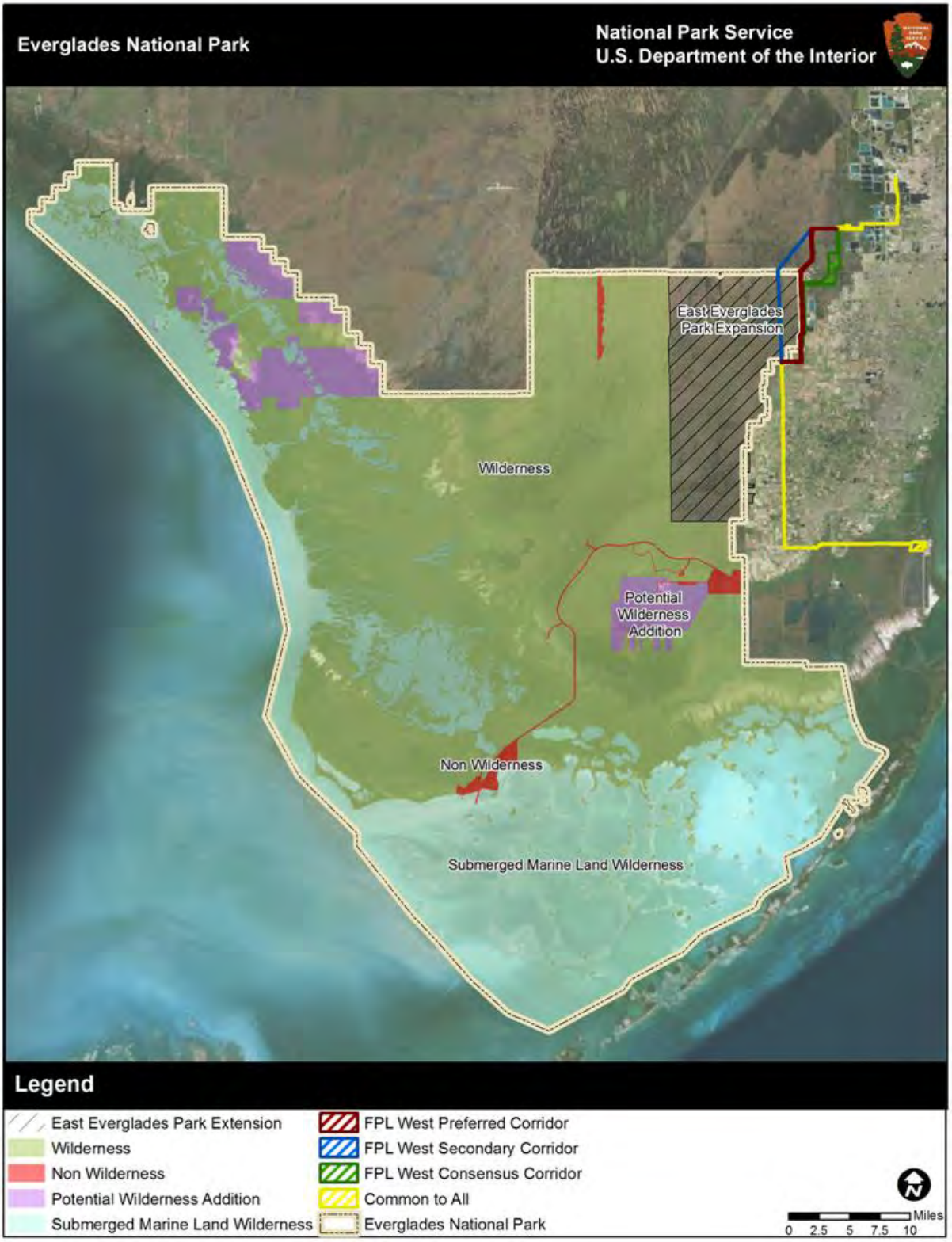


FIGURE 32: DESIGNATED WILDERNESS IN EVERGLADES NATIONAL PARK

The area may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Untrammeled

Historically, the larger Everglades area has been heavily manipulated with an intricate series of canals, levees, and drainage systems in an attempt to drain the watery landscape. Expanded dredging efforts between 1905 and 1910 transformed large tracts from wetland to agricultural land. As the South Florida region grew, developers cut more canals, built new roads, and removed mangroves from the shorelines and replaced them with palm trees. Canals, roads, and buildings gradually displaced native habitats. After the designation of the park in 1947, much of the dredging inside the park stopped, but the Central and South Florida project—to build an elaborate system of roads, canals, levees, and water-control structures stretching throughout South Florida—ensured continued outside alterations that still impact the park (NPS 2009b). Today, human intervention is required to undo or mitigate many hydrologic changes that have altered the natural hydrologic regime. Human intervention is also required to control the invasive nonnative plant and animal species that have taken hold in the Everglades.

The manipulation of ecological systems in the park infringes upon the untrammeled qualities of its wilderness areas, and Everglades National Park has multiple plans to restore natural conditions to the park, including the following:

- Fire management plan
- Exotic vegetation management plan
- Comprehensive Everglades Restoration Plan (CERP)
- Modified Water Deliveries to the Everglades National Park (MWD) project.

Although these plans may increase or replace other forms of trammeling, it is also anticipated that the improvements to natural character will outweigh the negative impacts of continued trammeling and ultimately improve overall wilderness character.

The fire management plan and exotic vegetation management plan deal directly with manipulation of the park's ecological systems with the aim of restoring natural conditions. The CERP and the MWD project involve work beyond the park boundary that have the potential to greatly impact the conditions within the park.

Natural

Natural systems existing within the wilderness area include natural floral and faunal populations supported by hydrologic flow and fire regimes that maintain equilibrium conditions within the park. Much of the park's designated wilderness maintains its natural quality. The interior of the park, in particular, far from the influence of roads or development along Tamiami Trail or the Main Park Road, can be described as natural. However, while the integrity of these natural systems remains intact for interior areas of the park, disturbances to these equilibrium conditions have occurred as a result of development at the edges of the park unit and at the larger watershed level. For the purposes of agricultural productivity, flood control, and water supply, the larger watershed encompassing the park has been dramatically re-engineered from its natural state. The construction of canals and flood control structures, and the large-scale drainage of wetlands, has altered the natural hydrological conditions. While these alterations of the natural hydrology have made it possible to support large urban centers and highly productive agricultural areas, direct effects have included disruptions to or elimination of overland sheet

flows, changes in the location and timing of flows, and permanent flooding in some areas and permanent drainage of others. Indirect effects have included land subsidence, abnormal fire patterns, and widespread changes in vegetation and animal communities. Portions of the park now flood more deeply during the rainy season and are drier during the winter. As a result, although natural fires are typical in slash pine and cypress communities, periodic droughts exacerbated by alteration to park hydrology may increase the risk of fire. Canals can also serve as habitats and movement corridors for invasive nonnative plants (e.g., hydrilla and water hyacinth) and animals (e.g., cichlids and sailfin catfish) that impact Everglades ecosystems (NPS 2013a). For instance, the natural faunal system of the park has been dramatically affected by the Burmese python and other exotic snakes. A recent study suggested that small mammal populations have greatly declined due to snake predation.

Undeveloped

Much of the park's designated wilderness is largely undeveloped. The wilderness waterway traverses large spans of the park that are relatively free from development and remain in their natural state.

In the park, wilderness areas may include facilities such as marked trails, campsites, toilets, and signs. Such structures are as compatible as possible with their surroundings and are typically removed when no longer needed. Due to the history of human occupation and development in the region, wilderness areas in the park may include remnant structures or evidence from before designation, such as canals, levees, or agricultural areas.

There are approximately 250 "structures" (relatively small pieces of equipment, some enclosed in a metal box and some accessed by a small boardwalk or platform in hard-to-access locations) within the park's wilderness areas. There are also many research plots that are marked with stakes, posts, tags, etc. This equipment is used for research and monitoring primarily in freshwater and marine environments for a wide range of scientific and resource management purposes (e.g., to investigate water quality or monitor threatened and endangered species, vegetation, or habitat).

The study "Airboat/ORV Trail Inventory for the East Everglades Addition Lands" (University of Georgia 2006) mapped, classified, and inventoried airboat and off-road vehicle trails in the East Everglades Addition from 1999 aerial imagery. The study documented evidence of substantial airboat activity in the northern half of the Addition. It also compared airboat trails that were evident in the 1999 aerial photos with trails evident in aerial photos taken in 1994 and 2003, and determined that airboat trails are declining over time.

Airboat use for administrative and research purposes occurs on some of the airboat routes within the East Everglades and on a limited number of other routes in other areas of the park to support operational, scientific, and resource management needs. Additional motorized equipment use in the EEEA includes helicopters, all-terrain vehicles (ATVs), 4×4 vehicles, and swamp buggies.

Outstanding Opportunities for Solitude or Primitive, Unconfined Recreation

Primitive (nonmotorized) forms of recreation are allowed in wilderness. At Everglades National Park, these include hiking, canoeing, and kayaking. Marked water trails are provided for nonmotorized boaters. The 99-mile long wilderness waterway provides extensive opportunities for solitude and primitive recreation even though consistent with the park's submerged marine wilderness designation, motor boat use is allowed. Additionally, there are numerous opportunities for backcountry camping at isolated and primitive sites, primarily in the southern and western portions of the park.

Human-caused sound can be an unwanted intrusion into the solitude of the park. These sounds are usually confined to developed areas, popular airboating (in the East Everglades) and boating areas, campgrounds, and along major roads. Sound levels vary according to the season, relating to the number of park visitors. From October 2008 through April 2009, there were more than 16,500 backcountry visitors, combined, in the Flamingo and Gulf Coast districts (NPS 2013a). Human-made sounds also occur as a result of helicopter and fixed-wing overflights undertaken by park personnel for the purpose of checking and servicing research installations, monitoring wildlife, and conducting fire management. Airboats are also used for these purposes. Noise produced from these administrative and research activities is not confined to the major visitor use areas, but occurs in the wilderness itself, affecting opportunities for solitude within the national park. In 2009 the park recorded more than 3,000 helicopters landings in the park's designated or potential wilderness areas (NPS 2013a). Nonetheless, opportunities for solitude abound with nearly 1.3 million acres of wilderness in the park.

East Everglades Wilderness Eligibility Assessment

The Wilderness Act, regulations in the Code of Federal Regulations (CFR) (Title 42 Public Lands: Interior, Part 19 Wilderness Preservation), Secretarial Order 2920, and NPS *Management Policies 2006* require that NPS review roadless and undeveloped areas, including new areas or expanded boundaries, within the national park system to determine whether they are suitable or not suitable for preserving as wilderness (NPS 2006a).

To satisfy these requirements, the park has prepared an East Everglades Wilderness Eligibility Assessment in conjunction with its new General Management Plan / East Everglades Wilderness Study / Environmental Impact Statement, which is currently in preparation (NPS 2013a). Based on the Wilderness Act Section 2(c) eligibility criteria and NPS *Management Policies 2006*, approximately 102,100 acres in the EEEA have been found eligible for possible designation as wilderness. Areas determined not to be eligible for wilderness designation include developed areas along the Tamiami Trail, the Chekika developed area, and road corridors within the EEEA. The draft General Management Plan / East Everglades Wilderness Study / Environmental Impact Statement proposes that certain lands within the EEEA be designated as wilderness. Should the final General Management Plan /East Everglades Wilderness Study/ Environmental Impact Statement include a wilderness proposal for the EEEA, that proposal will be forwarded to the Secretary of the Interior and eventually to Congress for possible legislative action. Only Congress can designate wilderness (NPS 2010a). Figure 33 depicts the area assessed in the wilderness eligibility assessment and the findings of the assessment.

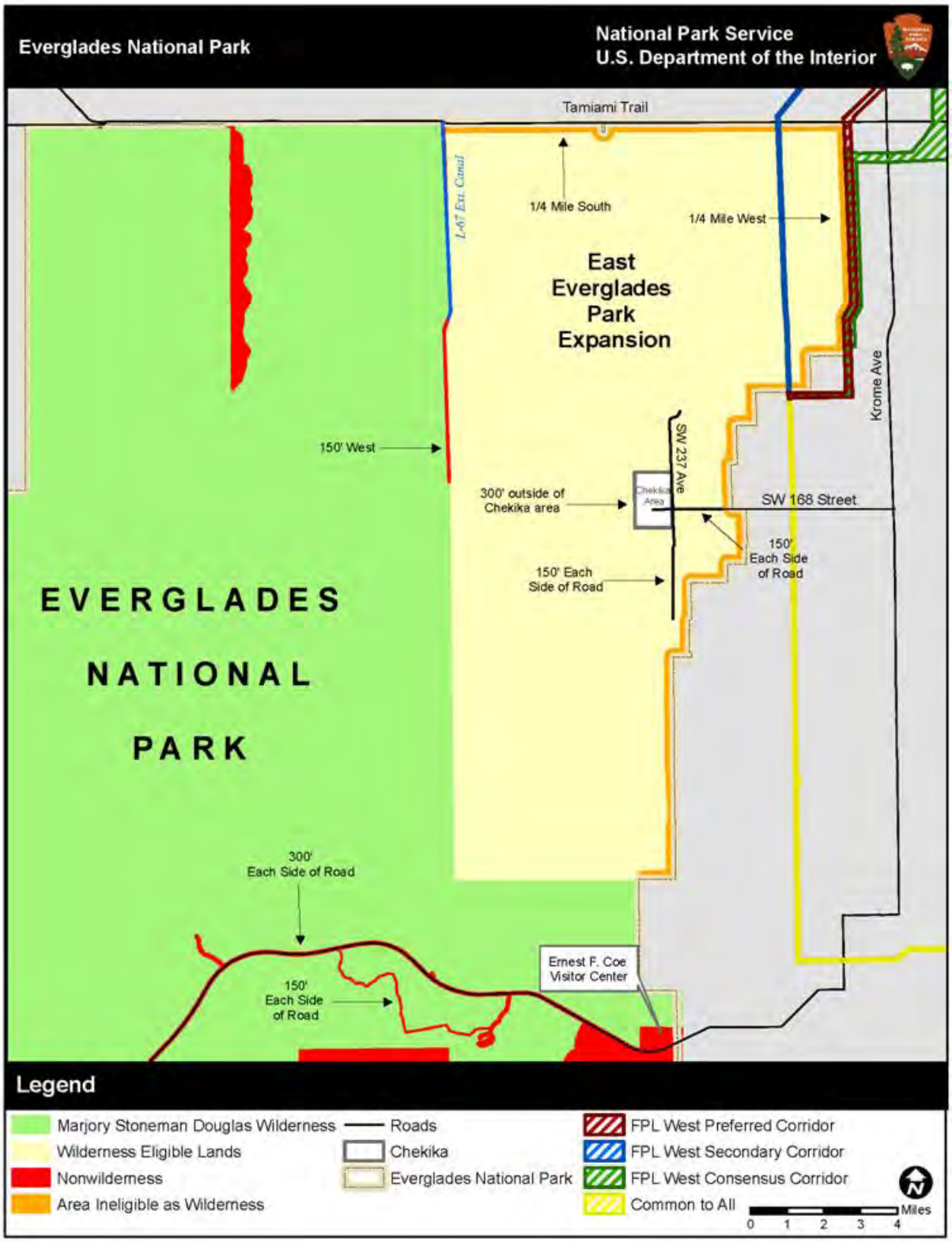


FIGURE 33: WILDERNESS ELIGIBILITY IN THE EEEA

VISITOR USE AND EXPERIENCE / RECREATION RESOURCES

Visitation to Everglades National Park has remained relatively constant at nearly 1 million visitors per year since 1988, with 934,531 visitors in 2011 (NPS 2012a). Recreational opportunities include biking, boating, fishing, hiking, camping, and wildlife viewing. Visitation to the Everglades is highly seasonal with a high season from December to April when the park receives just over half of its annual visitation. This period also coincides with the dry season when falling water levels result in abundant wildlife viewing opportunities, migrating and wintering birds congregate in the park, humidity levels and temperatures drop, and there are fewer mosquitoes. Visitation is lowest during the summer, with the least visits in June, July, August, and September. This coincides with the wet season characterized by dispersed wildlife, humidity, high temperatures, and abundant mosquitoes.

VISITOR USE IN THE PARK

The Everglades National Park EEEA has few facilities and currently receives limited visitor use, with the exception of those that visit the park through commercial airboat tours and those that launch private airboats from the Airboat Association of Florida site along Tamiami Trail. Fishing also takes place in the culverts on the south side of Tamiami Trail, within the park. Additional visitor use opportunities occur mostly in the Chekika area, and on and near the L-67 extension and L-31N canals and levees where wildlife viewing, hiking, bicycling, canoeing, and fishing are the primary recreation activities.

Four air boat ramps launch on the south side of Tamiami Trail. Three public ramps include a ramp immediately east of Coopertown Airboat (culvert 53), an undeveloped area east of the L-67 Extension, a launch site on SW 237th Avenue about 1 mile north of the Chekika entrance, and a private access ramp offered at the Airboat Association of Florida (culvert 47) property west of Gator Park (culvert 49). These commercial operators receive about 300,000 visitors each year. The commercial airboat operators offer guided tours into the East Everglades and provide the “river of grass” experience for visitors. The Everglades National Park Protection and Expansion Act of 1989 (Expansion Act) allows those noncommercial airboat operators who were using the expansion area as of January 1, 1989 to continue to operate airboats inside the Everglades Expansion Area for their individual lifetimes (NPS 1989).

Chekika is a small, developed area in a former state park in the NESRS, approximately 6 miles west of Krome Avenue. Historically, local residents used the site for picnicking, swimming, wildlife viewing, and camping. It is now a seasonal day use area within the park, and future development and use will be defined by the current GMP effort. Current visitor amenities include picnicking, a short hiking trail, and paved roads for biking (NPS 2012b).

Additional visitor experiences within the EEEA including wildlife viewing, boating, education focused on the unique natural and cultural heritage of the park, including diverse ecosystems and wildlife, historical water flows, and human history,

Approximately 15 miles west of the project area is the Shark Valley area—one of the major destinations in the park. Shark Valley is not within the EEEA. Within Shark Valley is the Shark Valley Visitor Contract Station which offers a park video, educational displays, an underwater camera, and informational brochures. A new, modern visitor center and concessions facility opened in 2014. Shark Valley also offers a 15-mile round-trip tram road (not open to private motorized vehicles) that extends into the marsh, one of the best opportunities for viewing the Everglades environment and the resources of the SRS. A two-hour narrated tram ride, provided by Shark Valley Tram Tours, Inc., provides an overview of the freshwater Everglades and bicycles are available to rent (NPS 2012c). Shark Valley is a favorite destination for local and out-of-town bicyclists. An observation tower is located at the end of the tour road and there are two short walking trails located near the main tram loop. The Shark Valley area

offers excellent opportunities for wildlife viewing and there are ranger-led bike tours and nature walks through the area.

The south portion of the EEEA is predominantly open, undeveloped wet prairie with few signs of human presence, providing a wilderness-like experience. Manmade features that intrude upon the natural landscape are present; however, visible features within the park are found primarily at the periphery of the park within a quarter mile of the northern and eastern boundary, and include radio towers and related operations buildings. Eight radio towers approximately 250 feet tall are visible to visitors on the Tamiami Trail and portions of airboat tours within the park (NPS 2010c). The Shark Valley observation tower is 7.4 miles south of the Tamiami Trail and is approximately 70 feet tall (NPS 2012c). The observation tower is visible only to visitors on the Shark Valley tram road and occasional paddlers in this remote area of sawgrass.

Numerous structures outside of the park are also visible to park visitors and intrude upon the natural scene and remote visitor experience. These include existing power transmission lines, radio towers, the Miccosukee Resort Hotel, the Krome Detention Center water tower, and structures associated with rock mining and cement manufacture. A full description of the existing viewshed is provided in the "Viewsheds (Visual Resources)" section in this chapter.

RECREATIONAL RESOURCES OUTSIDE OF THE PARK

The South Florida region provides substantial opportunities for outdoor resource-based recreation. Among the numerous activities available are diving, snorkeling, camping, hiking, bicycling, boating, and hunting.

The Francis S. Taylor Wildlife Management Area, which includes WCA 3B, is managed by FFWCC. This area is managed for both consumptive (hunting, frogging, and fishing) and non-consumptive (wildlife viewing, camping, boating, airboating, etc.) recreational use and environmental purposes. WCA 3B is accessed by crossing the L-29 canal at either the S-333 or S-334 water control structures and launching at the boat and airboat ramps (NPS 2010c).

The edge between the L-29 canal and the L-29 levee is used for passage along the canal, picnicking, or launching boats into the L-29 canal. A road atop the L-29 levee allows panoramic views to the north into WCA 3B and south into the park (NPS 2010c).

Primary access to boat ramps on the north side of the L-29 canal is at S-333 and S-334. Roads across these structures lead to several boat ramps and to bank fishing on the north bank of the L-29 canal. S-334 provides access to a boat ramp (Boat Ramp 153) 3 miles to the west that allows boat launching into the L-29 canal. At S-334 there is also an airboat ramp that provides access to WCA 3B. A picnic area is associated with the boat ramp. Control structure S-333 provides access across the L-29 canal to one airboat ramp and two boat ramps. There is a boat ramp on the L-67A canal and another on the L-67C canal. Both ramps are heavily used by boat fishermen. The airboat ramps provide access for deer and waterfowl hunters, as well as for recreational airboaters. Approximately 10.5 miles of the north bank of the L-29 canal are available for bank fishing (NPS 2010c).

Bank fishing is also popular from the shoulders of the Tamiami Trail and L-67 extension levee. Anglers frequent the 10.7 miles of the south bank of the L-29 canal (north shoulder of the highway). The only places for bank fishing on the south side of the highway are where the culvert sets discharge water to the south. FFWCC personnel conducted angler counts along the Tamiami Trail from December 1998 to May 1999. The mean number of anglers per mile for weekdays and weekend days, respectively, was 0.95 and 2.28. Ninety-four percent were bank anglers (NPS 2010c).

These numbers translate into an estimated ten anglers per weekday and 23 per weekend day, totaling approximately 5,000 person-days of fishing per year within the 10.7-mile angler count study area. Personal observation revealed 25 bank anglers and two boats with two anglers in the angler count study segment at approximately 10:00 a.m. on a Saturday in September 2000. Almost all the bank anglers were fishing on either side of the Tamiami Trail right of way, with only a few on the north bank of the L-29 canal (NPS 2010c). Fishing is also common along the L-31N canal, which borders the EEEA along its eastern border. All fishing occurs along the west bank of the canal. It should be noted that at least some of the fishing is subsistence, not recreational.

According to the Miami-Dade County Park and Recreation Department, the L-31N levee is an active biking route in addition to being a fishing and wildlife viewing area. The Everglades Trail is part of the Miami-Dade County Park and Recreation Department Greenway Network which includes the L-31N canal and levee as part of their 24-mile long trail through rural and urban areas of Miami-Dade County (NPS 2010c).

To the north of the EEEA is the Tamiami Trail, which borders both Everglades National Park as well as the WCA 3A and B. Tamiami Trail serves as a gateway not only to visitor recreational opportunities within these adjacent areas but also to the vast recreational opportunities in the South Florida region.

The State Comprehensive Outdoor Recreation Plan is the best source of information on recreation demand and supply at the state and regional level. It disaggregates the state into 5 regions based on geography. The Southeast Florida region (Region 5) stretches from Fort Pierce to Key West and includes 24 state parks (FDEP 2011).This region includes the Everglades and the Florida Keys, areas with significant natural beauty and recreational value. The region also encompasses Biscayne Bay, and nearly 300 miles of Atlantic Ocean Beach. Recreational activities within the entire region include wildlife viewing, canoeing, birding in addition to fishing, hiking, and biking mentioned above. There are no specific recreation areas within the West Consensus Corridor beyond those described above.

ADJACENT LAND USES AND POLICIES

The area of analysis for adjacent land uses and policies includes the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and lands extending to the urban development boundary to the east of the park (see “Figure 4: General Project Area,” in chapter 1). The primary focus is on the transmission line corridors in and around the park in the general study area, and areas within about 1/2 mile on either side of the proposed corridors where indirect impacts related to the construction or presence of the transmission lines could adversely affect adjacent land uses or landowners’ policies.

Major land uses in the area of analysis that could constrain the development of a transmission line corridor include Everglades National Park, tribal lands, conservation areas, developed recreational areas and residential development. The Miami-Dade County urban development boundary also restricts development in the vicinity; however, the project area is entirely outside of that boundary. As illustrated in figure 34, land ownership in the area of analysis is a mix of private, governmental, and tribal ownership. Major land owners include the United States of America (Everglades National Park), the SFWMD, the State of Florida, Rinker Materials Corporation, Kendall Properties and Investments, Inc. and other private entities. Lands owned by tribes or managed by the Bureau of Indian Affairs are discussed in the “Tribal Lands Including Indian Trust Resources” section of this chapter. The presence and locations of these various land uses and land ownership within the area of analysis and surrounding vicinity are provided in figures 34 and 35.

NATIONAL PARK SERVICE LANDS

Everglades National Park was established in order to conserve the ecological and biological function of the Everglades ecosystem and the natural landscape. It is set aside as a permanent wilderness, preserving essential primitive conditions including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna. It is the first national park dedicated for its biologic diversity. Figure 36 displays NPS lands in this vicinity.

The NPS *Management Policies 2006* regarding land use refer specifically to safeguarding against adverse impacts on park resources from adjacent incompatible land uses. As stated in the NPS *Management Policies 2006*, "External threats may originate with proposed uses outside a park that may adversely impact park resources or values. Superintendents will therefore be aware of and monitor land use proposals and changes to adjacent lands and their potential impacts. They will also seek to encourage compatible adjacent land uses to avoid or to mitigate potential adverse effects" (NPS 2006a).

PRIVATE LANDS

Private lands within area of analysis include residential, commercial, industrial/extractive and agricultural uses. Residential land uses are generally located to the east of the area of the West Consensus Corridor where several residential neighborhoods span along the eastern edge of the area of analysis. Homes within the area are primarily single-family dwellings situated within a suburban context. In this portion of the area of analysis, commercial land uses are located primarily along roadways and include hotels, tour companies, restaurants, and various other businesses operating along Tamiami Trail.

Industrial/extractive land uses include, most notably, the industrial complex located at North Kendall Drive and Krome Avenue. This complex is located to the northwest of the residential landscape and includes the Conrad Yelvington distribution center and Krome quarry, a cement/limestone quarry and cement plant owned by the CEMEX building materials company (see figure 37). The facility lies immediately adjacent to the FPL West Preferred Corridor and is in the area of analysis of the West Consensus Corridor.

Agricultural land uses are also present in the area of analysis in the southern portion of the West Consensus Corridor before it heads north and parallels the western edge of the mining operation. Crops are actively cultivated in many of these areas (USDA NASS 2012). Figure 38 provides a representative view of the agricultural land uses within the area of analysis. For a detailed description of specific vegetative cover types, refer to the "Vegetation and Wetlands" section of this chapter.

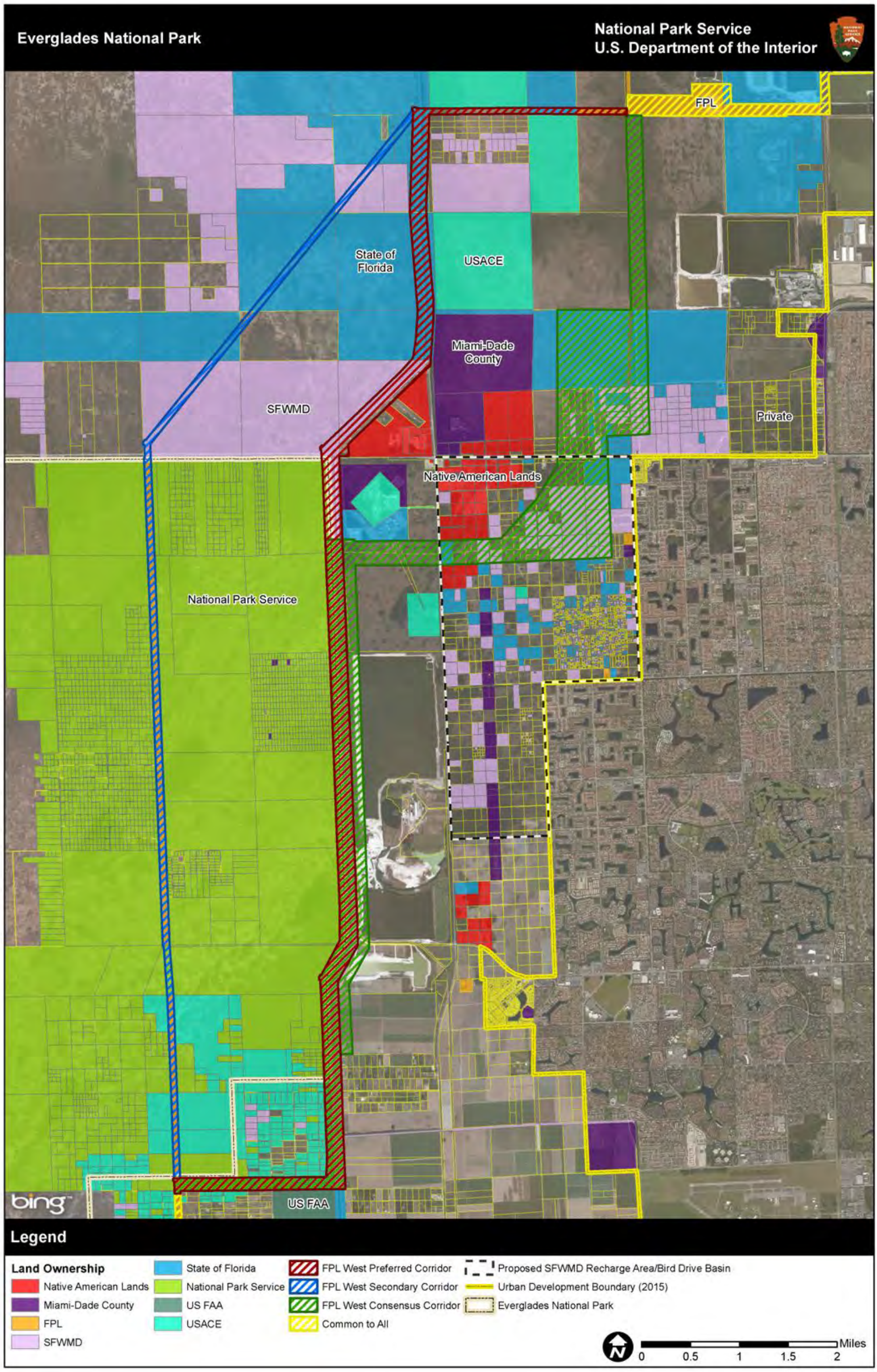


FIGURE 34: LAND OWNERSHIP WITHIN THE AREA OF ANALYSIS AND SURROUNDING VICINITY

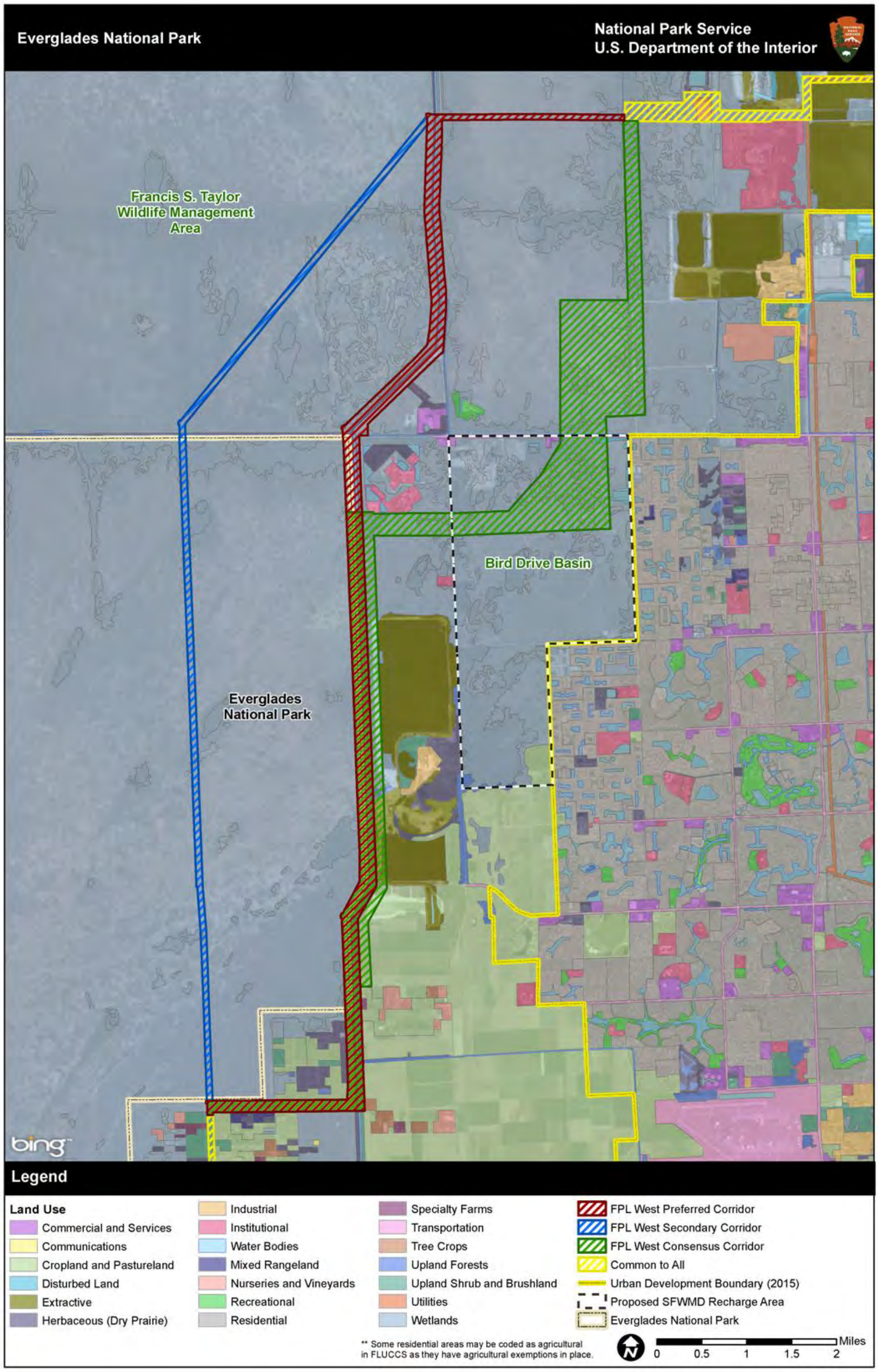


FIGURE 35: LAND USE WITHIN THE AREA OF ANALYSIS AND SURROUNDING VICINITY

FIGURE 36: EEEA OF EVERGLADES NATIONAL PARK

FIGURE 37: CEMEX PLANT, KROME QUARRY, AND DISTRIBUTION CENTER

FIGURE 38: AGRICULTURAL LAND LOCATED AT N. KENDALL DRIVE BETWEEN KROME AND SW 167TH AVENUES

STATE GOVERNMENT LANDS

South Florida Water Management District

SFWMD is a regional governmental agency supervised by the FDEP, and is responsible for water quality, flood control, water supply and restoration of the environment in 16 counties in C&SF. It is the largest water management district in the state, managing water needs for 7 million residents of South Florida (SFWMD 2012a). The Pennsuco wetlands are an area of wetlands north of the Tamiami Trail in the Pennsuco Regional Mitigation Area. In 1995, the SFWMD began using Pennsuco as a regional off-site mitigation area, allowing permit applicants to make mitigation contributions for the acquisition, enhancement, and long-term management of Pennsuco lands as compensation for permitted wetland impacts. As described in the "Vegetation and Wetlands" section, portions of the West Consensus Corridor near the Pennsuco wetlands are characterized by developed land uses such as roadways and channelized waterways. Figure 39 displays the Pennsuco wetlands area.

FIGURE 39: PENNSUCO WETLANDS

Bird Drive Basin

Bird Drive Basin is located within the area of analysis for the West Consensus Corridor. It lies between Krome Avenue and SW 157th Avenue, and is bounded generally by Tamiami Trail on the north and SW 72nd Street to the south (see figure 35). While Bird Drive Basin is located outside of the urban development boundary, a patchwork of land ownership is evident in this area. Land parcels include those under tribal, state, county, and private ownership. The area was originally identified in the CERP as a site designated for the Bird Drive Basin Recharge Area, but the project has since been dropped from the CERP plans. The purpose of the recharge area would have been to recharge groundwater and reduce seepage from Everglades National Park buffer areas by increasing water table elevations east of Krome Avenue. The project would have also provided for flood attenuation and water supply deliveries to the south Dade conveyance system and the NESRS (SFWMD 2012b). At present, SFWMD is assessing alternative sites. Current land uses at the site under tribal, state, county, and private ownership are anticipated to persist under their current status for the foreseeable future (Lawrence pers. comm. 2013). Figure 40 provides a representative view of the Bird Drive basin area.

FIGURE 40: BIRD DRIVE BASIN

Florida Fish and Wildlife Conservation Commission

The FFWCC manages Florida’s Wildlife Management Area system in order to sustain the widest possible range of native wildlife in their natural habitats. This system includes more than 5.8 million acres of land established as Wildlife Management Areas or Wildlife and Environmental Areas. On the majority of these lands (about 4.4 million acres), FFWCC is a cooperating manager working with other governmental or private landowners to conserve wildlife and provide public use opportunities. On the remaining lands, called “Lead Areas” (about 1.4 million acres), FFWCC is the landowner or "lead" managing agency responsible for land stewardship and providing quality wildlife conservation and recreation opportunities including hunting, fishing, wildlife viewing, hiking, biking, horseback riding, paddling, scenic driving, and camping.

Everglades and Francis S. Taylor Wildlife Management Area

In the Everglades and Francis S. Taylor Wildlife Management Area, the FFWCC is the lead agency for managing this area, and the properties, which are owned by SFWMD, represent a part of what remains of the largest freshwater marsh ecosystem in the U.S. Once water covered for at least part of each year, this ecosystem encompasses nearly all of south Florida from the custard apple and cypress swamps bordering Lake Okeechobee through flat expanses of gray-green sawgrass veined with sloughs and tree islands to the mangrove forests along Florida Bay. Today the 671,831-acre Everglades and Francis S. Taylor Wildlife Management Area is the northern and central core of the Everglades, separating Everglades National Park and Big Cypress National Preserve from extensive agricultural fields to the north and residential development to the east. Although airboats and tracked vehicles are necessary to reach the interior, the extensive network of levees and canals constructed for flood control and water supply afford ample opportunities for fishing, frogging, hiking, biking, and wildlife viewing (FFWCC 2012a).

The Everglades and Francis S. Taylor Wildlife Management Area is located north of the park on the north side of the Tamiami Trail (see figure 35). This area is also known as WCA 3 (WCA 3B), and is cooperatively managed by FFWCC and SFWMD. Figure 41 provides an aerial view of WCA 3A and 3B.

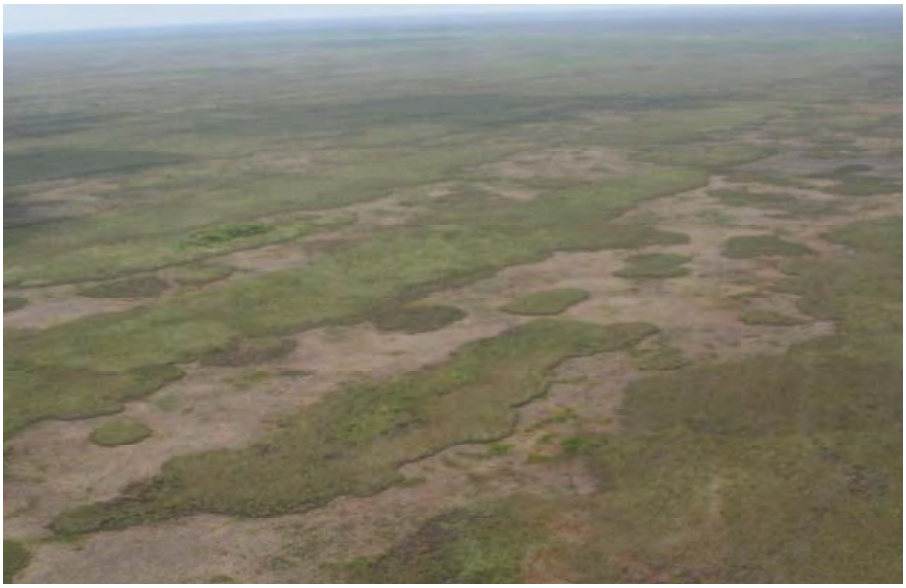


FIGURE 41: AERIAL VIEW OF THE WCA 3A AND 3B

The conceptual management plan for this management area identifies several resource management problems within the Everglades Complex and presents several strategies to address these concerns. The problems identified in the management plan relating specifically to land use include human disturbance contributing to habitat conditions that are not optimal for wildlife species; man-made features that have limited the spatial extent of prescribed fires and wildfires and thus promoted fuel loading and, consequently, peat fires that have reduced wildlife habitat; limited management control on the part of FFWCC over the larger ecosystem of which Everglades Complex is a part; and large inputs of nitrogen and phosphorus from surrounding areas that have degraded water quality in the Everglades Complex. Accompanying strategies developed in response to these problems include: identifying historic vegetative community types in order to restore habitats to the proper plant community composition; continue to maintain and establish rapport with landowners adjacent to the Everglades Complex; provide technical assistance and advice in order to ensure the welfare of ecosystem components; maintain working relationships with local representatives of governmental and regulatory agencies (i.e., SFWMD, four

Florida counties, Department of Environmental Protection, Florida Division of Forestry, USACE, NPS, USFWS, and the Miccosukee and Seminole Indian Tribes); and provide technical assistance and support to USACE, SFWMD, and other involved agencies to improve the quality of water entering the Everglades Complex (FFWCC 2003).

MICCOSUKEE LANDS

The area of analysis includes approximately 1,100 acres of lands occupied or used by the Miccosukee Tribe (figure 34). These lands are comprised primarily of herbaceous wetlands and are managed for multiple uses. Notably, the Miccosukee Tribe operates a resort and casino near the northwestern corner of Krome Avenue and SW 8th Street (Tamiami Trail) (see figure 42). Lands occupied or used by the Miccosukee Tribe are discussed in more detail in the "Tribal Lands Including Indian Trust Resources" section of this chapter.

FIGURE 42: MICCOSUKEE RESORT AND CASINO

LOCAL GOVERNMENT LANDS AND LAND USE PLANS

Several recreational and institutional land uses operated by local government entities are located within the area of analysis. Most notably, a complex housing the Miami Prison / Everglades Correctional Institute is located at the southwest corner of Tamiami Trail and SW 177 Avenue / Krome Avenue. Lands managed by Miami-Dade County are also found throughout the area of analysis, predominantly within the residential communities to the east. These include several community parks and recreational facilities such as and Sun Lake Park (located at SW 167th Avenue and SW 78th Street) and the Trail Glades Gun Range (located north of Tamiami Trail approximately a quarter mile east of Krome Avenue).

Miami-Dade County Comprehensive Development Master Plan

The general land use objectives and policies of Miami-Dade County, as well as where and how it intends development or conservation of land and natural resources during the next ten to twenty years, are addressed in its Comprehensive Development Master Plan. The plan provides for "sustainable development," which allows for land capacity to meet projected needs, preservation of wetlands and agricultural areas and protection of drinkable water well fields. A major review and update of the plan is done every seven years.

The plan establishes a growth policy that encourages development to occur:

- At a rate commensurate with projected population and economic growth.
- In a contiguous pattern centered around a network of high-intensity urban centers well-connected by multi-modal intra-urban transportation facilities.
- In locations which optimize efficiency in public service delivery and conservation of valuable natural resources.

The Land Use portion of the plan includes a map for 2015–2025, which shows recommended land uses by major categories, each of which is interpreted locally through zoning designations. The plan also establishes an Urban Development Boundary, which is shown in figures 34 and 35, as well as figure 43. Urban development within the boundary will generally be approved through the year 2015, provided that level-of-service standards for necessary public facilities are met (Miami-Dade 2013a). Figure 43 also depicts the future land use designations contained with the County's Comprehensive Development Master Plan.

Northwest Wellfield Protection Area and the West Wellfield Interim Protection Area

The Miami-Dade County West and Northwest wellfield protection areas, which are illustrated in figure 43, represent two components of a larger network comprised of freshwater wells (located throughout Miami-Dade County) that collect and deliver groundwater to the county's drinking water plants.

East Everglades Area of Critical Environmental Concern

As described in Miami-Dade County regulations Section 33B-13, Areas of Critical Environmental Concern are those having "significant environmental and natural resource value." The extent of the East Everglades Area of Critical Environmental Concern is depicted in figure 43. Reasons for designating the East Everglades Area of Critical Environmental Concern include its ability to provide for recharge of Biscayne Aquifer; surface water supply to Everglades National Park; flood storage capacity; water quality maintenance; and vegetation, wildlife, and other natural features.

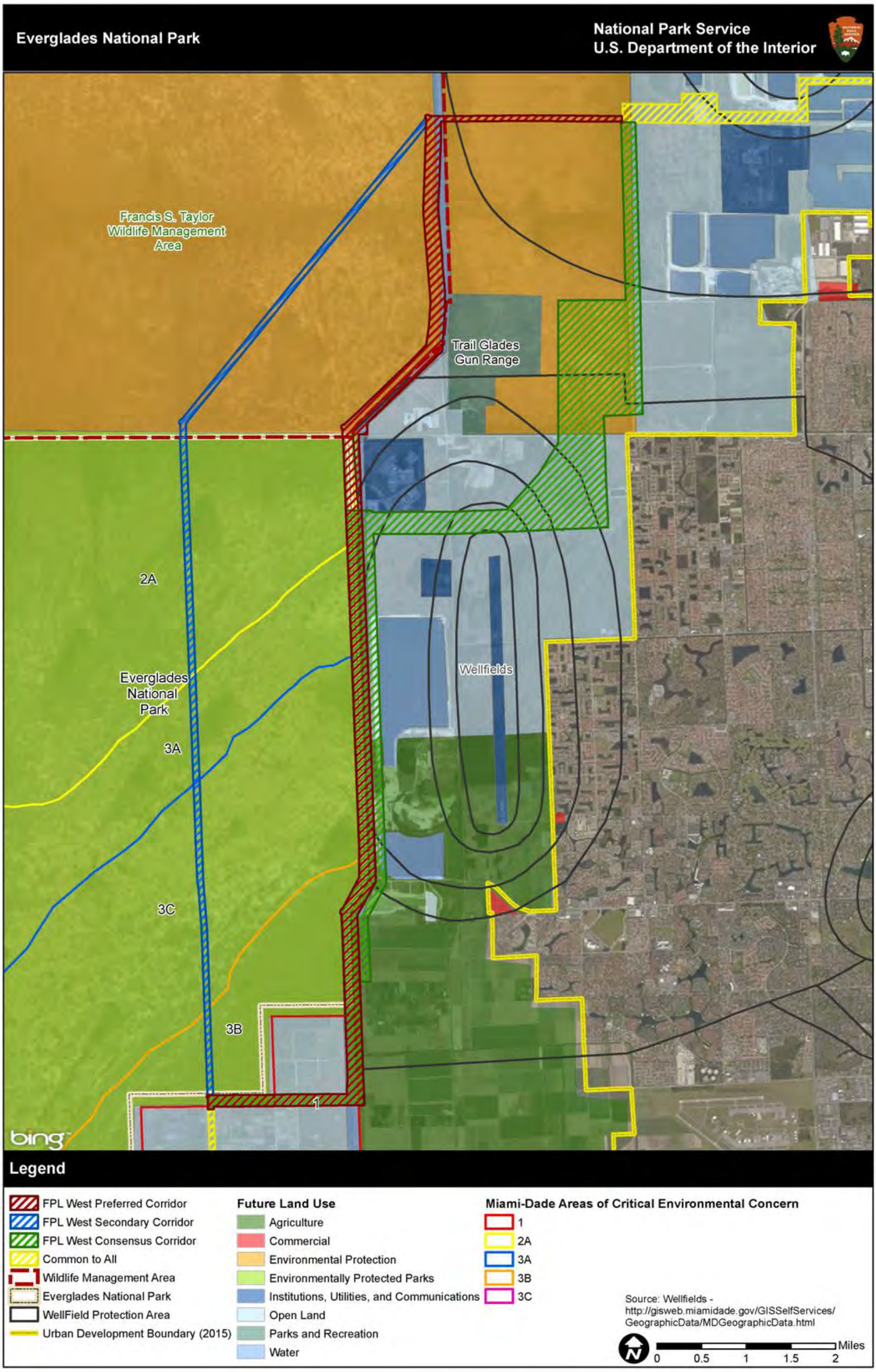


FIGURE 43: MIAMI-DADE AREAS OF CRITICAL ENVIRONMENTAL CONCERN, FUTURE LAND USE

Miami-Dade County ordinance number 81-1, §1, 1-15-81 states that "The regulation of land use in a coordinated manner within the area of critical environmental concern as described (in Section 33B-13), will minimize the dangers to human health, safety and welfare and to the functioning of the Biscayne Aquifer, its related surface waters and ecosystems, by:

a. Providing protection against alterations of the natural drainage systems;
b. Providing protection against coverage of natural water retention and recharge areas with excessive impermeable surfaces;
c. Providing protection against substantial alteration of the form and function of the natural ecosystem;
d. Providing protection against deterioration of water quality, both surface and ground;
e. Providing protection for the continuation of slow, natural overland flow of surface waters into Everglades National Park and the biotic and estuarine communities dependent on such flows;
f. Providing protection for the biological filtering capabilities of the wetland areas; and
g. Providing criteria for the method of elevation of structures above the level of seasonal, one hundred-year and storm surge flood levels."

Miami-Dade County intends for land uses within the East Everglades Area of Critical Environmental Concern to be managed in ways that prevent impacts from development. Property owners in the area are allowed use of their property, making public acquisition unnecessary. However, the use of transferable development rights can be evaluated and, if found to be appropriate, applied to all portions of the area as an alternative economic use so that owners may benefit from ownership and leave their land in its natural state (Miami-Dade 2013b).

TRIBAL LANDS INCLUDING INDIAN TRUST RESOURCES

There are two land areas held in trust for the Miccosukee Tribe (the Tribe) that are in the vicinity of the proposed action. Figure 34 shows locations as described below. In addition to the two Indian Trust parcels, there is an additional fee land parcel as well as land permitted to the Miccosukee in the vicinity of the project area. Trust land is land where the federal government holds the legal title, but the beneficial interest remains with the tribe. For fee land, the tribe acquires the legal title. Finally, the permitted land is owned by the NPS but under a long-term use permit to the Miccosukee Tribe.

The first area is comprised of three parcels of trust land outside the Everglades National Park, which are held in trust by the United States for the benefit of the Tribe and are used for self determination and commercial development purposes. One parcel is North of U.S. 41 (Tamiami Trail) and East of Krome Avenue. It is the Lambik Property and it consists of approximately 225 acres. This property is not currently used. Another parcel is the SEMA Property located east of Krome Avenue and South of U.S. 41. It consists of approximately 302 acres and has been graded to accommodate overflow parking from the Miccosukee Indian Resort and Gaming Facility, as described below. The third of these parcels is the Coral Way Property located east of Krome Avenue and South of U.S. 41/Tamiami Trail (and South of the SEMA Property). It consists of approximately 50 acres and is not currently in use.

The second area is comprised of three parcels also held in trust by the United States for the benefit of the Tribe located at the intersection of Krome Avenue and Tamiami Trail. The first Krome Avenue reservation area is comprised of 25 acres located at the northwest corner of the intersection and it is the site of the Miccosukee Indian Resort and Gaming Facility. A second parcel is behind and adjacent to the 25-acre Resort and Gaming Facility. This land held in trust for the benefit of the Miccosukee Tribe and

consists of approximately 180.61 acres. It extends all the way to the canal located behind the 25 acre Casino property but excludes a 4 acre existing radio/cell tower site. The third Krome Avenue reservation area is a 0.92-acre lot located on the southwest corner of the intersection and is the site of the Miccosukee Tobacco Shop. For purposes of the chapter 4 analysis, these three parcels are analyzed as one, referred to as the Resort and Gaming Facility.

The fee property is owned by the Miccosukee and is located along the eastern edge of Krome Avenue and north of SW 88th Street (N Kendall Drive). The parcel is approximately 100 acres. The current use is unknown, however when viewing an aerial photograph, the land use appears to match the agricultural uses of the adjacent properties.

The Tribe also has the right to use land in the Tamiami Trail Reservation Area within the Everglades National Park located at the 40-mile bend on U.S. 41, mile marker 70. This parcel is subject to an act of Congress that states the area is to be treated as a federally recognized Indian reservation (Miccosukee n.d.).[4] The Tamiami Trail Reservation Area is 5 miles long and 500 feet deep and approximately 333 acres, located adjacent to the Tamiami Trail. The eastern edge of the Tamiami Trail Reservation Area is approximately 15 miles from the FPL West Secondary Corridor and approximately 18 miles from the FPL West Preferred Corridor. The Tamiami Trail Reservation Area is presently the site of most Tribal operations and is the center of the Miccosukee Indian population (Miccosukee n.d.).

SOCIOECONOMICS

Potential socioeconomic issues associated with the alternatives and their associated transmission line construction scenarios include construction impacts on the regional economy, transmission line effects on property values and on recreation visitation, visitor spending, and on associated businesses, and possible effects of the transmission line development costs on shareholders and rates. Since the bulk of the construction workforce for the project is likely to reside within the large urban region of Miami-Dade County, the contribution to jobs and income associated with the construction activity is likely to have a broader effect on the economy, with the majority occurring within Miami-Dade County. As such, employment, unemployment, and income are described for Miami-Dade County in this section.

The effects of transmission lines on residential property values are known to have the largest effects on residential structures within close proximity to transmission lines (Pitts and Jackson 2007; Jackson and Pitts 2010). Therefore, the analysis will focus on identifying residential structures at varying proximities to the transmission line routes, and housing values will be assessed at a finer level of geography encompassing the alternative routes.

The cost of the transmission line routes and easements have the potential to impact shareholders and electricity rates; FPL serves 4.5 million customers in Florida.

GEOGRAPHIC CHARACTERISTICS

Miami-Dade County is located in Southeastern Florida bordered by Broward County to the north; the Atlantic Ocean to the southeast; Monroe County to the south and west; and Collier County to the west. The county encompasses 1,946 square miles of land, and 485 square miles of water. The county's interior makeup is characterized by substantial urban development to the east along the coastline; WCAs in the

[4] Miccosukee Reserved Area Act, P. L. 105-313, Oct. 30, 1998, 112 Stat. 2964.

northwest corner; agricultural land concentrated in the center of the county; and Everglades National Park comprising vast portions of Miami-Dade, from the center of the county to its western and southern extents.

The FPL West Preferred and FPL West Secondary Corridors as well as the West Consensus Corridor are located within Miami-Dade County. The West Consensus Corridor is located to the west of the urban development boundary. Just east of the project area and urban development boundary there are a number of communities that border the boundary on its west side. From south to north, these communities include The Hammocks, Kendall West, Kendall Lakes, Tamiami, and Doral.

DEMOGRAPHIC CHARACTERISTICS

Population Trends

Miami-Dade County has a population of 2,496,435 people, and a population density of 1,265 people per square mile (U.S. Census 2010a). It is the most populous county in Florida, and the eighth most populous county in United States, comprising half of the total South Florida metropolitan area population, including Miami-Dade, Broward, and Palm Beach counties (UF BEBR 2008).

Miami-Dade County has experienced population growth, especially in the 1960s and 1970s, with population doubling from 1960 to 1990. Southeastern Florida's densely populated urban areas and growing population have fueled the westward development of agricultural and unimproved lands, closer to western urban boundary and the Tamiami Trail region. Populations for the communities and subdivisions adjacent to the western urban boundary are summarized in table 14.

TABLE 14: POPULATION CHANGE 2000–2007 FOR MIAMI-DADE COUNTY

County and Census Designated Place	2000	2010	Percentage Change
Miami-Dade County	2,253,362	2,496,435	10.8
The Hammocks	47,379	NA	–
Kendall West	38,034	NA	–
Kendall Lakes	56,901	NA	–
Tamiami	54,788	NA	–
Doral	20,438	NA	–

Source: U.S. Census Bureau 2000, 2010a.

Race and Ethnicity

Florida and Miami-Dade County comprise approximately 58 and 15 percent non-Hispanic white populations, respectively. There has been an increase in the proportion of individuals of Hispanic origin in recent years in Miami-Dade County; in 2010, the Hispanic population comprised 65 percent of the population in the county. Table 15 provides the race and ethnicity for Florida and Miami-Dade in 2010.

TABLE 15: RACE AND ETHNICITY, 2010

Race or Ethnicity	Florida (in percent)	Miami-Dade County (in percent)
Non-Hispanic	77.5	35.0
White	57.9	15.4
Black	15.2	17.1
Other Race	2.9	1.7
Two or More Races	1.5	0.8
Hispanic (all races)	22.5	65.0

Source: U.S. Census Bureau 2010a.

ECONOMIC CHARACTERISTICS

Labor Force and Unemployment

In 2010, Miami-Dade County employment represented 14.3 percent of the total Florida employment (U.S. Bureau of Economic Analysis 2012). The unemployment rate in Miami-Dade County in 2010 was 11.3 percent, whereas the unemployment rate in Florida was 10.5 percent, and the U.S. unemployment rate was 5.8 percent. In February 2012, the unemployment rate was 10.0 percent, while the state's unemployment rate in February 2012 was 9.4 percent (UF BEBR 2012).

Employment and Income

In 2010, the per capita personal income in Miami-Dade County was $36,520, slightly less than the state's per capita income of $38,210 (UF BEBR 2012). In Miami-Dade County, total full-time and part-time jobs in 2010 were 1,416,227, while employment in Florida was 8,933,114 (U.S. Bureau of Economic Analysis 2012). In 2010, in Miami-Dade County, the other services sector was the largest source of employment, accounting for 26.5 percent of jobs, slightly higher than in Florida. The education and health care sector accounted for 13.9 and 13.1 percent, in Miami-Dade County and Florida, respectively (US Bureau of Economic Analysis 2012). The construction sector accounted for 4.2 percent of the jobs in the county and 5.2 percent of the jobs in the state. Table 16 summarizes employment by industry sectors for Miami-Dade County and Florida.

Housing

Within Miami-Dade County, residential areas are found in cities, towns, smaller communities, and in the unincorporated portions of the county. To identify the property values in close proximity to the alternative routes, the number of housing units, occupancy rate, and median housing values for 2010 were examined for 9 census tracts that intersect or are directly adjacent to the West Consensus Corridor. Within the 9 census tracts, there are over 11,000 housing units, with median housing values ranging from $263,800 to $434,400. Figure 44 summarizes the locations of the census tracts within the project area. Table 17 presents the housing characteristics.

TABLE 16: SUMMARY OF EMPLOYMENT BY INDUSTRY, 2007, MIAMI-DADE COUNTY AND FLORIDA

Industry Sector	Miami-Dade County	Florida
Goods-Producing		
Natural Resources and Mining	0.7%	1.7%
Construction	4.2%	5.2%
Manufacturing	2.9%	3.5%
Subtotal	**7.8%**	**10.3%**
Services-Producing		
Transportation	5.6%	3.0%
Information, Finance, Insurance, and Real Estate	12.3%	13.2%
Wholesale and Retail Trade	15.6%	14.6%
Education and Healthcare	13.9%	13.1%
Accommodations and Food Services	7.2%	8.0%
Other Services*	26.5%	25.5%
Subtotal	**81.2%**	**77.5%**
Government	11.1%	12.3%
Total	100.0%	100.0%

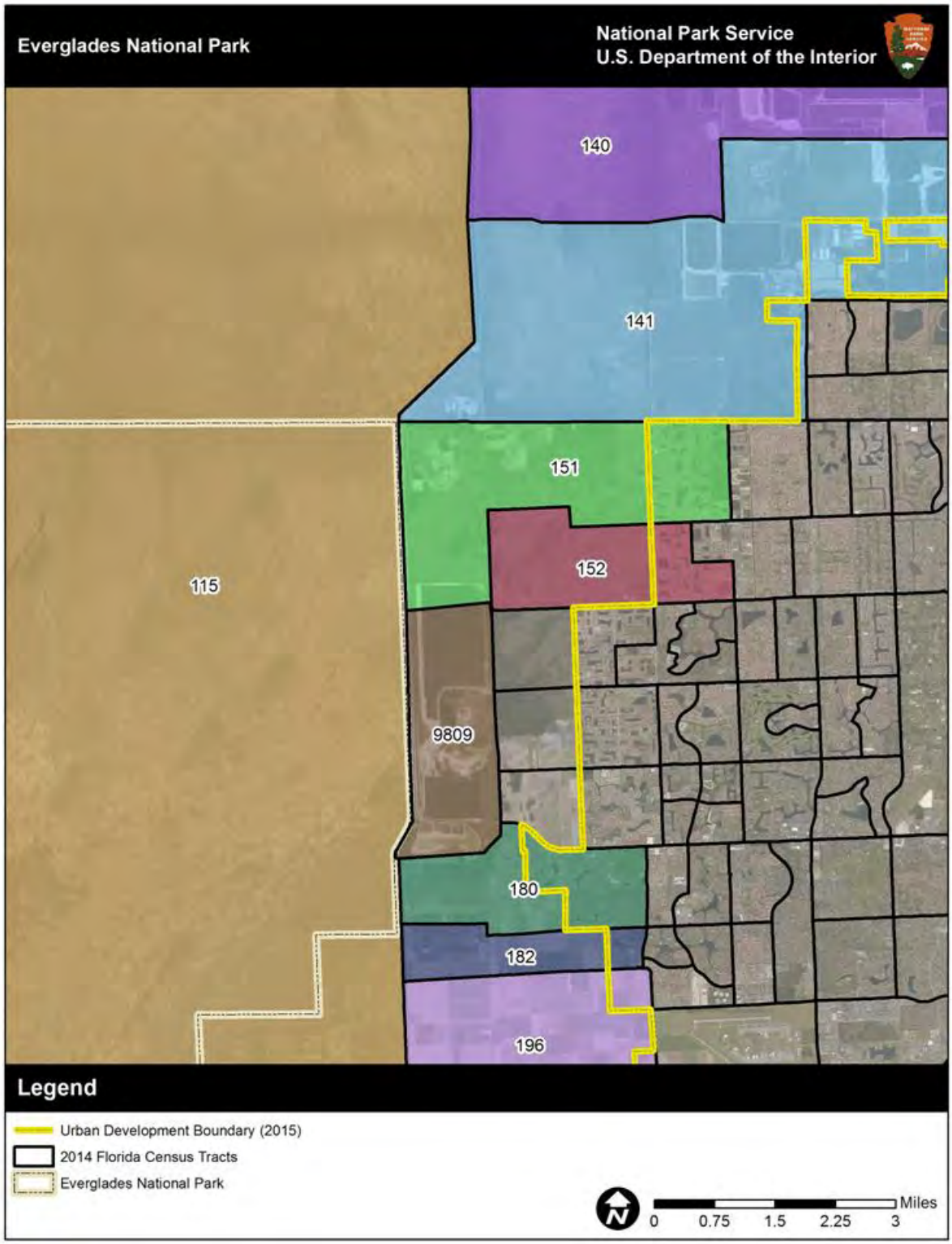
*Includes professional and technical services, management of companies, administrative and waste services, arts, entertainment and recreation, and other services.

Source: U.S. Bureau of Economic Analysis 2012

TABLE 17: HOUSING UNITS AND VALUES, 2010

Geography	Housing Units	Percent Occupied	Median Housing Value (2010$)
Florida	8,863,057	80.7	205,600
Miami-Dade County	980,580	84.4	269,600
Census Tract 115	1,865	84.5	434,400
Census Tract 140	12	100.0	NA
Census Tract 141	0	–	–
Census Tract 151	2,599	91.2	357,500
Census Tract 152	2,014	94.9	349,100
Census Tract 180	2,205	95.6	343,800
Census Tract 182	845	85.9	263,800
Census Tract 196	1,572	85.2	357,200
Census Tract 9809	0	–	–

Source: U. S. Census Bureau 2010b.



Note: This map does not depict the entire census tract area for census tracts 115, 196, and 140. As a result, there are housing units within these census tracts listed in table 17 that lie to the north, west and south of the portions of the census tracts shown on this map.

FIGURE 44: CENSUS TRACTS THAT INTERSECT OR ARE IN PROXIMITY TO THE ALTERNATIVE ROUTES

Park Visitor Spending and Contributions to the Regional Economy

Everglades National Park attracts over 1 million visitors a year spending an estimated $136.5 million annually (Stynes 2011). The visitor spending supports an estimated 1,956 jobs with annual income of $72.2 million in the regional economy (Stynes 2011). Although the jobs supported by park visitor spending represent only about 0.1 percent of total regional employment, the visitor spending and jobs supported are important to many businesses located near the park, such as concession operations and fishing outfitters (NPS 2013a).

FPL Rates and Ratepayers

FPL is the largest electric utility in Florida and one of the largest rate-regulated utilities in the United States. FPL serves 4.6 million customers in Florida (FPL 2012b). The typical FPL bill is the lowest out of 55 utilities in Florida and about 24 percent below the national average (FPL 2012c).

Capital expenditures for improvements to electric-utility infrastructure are investments made to serve customers. The expenditures are passed on to the customers served in the form of increased rates. However, as a regulated utility, the proponent can increase rates only on approval by state utility commissions. Such rate-increase requests are subjected to rigorous analysis by regulators and others, and to public process.

PARK OPERATIONS AND MANAGEMENT

Park management and operations refers to park staff efforts to maintain and administer park resources, and to provide an ideal visitor experience. Everglades National Park staff provides the full scope of functions and activities needed to accomplish management objectives. They perform duties that include visitor and resource protection, resource management, and interpretation and education. The superintendent manages all park staff and includes managers responsible for concessions, planning, and compliance, and cultural resources programs (NPS 2006a).

Principal park operations and management of relevance within EEEA and the scope of this project are overseen by the Fire Management, South Florida Natural Resources Center (SFNRC), Cultural Resources, and Visitor and Resource Protection divisions. Exotic plant management is an important part of management and operations in EEEA, and is a subdivision of the SFNRC.

FIRE AND AVIATION MANAGEMENT

The main responsibility of the Fire and Aviation Management is to implement prescribed burns and manage wildfires throughout Everglades National Park. The main purpose of these prescribed burns is to reduce the risk and threat of unwanted wildfire to protect life, property, community and park resources and maintain fire adapted ecosystems. Fire management staff also respond to approximately one wildfire per month, but there are large fluctuations in the frequency of fire events at the park due to the high potential for fires: in any given year, an average of 300 days offer suitable conditions for wildfires to start. Throughout the park, a total of 10 to 20 prescribed burns are conducted each year. Each burn generally lasts one to three days. Prescribed burns are extremely labor-intensive, requiring between 10 and 30 staff, all of whom are full-time professional fire staff (with occasional interagency participation from the USFWS and the U.S. Forest Service). The total staff size is 32 individuals, all of whom are permanent, full-time employees (four are subject to furlough). This is sufficient to meet the current needs of the Fire Management division (Anderson pers. comm. 2012).

Approximately two to four prescribed burns are conducted in EEEA each year. Aviation is an important part of fire management activities. Fire management staff uses a retrofitted crop-duster airplane to douse fires, as well as a contracted helicopter to ignite prescribed burns. Aircraft are also sometimes used to transport firefighters to strategic locations. Currently, the most significant obstructions to aviation in EEEA are large trees (Anderson pers. comm. 2012).

INTERPRETATION AND VISITOR SERVICES DIVISION

Interpretation and Visitor Services staff are active in the EEEA from December 1 – April 30, when the Chekika Day Use Area is open. Six volunteers operate in this vicinity on a daily basis during this period. Additional staff are located at the Shark Valley Visitor Center, which is open year round. Overall, three Visitor and Resource Protection staff and six staff from the Fire Management division are located at the EEEA. Due to budget and staffing cuts, Chekika area is currently closed indefinitely as of December 2013. Chekika will remain closed until sufficient resources are available to maintain operations in the area. User groups can still access the area through use of special permits.

SOUTH FLORIDA NATURAL RESOURCES CENTER

The SFNRC is one of the park's principal divisions. SFNRC oversees environmental and ecological assessments within the park, and provides scientific information to the park and to the U.S. Department of the Interior (DOI). The division is also responsible for permitting scientific research conducted by non-NPS institutions within the park, and provides funding for groups seeking to conduct such research. SFNRC had 62 full-time, permanent staff, and three part-time staff in 2012 (Mitchell pers. comm. 2012).

The SFNRC was divided into five major branches in 2012:

- Administration, which oversees administrative duties within SFNRC;
- Project Management, which oversees interactions with the USACE and carries out projects within the USACE framework;
- Water Quality, which analyzes water quality data and determines whether the park's water resources meet water quality standards;
- Physical Resources, which conducts hydrologic monitoring and interacts with the engineers at USACE and the SFWMD, as well as other county, state, and federal agencies; and
- Biological Resources, which oversees biological monitoring, exotic species management, and ecological modeling activities.

SFNRC operations make use of aircraft, particularly in the EEEA where aviation constitutes the easiest and most efficient way to transport individuals to otherwise inaccessible areas (Mitchell pers. comm. 2012).

EXOTIC PLANT MANAGEMENT

The Exotic Plant Management program is a part of the SFNRC. Exotic plant management is overseen by two permanent employees. This subdivision receives only a very small amount of internal NPS funding, enough for a modest operational budget. The majority of funding currently comes from external sources, largely from state and county governments. The availability of funding is therefore highly variable from year to year and from season to season, and external contractors rather than NPS staff carry out the majority of the physical operations of exotic plant management. The Exotic Plant Management

subdivision of SFNRC's main responsibilities are to secure funding, author contracts, hire contractors, oversee contracted work on exotic plants, and conduct exotic plant monitoring activities (Taylor pers. comm. 2012a).

Most exotic plant control is accomplished via herbicide application, manual removal, and application of prescribed fire. This subdivision works closely with the Fire Management division when fire is used a tool in managing exotic plant populations (Taylor pers. comm. 2012a).

Exotic plants of primary ecological concern in Everglades National Park at the time of this writing include melaleuca, Australian pine (*Casuarina equisetfolia*), Brazilian pepper, and Old World climbing fern (*Lygodium microphyllum*). The availability of funding for management activities focusing on these species is not equal: the majority of funding sources are for melaleuca-related work, with a small amount for Australian pine, and no funding for work involving other exotic plant species. For the fiscal years 2010, 2011, and 2012, all of the subdivision's work focused on melaleuca because this was the only plant for which funding was available. In the fiscal years 2009 and 2008, melaleuca-related work constituted the bulk of the subdivision's efforts. Even though Australian pine, Brazilian pepper, and *Lygodium* spp. are also serious ecological threats, funding for management activities focusing on them is seldom available (Taylor pers. comm. 2012a).

The majority of this subdivision's work takes place within EEEA. Almost all of the melaleuca in Everglades National Park is found in the EEEA, and over 90 percent of the park's Australian pine is also found there. Aircraft are routinely employed in order to provide transportation during exotic plant management operations, with helicopters used in up to 70 percent of the work that takes place in any given year. Airplanes are used for exotic plant monitoring (Taylor pers. comm. 2012a, 2012b).

CULTURAL RESOURCES

The Cultural Resources division oversees the park's Cultural Resources Program, the purpose of which is to research, delineate, and develop management objectives for the park's cultural resources (including archeological sites, historic preservations sites, historic structures, ethnographic resources, cultural landscapes, and historical resources). The Cultural Resources division also supervises the museum, oversees Section 106 and Section 110 consultations, and manages activities related to the National Historic Preservation Act (NHPA), including tribal consultations. The division consists of six full-time employees, four of which are permanent and two are subject to furlough (Memory pers. comm. 2012).

The Cultural Resources division works with the Fire Management and Visitor and Resource Protection divisions to accomplish its mission of cultural resources stewardship. Fire Management protects cultural resources from fires, and Visitor and Resource Protection enforces the policies put into place to protect sites from poaching or harmful human disturbance (Memory pers. comm. 2012).

Currently, the inventory of Everglades National Park's cultural resources is incomplete. Approximately 1.5 million acres of land needs to be inventoried, and the majority of it is not yet complete.

The Cultural Resources division's use of the EEEA is mostly limited to research and delineation of archeological and ethnographic sites. Ethnographic sites are sites or landscapes within Everglades National Park that have associations with living cultural groups, such as areas used for ceremonies or for traditional plant-gathering practices. A study is currently underway to identify all of the ethnographic sites in EEEA. The Cultural Resources division uses aircraft to access EEEA when necessary (Memory pers. comm. 2012).

VISITOR AND RESOURCE PROTECTION

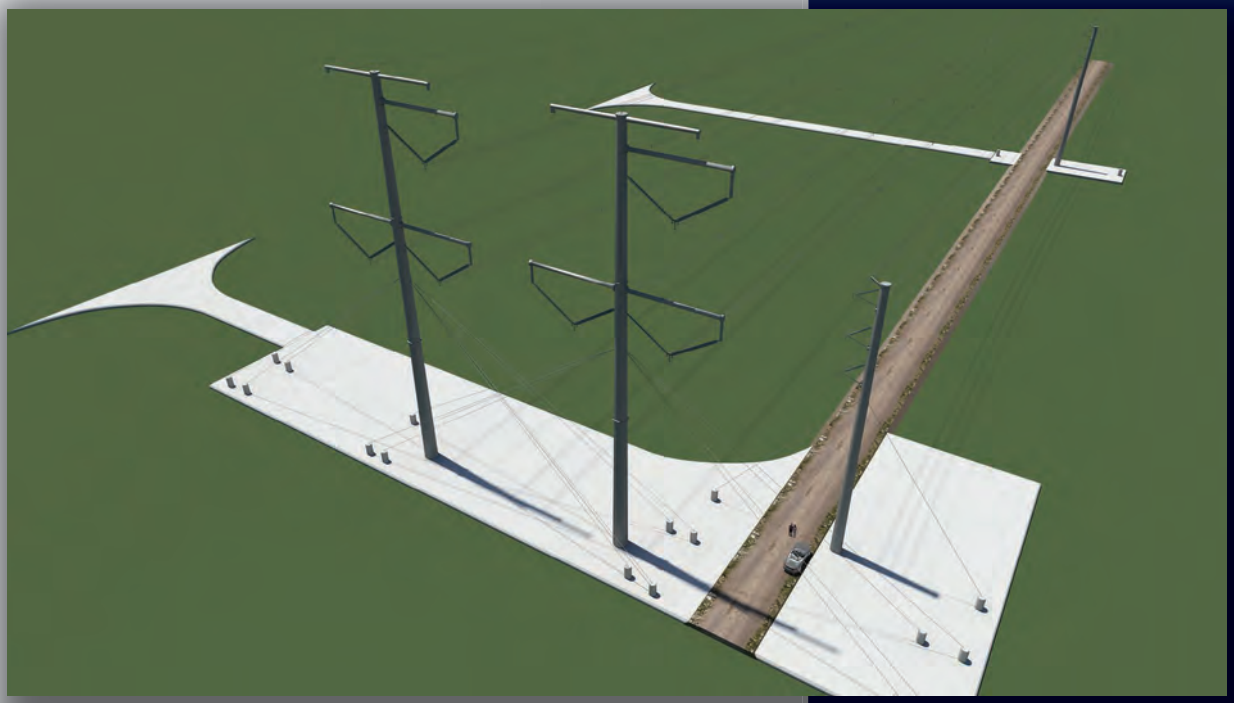
The Visitor and Resource Protection division is responsible for enforcing NPS laws and regulations within Everglades National Park. Visitor and Resource Protection officers monitor for violations of these laws and regulations, take action to prevent them, and, where possible, prosecute those responsible for violating them. Within this division, three officers are assigned to the EEEA. These three officers share an office with the Fire Management division (Foist pers. comm. 2012).

The most common violation of NPS laws within EEEA is the illegal use of all-terrain vehicles. As the vehicles are not street-legal and off-road use is not allowed in Everglades National Park, use of these vehicles within the park is illegal. Illegal all-terrain vehicle use within Everglades National Park increases the risk of wildfires, can damage naturally occurring biota, and sometimes results in serious injuries to visitors. Visitor and Resource Protection officers typically encounter several all-terrain vehicle violations per month in EEEA (Foist pers. comm. 2012).

Another common violation within the EEEA is the illegal dumping of trash. As EEEA is not fenced, it is easily vulnerable to such illegal dumping at any time during the year. Materials commonly dumped include tires, debris from construction sites, commercial debris, and miscellaneous garbage. Occasionally, the dumps include illegal materials in them, as with illegal marijuana growing operations that dump their debris in EEEA. In every instance, the Visitor and Resource Protection officers make an effort to identify the culprits responsible for the illegal dumps. Various items, such as retail receipts or medicine bottles with names on them, can sometimes provide enough information to allow Visitor and Resource Protection officers to identify the culprits and eventually develop a court case against them (Foist pers. comm. 2012).

The third most common illegal activity in EEEA, and also the most dangerous, is the illegal use of firearms for target shooting. Visitor and Resource Protection officers find evidence of firearm use approximately once per month. Firearm use is not allowed within Everglades National Park. Items of physical evidence, such as retail receipts, left at the scene of a crime can sometimes lead to successful prosecutions against those responsible (Foist pers. comm. 2012).

Other illegal activities within EEEA include poaching and illegal fishing, camping in inappropriate areas, use of airboats in inappropriate areas, and use of airboats without required safety equipment. Visitor and Resource Protection operations within EEEA are not yet completely defined. Efforts to catalogue the appropriate land within EEEA on which visitors may set up campsites, and routes upon which visitors may use airboats, are ongoing (Foist pers. comm. 2012).



CHAPTER 4

Environmental Consequences

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter describes the potential environmental consequences of implementing any of the alternatives being considered. For each impact topic discussed in "Chapter 3: Affected Environment," the environmental consequences, or potential impacts, of each of the alternatives are analyzed. Impacts analyzed include the impacts of the National Park Service (NPS) action related to land acquisition, as well as the indirect impacts from the transmission line construction that could occur as a consequence of the proposed land acquisition.

Where appropriate, measures to reduce adverse impacts from the transmission line construction are described, and the effects of these measures are included in the analysis. These mitigation measures include those proposed by Florida Power & Light (FPL) for its transmission line construction (Site Certification Application (SCA) application; see appendix F) and the terms and conditions that would be imposed under either alternative 3 or 4 as part of an exchange agreement (see appendices G and H). The proposed terms and conditions are subject to approval during the preparation of the Record of Decision (ROD) for this environmental impact statement (EIS). In the analysis, it is assumed that permits can be obtained for the transmission line construction being analyzed, but it is recognized that this is not assured, and the mitigation measures that would be imposed under any permit conditions are not known at this time. If the final negotiated terms and conditions are significantly different than those included in the ROD, additional National Environmental Policy Act (NEPA) analysis may be required.

As required by the Council on Environmental Quality (CEQ) regulations implementing the NEPA, a summary of the environmental consequences for each alternative is provided in table 3, which can be found at the end of chapter 2.

METHODOLOGY FOR ESTABLISHING IMPACT INTENSITY DEFINITIONS AND MEASURING EFFECTS BY RESOURCE

The general approach for measuring the effects (or impacts; these terms are used interchangeably throughout) of the alternatives on each impact topic includes general analysis methods as described in guiding regulations, basic definitions, definitions of the intensity of impact resulting from each alternative, and methods used to evaluate the cumulative effects. The analysis of impacts follows CEQ guidelines and Director's Order 12 handbook (NPS 2001). The analysis incorporates the best available scientific literature applicable to the region and setting, the species and areas being evaluated, and the actions being considered in the alternatives. For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions.

GENERAL ANALYSIS METHODS

Potential impacts of all alternatives are described in terms of type (Are the effects beneficial or adverse?); context (Are the effects site-specific, local, or regional?); duration (Are the effects short term or long term?); and intensity (Are the adverse effects negligible, minor, moderate, or major?). Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Beneficial impacts do not include an intensity determination.

Each action alternative is compared to a baseline to assess the context, duration, and intensity of the impacts, as well as to other alternatives to present the reader with a relative assessment of impacts. For purposes of the impact analysis, the baseline is alternative 1a, no NPS action, which includes neither acquisition of FPL lands nor acquisition of a perpetual flowage easement, and no transmission line construction (see chapter 2 for more detailed descriptions of this and all alternatives). Under each alternative, impacts of the land acquisition action are described first, followed by an assessment of the indirect impacts of the associated transmission line construction for that alternative.

In the absence of quantitative data, best professional judgment was used to determine impacts. In general, impacts were determined using existing literature; federal and state standards; consultation with subject-matter experts, including park staff, representatives from other agencies, and project consultants; and public scoping comments.

BASIC DEFINITIONS—TYPE AND DURATION OF IMPACTS

The following definitions are used for all impact topics unless otherwise noted:

- **Beneficial**: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- **Adverse**: A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.
- **Direct**: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).
- **Indirect:** Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8). All of the impacts related to transmission line construction are considered to be indirect impacts.
- **Context**: Context is the affected environment within which an impact would occur, such as localized, parkwide, regional (southern Florida or other regional context that is particular to the topic), global, affected interests, society as whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic.
- **Duration**: The duration of the impact varies according to the impact topic evaluated. However, for the purposes of this analysis, the following assumptions are used for all impact topics except soundscapes, which has its own definitions provided in that section.
  - **Short-term impacts**: Those impacts occurring in the immediate future or during implementation of either the land acquisition or exchange, or the pending transmission line construction, generally expected to range from a few months up to a few years. For natural systems (vegetation, wildlife, wetlands), recovery from short-term impacts would generally take less than one year.
  - **Long-term impacts**: Those impacts occurring after implementation of the alternative has occurred and construction is complete; for natural systems (vegetation, wildlife, wetlands), recovery from long-term impacts would take more than one year. Similarly, any impacts that occur after transmission line construction is complete would be long term.

INDIRECT TRANSMISSION LINE IMPACTS

Although the NPS does not have responsibility to choose or authorize if or where FPL builds transmission lines, it is foreseeable that FPL will attempt to obtain permits to construct transmission lines, and if

permits are approved, will construct the lines. Therefore, the indirect effects of these lines are discussed in this document.

The following assumptions were factored into the impact analysis of the transmission line construction associated with alternatives 1b, 2, 3, 4, and 5, although it is recognized that many of these factors will not be finalized until design is completed.

- Number of transmission lines with right-of-way: three as proposed (two 500-kilovolt (kV) lines, one 230-kV line)
- Width of right-of-way: 330 feet, with a 90-foot vegetation management easement for exotic species control (located along the west side of the FPL West Preferred Corridor)
- Approximate length of transmission line corridors within the project areas: from where the three corridor options in and around the park diverge south of the park, to where they converge in the Pennsuco wetlands area:
  - FPL West Preferred Corridor: about 15.7 miles (about 6.5 miles in the park)
  - FPL West Secondary Corridor: about 14.7 miles (about 7.4 miles in the park)
  - West Consensus Corridor: about 16.2 miles (0 miles in the park)
  - Route in area of possible relocated corridor: about 15 miles; this route was used for the Avian Risk Assessment (ARA) completed for the draft EIS only and is addressed only in sections dealing with avian resources
- Distance between structures: Based on information provided in the FPL SCA (FPL 2009a), the analysis assumes a span of 1,000 feet for the 500-kV line and a span of 500 feet for the 230-kV line, but it is recognized that this will vary with length of line between angles and the need to avoid or span some areas.
- Access road location and extent: This would depend on the route and the availability of access to the site (e.g., levee roads, other roads east of the park). For purposes of analysis, it is assumed that any road built would have an 18-foot-wide roadbed and would be up to 42 feet wide (in wetlands) and about 22 feet wide in uplands, including the slide slopes. For purposes of the analysis, it is assumed that the access road would run the entire length of any corridor. It is possible that the levee road could be used for access, or a road could be built in another location near the levee, depending on final design. Since that design is not known at this time, a “worst case” scenario of a new road constructed within the 330-foot corridor is used for analysis. Culverts would be included under access roads in wetlands to maintain channel flow and/or overland flow to the extent possible.
- Pads: pads would be required at all structure locations, but the area that would need to be filled is not exactly known for each route. For estimating area of disturbance, including side slopes, it is assumed that larger pads (where there are both 500-kV and 230-kV structures) would be 1 acre in wetlands and 0.63 acre in uplands. Smaller pads (where there are 230-kV structures only) are assumed for estimating purposes to cover about 0.35 acre in wetlands and 0.05 acre in uplands; corner pads (at angles in the lines) were estimated at 2 acres in wetlands and 1.74 acres in uplands (see appendix F for additional details). Pad sizes would likely be smaller in alternative 1b, in which additional flowage would not occur, but sizes are not known at this time, and these pad sizes were used for all estimates. All pads would be constructed of clean fill brought to the site. The final grade of access roads and structure pads is typically set to be 12 inches above the expected high water elevation. In the case of transmission line construction scenarios that include

> the perpetual flowage easement, this would mean 12 inches above a water level of 9.7 National Geodedic Vertical Datum (NGVD), or 10.7 NGVD.

Appendix F provides details about transmission line construction, operation, and management as well as a summary of mitigation as proposed by FPL in its application to the state for certification of its western corridors (SCA application). For alternatives 3 and 4, the terms and conditions for the exchanges also affect transmission line impacts and are assumed to be implemented in the analysis. These terms and conditions are found in appendices G and H.

For alternative 3, impacts within the park from transmission line construction would be reduced at the point where FPL is able to construct within the West Consensus Corridor. At this point, impacts under alternative 3 would then be similar to those described under alternative 2. For a conservative analysis, alternative 3 assumes FPL constructs entirely within the park.

AREA OF ANALYSIS (GEOGRAPHIC AREA EVALUATED FOR IMPACTS)

The area of analysis (or study area) for all topics is described under each topic and is based on the resources affected by the NPS land acquisition action and the geographic extent that one would expect to experience the impacts of the actions included in the alternatives. For most topics, the area of analysis is the project area shown in "Figure 5: Everglades National Park Showing Various Corridors and Areas Addressed in Alternatives 1–5" in chapter 2.

IMPACT INTENSITY DEFINITIONS

Because definitions of impact intensity (negligible, minor, moderate, and major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed. The impact intensity definitions define relative level of intensity for adverse effects. Beneficial impacts are described without the use of intensity definitions.

CUMULATIVE IMPACTS ANALYSIS

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

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

As stated in the CEQ Handbook (CEQ 1997b), "Considering Cumulative Effects," cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the no-action alternative, and are presented at the end of each impact topic discussion analysis.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Those actions include past, present, and reasonable foreseeable projects and plans that would result in implementing actions that would contribute to the cumulative effects of the alternative on various resources or values. Most of the projects considered for cumulative analysis are described in the section "Relationship to Other Projects and Plans" in chapter 1. These are briefly summarized in table 18, along with some specific non-park actions that could have a cumulative effect on certain resources being analyzed.

The area of analysis for cumulative impacts is the same as that described under each topic for the assessment of impacts of the alternatives. The analysis for most topics is focused on the area of the potential land exchange and the potential transmission line routes in or around the park, which would be determined by the NPS proposed action. For avian resources, cumulative effects are considered to occur in adjacent wetlands and areas used by birds for foraging outside of the park, extending to the coast. Socioeconomic impacts are considered at the county level.

In defining the contribution of each alternative to cumulative impacts, the following terminology is used:

Imperceptible: The incremental effect contributed by the alternative to the overall cumulative impact is such a small increment that it is impossible or extremely difficult to discern.

Noticeable: The incremental effect contributed by the alternative, while evident and observable, is still relatively small in proportion to the overall cumulative impact.

Appreciable: The incremental effect contributed by the alternative constitutes a large portion of the overall cumulative impact.

TABLE 18: PROJECTS WITH CUMULATIVE EFFECTS ON RESOURCES ANALYZED IN THIS ENVIRONMENTAL IMPACT STATEMENT

Project	Brief Description (see "Relationship to Other Projects and Plans" in Chapter 1 for details)	Past (P), Present (PR), and/or Reasonably Foreseeable Future (F) Action?
Central and Southern Florida (C&SF) project (system of levees, canals, and water control structures; U.S. Army Corps of Engineers (USACE) and South Florida Water Management District (SFWMD) are continuing to make modifications to the system and the operations)		
Everglades Restoration Transition Plan (ERTP)	Current operating plan for projects that directly affect the Water Conservation Areas (WCAs) and the park; focus is on improving habitat for wood stork, Cape Sable seaside sparrow, and Everglade snail kite.	PR, F
Water Quality Improvement Projects	Projects aimed at achieving phosphorus water quality standard established for the Everglades; includes stormwater treatment areas and water storage basins; completion planned for 2024.	PR, F
Everglades restoration plans (water management projects that would restore or enhance flows in the East Everglades Expansion Area (EEEA); these would occur over a 20–30 year period as the projects are funded and implemented and as lands in the park are acquired)		
Modified Water Deliveries to the Everglades National Park (MWD) Project	Modification of the C&SF project to help restore natural hydrology by providing a way for additional water to flow from WCA 3, north of the Tamiami Trail, into the park.	P, PR, F
Tamiami Trail Next Steps Project	Builds on the Tamiami Trail road improvements under the MWD project; bridging and additional road raising allows for more water flow into the park.	PR, F
Canal 111 (C-111) Project Modifications	These modifications to the C&SF project consist of a series of detention basins between the park and the southern end of the L 31 N canal and other modifications to canals for flood protection.	PR, P, F

Project	Brief Description (see "Relationship to Other Projects and Plans" in Chapter 1 for details)	Past (P), Present (PR), and/or Reasonably Foreseeable Future (F) Action?
Comprehensive Everglades Restoration Plan (CERP) and associated projects	A number of CERP projects are intended to improve flows in and around Everglades National Park, including the decompartmentalization of WCA 3, Everglades National Park seepage management, the C-111 spreader canal project, the CERP Master Recreation Plan, the Central Everglades Planning Project (CEPP), and the Water Control Plan.	P, PR, F
FPL electrical generation and transmission projects (for topics where the area of analysis is more extended)		
Turkey Point Power Plant expansion	Development of two new nuclear units at the existing Turkey point site on Biscayne Bay.	F
Eastern power transmission corridor upgrades and expansion	230-kV transmission line from the Turkey Point Power Plant north to Miami.	F
Western transmission corridor; corridor segments leading to and from Everglades National Park	Transmission line corridor from the Turkey Point Power Plant north to the Pennsuco substation; part of this is in the project area for the EIS because the NPS proposed action may influence the path it takes in or around the park.	F
Park management plans and projects		
Acquisition of lands in the EEEA under the Everglades National Park Protection and Expansion Act of 1989 (Expansion Act)	Includes acquisition of privately owned parcels in the expansion areas; many have been acquired; remaining ones include the FPL parcel that is the subject of this EIS, three airboat operations, and two AM radio properties.	P, PR, F
Land Protection Plan (LPP) for the East Everglades Addition	1991 plan that determined that all lands in EEEA are needed for restoration and sets priorities for acquisition of lands in the EEEA. This plan identifies compatible and incompatible land uses.	P, PR, F
Everglades General Management Plan / East Everglades Wilderness Study	The general management plan (GMP) sets the direction for the area, including desired future conditions and objectives that promote protection of park resources. The Wilderness Study had found that 102,100 acres are eligible for wilderness, including the FPL parcel.	F
Everglades Fire Management	The park conducts prescribed burns and responds to wildland fires in the area; the plan is currently being updated.	P, PR, F
Exotic Vegetation Management	The park implements its plan for controlling exotic plant species in the park; the plan includes control of exotic vegetation in the project area.	P, PR, F
Research, surveys, and monitoring in the EEEA	Conduct of research and surveys to monitor park resources – hydrology, special-status species; can include use of helicopters and airboats.	P, PR, F

Project	Brief Description (see "Relationship to Other Projects and Plans" in Chapter 1 for details)	Past (P), Present (PR), and/or Reasonably Foreseeable Future (F) Action?
Non-park actions that can affect resources in the area of analysis		
Airboat tour operations	Four commercial airboat tour operations conduct airboat tours in the EEEA and bring approximately 300,000 visitors into the park annually. The continuation of airboat tours is a source of noise in the EEEA that can affect wilderness values, visitor use and experience, wildlife, soils, and hydrology.	P, PR, F
Land development: urban development, road construction and expansion (e.g., Krome Avenue expansion)	General land disturbance including vegetation removal, paving, and building or road construction east of the park that can be expected in the future (current conditions are part of the affected environment). This disturbance can affect most resources and socioeconomics. Additionally, car collisions can affect wildlife.	P, PR, F
Mining	Continued mining operations east of the park can affect natural resources, land use, and socioeconomics.	P, PR, F

HYDROLOGY

GUIDING REGULATIONS AND POLICIES

NPS *Management Policies 2006*, Section 4.6.1, "Protection of Surface Waters and Groundwaters" states, "The Service will perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems" (NPS 2006a). NPS *Management Policies 2006* also specifically addresses the management of watershed and stream processes in Section 4.6.6. The policy states:

> The Service will manage watersheds as complete hydrologic systems and minimize human-caused disturbance to the natural upland processes that deliver water, sediment, and woody debris to streams.
>
> The Service will manage streams to protect stream processes that create habitat features such as floodplains, riparian systems, woody debris accumulations, terraces, gravel bars, riffles, and pools. Stream processes include flooding, stream migration, and associated erosion and deposition.
>
> The Service will protect watershed and stream features primarily by avoiding impacts on watershed and riparian vegetation and by allowing natural fluvial processes to proceed unimpeded.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

The potential impact on hydrology is based on impacts to potential flows in the Northeast Shark River Slough (NESRS), which includes the entire area of analysis for this topic. The level of impact on potential flows in NESRS is related to the effects of the land acquisition and to the extent and location of any disrupting features such as access roads and structure foundations.

The following definitions were used to determine the magnitude of adverse impacts on hydrology:

- **Negligible**: An action would have no measurable or detectable effect on hydrology.
- **Minor**: An action would have small, but measurable, localized effects on hydrology. Once the disturbance is removed, the area would recover without assistance.
- **Moderate**: An action would have clearly detectable effects on hydrology over a large area or substantial effects over a small area. Resulting changes could potentially affect hydrologic connectivity, organisms, or natural ecological processes over a large area or would affect hydrologic connectivity, organisms, or natural ecological processes over a small area. If the disturbance is removed, the affected area would likely return to a normal state with minimal intervention.
- **Major**: An action would have substantial, regional effects on hydrology. Resulting changes would affect hydrologic connectivity, organisms, or natural ecological processes. Key ecological processes and community structure would be altered. The system would not return to a normal state without substantial intervention, and success is not guaranteed.

ANALYSIS AREA

The area of analysis for hydrology includes the areas potentially developed for transmission lines, plus downstream areas where soils could be affected by changes in water quality in the EEEA and the project area surrounding the park. This includes the general area occupied by the transmission corridors in the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership, and FPL would not grant NPS a flowage easement. There would be no physical change to the land; therefore there would be no direct impacts on hydrology. However, the NPS would be unable to increase water levels in the NESRS, and would be unable to implement regional ecosystem restoration activities that rely on additional flow. Inability to allow increased water levels across the FPL property would result in preventing, reducing, or substantially delaying restoration efforts that rely on enhanced flows on a regional scale over the course of several decades, an indirect, but long-term major adverse impact on hydrology.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on hydrology.

Cumulative Impacts – Alternative 1a

Several past, present, and reasonably foreseeable projects are related to restoration of the hydrology and enhanced flows in the Everglades over a 20- to 30-year period. These include the C&SF project and Everglades Restoration Plans described in table 18. Funding and implementing associated projects and

acquisition of lands in the EEEA under the Expansion Act would result in large-scale beneficial impacts on hydrology in the NESRS and throughout the Everglades by increasing the hydroperiod and the flood stage in large parts of the Everglades in the park. However, alternative 1a would prevent or obstruct implementation of these flowage-related projects and would therefore result in major adverse impacts. Other actions in the area of analysis have also adversely affected regional hydrology, including the construction of mining lakes and paving of land for development east of the park, which disrupts natural flows and adds to impermeable surfaces and runoff. The impacts of not having flowage under alternative 1a would contribute appreciable adverse impacts on the overall cumulative effects on hydrology in this area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no physical change to the land, so there would be no direct physical impacts on hydrology. However, NPS would be unable to increase water levels in the NESRS, preventing restoration on a regional scale and obstructing implementation of regional ecosystem restoration activities that rely on additional flow. Inability to allow additional flow across the corridor would result in long-term major indirect adverse impacts on hydrology. Alternative 1a would contribute appreciable adverse impacts on the overall cumulative effects on hydrology in this area.

IMPACTS OF ALTERNATIVE 1B-: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, impacts of the land acquisition action would be the same as described for alternative 1a. The FPL retention of ownership of land in the EEEA would result in no direct impacts on hydrology; however, flowage restrictions would result in long-term indirect major adverse impacts on hydrology.

Impacts of Transmission Line Construction

Indirect impacts related to the construction of transmission lines in the FPL corridor would result from the construction of the transmission lines in the park, as described earlier in this chapter and appendix F. Under this alternative, transmission lines in the FPL West Secondary Corridor would be constructed directly through the flow path of the NESRS, and the FPL would not provide an easement to the NPS to accommodate the enhanced flows necessary for successful implementation of many of the ecosystem restoration projects in the Everglades. Construction of the transmission lines through this corridor would result in 7.4 miles of transmission lines in the park and 14.7 miles in the project area, including construction in the WCA 3B and Pennsuco wetlands north of the park. Culverts would be included under the access roads through this corridor to maintain existing surface water flows. FPL prefers the use of smaller diameter culverts to limit the depth of fill to be installed, but would use larger diameter culverts in some locations. The culverts would be designed and sized to equalize the amount of water volume created from a small rainfall event, and maintain the existing hydroperiod, and would be based on appropriate hydrological studies (see the “Mitigation Measures” section in appendix F).

Construction of the transmission lines, particularly without accommodation of enhanced flows, would result in long-term major adverse impacts. Existing hydroperiods would be maintained, but sheetflows would be disrupted as water is forced through the culverts and flows redirected. The transmission line corridor would be designed to maintain the existing hydroperiod during small rain events. However, the access road and associated support structures would result in a 7.4-mile-long hydrological barrier through the park’s portion of the NESRS and would contribute to compartmentalization of a system that is undergoing restoration activities to remove compartmentalization and reestablish sheet flow into and through the NESRS. Sheetflow would resume at some point downstream, but it would be noticeably

disrupted by the culverts, and it is likely there would be reduced hydroperiods downstream of the culverts (Sonenshein pers. comm. 2013).

Scour could also occur in the vicinity of the culverts, creating localized long-term negligible to minor adverse impacts along the transmission lines. There would also be short-term moderate adverse impacts related to the small to large-scale interruption of hydrologic processes that would also occur during construction, as areas are blocked off to place culverts and construct the access road and pads for the transmission line towers. Flows could be blocked or diverted along potentially long segments of the transmission lines. Bulldozers, excavators, and other construction equipment would be expected to enter the corridor to place fill materials to create the structure pads and access roads. This would cause localized and possibly regional obstructions and alterations of flow due to the presence of equipment and fill materials, depending on the method of construction.

Construction would occur in phases along the length of the lines, and although FPL has committed not to block flow along the entire length of the transmission line corridor, it is possible that flow could be blocked for several miles at a time. Typically, crews would selectively clear vegetation along the length of a right-of-way, or substantial portion of it, install silt fencing and curtains along the portion of the corridor that has just been cleared, lay the geotextile fabric, build the road and construct the transmission towers, and string the transmission lines. Hydrologic processes would be interrupted along the length of the corridor being worked on at any given time. Because the hydrology may be altered for miles, and the change in flow would be regionally noticeable with possible regional consequences, there would be short-term moderate adverse impacts on hydrology.

Cumulative Impacts – Alternative 1b

The cumulative projects with impacts on hydrology from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Construction of the transmission lines without a flowage easement in the FPL corridor would permanently prevent the implementation and success of these projects. Alternative 1b would result in major adverse impacts because of the lack of flowage, and would contribute appreciable adverse impacts on the overall cumulative effects on hydrology in this area.

Conclusion – Alternative 1b

Under alternative 1b, the impacts from the lack of a real estate transaction would be the same as under alternative 1a; flowage restrictions would result in long-term indirect major adverse impacts on hydrology. There would also be long-term major adverse impacts on hydrology from construction of the transmission lines, particularly the disruption of sheetflows through the culverts, and the likelihood that there would be reduced hydroperiods downstream of the culverts. Forcing the flow through culverts could result in scour, and localized long-term negligible to minor adverse impacts. Construction activities for the transmission lines would cause short-term moderate adverse impacts related to small to large-scale interrupted hydrologic processes that would occur during construction.

Alternative 1b would prevent or obstruct implementation of regional flowage-related projects and would therefore result in major adverse impacts. This alternative would contribute appreciable adverse impacts on the overall cumulative effects on hydrology in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, no direct impacts would be expected from the acquisition of FPL land in the EEEA. There would be substantial long-term indirect benefits from placing ownership of this area solely with the NPS and the ability to accommodate enhanced flows, manage the area consistently with lands around it, and proceed with Everglades ecosystem restoration projects without obstacles from the FPL parcel.

Impacts of Transmission Line Construction

Under alternative 2, impacts on hydrology within the park would be avoided, but construction of the transmission lines in the West Consensus Corridor would result in disturbances to hydrology in this area. Impacts on hydrology would not be as great as impacts of alternative 1b for several reasons. The wetlands through which the lines would cross in this area are not contiguous with wetlands in the EEEA; many are segmented and have altered hydrologic conditions. This area is also not impacted by the regional ecosystem restoration projects that rely on enhanced flows. Culverts beneath the transmission line road and tower pads would allow flows beneath the lines at existing levels, but the culverts would disrupt the small amount of sheetflow that does exist in this area, and would further segment the hydrologic conditions. The existing hydroperiod would be maintained. There would be some potential for scour where water is directed through the culverts, with negligible to minor adverse impacts. Construction-related impacts would therefore be long-term negligible to moderate adverse.

The construction activities would block flows across the construction corridor in stages and would interrupt hydrologic processes and divert flow on a small to large scale, similar to those described under alternative 1b, but the results of the impacts would not be as noticeable. Impacts would not occur within the park because the wetlands in the West Consensus Corridor have been segmented hydrologically from the park, and there is no noticeable sheetflow that serves the remainder of the Everglades. These impacts would therefore be short-term minor to moderate adverse.

Cumulative Impacts

The cumulative projects with impacts on hydrology from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would allow enhanced flows to proceed, and would allow for large-scale benefits over 20 to 30 years. The alternative would also result in long and short-term minor to moderate adverse impacts from the construction of the transmission lines in the West Consensus Corridor east of the park. Alternative 2 would contribute appreciable benefits to the overall cumulative impacts on hydrology; the contribution of adverse effects from the construction of the transmission lines outside the park would be only slightly noticeable overall.

Conclusion

Overall, there would be no direct impacts on hydrology from NPS acquisition of the FPL corridor. There would be indirect long-term benefits of acquisition and the additional protection to the land that would result from the change in ownership, and the ability of the NPS to allow the enhanced flows across the corridor called for in the ecosystem restoration plans. Under alternative 2, there would be short- and long-term negligible to moderate adverse impacts on hydrology in the wetlands in the West Consensus Corridor as a result of transmission line construction and temporary blockage of flow across the corridor, and longer-term fragmentation of the hydrologic processes around the new transmission lines. Alternative 2 would contribute appreciable benefits to the overall cumulative impacts on hydrology; the contribution

of adverse effects from the construction of the transmission lines outside the park would be only slightly noticeable overall.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, there would be no direct impacts on hydrology from the exchange of FPL and NPS lands in the EEEA. However, the exchange would allow the NPS to manage the existing FPL property for enhanced restoration flows. The exchange would ensure no development could be proposed in the current FPL corridor and the various flow dependent Everglades restoration projects could continue without any obstacles due to the presence of this parcel. The exchange would enhance conservation of the resources and values of the park, including hydrologic resources. Alternative 3 would have a substantial indirect long-term beneficial impact.

Impacts of Transmission Line Construction

Construction of new transmission lines adjacent to the L-31N canal and levee would have impacts similar in nature to those described under alternative 1b. The location of the lines adjacent to the levee would have reduced impacts on hydrology compared to construction of transmission lines further to the west, yet more noticeable impacts than if the lines were constructed in the West Consensus Corridor, especially in the portion of the West Consensus Corridor in Bird Drive Basin, further from the park boundary. Construction of culverts beneath the transmission line access roads would result in no change in hydroperiod in the area between the transmission lines and the L-31N levee, but sheetflow patterns would be disrupted by the transmission line platforms, which cannot be easily mitigated. Water flows toward the canal in many parts of this area, and would continue to do so until and possibly after the seepage barrier projects are completed. Impacts of this water flow would be minimized in these places, and the corridor is far enough east that impacts west of the transmission lines would be minimized. The regional ecosystem restoration activities that rely on enhanced flow would be minimally impacted because the regional flow pattern would be from the north to the south-southwest and thus would not need to pass through the transmission corridor.

Alternative 3 includes certain terms and conditions for the use of the FPL West Preferred Corridor (appendix G). Under these terms and conditions for the exchange, FPL would commit to describing methods and results of hydrologic analysis to avoid and minimize impacts on sheetflow at the park to the maximum extent practicable.

As a conditional requirement for the land exchange under this alternative, a perpetual flowage easement would be placed on the FPL fee property, ensuring that the hydroperiod would be maintained, and that impacts on sheetflow would be minimized. Hydrology in the FPL fee corridor could be managed consistently with restoration requirements. The transmission corridor would be designed and constructed to sustain water levels no greater than 10.7 NGVD29 for significant periods. FPL would be required to ensure that the design and construction of the transmission lines would be compatible with ecosystem restoration goals and activities allowing for protection of resources and values of Everglades National Park. However, the use of culverts would still disrupt sheetflows as water is forced around the structure pads and through culverts beneath the road, and it is possible that the hydrology in the channel between the levee and the transmission lines would be somewhat more isolated and restricted in its flow than water on the west side of the transmission lines. There would be adverse impacts associated with the construction of the access road (and/or finger pads if the levee road is used). Impacts would be less intense if the levee road is used and finger pads could be constructed because there would be fewer obstructions to hydrology.

The impacts from placement of the transmission lines in this area as described above would be long-term moderate and adverse. The potential for scour around the culverts where water is channelized would result in localized long-term negligible to minor adverse impacts.

Construction of the transmission lines would result in the same short-term minor to moderate adverse construction-related impacts related to small to large-scale interrupted hydrologic processes discussed in the analysis for alternative 1b, although they would be less noticeable because of the location next to the levee.

Cumulative Impacts

The cumulative projects with impacts on hydrology from other past, present and reasonably foreseeable future projects would be the same as those discussed under alternative 1a, and would be mainly beneficial. The proposed exchange would allow enhanced flows and implementation of flowage-related ecosystem restoration projects that would benefit hydrology overall. Alternative 3 would contribute long-term minor to moderate adverse impacts on hydrology on the far eastern edge of the park, as well as short-term minor to moderate adverse construction-related impacts. These impacts would contribute both appreciable long-term beneficial impacts, and noticeable long- and short-term adverse impacts on hydrology in this area.

Conclusion

Under alternative 3, there would be substantial indirect long-term beneficial impacts from the exchange and the ability for the NPS to increase water levels across the acquired FPL property and implement flow-related ecosystem restoration activities. The transmission lines would be located adjacent to the existing L-31N levee, so impacts on hydrology throughout the NESRS would be less than would occur if the lines were built in the existing FPL corridor further west. The hydroperiod would be maintained, but sheetflow patterns would be disrupted by the transmission line platforms, which cannot be easily mitigated. Water is also flowing toward the canal in many parts of this area, so impacts from this would be minimized in these places, and the corridor is far enough east that impacts would be minimized. The regional ecosystem restoration activities that rely on enhanced flow would be possible because the culverts beneath the transmission lines would be sized adequately to handle enhanced flows. There would be additional localized long-term negligible to minor adverse impacts at the culverts where water is channelized and scour could occur. There would be short-term minor to moderate adverse construction-related impacts related to small to large-scale interrupted hydrologic processes.

Alternative 3 would contribute both appreciable long-term beneficial impacts, and noticeable long- and short-term adverse impacts on overall cumulative impacts on hydrology in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Impacts on hydrology from the land exchange under alternative 4 would be the same as impacts described for alternative 3, but with additional beneficial impacts on hydrology resulting from terms and conditions that would reduce the risk of having additional utility facilities developed within the exchange corridor and minimize the effects of associated disturbance on hydrology. These terms and conditions for alternative 4 are in appendix H. The exchange would ensure no development could be proposed in the current FPL corridor and the various flow dependent Everglades restoration projects could continue without any obstacles due to the presence of this parcel. The exchange would enhance conservation of the

resources and values of the park, including hydrologic resources. Alternative 4 would have a substantial indirect long-term beneficial impact.

Impacts of Transmission Line Construction

The terms and conditions related to hydrology for either the fee for fee exchange (appendix G) or the fee for easement exchange (appendix H) are the essentially the same. As a result impacts on hydrology under alternative 4 would be the same as impacts on hydrology under alternative 3. The transmission lines would be located adjacent to the existing L-31N levee, so impacts on hydrology throughout the NESRS would be less than would occur if the lines were built in the existing FPL corridor further west, but greater than if lines are constructed in the West Consensus Corridor. The hydroperiod would be maintained, but sheetflow patterns would be disrupted by the transmission line platforms, which cannot be easily mitigated.

The impacts on hydrology from construction under this alternative would be the same as under alternative 3. Alternative 4 would contribute long-term minor to moderate adverse impacts on hydrology on the far eastern edge of the park, as well as short-term minor to moderate adverse construction-related impacts.

Cumulative Impacts

Cumulative impacts under alternative 4 would be the same as under alternative 3. Alternative 4 would contribute long-term beneficial impacts and long-term minor to moderate adverse impacts on hydrology on the far eastern edge of the park, as well as short-term minor to moderate adverse construction-related impacts. Alternative 4 would contribute both appreciable long-term beneficial impacts and noticeable long- and short-term adverse impacts on hydrology in this area.

Conclusion

The impacts of land exchange and construction, as well as cumulative impacts would be the same as under alternative 3 except that no other utilities could be built in the corridor, which would lessen the risk of additional hydrologic impacts. Impacts from the land exchange would be long term and beneficial; impacts from construction of the transmission lines would be long-term moderate adverse, and there would be additional localized long-term negligible to minor adverse impacts at the culverts where water is channelized and scour could occur. There would be short-term minor to moderate adverse construction-related impacts related to small to large-scale interrupted hydrologic processes would also occur. Alternative 4 would contribute appreciable long-term beneficial impacts and noticeable long- and short-term adverse impacts on the overall cumulative impacts on hydrology in this area.

Impacts of Alternative 5: Perpetual Flowage Easement on FPL Property

Impacts of the Land Acquisition Action

Under alternative 5, the long-term flowage easement through the current FPL property would give the NPS the ability to manage the area to accommodate enhanced flows associated with ecosystem restoration activities. The ability to flow more water across the property would allow implementation of flow-related restoration projects, which would result in substantial indirect long-term beneficial impacts.

Impacts of Transmission Line Construction

Direct and indirect construction-related impacts on hydrology under this alternative would be similar to those described under alternative 1b, although enhanced flows would be accommodated across the corridor. Flows would be adequate for ecosystem restoration activities, but would be directed through culverts. The hydroperiod would be maintained, but even with FPL requirements to minimize disturbance to sheetflow, the flow would be interrupted by the culverts along the length of the transmission lines, and flows would be directed more in an east to west direction than a northeast to southwest direction, resulting in regional impacts that are hard to mitigate. The result would be long-term minor to major adverse impacts from the sheetflow interruption, with impact intensity varying according to the downstream distance from the culverts, and localized long-term negligible to minor adverse impacts at the culverts where water is channelized and scour could occur as previously described under alternative 1b. There would be short-term moderate adverse indirect impacts on hydrology resulting from blockage of flow across the FPL West Secondary Corridor during the construction process.

Cumulative Impacts

The cumulative projects with impacts on hydrology from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Implementation of alternative 5 would provide both long-term beneficial and long-term major adverse impacts, because the flow-related ecosystem restoration projects could proceed, but sheetflow patterns would be disrupted regionally by the transmission lines. Alternative 5 would therefore contribute appreciable beneficial impacts by allowing enhanced flows, and appreciable adverse impacts by the disruption of sheetflows to the overall cumulative effects on hydrology in this area.

Conclusion

Under alternative 5, there would be substantial indirect long-term beneficial impacts from the easement and the ability for the NPS to increase water levels across the FPL property and implement flow-related ecosystem restoration activities. Construction of the transmission lines would have similar impacts as described under alternative 1b, except that enhanced flows would be accommodated. The placement of the transmission lines would result in long-term minor to major adverse impacts, and localized negligible to minor adverse impacts related to scour around the culverts, and short-term moderate adverse construction-related impacts related to small to large-scale interrupted hydrologic processes that would also occur.

The alternative would contribute appreciable beneficial impacts to overall cumulative impacts by allowing enhanced flows, but would also contribute appreciable long-term adverse impacts because the culverts under the transmission lines would noticeably disrupt sheetflow and impact hydrology in this area.

WATER QUALITY

GUIDING REGULATIONS AND POLICIES

NPS *Management Policies 2006* specifically addresses water quality in Section 4.6.3. The policy states:

> The pollution of surface waters and groundwater by both point and nonpoint sources can impair the natural functioning of aquatic and terrestrial ecosystems and diminish the utility of park waters for visitor use and enjoyment. The Service will determine the quality of park surface and groundwater resources and avoid, whenever possible, the

pollution of park waters by human activities occurring within and outside the parks. The Service will

- Work with appropriate governmental bodies to obtain the highest possible standards available under the Clean Water Act for the protection for park waters;
- Take all necessary actions to maintain or restore the quality of surface waters and groundwater within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations; and
- Enter into agreements with other agencies and governing bodies, as appropriate, to secure their cooperation in maintaining or restoring the quality of park water resources.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Potential impacts on water quality are based on impacts on the chemical, physical, or biological constituents of the water column. The analysis of possible impacts on water quality was based on a review of existing literature and maps, information provided by the NPS and other agencies, experience related to transmission line construction-related effects, and professional judgment.

The following definitions were used to determine the magnitude of adverse impacts on water quality:

- **Negligible**: Water quality would not be affected, or changes would be at low levels of detection. Any detected effects to water quality would be slight and localized.
- **Minor**: Changes in water quality would be measurable, although the changes would be small and localized.
- **Moderate**: Changes in water quality would be measurable and regional.
- **Major**: Changes in water quality would be readily measurable, and would have observable consequences on a regional scale.

ANALYSIS AREA

The area of analysis for water quality includes the NESRS in the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see “Figure 4: General Project Area,” in chapter 1).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property’s status or ownership and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, and no direct impacts on water quality. However, because there would not be any flowage easements, the NPS could not flow additional water across the FPL property. Flow-dependent ecosystem restoration activities would be prevented or delayed. Anticipated improvements to water quality as the result of the restoration could not occur, and would result in indirect long-term minor adverse impacts.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on water quality.

Cumulative Impacts – Alternative 1a

Several past, present, and reasonably foreseeable projects related to restoration of the hydrology and enhanced flows in the Everglades over a 20- to 30-year period (the C&SF project and Everglades Restoration Plans described in table 18). Funding and implementing these associated projects, as well as acquisition of property throughout the park, would result in large-scale beneficial impacts by increasing the hydroperiod and the flood stage in large parts of the Everglades in the park. These hydrologic changes would also result in beneficial impacts to water quality by decreasing dry periods, although there is concern that there could be more phosphorus carried through the system with the restoration projects. Construction of the Stormwater Treatment Areas outside the park would proceed regardless, and would provide substantial water quality benefits. Other projects outside the park, including mining, road construction, and suburban/ urban development, have cumulative impacts on water quality by increasing impervious surfaces that increase runoff, and providing sources of contamination (sediments, mining discharge, pesticides, oils), which affect water quality in receiving waters.

Alternative 1a would prevent or obstruct implementation of the flow-related projects and would therefore result in minor adverse impacts. Alternative 1a would contribute slightly noticeable long-term adverse impacts on overall cumulative effects on water quality in the area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no direct impacts on water quality since there would not be any real estate transaction, but the absence of a flowage easement would prevent or delay implementation of flow-dependent ecosystem restoration projects, resulting in long-term indirect minor adverse impacts on water quality. There would be no impacts related to transmission line construction. Alternative 1a would contribute slightly noticeable long-term adverse impacts on overall cumulative effects on water quality in the area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, there would be no direct impacts. Indirect impacts related to continued ownership of land in the EEEA by FPL and the lack of any flowage easements would be the same as alternative 1a. Flow-dependent ecosystem restoration activities would be prevented or delayed. Anticipated improvements to water quality as the result of the restoration could not occur, and would result in indirect long-term minor adverse impacts on water quality.

Impacts of Transmission Line Construction

Indirect impacts would result from the construction of transmission lines in the park, as described in earlier in this chapter and appendix F. FPL would obtain all necessary permits for constructing transmission lines through the existing FPL West Secondary Corridor directly through the flow path of the NESRS. FPL would place fill in wetlands to construct the access roads and structure pads placed every 500 feet along the transmission line corridor, about 7.4 miles of which is in the park. The fill would be clean and free of pollutants per state requirements, although the crushed limestone typically used as fill

in the region normally has higher levels of phosphorus and suspended solids that would affect surface runoff, even with the use of best management practices (BMPs) (Castro pers. comm. 2013). Potential impacts on water quality would be in the form of sediment discharge to the surrounding waterways, which would increase total suspended solids, turbidity, and nutrients, including nitrogen and phosphorus (the limiting nutrient in the Everglades system), which sorb to the sediment particles in the water column near the construction sites during the short term.

Other indirect impacts on water quality would result from the disturbance of sheetflows as water is pushed through the culverts. Particularly without enhanced flows, it would be reasonable to expect that there would be areas downstream of the corridor that could have more frequent episodes of drying and rewetting as a result of disturbed sheetflows. Increased period of drying and rewetting could increase concentrations of phosphorus, and could also increase methylation of mercury. Given the length of the transmission lines, there would be long-term major adverse impacts.

Turbidity screens and erosion control devices would be used to minimize construction impacts on wetlands and water bodies and ensure that state water quality standards for turbidity are met. In addition, FPL would place geotextile fabric beneath the fill to prevent fill material used to construct the access roads and structure pads from being released into the surrounding waters and wetlands. FPL would obtain stormwater permits for construction of the transmission lines. All stormwater discharges would be addressed through compliance with Rule 62-621.300 (4) (Generic Permit for Stormwater from Large and Small Construction Activities), and would require sediment and erosion control devices listed above, and possibly other actions to protect water quality. However, due to the location of the transmission line in the park, the effects of even small changes in water quality would be noticeable, and there would be short-term minor to moderate adverse impacts from sediment discharge into the aquatic environment during construction.

The installation of the transmission line support towers requires the use of an auger truck (appendix F) that will auger a hole approximately 18 to 25 feet deep, which could encroach into underlying groundwater layers and may require dewatering. This water may be discharged into the surrounding waterways if it is sufficiently free of sediments. The auger holes and discharge would be relatively small and localized, but the water would have different water chemistry characteristics than the surrounding water, and would not be free of sediment resulting in localized minor to moderate adverse impacts on water quality. Use of appropriate BMPs would be necessary.

FPL would develop a plan that would include a section on how pollutants or hazardous materials will be managed to minimize impacts and requires a contingency/containment plan. In the case of accidental spills from construction equipment, construction crews would be equipped with spill containment and absorption materials, so there would be short-term negligible to minor adverse localized impacts on water quality associated with accidental spills (FPL 2009a). Similarly, maintenance workers would be equipped with spill containment equipment when using herbicides during maintenance of the transmission line corridor. Such activities would result in indirect short-term minor to moderate adverse construction-related impacts.

Cumulative Impacts – Alternative 1b

The cumulative projects with impacts on water quality from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Construction of the transmission lines without a flowage easement in the FPL corridor would permanently hinder the implementation and success of these projects, and would therefore result in major adverse impacts on water quality, and short-term minor to moderate adverse impacts on water quality. Alternative 1b would

contribute appreciable long-term adverse impacts and noticeable short-term minor to moderate adverse construction-related impacts to overall cumulative impacts on water quality in the area.

Conclusion – Alternative 1b

Impacts related to the land acquisition action would be the same as under alternative 1a. There would be no direct impacts on water quality since there would not be any real estate transaction. However, the absence of a flowage easement would prevent or delay implementation of flow-dependent ecosystem restoration projects, resulting in long-term indirect minor adverse impacts on water quality. Construction of the transmission lines without a flowage easement in the FPL corridor would permanently hinder the implementation and success of ecosystem restoration projects, and would therefore result in major adverse impacts. There would also be short-term minor to moderate adverse impacts related to construction activities. Alternative 1b would contribute appreciable long-term adverse impacts, as well as noticeable short-term adverse construction-related impacts to overall cumulative impacts on water quality in the area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, the NPS would own and therefore be able to manage the FPL corridor to accommodate enhanced flows associated with ecosystem restoration activities. The NPS could allow enhanced sheetflows across the FPL corridor and implement regional restoration activities that rely on enhanced flows. This would decrease the frequency and duration of dry periods in the EEEA, which would decrease the potential for increased production of methyl mercury and higher concentrations of phosphorus, resulting in indirect long-term benefits to water quality.

Impacts of Transmission Line Construction

The types of indirect adverse impacts from construction of transmission lines outside the park in the West Consensus Corridor would be the same as under alternative 1b, but because the waters outside the park are less pristine than waters in the park, the intensity of those impacts would be less pronounced. Flows would continue as they are, and it is not expected that there would be any noticeable changes to the frequency of drying and rewetting periods, so there would not be noticeable associated changes in phosphorus concentrations or methyl mercury production. Impacts would be indirect, long-term negligible to minor adverse. Construction-related activities would have short-term negligible to minor adverse impacts. The wetlands in the West Consensus Corridor are hydrologically compartmentalized from the EEEA, and impacts on water quality in the West Consensus Corridor would not affect water quality in the EEEA or NESRS, therefore impacts on water quality in the park would be avoided.

Cumulative Impacts

The cumulative impacts on water quality from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would allow enhanced flowage and implementation of ecosystem restoration projects that rely on enhanced flows to proceed, and would allow for regional benefits to water quality over 20 to 30 years, but would also result in long-term negligible to minor adverse impacts, and short-term negligible to minor adverse impacts on water quality outside the park. Alternative 2 would contribute appreciable benefits to the overall cumulative impacts on water quality within the park; the contribution of adverse effects from the construction of the transmission lines outside the park would be only slightly noticeable.

Conclusion

Under alternative 2, acquisition of the FPL corridor and the ability to flow additional water across the property would result in indirect long-term beneficial impacts on water quality in EEEA. Impacts from the construction of the transmission lines outside the park would be similar to, but less intense than those described under alternative 1b—indirect, long-term negligible to minor adverse, and short-term negligible to minor adverse for construction activities. Impacts from transmission line construction inside the park would be avoided, and alternative 2 would contribute appreciable benefits to the overall cumulative impacts on water quality within the park; the contribution of adverse effects from the construction of the transmission lines outside the park would be only slightly noticeable.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, the fee for fee land exchange would allow the NPS to accommodate enhanced flows across the current FPL corridor and the exchange corridor, and proceed with flow-dependent ecosystem restoration projects, resulting in indirect long-term beneficial impacts on water quality from the property exchange, as discussed for alternative 2.

Impacts of Transmission Line Construction

Under this alternative, FPL would construct the transmission lines in the exchange corridor adjacent to the L-31N canal. Impacts on water quality related to the construction of the transmission lines would be similar to the impacts described in the analysis for alternatives 1a and 2, although the intensity of the impacts would be less than those expected under alternative 1b and more than under alternative 2, due to the location of the transmission line corridor. Water currently flows toward the canal in this area, and would continue to do so until the seepage barriers are put in place, and would carry pollutants toward the edge of the park and away from more sensitive areas. There would be possible impacts on water quality from sediment discharge into the surrounding waterways, which would increase total suspended solids, turbidity, and nutrients, particularly phosphorus (which sorb to the sediment particles, in the water column near the construction sites during construction), or from accidental spills from equipment or vehicles. The more confined water in the channel between the levee and a parallel access road might be more stagnant, with less flow, and that could adversely affect water quality by encouraging localized eutrophication, although FPL has committed to maintaining the hydroperiod and preserving sheetflow through the FPL transmission line corridor, resulting in long-term minor adverse impacts.

There might be additional water quality impacts in the area between the transmission lines and the levee, because it would be more compartmentalized hydrologically. Increased mercury methylation would not be a large concern in this area; it already has many areas that are dry and rewet regularly, and the changes in frequency of drying and rewetting would not be very noticeable (Castro pers. comm. 2013).

In addition, monitoring has shown there is an elevated level of metals and other pollutants in the soils near the canal (Castro et al. 2013). Should the soils be disturbed during construction and reach the water column, concentrations of these pollutants could increase in the adjacent waterways. Use of appropriate BMPs, such as turbidity curtains and coffer dams, to ensure runoff from the disturbed soils would not reach the adjacent waterways during construction would be important and necessary. Construction methodologies call for use of geotextile and other approaches that would minimize or negate long-term impacts related to contaminants in this area.

As with alternatives 1b and 2, FPL would use BMPs, such as turbidity screens and erosion control practices, during construction to ensure that water quality standards are met, and construction crews would have spill containment and absorption materials to manage spills. Short-term construction-related impacts would be the similar to impacts under alternative 1b (minor to moderate adverse), with the addition of concerns about metals and other constituents found in the park soils near the L-31N canal getting into the water column. These issues could be addressed through mitigation and use of proper management practices.

Under the terms and conditions (appendix G), FPL would develop a construction work plan. This plan would include a section on how pollutants or hazardous materials would be managed to minimize impacts and requires a contingency/containment plan. In the case of accidental spills from construction equipment, construction crews would be equipped with spill containment and absorption materials, so there would be short-term negligible to minor adverse localized impacts on water quality associated with accidental spills. Similarly, maintenance workers would be equipped with spill containment equipment when using herbicides during maintenance of the transmission line corridor, and all herbicides would be approved for use by the NPS. The section on erosion and sedimentation BMPs requires FPL to use state-of-the-art methods to prevent violations of state water quality standards and correct any erosion or shoaling that causes adverse impacts on water quality as soon as practicable.

Cumulative Impacts

The cumulative projects with impacts on water quality from other past, present and reasonably foreseeable future projects would be the same as those discussed under alternative 1a, and would be mainly beneficial. Construction of the transmission lines in the proposed exchange corridor on the eastern edge of the park, would allow enhanced flows and implementation of flowage-related ecosystem restoration projects that would benefit water quality overall. Long-term minor adverse, and short-term minor to moderate adverse impacts from the construction of the transmission lines would be limited to the eastern edge of the park. Alternative 3 would contribute appreciable benefits to water quality regionally, but would also contribute noticeable short and long-term adverse impacts to cumulative effects on water quality in the study area.

Conclusion

There would be no direct impacts on water quality under alternative 3, but there would be indirect long-term beneficial impacts on water quality as the result of being able to accommodate enhanced restoration flows, and placing a large area of connected land into NPS ownership, allowing for management of park resources, including water quality, consistently with park objectives. Additional indirect impacts similar in nature to those discussed under alternatives 1b and 2 would be related to the construction of transmission lines in the FPL West Preferred Corridor and would be both long-term minor adverse impacts, and short-term minor to moderate adverse impacts. Alternative 3 would contribute appreciable benefits to water quality regionally, but would also contribute noticeable short and long-term adverse impacts to cumulative effects on water quality in the study area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

The terms and conditions for this action (appendix H) related to water quality for alternative 4 would be the same as under alternative 3, but with additional beneficial impacts resulting from terms and conditions that would reduce the risk of having additional utility facilities developed within the exchange corridor and minimize the effects of associated disturbance on water quality during construction. The impacts

related to the exchange and construction of the transmission lines on water quality under this alternative would be the same as for alternative 3. The property exchange would result in indirect long-term beneficial impacts on water quality.

Impacts of Transmission Line Construction

Because the terms and conditions that address water quality would be essentially the same under both alternatives 3 and 4 (appendices G and H), impacts of alternative 4 would therefore be the same as under alternative 3. There would be long-term minor adverse impacts related to sheetflow disturbance, and localized negligible to minor adverse impacts at the culverts where water is channelized and scour with associated water quality effects could occur. There would also be short-term minor to moderate adverse impacts on water quality from construction activities.

Cumulative Impacts

Cumulative impacts on water quality under alternative 4 would be the same as under alternative 3. Alternative 4 would contribute appreciable benefits to water quality regionally, but would also contribute noticeable short and long-term adverse impacts to cumulative effects on water quality in the study area.

Conclusion

Impacts on water quality would be the same as discussed under alternative 3 except no other utilities could be built in the corridor, which would lessen the risk of additional water quality impacts. There would be no direct impacts on water quality under alternative 3, but there would be indirect long-term beneficial impacts on water quality as the result of being able to accommodate enhance restoration flows, and placing a large area of connected land into NPS ownership, allowing for management of park resources, including water quality, consistently with park objectives. Additional indirect impacts similar in nature to those discussed under alternatives 1b and 2 would be related to the construction of transmission lines in the FPL West Preferred Corridor and would be both long-term minor adverse impacts, and short-term minor to moderate adverse impacts. Alternative 4 would contribute appreciable benefits to water quality regionally, but would also contribute noticeable short and long-term adverse impacts to cumulative effects on water quality in the study area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, there would be no direct impacts on water quality. The acquisition of a perpetual flowage easement across the FPL property would give the NPS the ability to manage the area to proceed with ecosystem restoration activities that rely on enhanced flows. These restoration activities would increase the hydroperiod and improve water quality in the restoration area over the long term, and result in long-term beneficial indirect impacts on water quality.

Impacts of Transmission Line Construction

The construction of transmission lines in this corridor would result in the same types of impacts on water quality as discussed under alternative 1b, and result in long-term major adverse impacts and short-term minor to moderate adverse impacts. The impacts would still be major because of the size of the area affected. However, the increased hydroperiod and flood stage would result in less likelihood of frequent drying and rewetting that the disturbance to sheetflow would cause, which could attenuate some of the

potential impacts on water quality discussed under alternative 1b, particularly increased concentrations of phosphorus and methyl mercury in areas that dry and rewet more often,

Cumulative Impacts

The cumulative projects with impacts on water quality from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Implementation of alternative 5 would provide both long-term major adverse and short-term minor to moderate adverse impacts in the FPL West Secondary Corridor, but flow-related ecosystem restoration projects could proceed, resulting in regional benefits to water quality. The alternative would contribute appreciable beneficial impacts, and noticeable adverse impacts to cumulative effects on water quality in the area where sheetflow is disrupted, and wetlands could be more subject to drying.

Conclusion

Under alternative 5, there would be indirect long-term benefits to water quality from the flowage easement, but there would also be indirect major long-term adverse impacts and short-term minor to moderate adverse impacts related to the construction of the transmission lines, although increased flows would attenuate some of these adverse impacts downstream of the culverts and transmission lines. Alternative 5 would contribute appreciable beneficial impacts, and noticeable adverse impacts to cumulative effects on water quality in the area where sheetflow is disrupted, and wetlands could be more subject to drying.

SOILS

GUIDING REGULATIONS AND POLICIES

NPS *Management Policies 2006*, Section 4.8, states that the NPS will protect geologic features from the unacceptable impacts of human activity, while allowing natural processes to continue. The term “geologic features” describes the products and physical components of geologic processes and includes soils.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Potential impacts on soils are assessed based on the extent of disturbance to natural undisturbed soils, the potential for soil erosion resulting from disturbance, and the potential for changes to soils caused by changes in water quality. The analysis of possible impacts on soil resources was based on a review of existing literature and maps, information provided by the NPS and other agencies, experience related to transmission line construction-related effects, and professional judgment.

The following definitions were used to determine the magnitude of adverse impacts on soils:

- **Negligible**: Soils would not be affected, or effects would not be measurable. Any soil erosion or effects on soil productivity or the ability of the soil to support native vegetation would be slight and would occur in a localized area.
- **Minor**: Effects on soils (soil erosion, effects on soil productivity or the ability of the soil to support native vegetation) would be detectable, but only a localized area would be affected. If mitigation was needed to compensate for adverse effects, it would be relatively simple to implement and would likely be successful.

- **Moderate**: Effects on soils (soil erosion, effects on soil productivity or the ability of the soil to support native vegetation) would be readily apparent and would occur over a regional area. Mitigation would probably be necessary to compensate for adverse effects and would likely be successful.
- **Major**: Effects on soils (soil erosion, effects on soil productivity or the ability of the soil to support native vegetation) would be readily apparent, and would substantially change the soil or geologic characteristics over a regional area, with a permanent loss of large areas. Extensive mitigation would be needed to compensate for adverse effects, and its success would not be ensured.

ANALYSIS AREA

The area of analysis for soils includes the areas potentially developed for transmission lines, plus downstream areas where soils could be affected by changes in water quality in the EEEA and the project area surrounding the park. This includes the area in and around the transmission corridors in the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership, and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on soils. Because flowage would not be restored, there would be long-term adverse indirect impacts on soils in the EEEA from the lack of seasonal drying and wetting and associated growth of plants and contribution to soils. Loss of peat soils would also occur through oxidation due to ongoing drying under flowage restrictions, resulting in long-term major adverse impacts on soils.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed, therefore, there would be no construction-related impacts on soils.

Cumulative Impacts – Alternative 1a

Ecosystem restoration projects in the Everglades described in table 18 and acquisition of property throughout the park would result in beneficial impacts on soils throughout the Everglades (over a 20-30 year period, as associated projects are funded and implemented), but alternative 1a would prevent or obstruct implementation of many if these projects and would therefore result in major adverse impacts. The overall direction of the GMP to preserve park resources would indirectly benefit the soils in the park. Other projects in the area of analysis with adverse effects on soil include ongoing urban development, road construction and potential road expansions, ongoing mining (minor to moderate adverse). Use of prescribed fire in the park can have short-term adverse effects on soils from loss of organic matter, but long-term benefits from release of nutrients. Alternative 1a would result in major adverse impacts because of the lack of flowage and would contribute appreciable adverse impacts to the overall cumulative effects on soils in this area.

Conclusion – Alternative 1a

Under alternative 1a, while there would be no direct impacts from the FPL retention of property in the EEEA, but there would be major long-term adverse impacts on soils because of the lack of additional flowage and resultant loss of peat soils. There would be no impacts related to transmission line construction. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative effects on soils in this area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, impacts of the land acquisition action would be the same as described under alternative 1a. The FPL retention of ownership of land in the EEEA would not result in direct impacts on soils; however, flowage restrictions would result in long-term indirect major adverse impacts on soils.

Impacts of Transmission Line Construction

Under alternative 1b, long-term major indirect adverse impacts on soils would result from the construction of transmission lines in the park and surrounding areas to the north and south of the park. Construction in these areas would occur as described earlier in this chapter and appendix F, based on the FPL State Certification Application (SCA) and responses provided to data requests by the NPS (FPL 2009a; FPL 2012a). Transmission line construction along this corridor would involve excavation for pole placement, earthmoving and grading for the construction of access roads and pads, the placement of guy-wire anchors into the soil and subsoil, and the placement of fill in pads and along access roads. Soils would also be disturbed in construction laydown and staging areas along the right-of-way. Transmission line construction would result in direct disturbances to soils and the permanent loss of 182 acres of soils. Disturbances within the park would extend to 89 acres of soils that were previously undisturbed and contain nutrient levels closer to the natural state than those found outside of the park unit. Culverts along the length of the transmission line would, through channelization, contribute to some scour and subsequent erosion and resulting loss of additional soils.

The SCA (FPL 2009a) states that cranes, bucket trucks, flatbed trucks, semi-trailer trucks, front-end loaders, bulldozers, and other support vehicles are typically used in structure erection and anchor/guying installations. Laydown areas for equipment and materials will be located in uplands to the fullest extent practical, but there are few uplands along the FPL West Secondary Corridor, so most of these areas would have to be located along the right-of-way in wetland soils.

Ground disturbance from these actions can compact soils, disturb and modify the soil layer structure, expose soils, and increase the overall potential for erosion. Compacted soils contribute to reducing water infiltration rates, allowing for greater runoff and increased potential for erosion. Compacted soils can also inhibit seed germination and plant growth, which over the long term decreases the amount of organic material in the soils and decreases overall soil productivity. During construction, mitigation measures would be implemented to minimize adverse impacts on soils from ground disturbance. As detailed in the FPL SCA (FPL 2009a), these measures would include adhering to sedimentation and erosion control specifications and measures, including the use of silt fences, hay bales, and geotextile liners in wetland areas. Reclamation would include restoring laydown areas and stabilizing potentially erodible areas, typically through seeding and mulching. Impacts on soils that are disturbed during construction but reclaimed would be short and long term (depending on the length of time needed to restore the soil function), localized, minor to moderate, and adverse.

A permanent loss of soils would occur in the areas occupied by structure pads and access roads. The construction of pads and roads involves clearing and grubbing of the road or pad footprint and then placing, spreading, shaping, and compacting hauled clean fill to the design elevation. In the footprint of the pads and roadbed, existing peat or marl soils would be permanently excavated and replaced with fill, and the natural function of the soils would be lost. Although the pads and side slopes may be seeded later, there would be no natural soil used on these areas (they are gravel) and the soil loss would be considered permanent. The width of the area graded and filled for access roads (width of main road surface and side slopes) and the dimensions of the structure pads (main area of pad plus side slopes) would vary depending on the soil conditions and the amount of fill needed, which in turn would determine the height of the road or pad surface and the area of the side slopes. In order to do a comparative assessment of acres filled for analysis in this EIS, estimates of road width and pad sizes provided by FPL (based on a preliminary conceptual design) were used (see appendix F; also Braun 2012). Based on this information, it was assumed that the access road would be 42 feet wide in wetlands, where a large amount of fill would be needed, and about 22 feet wide in non-wetland areas. Estimated pad sizes (with side slopes) were derived from information provided by FPL (FPL 2012a; Braun pers. comm. 2012). It was assumed that each larger pad would cover 1 acre in wet areas and about 0.63 acre in non-wetland areas. Similarly, the smaller pad supporting only the 230-kV line (every 500 feet) would cover 0.35 acre in wet areas and 0.05 acre in drier areas. Corner pads (at angles in the lines) were estimated at 2 acres in wetlands and 1.74 acres in uplands. The number of pads depends on the span lengths, and it was assumed that the span for the 500-kV lines would be about 1,000 feet and the span for the 230-kV line would be about 500 feet. This would result in a larger pad every 1,000 feet and a smaller pad midway between the larger pads, but also every 1,000 feet.

Based on these assumptions, the total area of permanent loss of soils along the FPL West Secondary Corridor was estimated using geographic information system (GIS) mapping and the Florida Land Use, Cover, and Forms Classification System (FLUCFCS) vegetation cover types to delineate wetlands and non-wetland areas, and using a line in the center of the corridor for route location. Table 19 summarizes an estimate done for the area of soil loss for the FPL West Secondary Corridor in the park and between points of nexus of all three routes in the project area.

Other impacts on soils could occur from changes in water quality. While excavation is taking place, sediment and suspended solids would likely travel downstream and could affect soils through sedimentation and changes in nutrient condition. Exposed soils would be expected to erode and leach nutrients (phosphorus) into the water column, and erosion can carry phosphorus-laden sediments downstream and change the quality of soils in those areas. Sedimentation would likely only occur in limited areas and would be mitigated with the use of silt fencing and erosion control devices, so adverse impacts relating to this would be long term, but localized and minor.

Short-term minor to moderate adverse construction-related impacts would occur related to temporary disturbances from earth-moving activities and increased erosion potential. The long-term maintenance of the transmission lines would have only negligible adverse effects on soils, because maintenance vehicles would access the right-of-way on established access roads and maintenance surveys could be done by helicopter.

Overall, long-term adverse impacts on soils from transmission line construction would be major in severity. Impacts would be noticeable and would last beyond the period of construction. Although impacts would be localized in the right-of-way, they would occur throughout the project area and along the entire length of the right-of-way. Mitigation for impacts on soils that are not permanently lost would include reclamation (such as replacement of disturbed soils with topsoil and subsequent reseeding) and would be expected to successfully reduce impacts to minor levels in those areas. However, there would be

a permanent loss of soils on pads and access roads, which compose about 31 percent of the total right-of-way acreage.

TABLE 19: ESTIMATE OF ACRES LOST TO PADS AND ACCESS ROAD ROUTE IN FPL WEST SECONDARY CORRIDOR

Area of Disturbance		Approximate Area Disturbed in the Park (7.3 miles) (Using approximate centerline)	Approximate Area Disturbed in Area of Analysis (Includes Areas South and North of the Park to Points of Nexus) (14.7 miles) (Using approximate centerline)
Pad every 1,000 feet, all 3 lines	Wetlands Approx. 1 acre/pad	Approximately 38 pads 38 acres	Approximately 75 pads 75 acres
	Non-wetlands Approx. 0.63 acre/pad	—	Approximately 3 pads 1.9 acres
	Wetlands – angle structure Approx. 2.0 acres/pad	—	Approximately 2 pads 4 acres
	Non-wetlands – angle structure Approx. 1.74 acres/pad	—	—
Pad every 1,000 feet 230-kV line	Wetlands Approx. 0.35 acres/pad	Approximately 39 pads 13.7 acres	Approximately 76 pads 26.7 acres
	Non-wetlands Approx. 0.05 acre/pad	—	—
Access road	Wetlands 42 feet wide	37.4 acres	74.0 acres
	Non-wetlands 22 feet wide	—	0.4 acres
Total acres lost	Wetlands	89.1 acres	179.7 acres
	Non-wetlands	—	2.3 acres
Total acres lost		89.1 acres	182 acres (about 31% of total right-of-way acres)
Total right-of-way acres	Wetlands	293.9 acres	582.6 acres
	Non-wetlands	—	7.3 acres
Total right-of-way acres		293.9 acres	590 acres

Note: These are estimates only and are subject to change with final design and site-specific mapping.

Cumulative Impacts – Alternative 1b

The cumulative impacts on soils from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 1b would contribute short-term minor to moderate adverse construction-related impacts and long-term major adverse effects from construction of the transmission line without a flowage easement in the FPL corridor. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on soils in this area.

Conclusion – Alternative 1b

Under alternative 1b, there would be no direct impacts on soils from the FPL retention of property in the EEEA; however, flowage restrictions would result in long-term indirect major adverse impacts on soils. Indirect impacts on soils would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short- and long-term minor to moderate adverse impacts from construction, long-term major adverse impacts from a permanent loss of 182 acres of soils, and negligible adverse impacts from line maintenance. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on soils in this area.

IMPACTS OF ALTERNATIVE 2: NPS Acquisition of FPL Land

Impacts of the Land Acquisition Action

Under alternative 2, indirect beneficial impacts on soils would be expected from the acquisition of FPL land in the EEEA. NPS management would extend to an additional 320 acres of soils within the acquired area, and there would be improvements to soils associated with enhancing water levels. Flowage would allow for the development of soils from seasonal drying and wetting and would lead to improvements in soils conditions over time.

Impacts of Transmission Line Construction

Under alternative 2, long-term moderate adverse impacts on soils would result from the possible construction of transmission lines to the east of the park. While impacts on soils within the park would be avoided, transmission line construction in the West Consensus Corridor would result in disturbances to soils in this area. Impacts from transmission line construction would include erosion, compaction, and permanent removal. The severity of impacts on soils would depend on where the construction occurred in this area. While some soils in the area have been disturbed, drained, and cleared of vegetation, other areas (such as Pennsuco wetlands) contain natural, *in situ* soils. Construction in this area would affect soils that are, for the most part, already disturbed and there would be a higher likelihood of restoring any disturbed areas that are not permanently lost. If construction occurred within the West Consensus Corridor, about 187 acres would be lost in areas adjacent to the park unit. Culverts along the length of the transmission lines would also contribute through channelization to some scour and subsequent erosion and resulting loss of soils.

Impacts such as soil compaction and erosion from excavation for pole placement, earthmoving, and grading would occur and would be similar to those described under alternative 1b. Mitigation measures as described under alternative 1b (erosion control devices and geotextile liners) would be used to minimize adverse impacts on soils. Reclamation would include stabilizing potentially erodible areas, typically through seeding and mulching, and would reduce impacts in these areas to a minor level. There would also be a permanent loss of soils in areas of access road and pad locations similar to that described under alternative 1b. In order to compare acres of permanent soil loss, the acres of soils that would be permanently removed or covered with fill at pads and along the access road were estimated within the West Consensus Corridor by assuming a route length of approximately 16.2 miles, and a route that generally follows the far eastern side of the corridor (table 20). Impacts could be further minimized by selection of a route that is co-located with existing infrastructure and disturbed areas.

TABLE 20: ESTIMATE OF ACRES LOST TO PADS AND ACCESS ROAD ROUTE IN THE WEST CONSENSUS CORRIDOR

Area of Disturbance		Approximate Area Disturbed in the Park (0 Miles)	Approximate Area Disturbed in Area of Analysis (16.2 Miles)
Pad every 1,000 feet, all 3 lines	Wetlands Approx. 1 acre/pad	No area in park.	Approximately 60 pads 60 acres
	Non-wetlands Approx. 0.63 acre/pad	—	Approximately 24 pads 15.1 acres
	Wetlands – angle structure Approx. 2.0 acres/pad	—	Approximately 6 pads 12 acres
	Non-wetlands – angle structure Approx. 1.74 acres/pad	—	Approximately 5 pads 8.7 acres
Pad every 1,000 feet 230-kV line	Wetlands Approx. 0.35 acres/pad	—	Approximately 55 pads 19.3 acres
	Non-wetlands Approx. 0.05 acre/pad	—	Approximately 23 pads 1.15 acres
Access road	Wetlands 42 feet wide	—	58.0 acres
	Non-wetlands 22 feet wide	—	12.9 acres
Total acres lost	Wetlands	—	149.3 acres
	Non-wetlands	—	37.9 acres
Total Acres Lost			187.2 acres (about 29 of total right-of-way acres)
Total right-of-way acreage	Wetlands	—	454.9 acres
	Non-wetlands	—	195.7 acres
Total Right-of-Way Acres			650.6 acres

Note: These are estimates only and are subject to change with final design and site-specific mapping.

Selection of this route would result in the loss of approximately 29 percent of total acreage within the right-of-way due to access road and pad construction. Although the acreage of permanent loss is comparable to that under alternative 1b, fewer impacts would accrue to soils under alternative 2 because many areas in the West Consensus Corridor have been developed and soils at these locations have already been disturbed or removed. The impact on soil resources would be less in these areas because of the lack of natural soils, and greater in areas in undeveloped wetlands, located primarily north of Tamiami Trail. For example, the West Consensus Corridor would partly parallel the area currently used for rock mining, and natural soils have already been disturbed or removed in that area. However, adverse impacts would increase in any portions of a route that would cross undeveloped areas in Bird Drive basin and north in the Pennsuco wetlands. Also, soils in Bird Drive basin are marls and have already been disturbed by all-terrain vehicle use in that area (McMahon 1988).

There would be long-term minor adverse impacts on designated “unique” farmland soils in areas where the installation of access roads and pads was collocated with these soils types; however, soils of this designation occurring in the remainder of the right-of-way would be retained and probably not developed. Some agricultural activities could still take place under transmission lines, which would minimize the impacts on “unique” farmland soils.

Construction-related short-term impacts such as soil compaction and erosion from excavation for pole placement, earthmoving, and grading would occur, with minor to moderate adverse impacts. Mitigation measures such as erosion control devices and geotextile liners would be used to minimize adverse impacts on soils. Reclamation would include stabilizing potentially erodible areas, typically through seeding and mulching, and would reduce short-term impacts in these areas to a minor level.

Cumulative Impacts

The cumulative impacts on soils from other past, present, and reasonably foreseeable future projects would be similar to those discussed under alternative 1a. Alternative 2 would allow for enhancing water levels / implementation of the ecosystem restoration projects and benefit soils, but would also result in short- and long-term minor to moderate adverse impacts from transmission line construction in areas outside the park. Alternative 2 would contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on soils in this area.

Conclusion

Under alternative 2, there would be no direct impacts from the acquisition of FPL property in the EEEA, with indirect benefits from the acquisition itself and the ability to increase water levels in the area, which contributes to the development of soils. There would be indirect long-term moderate adverse impacts on soils from transmission line construction east of the park, which would result in the loss of 187.2 acres of soils outside the park. The severity of impacts would depend on where the impact occurs within the West Consensus Corridor, and some of the soils in this area have been disturbed, drained, or cleared of vegetation. In general, impacts on soils would be greater along the eastern and northern portions of the area and reduced along the western and southern portions of the area where soils have already been disturbed. There would also be minor adverse impacts on designed unique farmland soils in the southern portion of the route outside the park. Impacts from transmission line construction inside the park would be avoided. Alternative 2 would contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on soils in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, indirect beneficial impacts on soils similar to those described under alternative 2 would be expected from the acquisition of FPL land in the EEEA. NPS management would extend to an additional 320 acres of soils within the acquired area, and improvements to soils associated with enhanced water levels would occur. Flowage would allow for the development of soils from seasonal drying and wetting and would lead to improvements in soils conditions over time. However, these gains would be offset to some degree by long-term indirect moderate adverse impacts resulting from the removal of 260 acres of soils from the park and associated park management activities.

Impacts of Transmission Line Construction

Under alternative 3, indirect adverse impacts on soils would result from the construction of transmission lines in the exchange corridor, directly adjacent to park lands, as described earlier in this chapter and appendix F (SCA). Long-term major adverse impacts on soils would occur from compaction within the footprint of towers and roads and the permanent loss of an estimated 194 acres, including 80 acres within the park. Additionally, culverts along the length of the transmission line would contribute through channelization to some scour and subsequent erosion and resulting loss of soils. Because terms and conditions would accommodate enhanced flows across the property, the regional ecosystem restoration activities that rely on enhanced flow would be possible. However, impacts such as compaction and erosion from excavation for pole placement, earthmoving, and grading would occur. Alternative 3 would result in short-term minor to moderate adverse construction-related impacts stemming from temporary disturbances due to earth-moving activities and increased erosion potential. Erosion control measures required by the terms and conditions would minimize impacts where possible.

Similar to the other transmission line construction–related impacts described earlier, there would be a permanent loss of soils in areas of access road and pad locations. For the purposes of the analysis, it is assumed that a new access road would be constructed along the right-of-way, although if the existing levee road could be used, that would decrease impacts. In order to compare acres of permanent soil loss, the acres of soils that would be permanently removed or covered with fill at pads and along the access road were estimated by assuming a route length of approximately 15.7 miles with about 6.3 miles in the park (table 21).

Impacts on soils under alternative 3 would be similar to those described for alternative 1b and would include compaction, erosion, loss of soils on pads and access road locations, impacts from sedimentation and possible changes in water quality (nutrient release and input to soils), and negligible adverse effects from future line maintenance. Impacts on soils that are not permanently lost would be reduced somewhat areas that are already developed or in agricultural areas, since these soils are already disturbed. Also, agricultural soils can be stockpiled during construction for replacement or topsoil can be added, if needed, to restore productivity. Overall, transmission line construction along the FPL West Preferred Corridor would have localized, long-term major adverse impacts. The impacts could be noticeable and would last for more than the period of construction in most locations. Although impacts would be limited to localized areas in the right-of-way, they would occur throughout the project area and along the entire length of the right-of-way. Mitigation for impacts on soils that are not permanently lost would include reclamation and would be expected to successfully reduce impacts to minor levels in those areas. The permanent loss of soils would be limited to pads and access roads, which compose about 31 percent of the total right-of-way acreage.

There would be long-term minor adverse impacts on designated “unique” farmland soils in a few areas where the installation of access roads and pads was collocated with these soils types. Few of these soils exist within the FPL West Preferred Corridor, however, and soils of this designation occurring in the right-of-way would be retained and most likely not developed.

TABLE 21: ESTIMATE OF ACRES LOST TO PADS AND ACCESS ROAD ROUTE IN FPL WEST PREFERRED CORRIDOR

Area of Disturbance		Approximate Area Disturbed in the Park (6.3 Miles)	Approximate Area Disturbed in Area of Analysis (Includes Areas South and North of the Park to Points of Nexus) (using line located on west side of corridor within exchange corridor) (15.7 Miles)
Pad every 1,000 feet, all 3 lines	Wetlands Approx. 1 acre/pad	Approximately 33 pads 33 acres	Approximately 71 pads 71 acres
	Non-wetlands Approx. 0.63 acre/pad	—	Approximately 9 pads 5.7 acres
	Wetlands – angle structure Approx. 2.0 acres/pad	Approximately 2 pads 4 acres	Approximately 8 pads 16 acres
	Non-wetlands – angle structure Approx. 1.74 acres/pad	—	Approximately 1 pad 1.7 acres
Pad every 1,000 feet 230-kV line	Wetlands Approx. 0.35 acres/pad	Approximately 32 pads 11.2 acres	Approximately 68 pads 23.8 acres
	Non-wetlands Approx. 0.05 acre/pad	—	Approximately 10 pads 0.5 acres
Access road	Wetlands 42 feet wide	31.9 acres	70 acres
	Non-wetlands 22 feet wide	—	5.3 acres
Total acres lost	Wetlands	80.1 acres	180.8 acres
	Non-wetlands	—	13.2 acres
Total Acres Lost		80.1 acres	194 acres (about 31% of total right-of-way acres)
Total right-of-way acreage	Wetlands	175.5 acres	534.9 acres
	Non-wetlands	—	95.3 acres
Total Right-of-Way Acres		175.5 acres	630.2 acres

Note: These are estimates only and are subject to change with final design and site-specific mapping.

Alternative 3 also includes certain terms and conditions for the use of the FPL West Preferred Corridor (appendix G). Not many of the terms and conditions pertain directly to soils. Impacts on soils from vegetation management in the nonnative vegetation management easement would occur due to access and vegetation management activities. Impacts would include disturbance and compaction from equipment and access by foot. Intensity would depend on frequency of treatment, area treated, and type of equipment used for vegetation management activities.

Cumulative Impacts

The cumulative impacts on soils from other past, present, and reasonably foreseeable future projects would be similar to those discussed under alternative 1a. Alternative 3 would allow enhancing water levels /implementation of the ecosystem restoration projects and benefit soils, but the land exchange and construction of the transmission line in the exchange corridor would result in minor to moderate and long-term major adverse impacts; these impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area.

Conclusion

Under alternative 3, there would be no direct impacts on soils from the exchange of FPL property in the EEEA. There would be indirect long-term beneficial impacts from having all the EEEA under NPS ownership, resulting in the ability to go forward with Everglades ecosystem restoration projects and the enhancement of resource conservation and values of the park, including soil resources. However, these gains would be offset to some degree by long-term indirect moderate adverse impacts occurring from the removal of 260 acres of soils from the park and associated park management activities. There would be indirect major adverse impacts on soils from the construction of the transmission lines in the FPL West Preferred Corridor with a resulting permanent loss of 194 acres of soils including 80 acres in the exchange corridor. There would also be long-term minor adverse impacts on unique farmland soils located within this corridor but in an agricultural area south of the park boundary and short-term minor to moderate adverse construction-related impacts. The unique farmland soils are not in the park, but are part of the corridor being analyzed from nexus to nexus. Alternative 3 would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, there would be benefits to soils as described under alternative 3, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of soils. These terms and conditions are found in appendices G and H.

Impacts of Transmission Line Construction

Impacts occurring on soils from transmission line construction under alternative 4 would be similar those described for alternative 3; however, the terms and conditions under this alternative allow for other utility related facilities in the right-of-way. This increases the risk of additional soil disturbance in the right-of-way either at the time of transmission line construction or at a later date. Construction of the transmission lines in the FPL West Preferred Corridor would have the following indirect impacts on soils. There would be long-term major adverse impacts on soils from compaction within the footprint of towers and roads and the permanent loss of an estimated 194 acres, including 80 acres in the exchange corridor. Long-term minor adverse impacts on designated “unique” farmland soils would occur in a few areas where the installation of access roads and pads was collocated with these soils types. Short-term minor to moderate adverse construction-related impacts on soils would stem from temporary disturbances due to earth-moving activities and increased erosion potential. Erosion control measures required by the terms and conditions would minimize impacts where possible. Impacts on soils from vegetation management in the nonnative vegetation management easement would occur due to access and vegetation management activities. Impacts would include disturbance and compaction from equipment and access by foot.

Intensity would depend on frequency of treatment, area treated and type of equipment used for vegetation management activities.

Cumulative Impacts

The cumulative impacts on soils from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 4 would allow flowage/implementation of the ecosystem restoration projects and benefit soils, but the land exchange and construction of the transmission line in the exchange corridor would result in minor to moderate and long-term major adverse impacts; these impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area.

Conclusion

Under alternative 4, there would be benefits to soils as described under alternative 3, but with easement terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of soils. There would be no direct impacts on soils from the exchange of FPL property in the EEEA. There would be indirect beneficial impacts from a gain in land and soils in the park and from having a majority of the EEEA under NPS ownership, resulting in the ability to go forward with ecosystem restoration without any potential future obstacles, which would enhance the conservation of the resources and values of the park, including soil resources. Additional beneficial impacts on soils would occur under terms and conditions that would reduce the risk of having additional utility facilities developed within the exchange corridor, thereby minimizing the effects of associated disturbance or removal soils. Indirect adverse impacts on soils from the construction of the transmission lines in the FPL West Preferred Corridor would include: long-term major adverse impacts on soils within the footprint of towers and roads resulting in a loss of 194 acres of soils, including 80 acres in the exchange corridor. There would be long-term minor adverse impacts on designated “unique” farmland soils outside the park; and short-term minor to moderate adverse construction-related impacts. Alternative 4 would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, there would be no direct impacts of the land acquisition action on soils. Although a flowage easement would be maintained, the FPL retention of ownership of land in the EEEA would result in no direct impacts on soils.

Indirect impacts on soils associated with the flowage easement would be the same as described under alternative 2. The perpetual flowage easement across the FPL property would result in long-term beneficial impacts by allowing the NPS to manage the area to accommodate enhanced flows associated with ecosystem restoration activities. Improvements to soils associated with ecosystem restoration activities would occur on lands previously not subject to ecosystem restoration activities.

Impacts of Transmission Line Construction

Direct and indirect adverse impacts on soils under alternative 5 would be the very similar to those described under alternative 1b. Indirect impacts on soils would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short- and long-term minor to moderate adverse impacts from construction and negligible adverse impacts from line maintenance.

Long-term major indirect adverse impacts on soils would result from the construction of transmission lines in the park and surrounding areas to the north and south of the park from the permanent loss of soils. Transmission line construction along this corridor would involve excavation for pole placement, earthmoving and grading for the construction of access roads and pads, the placement of guy-wire anchors into the soil and subsoil, and the placement of fill in pads and along access roads. Soils would also be disturbed in construction laydown and staging areas along the right-of-way. Transmission line construction would result in direct disturbances to soils and the permanent loss of 182 acres of soils. Disturbances within the park would extend to 89 acres of soils that were previously undisturbed and contain nutrient levels closer to the natural state than those found outside of the park unit. Culverts along the length of the transmission line would, through channelization, contribute to some scour and subsequent erosion and resulting loss of additional soils.

Cumulative Impacts

The cumulative impacts on soils from other past, present, and reasonably foreseeable future projects would be similar to those discussed under alternative 1a. Alternative 5 would provide beneficial impacts because flowage easement would allow the ecosystem restoration projects to proceed, but would have minor to long-term major adverse impacts due to transmission line construction in the park with no gain of park protected soils. These impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area, although the benefits would not be as extensive as those under the alternatives that result in the acquisition of soils in the park.

Conclusion

Under alternative 5, impacts on soils related to construction of the transmission lines would be similar to those for alternative 1b. There would be no direct impacts on soils from the FPL retention of property in the EEEA, but there would be long-term benefits from having a perpetual flowage easement agreement. Indirect impacts on soils would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short- and long-term minor to moderate adverse impacts from construction and negligible adverse impacts from line maintenance, and long-term major adverse impacts from the permanent loss of 182 acres of soils including 89 acres in the park. These impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on soils in this area, although the benefits would not be as extensive as those under the alternatives that result in the acquisition of soils in the park.

VEGETATION AND WETLANDS

GUIDING REGULATIONS AND POLICIES

As described in chapter 3, most of the vegetation in the project area is wetland vegetation, with the exception of some disturbed land, cultivated land, and developed land in the area east of the park. Federal Executive Order 11990: Protection of Wetlands, directs federal agencies to avoid adverse impacts on wetlands. Director’s Order 77-1 establishes policies, requirements, and standards for implementing Executive Order 11990.

Director’s Order 77-1 states that the NPS will employ a sequence of avoiding adverse wetland impacts to the extent practicable, minimizing impacts that cannot be avoided, and compensating for remaining unavoidable adverse wetland impacts by restoring degraded wetlands. A wetland statement of findings will be completed for the alternative that is selected as the preferred alternative at the time of permitting.

NPS *Management Policies 2006* specifically addresses water quality, wetlands, and floodplains in Sections 4.6.3, 4.6.4, and 4.6.5, respectively. The policies state that the NPS will "take all necessary actions to maintain or restore the quality of surface waters and ground waters in parks consistent with the Clean Water Act (CWA) and all other applicable and federal, state, and local laws and regulations." The NPS will provide similar protective provisions for wetlands and floodplains as stated in the director's orders discussed above (NPS 2006a).

Regarding vegetation and the habitat it provides, the NPS *Management Policies 2006* directs parks to provide for the protection of park resources. The policies state that "the Service will not attempt to solely preserve individual species (except threatened or endangered species) or individual natural processes; rather, it will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological ecosystems" (NPS 2006a, Section 4.1).

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Maps showing vegetation cover in the project area derived from SFWMD FLUCFCS data (SFWMD 2011a) and communications with NPS staff were used to identify baseline conditions for vegetation and wetlands. Available information was taken from other NPS and non-NPS resources to describe these resources in more detail. The analysis of possible impacts on vegetation and wetlands was based on review of existing literature and maps, information provided by the NPS and other agencies, experience related to transmission line construction-related effects, and professional judgment. Wetlands and other vegetation communities are largely considered together in this section because the vast majority of plant communities in the project area also qualify as jurisdictional wetlands. In addition to this analysis, populations of special-status plant species are considered in the "Special-status Species" section as appropriate.

The impact intensity definitions for vegetation and wetlands are based on the amount of wetlands or other plant communities permanently altered or restored and on the size, integrity, and connectivity of the wetlands or other plant communities affected. These indicators are defined as follows:

- **Size**: The severity of impacts on wetlands and other plant communities depends on the size of the impacted area. A small area of impact in a large wetland would be likely to have less of an effect than a large area of impact in a small wetland. Similarly, a small area of impact on a large tree island would be likely to have less of an effect on a large area of impact on a small tree island. The change in the size of a wetland or other plant community, as a result of an impact, would also influence the integrity and connectivity of the wetland and vice versa.
- **Integrity**: Highly intact wetlands or other plant communities with little prior disturbance would be more susceptible to impacts from direct development than those that were previously degraded by development or other activities. The loss of function and productivity of the higher quality area would be a greater loss than that of a lower quality area. Additionally, indirect impacts due to soil disturbance or a change in vegetation or hydrology would also impact the integrity of the area.
- **Connectivity**: The relationship of wetlands to other wetlands or other plant communities is also important in determining the degree of impact or project benefits. The establishment of buildings or other structures in wetlands or other plant communities would create barriers to the natural dispersal of plants and animals and impact the connectivity of those communities. Impacts to areas with more complex associations of wetlands and/or other plant communities would be more likely to affect the connectivity of the area than impacts on areas with fewer natural community types.

The following definitions were used to determine the magnitude of adverse impacts on vegetation and wetlands:

- **Negligible**: No measurable or perceptible effects on size, integrity, or connectivity of wetlands would occur. For any other vegetation present, impacts may cause a change, but the change would have no measurable or perceptible effects on plant community size, integrity, or continuity.
- **Minor**: The effect on wetlands would be measurable or perceptible, but localized in terms of area and in the nature of the impact. A small effect on size, integrity, or connectivity would occur; however, the overall viability of the wetland would not be affected. If left alone, an adversely affected wetland would recover, and the impact would be reversed. For any other vegetation present, impacts may cause a change in plant community size, integrity, or continuity, but the change would be localized in a relatively small area and no change in the viability of the plant community would occur.
- **Moderate**: The impact would be sufficient to cause a measurable effect on one of the three parameters (size, integrity, and connectivity) or would result in a permanent loss in wetland acreage, but not to large areas. Wetland functions would not be affected in the long term. For any other vegetation present, impacts may cause a change in plant community size, integrity, or continuity, and the change would be extensive but not regional in nature.
- **Major**: The impact would result in a measurable effect on all three parameters (size, integrity, and connectivity) or a permanent loss of large wetland areas. The impact would be substantial and highly noticeable. The character of the wetland would be changed so that the functions typically provided by the wetland would be substantially altered. For any other vegetation present, impacts may cause a change that would be substantial, would be highly noticeable, and would affect a large area. Extensive mitigation would be needed to offset adverse effects and its success would not be ensured.

ANALYSIS AREA

The area of analysis for vegetation and wetlands includes the area of construction disturbance and transmission line presence along the transmission line corridors in and around the park, located in the EEEA and in the project area surrounding the park. This includes the area in and around the transmission line corridors in the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see “Figure 4: General Project Area,” in chapter 1). The area of analysis for vegetation and wetlands is focused on vegetation and wetlands in the proposed corridors and on adjacent lands (within 500 feet of any transmission line right-of-way) and downstream wetlands.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property’s status or ownership, and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on vegetation or wetlands. Under alternative 1a, indirect impacts would result in continued long-term major adverse impacts on vegetation and wetlands due to continued habitat degradation from altered hydrology. Habitat restoration and exotic species management efforts within the park would be hindered by FPL ownership of the parcel and the lack of a flowage easement, or sufficient interests in these properties, to flow additional water across the FPL West Secondary Corridor, thereby

having a negative impact on vegetation and wetlands. Adverse impacts on soils in the EEEA would result from the lack of a flowage easement due to the lack of seasonal drying and wetting and associated growth of plants and contribution to soils. Loss of peat soils would also occur through oxidation due to ongoing drying under flowage restrictions. This soil degradation and loss could result in the region becoming less able to support native wetland vegetation.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on vegetation or wetlands.

Cumulative Impacts – Alternative 1a

The past, present, and reasonably foreseeable future land acquisition and ecosystem restoration actions in the Everglades described in table 18 would result in several long-term beneficial impacts, with some short-term minor adverse effects. However, many of these ecosystem restoration projects may not be completed as planned or when planned due to the inability to flow enough water over the FPL West Secondary Corridor to establish hydrologic restoration goals. Habitat degradation from altered hydrology would be expected under alternative 1a due to the lack of a flowage easement or sufficient rights to flow additional water across the FPL West Secondary Corridor, resulting in long-term major adverse impacts. Other projects in the area of analysis have contributed and would contribute adverse cumulative impacts on wetlands and vegetation through removal of vegetation and filling of wetlands. These include urban development, road construction, and mining. Park projects such as prescribed burns can cause short-term adverse effects, but long-term benefits by reducing the fuel load and reducing the severity of wildfires. Vegetation management by the park, particularly exotic plant management planning and implementation, provides beneficial cumulative impacts. The overall direction of the GMP to preserve park resources would indirectly benefit the vegetation in the park. The impacts of alternative 1a due to the lack of flowage and resultant inability to meet ecosystem restoration goals for the Everglades would contribute appreciable adverse impacts to the overall cumulative effects on wetlands and vegetation in this area.

Conclusion – Alternative 1a

Under alternative 1a, the retention of ownership of land in the EEEA by FPL without construction on the FPL West Secondary Corridor, in the exchange corridor, or in any area outside the park, would result in continued indirect long-term major adverse impacts on vegetation and wetlands due to continued habitat degradation from altered hydrology. Habitat restoration and exotic species management efforts within the park would be hindered by the lack of a flowage easement, or sufficient interests in these properties, to increase water levels across the FPL West Secondary Corridor, thereby having a negative impact on vegetation and wetlands. There would be no impacts on vegetation and wetlands from transmission line construction since no construction would occur on the FPL West Secondary Corridor, in the exchange corridor, or in any area outside the park. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative effects on wetlands and vegetation in this area.

ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of Land Acquisition Action

Under alternative 1b, FPL would retain ownership of land in the EEEA, but the impacts of the land acquisition action would be the same as described under alternative 1a. There would be no physical change to the land, so there would be no direct impacts on wetlands or vegetation. Indirect impacts would result in continued long-term major adverse impacts on vegetation and wetlands due to continued habitat

degradation from altered hydrology. FPL ownership of the parcel and the lack of a flowage easement, or sufficient interests in these properties, to flow additional water across the FPL West Secondary Corridor are expected to hinder habitat restoration and exotic species management efforts within the park, thereby having a negative impact on vegetation and wetlands.

Impacts of Transmission Line Construction

Localized long- and short-term major adverse impacts on vegetation and wetlands would result from the construction of transmission lines in the park and in surrounding areas to the north and south of the park, as described earlier in this chapter and appendix F, based on the FPL SCA and responses provided to data requests by NPS (FPL 2009a; FPL 2012a). As described in the analysis of impacts on soils, transmission line construction along the FPL West Secondary Corridor would involve excavation for pole placement, earthmoving and grading for the construction of access roads and pads, the placement of guy wire anchors in the soil and subsoil, and the placement of fill in pads and along access roads. Laydown areas for equipment and materials would be located in uplands to the fullest extent practicable, but because there are few uplands along the FPL West Secondary Corridor, most of these laydown areas would have to be located along the right-of-way in wetlands. Essentially the entire right-of-way is wetland (see "Figure 9: Wetlands and Vegetative Cover Map" and "Table 5: Land Cover Types within the Corridors in the Area of Analysis," both in chapter 3), consisting of predominantly sawgrass marsh in the EEEA, interspersed with small tree islands consisting of wetland hardwood forest, and some freshwater graminoid marsh near the Tamiami Trail. The area north of the trail is again primarily sawgrass marsh until the right-of-way turns to the east and enters the Pennsuco wetlands, which are mainly graminoid freshwater prairie marsh, with areas of wet prairie and nonnative (also called exotic) hardwoods (melaleuca) especially in disturbed areas.

Heavy equipment entering the marsh would cause localized long-term disturbance to vegetation and the wetlands located outside of areas where filling may be necessary for roads or structure pads. Vegetation in these areas would be crushed or removed, and soils compacted in areas of ground disturbance. Compacted soils can inhibit seed germination and plant growth, which over the long term, decreases the amount of organic material in the soils and decreases the overall productivity of the wetland vegetation. Also, disturbance caused by the removal of soil and vegetation is expected to make the area more vulnerable to nonnative species growth and disruption of native plant species compositions.

Where vegetation is not removed for construction purposes and can remain in the right-of-way, it must be cut to meet line clearance requirements. Trees (native and nonnative) in the corridor would be cut or removed to reduce the risk of flashovers from transmission lines. Where clearing is required, all trees and shrubs within the right-of-way limits whose mature height could exceed 14 feet and that are in the wire management zone under the transmission lines would be evaluated by FPL for pruning or clearing to ground level. Where trees are cut to ground level, stumps would either be cut or ground down to natural grade and treated with an NPS-approved herbicide to prevent regrowth, or the entire stump and root mat would be grubbed to at or below grade. When chipped material is not spread in uplands along the right-of-way, vegetation debris may be hauled to landfills or piled and burned within the limits of the right-of-way consistent with state and local regulations. Side trimming and pruning of trees along the right-of-way edges may also be required. Clearing in wetlands will be accomplished using restrictive clearing techniques, usually with chainsaws or with low-ground-pressure shear or rotary type machines, which reduce soil compaction and vegetation disturbance. In these areas, minimal clearing should be required, given the primary type of wetland vegetation present (sawgrass marsh). Also, there are areas of tree islands in the FPL West Secondary Corridor that could require clearing for access or construction laydown or staging areas, if there is no way to avoid these areas. Trees would have tops trimmed or removed.

According to the FPL SCA, construction in wetlands will retain the vegetative root mat in the right-of-way in areas not filled for road or structure pad construction, thereby minimizing impacts on wetland vegetation in these areas. Other mitigation measures would be implemented to minimize adverse impacts on vegetation. As detailed in the FPL SCA, these measures would include adhering to sedimentation and erosion control specifications and measures, including the use of silt fences, hay bales, and geotextile liners in wetland areas. Areas that are not permanently filled will be allowed to revegetate from seed stock from surrounding areas.

Areas occupied by access roads or structure pads would require the full removal of vegetation, and a permanent loss of wetland vegetation would occur in these areas. Details regarding the areas of these pads can be found in the analysis under the "Soils" topic. However, since the majority of the FPL West Secondary Corridor is wetlands, essentially all the acres identified as having loss of soils would also have loss of wetland vegetation. The loss of wetlands is detailed in table 19 under the soils analysis and is summarized in table 22, for three possible routes that would be considered for transmission line construction under this and other alternatives (based on preliminary design assumptions).

TABLE 22: SUMMARY OF WETLAND ACRES LOST TO PADS AND ACCESS ROADS (ESTIMATE)

Route	Approximate Wetland Acres Lost in the Park	Approximate Wetland Acres Lost from Nexus to Nexus in Project Area
FPL West Secondary Corridor	89.1	179.7
FPL West Preferred Corridor	80.1	180.8
West Consensus Corridor	0	149.3

See tables 19, 20, and 21 in the "Soils" section for details.

As can be seen in table 22, about 179.7 acres of wetlands would be lost from direct construction-related activities along the FPL West Secondary Corridor right-of-way from nexus point to nexus point in the project area, and about 89.1 acres would be lost in Everglades National Park. The impacts on wetlands in this area would include the loss of acres but also the loss of wetland functions and values, including a reduced ability to support plants and animals. As noted in chapter 3, functions of these wetlands in the project area include supporting water storage and biogeochemical processes and providing habitat for numerous wildlife species, including important nesting and foraging habitat for many special-status birds (see the "Wildlife" and the "Special-status Species" sections for a more detailed assessment of impacts on these species). Mitigation for wetland losses and impacts in transmission line rights-of-way were proposed by FPL in its 2009 ERP application (FPL 2009a, Appendix 10.4, Section 3). All transmission line impacts are proposed to be mitigated through the purchase of mitigation credits from the Hole-in-the-Donut wetland mitigation bank, which is located in Everglades National Park, using a mitigation ratio of 1:1. It is stated that this would provide significant benefit to regional wetland restoration and conservation efforts and would directly benefit vegetation communities and wildlife habitat in the park. Although this mitigation would provide benefits in another area of the park, the mitigation would be off site and would not replace the functions lost within the project area or prevent the fragmentation of the wetland environment in that area by the access road along the length of the right-of-way. The U.S. Fish and Wildlife Service (USFWS) may also require mitigation of wetland impacts in the Core Foraging Area of affected wood stork colonies within the core foraging area of that colony and creation of wetlands with similar hydroperiods as those impacted.

Other impacts on wetlands could occur from changes in water quality and hydrology. It is anticipated that disturbance to the wetlands, including the excavation of soils and vegetation for each structure pad, would release nutrients into the water (as described above in "Soils" and "Water Quality") and cause phosphorus assimilation processes to occur downstream in the park. Vegetation in a nutrient-poor environment like

the Everglades can respond to an increase in nutrients with a change in species composition or accelerated growth. Macrophyte communities may be altered, because they have shown responses from phosphorus increases as low as 5 μgL^{-1} (Gaiser et al. 2005; Gaiser et al. 2007). Nonnative species could expand if not properly managed. The level of this impact on vegetation remains unknown; however, as nutrients vital for plant growth become readily available, native and nonnative vegetation productivity may be accelerated in the project area. These effects would likely only occur in limited areas if BMPs including silt fencing and erosion control devices are implemented prior to and during construction.

Wetland vegetation can also be affected by changes in hydrology and it is expected that hydrology would change due to the placement of the access road and pads along the entire length of the corridor. According to the SCA, culverts would be included beneath access roads in wetlands to maintain channel flow and/or overland flow. However, a localized change in species composition would be expected around the culverts and along the access road and pad foundations. Flows would be channelized through the numerous culverts beneath the access road and it is likely that this could result in a change in species composition or transitional vegetation progression just downstream of most of the culvert sets, similar to what has been seen along the Tamiami Trail, resulting in localized adverse impacts on wetlands.

Vegetation would have to be maintained at an acceptable height over the life of the lines. The long-term maintenance of the transmission lines would have only negligible adverse effects on vegetation and wetlands, because maintenance vehicles would access the right-of-way on established access roads and maintenance surveys could be done by helicopter. Also, most of the wetlands crossed by the corridor, including those portions in Everglades National Park, are nonforested (herbaceous) wetlands. Here, the vegetation tends to grow low enough to not require any clearing except at access road and structure pad locations. According to the SCA, FPL plans to manage vegetation on the transmission line right-of-way by a variety of methods, including trimming, mowing, and the use of approved growth regulators and herbicides, targeting species that are incompatible with the safe access and operation and maintenance of the transmission system. The FPL right-of-way maintenance program is specific to each location, and the exact manner in which right-of-way maintenance will be done will depend on the location, type of terrain, surrounding environment, and regulatory control. Any fast-growing vegetation whose mature height could exceed 14 feet would be pruned or removed from the area between the structures to avoid interference with the conductor clearance. Any vegetation that could restrict access to the right-of-way would be removed; however, this should consist mainly of trees and shrubs in the tree island areas. FPL also states in the SCA that it would control the spread of nuisance plants that could present a fire hazard in the right-of-way through the use of approved herbicides and other removal techniques. Where vegetation maintenance activities would occur in or adjacent to the park, herbicide use and other removal techniques would be coordinated with the park and in accordance with the NPS Integrated Pest Management Plan.

Impacts on vegetation and wetlands from individual fill pads would be somewhat localized. However, overall impacts on vegetation and wetlands would be wide spread, short- and long-term, major and adverse because the construction of the access roads and pads would have a highly noticeable effect and would include a permanent loss of approximately 179.7 acres in the area of analysis, 89.1 acres of which are within the park boundary. Mitigation for impacts on wetlands that are not permanently lost would include reclamation and would be expected to successfully reduce impacts to minor levels in those areas. Although the permanent losses are limited to localized areas in the right-of-way, they would occur throughout the project area and along the entire length of the right-of-way. Wetland functions may not be substantially altered but there would be a change in the character of the wetland for which the proposed off-site mitigation may not totally compensate. A permanent loss of wetlands would occur on pads and access roads, and this acreage comprises about 30 percent of the total right-of-way acreage.

Cumulative Impacts – Alternative 1b

The cumulative impacts on vegetation and wetlands from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 1b would have long-term major adverse impacts, and localized, short-term major adverse impacts, and these would contribute appreciable adverse impacts to the overall cumulative effects on wetlands and vegetation in this area.

Conclusion – Alternative 1b

Under alternative 1b, FPL would retain ownership of land in the EEEA. Indirect long-term major adverse impacts on vegetation and wetlands would occur as described under alternative 1a. Impacts on vegetation and wetlands would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include localized short- and long-term major adverse indirect impacts from construction and operation of the transmission line. These impacts would include a permanent loss of approximately 179.7 acres of wetlands, of which 89.1 acres are within the park boundary. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on wetlands and vegetation in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

The park would realize a net gain of 320 acres of primarily wetlands within the park boundary under alternative 2. This would be a direct long-term benefit to vegetation and wetlands. Long-term indirect benefits to vegetation and wetlands would also occur because the land acquisition of the FPL corridor in the interior of the park would ensure that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel. The connectivity of the EEEA wetlands would be ensured, and a potential source of nonnative vegetation not under NPS control would be removed. Placing ownership of this area solely with the NPS would enhance the ability to provide more natural water flows to the park, which in turn would enhance the conservation of the resources and values of the park, a long-term beneficial impact.

Impacts of Transmission Line Construction

Indirect impacts under alternative 2 would result from the possible construction of transmission lines to the east of the park in the West Consensus Corridor. This area is also mostly wetlands, but there are areas of non-wetland vegetation in the southern portion of the route (agricultural lands, developed lands) and adjoining the mining operations. Impacts of vegetation removal (temporary) from excavation for pole placement, earthmoving, and grading would occur and would be similar to those described under alternative 1b. Also, disturbance caused by the removal of soil and vegetation would be expected to make the area more vulnerable to nonnative species growth and the disruption of native plant species compositions. Mitigation measures as described under alternative 1b (erosion control devices and geotextile liners) would be implemented to minimize adverse impacts in those areas. Laydown areas for equipment and materials would be located in uplands to the fullest extent practicable. Reclamation would include seeding and mulching, and would reduce impacts in these areas to a minor level. It is expected that the USACE, through the Section 404 permitting process, would require avoidance and minimization of impacts to wetlands in the West Consensus Corridor. This is anticipated to reduce wetland impacts if transmission lines are eventually constructed in this area.

Where vegetation is not removed for construction purposes and can remain in the right-of-way, it must be cut to meet line clearance requirements. As noted under alternative 1b, any trees or shrubs (native and nonnative) within the right-of-way limits whose mature height could exceed 14 feet and that are in the wire management zone under the transmission lines would be evaluated by FPL for pruning or clearing to ground level. Where trees are cut to ground level, stumps would either be cut or ground down to natural grade and treated with a herbicide to prevent regrowth, or the entire stump and root mat would be grubbed to at or below grade. When chipped material is not spread in uplands along the right-of-way, vegetation debris may be hauled to landfills or piled and burned within the limits of the right-of-way consistent with state and local regulations. Side trimming and pruning of trees along the right-of-way edges may also be required.

Clearing in wetlands will be accomplished using restrictive clearing techniques, usually with chainsaws or with low-ground-pressure shear or rotary type machines, which reduce soil compaction and vegetation disturbance. In these areas, minimal clearing should be required, given that most of the wetlands in the West Consensus Corridor are low-growing wet prairie. There are areas of wetland hardwoods in this area that would require trimming or removal; some of these are nonnative hardwoods.

There would be a permanent loss of vegetation in areas of access road and pad locations that have vegetation. Most of the West Consensus Corridor is vegetated, but the type of vegetation varies considerably within this area. The total number of acres of vegetation permanently removed would be the same as those acres presented in the soils analysis and are shown in table 20 in the soils analysis. An estimate of wetland acres lost from transmission line construction in the West Consensus Corridor is in table 22. These estimates were done for a route located on the far eastern side of the West Consensus Corridor. The approximate values may be more or less than those estimated, depending on final route selection, co-location of infrastructure with existing roads and other filled areas and the wetland impact minimization required for CWA Section 404 permit approval.

The impacts on wetlands from permanent filling would be less under alternative 2 compared to alternative 1b not only because there are fewer wetlands compared to the FPL West Secondary Corridor (see table 22: 149.3 total acres of wetlands lost in the West Consensus Corridor compared to approximately 180 acres for either of the other routes with the FPL corridors), but also because of the type of wetlands present and their current condition. There is a relatively large amount of nonnative wetland hardwood in the area, dominated by melaleuca. Wetlands in the Bird Drive basin area have been disturbed by nonnative infestations as well as by all-terrain vehicle use. Non-wetland vegetation also occurs in the West Consensus Corridor, particularly in agricultural areas in the south and in disturbed areas along the roadways and canals. The impact on vegetation and on wetlands in particular would be less in these areas because of the lack of native species and the lower functional value of wetlands with those species and with evidence of human disturbance. Also, the West Consensus Corridor partly parallels the area currently used for rock mining, and natural vegetation has already been disturbed or removed in that area. Similarly, there would be little impact on vegetation in the areas that are already disturbed or developed in the south end of this route from agriculture or industrial development. However, adverse impacts would increase in any portions of the route that cross undeveloped areas in the Pennsuco wetlands. Adverse impacts on Pennsuco wetlands could be minimized if existing filled and/or disturbed areas are used for the transmission line corridor. It is assumed that off-site mitigation would be used to compensate for any permanent wetland losses along this route, similar to what is proposed in the SCA and the mitigation plan. Off-site mitigation bank credits may or may not fully compensate for the losses, depending on the area crossed and the value of the wetlands in that location.

Other impacts on wetlands could occur from changes in water quality and hydrology. As noted under alternative 1b, it is anticipated that disturbance to the wetlands, including the excavation of soils and vegetation for each structure pad, would release nutrients into the water and cause phosphorus

assimilation processes to occur downstream in the park. Vegetation in a nutrient-poor environment like the Everglades can respond to an increase in nutrients with a change in species composition or accelerated growth, and this could occur in wetter areas, such as the Pennsuco wetlands. These effects would likely only occur in limited areas if BMPs including silt fencing and erosion control devices are implemented prior to and during construction.

Wetland vegetation can also be affected by changes in hydrology, and it is expected that hydrology would change due to the placement of the access road and pads along the entire length of the corridor. According to the SCA, culverts would be included beneath access roads in wetlands to maintain channel flow and/or overland flow. However, a localized change in species composition would be expected around the culverts and along the access road and pad foundations. Flows would be channelized through the numerous culverts beneath the access road, and it is likely that this could result in a change of species or transitional vegetation progression just downstream of most of the culvert sets, resulting in localized adverse impacts on wetlands.

Vegetation would have to be maintained at an acceptable height over the life of the lines, and this long-term maintenance of the transmission lines would have only negligible adverse effects on vegetation and wetlands because maintenance vehicles would access the right-of-way on established access roads and maintenance surveys could be done by helicopter. Most of the wetlands crossed by the West Consensus Corridor are nonforested (herbaceous) wetlands, which would require less vegetation clearing, and there are areas that are more urbanized or cultivated in the West Consensus Corridor that would not require vegetation clearing at all. FPL states in the SCA that it would control the spread of nuisance plants that could present a fire hazard in the right-of-way through the use of approved herbicides and other removal techniques. The use of herbicides would be selective and would meet applicable federal, state, and local regulations. To enhance the safe, reliable operation of the proposed transmission lines, FPL may trim or remove danger timber outside the FPL right-of-way in coordination with the adjacent property owners. Danger timber includes trees in danger of falling or leaning into the conductors or, in areas of wildfire hazard, other vegetation that may provide excessive fuel loading in proximity to the transmission lines. For example, when the right-of-way is adjacent to the 8.5-square-mile area east of the park or the Pennsuco wetlands north of the park, FPL may acquire the necessary property rights to maintain such vegetation, as needed.

Overall, impacts on vegetation and wetlands under alternative 2 would range from negligible and adverse to short and long term, moderate, and adverse, depending on the area within the West Consensus Corridor that is affected. In general, impacts on wetland vegetation would be greatest in the Pennsuco wetlands in the northern portions of the West Consensus Corridor. Impacts would be reduced along the western and southern portions of the West Consensus Corridor where vegetation has already been disturbed and there are fewer wetlands and wetlands of lower quality due to proximity to disturbance, interrupted flows, and abundance of nonnative plant species. Impacts from construction would be noticeable and would last beyond the period of construction in most locations, and although impacts would occur along the entire length of the right-of-way, there would be areas of previous disturbance where impacts would be less severe. It is not likely that construction in these previously disturbed areas would change the character of the wetlands to the extent that functions provided would be substantially altered. Mitigation for impacts on vegetation and wetlands that are not permanently lost would include reclamation and would be expected to successfully reduce impacts to minor levels in those areas. A permanent loss of wetlands would be limited to pads and access roads, and this acreage comprises about 23 percent of the total right-of-way acreage. Impacts on wetlands are reduced when compared to alternative 1b since there is less wetland acreage impacted (approximately 149.3 acres impacted under alternative 2 versus approximately 179.7 acres under alternative 1b) and no wetlands within the boundary of the park are impacted. Wetlands within the park are generally considered to be of higher quality than wetlands outside the park due to their size, integrity, and connectivity.

Cumulative Impacts

The cumulative impacts on vegetation and wetlands from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. It is expected that hydrologic restoration goals can be met in the EEEA since NPS would acquire the FPL West Secondary Corridor, with substantial long-term beneficial impacts, plus short-term negligible to moderate adverse impacts of constructing a transmission line outside the park; alternative 2 would contribute appreciable benefits and somewhat noticeable adverse effects to the overall cumulative effects on wetlands and vegetation in this area.

Conclusion

Under alternative 2, there would be substantial long-term beneficial impacts to vegetation and wetlands from the acquisition of FPL property in the EEEA. The land acquisition would remove a large area of non-NPS ownership of land in the interior of the park, ensuring that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel.

Adverse impacts would result from the construction of the transmission lines in the West Consensus Corridor and would include short- and long-term negligible to moderate adverse impacts on vegetation and wetlands, depending on the location of the lines; impacts could be less due to fewer wetland acres in the West Consensus Corridor compared to the areas crossed by the other routes in the FPL West Secondary and FPL West Preferred Corridors and the relative quality of the wetlands. Impacts from transmission line construction inside the park would be avoided. Alternative 2 would contribute appreciable benefits and somewhat noticeable adverse effects to the overall cumulative effects on wetlands and vegetation in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, the exchange would remove a large area of non-NPS ownership of land in the interior of the park, and add 320 acres in the FPL right-of-way. This would ensure that no other development would be proposed in the corridor and that the various Everglades ecosystem restoration projects would be able to proceed without obstacles related to the presence of the FPL parcel. The connectivity of the EEEA wetlands would be ensured, and a potential source of nonnative vegetation not under NPS control would be removed. Placing the ownership of this area solely with the NPS would enhance the ability to provide more natural water flows to Everglades National Park, which in turn would enhance the conservation of the resources and values of the park, including wetlands, a substantial long-term beneficial impact. In addition, the park would realize a net gain of 60 acres of higher-value wetlands. The exchange corridor given to FPL would be 260 acres of mostly wetlands located at the edge of the park, close to developed areas, with several areas infested with nonnative plants. The FPL corridor gained by the park would be 320 acres that is far from developed areas, with fewer nonnative plants and containing tree islands or hardwood hammocks that support a variety of vegetation species, including some listed species.

Alternative 3 would result in a loss of 260 acres of wetlands within the park. There would be a net gain of 60 acres, but a loss of 260 acres. Alternative 3 would result in a direct, long-term major adverse impact from the loss of park wetlands/vegetation (260 acres), and negligible to minor adverse impact from the loss of the ability to maintain wetlands and vegetation according to NPS standards.

Impacts from Transmission Line Construction

Under alternative 3, indirect short- to long-term major adverse impacts would result from the construction of transmission lines in the FPL West Preferred Corridor, directly adjacent to park lands, as described earlier in this chapter and appendix F. Impacts such as soil compaction and erosion from excavation for pole placement, earthmoving, and grading would occur that could affect vegetation and wetlands and would be similar to those described under alternative 1b. Also, disturbance caused by the removal of soil and vegetation would be expected to make the area more vulnerable to nonnative species growth and disruption of native plant species compositions. Mitigation measures as described under alternative 1b (erosion control devices and geotextile liners) would be implemented to minimize adverse impacts in those areas. Laydown areas for equipment and materials would be located in uplands to the fullest extent practicable. Alternative 3 also includes certain terms and conditions for the use of the FPL West Preferred Corridor that include provisions for the protection of wetlands and the control of nonnative and invasive species (appendix G). A construction work plan would be developed and approved and would require steps to avoid, minimize, and mitigate wetland impacts to the maximum extent practicable, including temporary impacts that occur during construction. Terms and conditions that protect natural hydrology would also protect wetlands. Assuming that these provisions are implemented, overall earthmoving and use of equipment during construction would result in short- and long-term minor adverse impacts on vegetation and wetlands.

Similar to the other transmission line construction impacts described earlier, there would be a permanent loss of wetlands in areas of access road and pad locations. The exact acreage of direct wetland impacts is unknown due to uncertainties in the design at this stage. For the purposes of the analysis, it is assumed that a new access road would be constructed along the right-of-way, although if the existing levee road could be used, that would decrease impacts. In order to compare acres of permanent soil loss, the acres of vegetation/wetlands that would be permanently removed or covered with fill at pads and along the access road were estimated by assuming a route length of approximately 15.7 miles, with about 6.3 miles inside Everglades National Park (see table 21 in the soils analysis). An estimate of wetland acres lost is summarized in table 22. The approximate acres of wetlands lost in the project area is 180.8, about the same as for the FPL West Secondary Corridor, although approximately 9 fewer acres of wetlands are lost in the park compared to the FPL West Secondary Corridor (approximately 80.1 acres versus 89.1 acres). The amount of wetland fill may increase over estimates if fill pads are located closer together (i.e., span lengths are shorter than 500 and 1,000 feet).

For alternative 3, the wetland mitigation plan proposed by FPL provides for a 1:1 compensation using the Hole-in-the-Donut wetland mitigation bank in Everglades National Park. Alternative 3 also includes certain terms and conditions for the use of the FPL West Preferred Corridor that include provisions for the protection of wetlands. A construction resource stewardship plan would be developed and approved and would require steps to avoid, minimize, and mitigate wetland impacts to the maximum extent practicable. No wetlands on the corridor can be excavated for the purpose of obtaining fill, and impacts on the hydrology of the area must be minimized. As described above, the terms and conditions also include a provision for avoidance of wetland impacts by altering structure locations, examining the need for access road and pad construction, and changing span lengths. It is assumed that the mitigation developed and the approved terms and conditions for this alternative would provide adequate compensation for wetlands losses and other impacts on vegetation. Also, impacts on vegetation and wetlands would be considered reduced under this alternative because the FPL West Preferred Corridor crosses no large expanses of heavily forested uplands or forested wetlands. There are also a few areas along the FPL West Preferred Corridor that are already disturbed or in agricultural use in the 8.5-square-mile area east of the park. This vegetation can be readily replaced (agricultural) or has lower ecological values due to the fragmentation of habitat and the presence of nonnative plant species along this edge environment. Areas that contain nonnative species such as Brazilian pepper and melaleuca, which are more common along edge

environments such as along canals and roadways, have a reduced functional value because they provide relatively poor wildlife habitat and reduced species diversity. However, the northern portion of the route near the Tamiami Trail contains habitat for nesting wood storks and kites and wading birds (see the "Special-status Species" section).

Other impacts on wetlands could occur from changes in water quality and hydrology. As noted under alternative 1b, it is anticipated that disturbance to the wetlands, including the excavation of soils and vegetation for each structure pad, would release nutrients and cause phosphorus assimilation processes to occur downstream in the park. Vegetation in a nutrient-poor environment like the Everglades can respond to an increase in nutrients with a change in species composition or accelerated growth, and this could occur in wetter areas of the route. These effects would likely only occur in limited areas if BMPs including silt fencing and erosion control devices are implemented prior to and during construction. Wetland vegetation can also be affected by changes in hydrology, and it is expected that hydrology would change based on the placement of the access road and pads along the entire length of the corridor. According to the SCA, culverts would be included beneath access roads in wetlands to maintain channel flow and/or overland flow. However, a localized change in species composition would be expected around the culverts and along the access road and pad foundations. Flows would be channelized through the numerous culverts beneath the access road, and it is likely that this could result in the transitional vegetation progression just downstream of most of the culvert sets, resulting in localized minor adverse impacts on wetlands.

Vegetation would have to be maintained at an acceptable height over the life of the lines, and this long-term maintenance of the transmission lines would have only negligible adverse effects on vegetation and wetlands because maintenance vehicles would access the right-of-way on established access roads and maintenance surveys could be done by helicopter. Most of the wetlands crossed by the corridor, including those portions in Everglades National Park, are nonforested (herbaceous) wetlands and would therefore require less vegetation clearing, and there are areas that are more urbanized or cultivated in the southern section of this route that would not require vegetation clearing at all. Much of the forested areas along the canal consist of Brazilian pepper or melaleuca, which as nonnative species should be removed. FPL states in the SCA that it would control the spread of nuisance plants that could present a fire hazard in the right-of-way through the use of approved herbicides and other removal techniques. Impacts on wetlands from vegetation management in the nonnative vegetation management easement would occur due to access and vegetation management activities. Impacts would include disturbance and soil compaction from equipment and access by foot. Intensity would depend on frequency of treatment, area treated, and type of equipment and chemicals used for vegetation management activities. The use of herbicides would be selective and would meet applicable federal, state, and local regulations and NPS Integrated Pest Management Plan requirements. To enhance the safe, reliable operation of the proposed transmission lines, FPL may trim or remove danger timber outside the FPL right-of-way in coordination with the adjacent property owners. Danger timber includes trees in danger of falling or leaning into the conductors or, in areas of wildfire hazard, other vegetation that may provide excessive fuel loading in proximity to the transmission lines. For example, when the right-of-way is adjacent to the park along the canal, FPL may acquire the necessary property rights to maintain such vegetation, as needed. There is also a 90-foot-wide vegetation management easement proposed along the border with the park to facilitate the control of nonnative species and fire. It is not clear if the right-of-way would be sufficient to provide access to wetlands in the 90-foot easement and vehicle/equipment access may create additional impacts. The vegetation management practices are not expected to be consistent with existing park vegetation management practices in the easement area, which may lead to additional minor adverse impacts on naturally occurring vegetation and wetlands.

Overall, with the additional mitigation in place under the terms and conditions, impacts on vegetation and wetlands from transmission line construction along the FPL West Preferred Corridor would be short and

long term, major, and adverse. Changes to non-wetland communities would be localized in relatively small areas and short term, with no change in the viability of the plant communities. Wetlands would be affected in the short term during construction, and many of these areas would recover. However, the impact on many wetlands would be sufficient to cause a measurable effect on one of the three parameters (size, integrity, and connectivity) and there would be a permanent loss of wetland acreage, but not in large areas of wetlands. Loss is estimated at 80.1 acres in the park, 180.8 acres in area of analysis. Mitigation for impacts on wetlands, including the mitigation that would be implemented under the required terms and conditions (including exotic species control conditions), should reduce adverse impacts especially in areas that are not permanently lost. There would still be a permanent loss of acres for pads, roads and adherence to terms and conditions cannot guarantee impacts level less than major adverse as defined by the definitions used for analysis.

Cumulative Impacts

The cumulative impacts on vegetation and wetlands from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. The land exchange would result in contribution of long-term benefits and long-term major adverse impacts on wetlands and vegetation, as well as short-term negligible to major adverse impacts from construction of the transmission line in the exchange corridor. The contribution of alternative 3 to the overall cumulative impacts would include appreciable benefits and appreciable adverse impacts.

Conclusion

Under alternative 3, there would be substantial beneficial impacts to vegetation and wetlands from having a net gain in wetland acreage to the park and having the main body of EEEA wetlands reconnected in NPS ownership, resulting in the ability to go forward with ecosystem restoration without any potential future obstacles from the FPL parcel. Placing the majority of the EEEA under NPS ownership would enhance the conservation of the resources and values of the park, including vegetation and wetlands. Alternative 3 would also result in a loss of 260 acres of wetlands in the exchange corridor. There would be a net gain of 60 acres, but a loss of 260 acres. This is a direct long-term, major adverse impact from the loss of park wetlands/vegetation (260 acres), and negligible to minor adverse impacts from the loss of the ability to maintain wetlands/vegetation per NPS standards. There would also be adverse impacts on vegetation and wetlands from the construction of the transmission lines in the FPL West Preferred Corridor, which would include short- and long-term minor major adverse impacts from transmission line construction. Alternative 3 would contribute appreciable benefits and appreciable adverse impacts on overall cumulative impacts on vegetation and wetlands.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts from the Land Acquisition Action

Under alternative 4, there would be benefits to vegetation and wetlands as described under alternative 3, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of wetlands. The easement terms and conditions do not necessarily imply the same level of protection and management as NPS *Management Policies 2006*. There would be no major adverse impacts under this alternative related to the land exchange because the acreage of vegetation /wetlands would remain the same within the park boundary (this is a difference between alternatives 3 and 4). Terms and conditions are found in appendices G and H.

Impacts from Transmission Line Construction

Adverse impacts on vegetation and wetlands from transmission line construction would be the same as described under alternative 3, because there are no substantial differences in the terms and conditions under this alternative and no expected differences in how wetlands would be treated under an easement as opposed to under fee ownership, given the mitigation that FPL included in its SCA and expected conditions in the required resource stewardship plan. Indirect adverse impacts on vegetation and wetlands from the construction of the transmission lines in the FPL West Preferred Corridor would include short- and long-term major adverse impacts from transmission line construction.

Cumulative Impacts

The cumulative impacts on vegetation and wetlands from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 3. However, the park would have slightly more control over vegetation management in the exchange corridor than under alternative 3. Alternative 4 would contribute appreciable benefits and appreciable adverse impacts to overall cumulative impacts on vegetation and wetlands.

Conclusion

Under alternative 4, there would be benefits to vegetation and wetlands as described under alternative 3, but with easement terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of wetlands. There would be no major adverse impacts related to the land exchange because the acreage of vegetation /wetlands would remain the same within the park boundary (this is a difference between alternatives 3 and 4). Short- and long-term major adverse impacts on vegetation and wetlands from transmission line construction would be the same as described under alternative 3, because there are no substantial differences in the terms and conditions under this alternative and no expected differences in how wetlands would be treated under an easement as opposed to under fee ownership, given the mitigation that FPL included in its SCA and expected conditions in the required resource stewardship plan. The park would have slightly more control over vegetation management in the exchange corridor than under alternative 3. Alternative 4 would contribute appreciable benefits and appreciable adverse impacts to overall cumulative impacts on vegetation and wetlands.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Alternative 5 provides for a perpetual flowage easement over the FPL West Secondary Corridor that would allow flows over and around structures in the FPL corridor. Having a flowage easement on the FPL parcel in the EEEA that would allow for surface flows and would not impede any ecosystem restoration projects planned for this area would have substantial indirect, long-term benefits on park resources, including wetlands.

Long-term minor to moderate adverse impacts would occur from the continued inability to manage the corridor as NPS lands (i.e., FPL ownership of the parcel would hinder any wetland/vegetation management efforts within the park).

Impacts from Transmission Line Construction

There would also be adverse impacts on vegetation and wetlands both in and around the park from the transmission line construction in the FPL West Secondary Corridor, as described under alternative 1b. These impacts would be short and long term, major, and adverse. However, the additional water available from the flowage easement may enable ecosystem restoration of areas disturbed during construction to occur at a faster rate. Alternative 5 would reduce the ability to restore wetlands, but not completely prevent all ecosystem restoration efforts. Degradation of the vegetation/wetlands from FPL ownership instead of NPS will be similar to alternative 1a, except there would be a flowage easement or sufficient rights to flow additional water over the corridor.

Cumulative Impacts

The cumulative impacts on vegetation and wetlands from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 5 would result in long-term beneficial impacts from the flowage easement, but would also result in short- to long-term minor to major adverse impacts from the construction of the transmission line. Alternative 5 contributes both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on wetlands and vegetation in this area, although the benefits would not be as extensive as those under the alternatives that result in the acquisition of wetlands in the park

Conclusion

Under alternative 5, impacts would be similar to alternative 1b, except there would be substantial long-term benefits from having a perpetual flowage easement agreement. Adverse impacts on vegetation and wetlands would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short- and long-term major adverse impacts from the transmission lines. Alternative 5 would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on wetlands and vegetation in this area, although the benefits would not be as extensive as those under the alternatives that result in acquisition of wetlands in the park.

FLOODPLAINS

GUIDING REGULATIONS AND POLICIES

Procedural Manual 77-2: Floodplain Management, establishes the NPS procedures for implementing floodplain protection and management actions in units of the national park system as required by Executive Order 11988: Floodplain Management, and Director's Order 77-2: Floodplain Management. It is NPS policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. If a proposed action is found to be in an applicable regulatory floodplain and relocating the action to a non-floodplain site is considered not to be a viable alternative, flood conditions and associated hazards must be quantified as a basis for management decision making and a formal statement of findings must be prepared. The statement of findings should describe the rationale for selection of a floodplain site, disclose the amount of risk associated with the chosen site, and explain flood mitigation plans.

NPS *Management Policies 2006* specifically addresses floodplains in Section 4.6.4. The policy states:

> In managing floodplains on park lands, the National Park Service will (1) manage for the preservation of floodplain values; (2) minimize potentially hazardous conditions associated with flooding; and (3) comply with the NPS Organic Act and all other federal laws and executive orders related to the management of activities in flood-prone areas,

including Executive Order 11988 (Floodplain Management), the National Environmental Policy Act, applicable provisions of the Clean Water Act, and the Rivers and Harbors Appropriation Act of 1899. Specifically, the Service will

- protect, preserve, and restore the natural resources and functions of floodplains;
- avoid the long- and short-term environmental effects associated with the occupancy and modification of floodplains; and
- adversely affect the natural resources and functions of floodplains or increase flood risks.

When it is not practicable to locate or relocate development or inappropriate human activities to a site outside and not affecting the floodplain, the Service will

- prepare and approve a Statement of Findings, in accordance with procedures described in Director's Order 77-2: Floodplain Management;
- use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing the impact on the natural resources of floodplains;
- ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR 60).

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Impacts on floodplains were assessed by consideration of the size of impact, length of effect, and area affected, using best professional judgment and discussion with NPS staff.

The following definitions were used to determine the magnitude of adverse impacts on floodplains:

- **Negligible**: Floodplains would not be affected; effects would either be non-detectable, or, if detected, would be considered slight, local, and would likely be short term.
- **Minor**: Effects on floodplains would be measurable, although the effects would likely be small, short term, and localized. No mitigation measures associated with water quality or hydrology would be necessary.
- **Moderate**: Effects on floodplains would be measurable and long term, but relatively localized. Mitigation could be required and if implemented and would likely be successful.
- **Major**: Effects on floodplains would be readily measurable, would have substantial consequences, and would be observable over a relatively large area and likely long term. The character of the floodplain would be changed so that the functions typically provided by the floodplain would be substantially changed. Mitigation would be required and its success could not be ensured.

ANALYSIS AREA

The area of analysis for floodplains is the 100-year floodplain located in the general project area, including the NESRS in the EEEA. This includes the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1 and "Figure 10: Floodplain Map" in chapter 3; most of the study area is 100-year floodplain).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership, and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on floodplains. However, the NPS would be unable to flow additional water across FPL property from north of the park, and would be unable to implement regional ecosystem restoration activities that rely on additional flow. The inability to increase water levels across the FPL property would result in preventing restoration on a regional scale. Excess water would continue to be held in the WCAs north of the park or redirected upstream to the St. Lucie River or elsewhere rather than through the park. Floodplain values associated with the restoration related to habitat values, wetland quality, etc., would be limited to existing floodplain values. The urban areas outside the park would not be at increased risk of flooding. This would result in indirect, long-term major adverse impacts on floodplains.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on floodplains.

Cumulative Impacts – Alternative 1a

Several past, present, and reasonably foreseeable projects related to the restoration of hydrology and enhanced flows in the Everglades over a 20- to 30-year time period, and acquisition of property throughout the park, as described in table 18, would result in large scale regional beneficial impacts on floodplain function and values in the slough and throughout the Everglades by increasing the hydroperiod and the flood stage in large parts of the Everglades in the park, and relieving stresses on water storage requirements outside the park. However, alternative 1a would prevent or obstruct implementation of these flowage-related projects and would therefore result in major adverse impacts on floodplains. Other projects and actions in the area of analysis have had and could have adverse impacts on floodplains, including any construction in the regulatory floodplain that changes flows and surface runoff characteristics; this includes all urban/suburban, commercial, and industrial development to the east of the park. Alternative 1a would have major adverse impacts that would contribute appreciable adverse impacts on floodplains in the area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no direct impacts on floodplain function and values, but there would be long-term indirect major adverse impacts related to the lack of a flowage easement and the inability to proceed with flow-dependent ecosystem restoration projects that would prevent moving additional water into the park. There would be no construction under this alternative, so there would be no construction-related impacts. Alternative 1a would contribute appreciable adverse impacts to the cumulative impacts on floodplains in the area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, impacts from the land acquisition action would be the same as under alternative 1a. There would be indirect long-term major adverse impacts due to the inability to flow additional waters across the FPL property, so more water would continue to be stored north of the park, and improvement of many floodplain values would be prevented.

Impacts of Transmission Line Construction

There would be additional impacts related to the construction of the transmission lines in the existing corridor without a flowage easement. Without a flowage easement, noticeable improvement of floodplain function and values would therefore be prevented within the park. Indirect impacts would result from the construction of transmission lines in the park, as described earlier in this chapter and appendix F. Transmission lines in the FPL West Secondary Corridor would be constructed directly through the flow path of the NESRS.

Construction of the transmission lines through this corridor would result in construction of 7.4 miles of transmission lines in the park and 14.7 miles through both the NPS wetlands and the SFWMD Pennsuco wetlands north of the park. FPL has committed to constructing culverts under the access roads through this corridor to maintain existing surface water flows. The culverts would be designed and sized to equalize the amount of water volume created from a small rainfall event, and would therefore convey most stormwater through the culverts. There would be no substantial increase or decrease in floodplain elevation and the transmission lines would not increase threats to human safety due to flooding. Although water could pass through the culverts, the transmission lines would serve to compartmentalize the NESRS, and impacts on floodplain values and functions (such as creating a habitats for fish and other animals and providing temporary storage of high flows, slowing flow velocity, providing groundwater recharge, and reducing downstream impacts of high flows) would be measurable and localized. Impacts from transmission line construction would therefore be long-term, moderate and adverse.

Cumulative Impacts – Alternative 1b

The cumulative impacts on floodplain function and values from the other past, present, and reasonably foreseeable future projects considered in the cumulative analysis would be the same as those discussed under alternative 1a. Under alternative 1b, there would be long-term major adverse impacts related to the lack of a flowage easement, plus long-term moderate adverse impacts from the construction and presence of transmission lines, which would contribute appreciable adverse impacts to the overall cumulative effects on floodplains in this area.

Conclusion – Alternative 1b

Under alternative 1b, the direct and indirect impacts on floodplains related to the land acquisition decision would be the same as under alternative 1a; with no direct impacts on floodplain function and values, but with long-term major adverse impacts related to the lack of a flowage easement and the inability to proceed with flow-dependent ecosystem restoration projects that would prevent moving additional water into the park. There would be additional long-term moderate adverse impacts on floodplain functions and values related to the construction and presence of the transmission lines. Construction of the transmission lines without a flowage easement in the FPL corridor could permanently hinder the implementation and success of these projects, and would contribute appreciable adverse impacts to the overall cumulative effects on floodplains in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, no direct impacts on floodplains would be expected from the acquisition of FPL land in the EEEA. There would be indirect long-term benefits from placing ownership of this area solely with the NPS and the ability to continue flow-dependent ecosystem restoration projects. Floodplain values in the park would improve, as would long-term floodplain function. Flows could be redirected from upstream areas currently receiving excess water. Urban areas would continue to be protected from flooding because flood storage capacity in the park would increase.

Impacts of Transmission Line Construction

Under this alternative, FPL would construct the transmission lines outside the park in the West Consensus Corridor. The possible corridor outside the park would not be affected by ecosystem restoration activities. Impacts on floodplains in this area would occur from construction of roads, pads, and culverts, and the transmission lines would serve to compartmentalize flows in the area, although water could pass through the culverts. However, wetlands and floodplains have been segmented and compartmentalized in this area. Flows are already disrupted and the area has been drained and disconnected from the broader natural floodplain, so the existing floodplain values in this area are less than they are inside the park. Impacts on floodplain function and values would therefore be long-term indirect negligible and adverse. Impacts on floodplain function and values within the park would be avoided.

Cumulative Impacts

The cumulative impacts on floodplain function and values from other past, present, and reasonably foreseeable future projects related to the restoration of hydrology and enhanced flows in the Everglades would be the same as those discussed under alternative 1a. Alternative 2 would allow enhanced flowage and implementation of restoration projects that rely on enhanced flows to proceed, which would provide large-scale benefits over 20 to 30 years. The alternative would also result in long-term negligible adverse impacts from the construction and presence of the transmission lines in the West Consensus Corridor east of the park. Alternative 2 would contribute appreciable benefits to the overall cumulative impacts on floodplains; the contribution of adverse effects from the construction of the transmission lines outside the park to cumulative impacts on floodplains would be only slightly noticeable overall.

Conclusion

Overall, there would be no direct impacts on floodplains from obtaining the FPL corridor. There would be indirect benefits of acquisition itself from placing ownership of this area solely with the NPS and the ability to continue flow-dependent ecosystem restoration projects. Under alternative 2, there would be long-term indirect negligible adverse impacts related to transmission line construction and presence in an area that has already been segmented hydrologically and disconnected from the natural floodplain. Impacts from transmission line construction inside the park would be avoided. Alternative 2 would contribute noticeable benefits to the overall cumulative impacts on floodplains; the contribution of adverse effects from the construction of the transmission lines outside the park to cumulative impacts on floodplains would be only slightly noticeable overall.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, the direct and indirect impacts associated with the land exchange would be the same as described under alternative 2, since the enhanced flowage would be accommodated across the original FPL property and the exchange corridor. There would be no direct impacts on floodplains from the acquisition of FPL land in the EEEA.

Impacts of Transmission Line Construction

Under alternative 3, there would be long-term moderate adverse impacts related to the placement of the transmission lines in the exchange corridor adjacent to the existing L-31N levee. With the transmission lines on the edge of the park, impacts on floodplain function and values throughout the NESRS would be less than would occur if the lines were built further to the west, but impacts on floodplains would be greater than if the lines were built east of the park in (see alternative 2).

In addition to the commitment to maintain surface and subsurface flows, and accommodate enhanced flows by using culverts under the access road, alternative 3 includes certain terms and conditions for the use of the FPL West Preferred Corridor (appendix G). Under these terms and conditions for the exchange, FPL would minimize impacts on sheetflow at the park to the maximum extent practicable. The presence of the road or finger pads would alter hydrologic flow locally as water is forced around the structure pads and through culverts beneath the access road or driveway portion of the finger pads, but would not noticeably alter floodplain function.

Should an access road be built parallel to the levee, it is possible that the hydrology in the channel between the levee and the transmission lines would be somewhat more compartmentalized and restricted in its flow than water on the west side of the transmission lines. FPL would be required to ensure that the design and construction of the transmission lines would be compatible with ecosystem restoration goals and activities allowing for protection of resources and values of Everglades National Park. With implementation of this mitigation and the full hydrologic analysis conducted as part of the required terms and conditions, there would be long-term moderate adverse impacts on floodplain function and values.

Cumulative Impacts

The cumulative impacts on floodplain function and values under alternative 3 from other past, present and reasonably foreseeable future projects would be the same as those discussed under alternative 1a, and would be mainly beneficial. There would be indirect benefits of acquisition itself from the ability to continue flow-dependent ecosystem restoration projects. Construction and presence of transmission lines would contribute long-term moderate adverse impacts on floodplains on the far eastern edge of the park. These impacts would contribute both appreciable long-term beneficial, and noticeable adverse impacts on floodplains in this area.

Conclusion

Under alternative 3 there would be no direct impacts on floodplains from the implementation of the land exchange associated with this alternative. There would be long-term indirect beneficial impacts of acquiring the FPL land, which would enhance the conservation of the resources and values of the park, including floodplains and their values and functions, and allow for flow-dependent ecosystem restoration projects to proceed. There would be long-term moderate adverse impacts on floodplain functions and values from construction and presence of transmission lines in the FPL West Preferred Corridor due to

increased compartmentalization and the effects of the disrupted sheetflows on floodplain values, such as habitat. Alternative 3 would contribute appreciable long term beneficial, and noticeable adverse impacts to the cumulative impacts on floodplains in the area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, the direct and indirect impacts associated with the land exchange would be the same as described under alternative 3, but with beneficial impacts on floodplains resulting from terms and conditions that would reduce the risk of having additional utility facilities developed within the exchange corridor and associated floodplain. Terms and conditions are found in appendices G and H.

Impacts of Transmission Line Construction

The indirect impacts associated with the placement of the transmission lines in the exchange corridor would be the same as described under alternative 3. There would be long-term moderate adverse impacts on floodplains and floodplain function and values due to increased compartmentalization and the effects of the disrupted sheetflows on floodplain values.

Cumulative Impacts

Cumulative impacts would be the same as described under alternative 3. Alternative 4 would contribute indirect benefits of acquisition itself from the ability to continue flow-dependent ecosystem restoration projects, and long-term moderate adverse impacts on floodplains on the far eastern edge of the park. These impacts would contribute both appreciable long term beneficial, and noticeable adverse impacts on floodplains in this area.

Conclusion

Impacts would be the same as described under alternative 3 except no other utilities could be built in the corridor, which would lessen the risk of additional floodplain impacts. There would be no direct impacts on floodplains from the implementation of the land exchange, but there would be long-term indirect beneficial impacts of acquiring the FPL land, which would enhance the conservation of the resources and values of the park, including floodplains and their values and functions, and allow for flow-dependent ecosystem restoration projects to proceed. There would be indirect adverse impacts from construction and presence of transmission lines in the FPL West Preferred Corridor resulting in long-term moderate adverse impacts on floodplains and floodplain function and values. Alternative 4 would contribute appreciable long term beneficial, and noticeable adverse impacts to the cumulative impacts on floodplains in the area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, the direct and indirect impacts associated with the land exchange would be the same as described under alternative 2. The enhanced flowage would be accommodated across the exchange corridor and across the original FPL property. Alternative 5 would have indirect long-term benefits on floodplains.

Impacts of Transmission Line Construction

Under alternative 5, indirect impacts on floodplains and floodplain functions and values would be the same as those described for alternative 1b, except that the flowage easement would allow for enhanced flows to accommodate flow-related ecosystem restoration activities. The hydroperiod would be maintained, but the enhanced flows would be forced through culverts, limiting the benefits to floodplain function, and this would continue to hamper improvements to floodplain values and result in long-term moderate adverse impacts on floodplains by compartmentalizing areas and obstructing flows and diminishing floodplain function locally.

Cumulative Impacts

The cumulative projects considered with respect to floodplain function and values from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Implementation of alternative 5 would provide both long-term beneficial and long-term moderate adverse impacts, because the flow-related ecosystem restoration projects could proceed, but sheetflow patterns would be disrupted regionally by the transmission lines. Alternative 5 would therefore contribute appreciable beneficial impacts by allowing enhanced flows and a higher flood stage, and noticeable adverse impacts on floodplain function in the area.

Conclusion

Under alternative 5, enhanced flowage would be accommodated across the exchange corridor and across the original FPL property, resulting in long-term benefits, similar to alternative 2. Impacts on floodplains from transmission line construction would be long-term moderate adverse, similar to those discussed under alternative 1b. Alternative 5 would contribute appreciable beneficial impacts by allowing enhanced flows and a higher flood stage, and noticeable adverse impacts on cumulative impacts on floodplains in the area.

SOUNDSCAPES

GUIDING REGULATIONS AND POLICIES

In accordance with NPS *Management Policies 2006* (NPS 2006a) and Director's Order 47: Sound Preservation and Noise Management (NPS 2000a), an important part of the NPS mission is the preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscapes is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials.

As stated in Director's Order 47, natural sounds are intrinsic elements of the environment that are often associated with parks and park purposes. They are inherent components of the "scenery and the natural and historic objects and the wildlife" protected by the NPS Organic Act. Intrusive sounds are of concern to the NPS because they can impede the ability of the NPS to accomplish its mission.

By definition, noise is human-caused sound that is considered unnecessary and unwanted. Whether a sound is considered unpleasant depends on the individual who hears the sound and the setting and circumstance under which the sound is heard. While performing certain tasks, people expect and, as such, accept certain sounds that are considered unpleasant under other circumstances. For example, if a person works in an office, sounds from printers, copiers, telephones, and keyboards are generally acceptable and

not considered unduly unpleasant or unwanted. By comparison, when resting or relaxing, these same sounds may be intolerable.

Sound levels are usually measured in A-weighted decibels (dBAs), and descriptors such as the energy equivalent noise level (L_{eq}) and the day-night average noise level (L_{dn}) are commonly used to account for fluctuations of sound over time. Generally, a 3 dBA increase in ambient sound levels is considered the minimum threshold at which most people can detect a change in the sound environment. Decibels (dBs) are often related to perceived loudness, and in some frequency bands a 10-dBA increase can result in sounds that seem twice as loud, even though this would correspond to multiplying the number of sound sources by 10.

Sounds found desirable during times of rest and relaxation are referred to as natural quiet, and include natural, outdoor ambient sounds, without the intrusion of human-caused sounds. Natural sounds throughout the park—including flowing water, animals, and rustling leaves—are not considered noise. The enjoyment of natural sounds in the park enhances the visitor's experience, and natural quiet can be essential for some individuals to achieve a feeling of peace and solitude.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Soundscape impacts in the park were assessed based on the area where noise attributable to transmission line construction or operation would be 3 dBA or greater over the *natural ambient*. For noise-sensitive residential areas outside the park, impacts were assessed based on the area where transmission line construction or operation would increase sound levels by 3 dBA or greater over the *existing ambient*. The rationale for the 3 dBA change criterion for assessing impacts is explained below, followed by further details on the methodologies used to characterize natural ambient and existing ambient sound levels, temporary construction impacts, and long-term operation impacts.

Background Information on Reduction in Listening Area

An increase in the ambient noise level affects the ability of humans and animals to perceive other sounds within a certain distance. In general, the higher the ambient noise level, the shorter the distance from which other sounds (for example, those of a songbird) can be heard. This concept is expressed in terms of listening area and alerting distance. In terms of impact metrics, a 3 dBA increase in the natural ambient is an important indicator of potential impact because it results in a 50 percent reduction in *listening area* for humans and animals and a 30 percent reduction in *alerting distance*, as described below (NPS 2010d).

Reduction in listening area quantifies the loss of hearing ability to humans and animals as a result of an increase in ambient noise level. Under natural ambient conditions a sound is audible within a certain area around a visitor or animal. If the ambient level is increased due to a noise event, the area in which the sound is audible decreases. Table 23 and figure 45 illustrate the relationship between increased ambient and listening area reduction.

TABLE 23: REDUCTION IN LISTENING AREA AND ALERTING DISTANCE DUE TO INCREASES IN AMBIENT LEVELS

dBA Ambient Increase	3	6	10	20
Percent Reduction in Listening Area	50%	75%	90%	99%
Percent Reduction in Alerting Distance	30%	50%	70%	90%

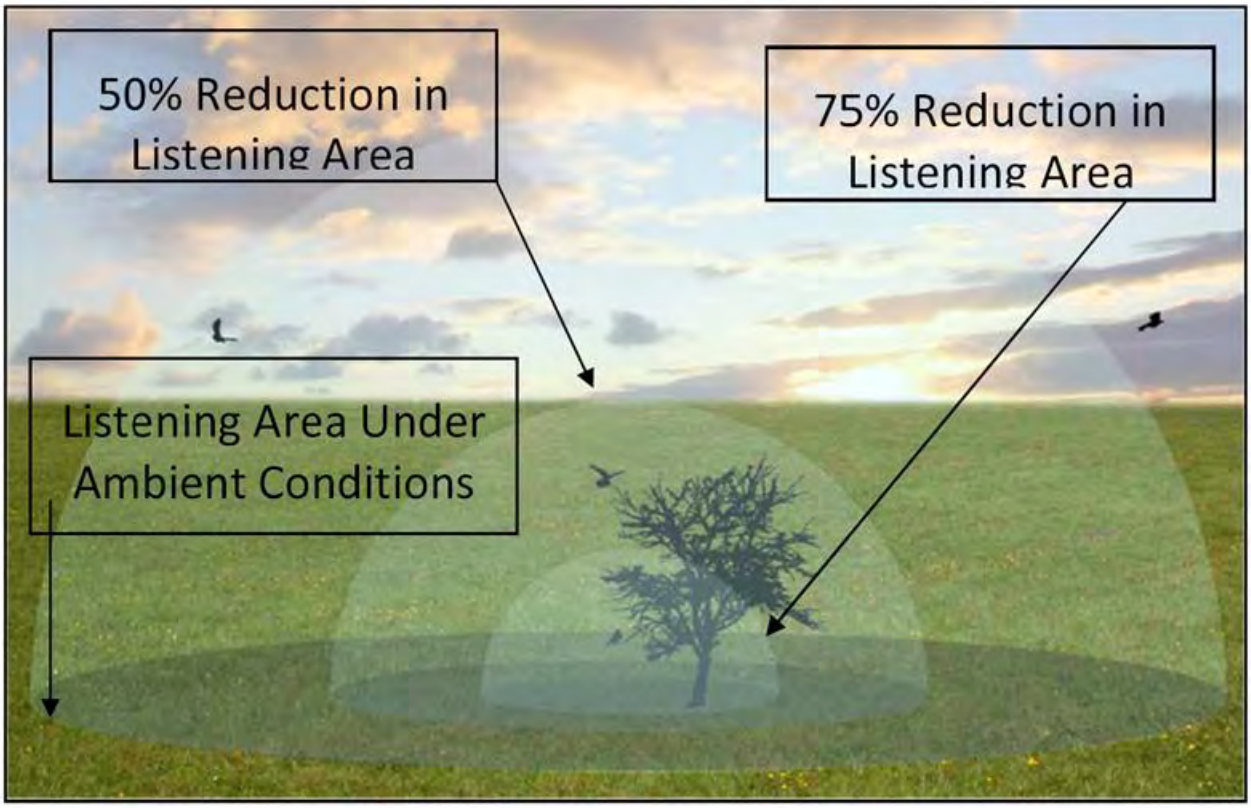


FIGURE 45: REDUCTION IN LISTENING AREA

For example, under natural ambient conditions, an owl perched in a tree may be able to hear a mouse scurrying through the brush anywhere within an area of 100 square meters of the perch. If a noise event increases the ambient level by 3 dBA, the area in which the owl can hear a mouse would decrease by 50 percent to approximately 50 square meters.

The reduction in alerting distance is closely related to the reduction in listening area. The residual alerting distance is equal to the square root of the residual listening area. Instead of addressing losses in terms of an area, reduction in alerting distance expresses the reduction as a linear distance from a source. For example, under natural ambient conditions, a hiker may be alerted to the sound of a flash flood at a distance of 1 mile. If a noise such as an off-road vehicle increases the ambient level by 6 dBA, the distance at which the flood could be detected would decrease by 50 percent to approximately 1/2 mile (NPS 2010d).

Visitors and wildlife are impacted by their failure to hear natural sounds that would have been audible in the absence of noise: a bird misses the sound of a worm, a mouse misses the footfall of a coyote, a visitor misses the sound of a distant waterfall. Reductions in listening area and alerting distance capture these types of impacts.

Natural Ambient and Existing Ambient Sound Levels

As discussed in chapter 3, the existing natural ambient in the park was determined from a monitoring site south of the Shark Valley Visitor Center and the results are considered generally representative of interior areas of the park in the project area. The natural ambient varies between summer and winter, with winter being quieter. Therefore, to be conservative, the winter daytime natural ambient of 28.4 dBA was used as

the basis for assessing impacts in the park. The analysis also does not account for masking corona noise due to weather noise, resulting in a more conservative analysis.

Natural ambient is not an appropriate basis for assessing impacts in the context of residential areas, where human-caused sounds are more accepted. An existing day-night sound level (L_{dn}) of 55 dBA was estimated based on population density, as discussed in chapter 3. The L_{dn} metric incorporated a 10 dBA penalty on sound levels occurring at night. There is no monitoring data available for the affected residences. For impact assessment purposes, the estimated quietest daytime hourly L_{eq} was assumed to be approximately 10 dBA less than the estimated L_{dn}, or 45 dBA.

Short-term Construction Impacts Methodology

The specific activities associated with the possible future transmission line construction were evaluated in terms of the types of equipment typically used, the potential duration and frequency of occurrence of the activities, and the potential approximate noise level generated at various distances from the noise sources. Each of these factors was subsequently used to determine the degree of the impact associated with construction relative to natural ambient (in the park) or existing ambient (residential area) sound levels.

Table 24 summarizes the maximum instantaneous (L_{max}) noise levels generated by typical equipment used in transmission line construction as a function of distance from the construction site. The reference L_{max} levels at a distance of 50 feet are based on monitoring of actual construction equipment operation as reported in the documentation of the Federal Highway Administration's Roadway Construction Noise Model.[5] The equipment noise levels at greater distances from the site were calculated assuming that noise levels would decrease by 6 dBA per doubling of distance, which is typical for point sources of noise. The L_{max} levels presented in the table are conservative (over-predicting as opposed to under-predicting impacts), because they do not take into account ground cover attenuation, atmospheric effects, or the effects of topography on sound levels. The "total" column presents the combined noise level of all the listed types of equipment operating simultaneously as calculated through "decibel addition" (dBs are expressed on a logarithmic scale and thus cannot be directly added together). Helicopters were not included in the sound levels shown in table 25, but helicopter sound levels on the ground during conductor stringing would be similar to the combined noise level of heavy construction equipment (e.g., 80–90 dBA maximum).

Within the park, construction noise would drop to equal the natural ambient (and thus result in a 3 dBA increase in the total sound level) at a distance of 13.7 miles under the simplified analysis assumptions used. Construction noise will drop to ambient levels at much shorter ranges than 13.7 miles on sunny days, because the warmer air near the ground will cause the noise energy to refract upwards. Propagation out to 13.7 miles will be the plausible upper bound, and will occur shortly after sunrise, possibly shortly before sunset, and possibly downwind of the construction site when wind speeds are low. Construction noise levels could exceed the natural ambient by 10 dBA or more (e.g., 38.4 dBA) out to a distance of 4.3 miles.

[5] http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/.

TABLE 24: TYPICAL TRANSMISSION LINE CONSTRUCTION NOISE LEVELS (L_{MAX})

Distance (feet)	Flat Bed Truck dBA	Grader/Scraper dBA	Crane dBA	Tractor dBA	Bulldozer dBA	Generator dBA	Saw dBA	Auger Drill Rig dBA	Total dBA
50	74	84	81	84	82	81	84	84	91.6
100	68.0	78.0	75.0	78.0	76.0	75.0	78.0	78.0	85.6
200	62.0	72.0	69.0	72.0	70.0	69.0	72.0	72.0	79.5
400	55.9	65.9	62.9	65.9	63.9	62.9	65.9	65.9	73.5
800	49.9	59.9	56.9	59.9	57.9	56.9	59.9	59.9	67.5
1,600	43.9	53.9	50.9	53.9	51.9	50.9	53.9	53.9	61.5
3,200	37.9	47.9	44.9	47.9	45.9	44.9	47.9	47.9	55.5
6,400	31.9	41.9	38.9	41.9	39.9	38.9	41.9	41.9	49.4
12,800	25.8	35.8	32.8	35.8	33.8	32.8	35.8	35.8	43.4
25,600	19.8	29.8	26.8	29.8	27.8	26.8	29.8	29.8	37.4
26,600	19.5	29.5	26.5	29.5	27.5	26.5	29.5	29.5	37.1
28,100	19.0	29.0	26.0	29.0	27.0	26.0	29.0	29.0	36.6

For residential areas, construction noise would drop to equal the existing ambient at a distance of 2.0 miles in the absence of intervening barriers to sound (such as terrain or other buildings). Construction noise would be 10 dBA or more over the existing ambient out to a distance of 0.6 miles. Building row attenuation effects were accounted for. As sound travels from near ground level sources (such as most construction equipment), the initial rows of buildings encountered serve to attenuate the noise for subsequent rows. The distance to the first row of buildings for various segments of the transmission lines was estimated using a GIS. A shielding factor of 4.5 dB was subtracted at the first row of buildings and 1.5 dB subtracted for each successive row of buildings, up to a maximum attenuation of 10 dBA as recommended by the Federal Transit Administration guidance (FTA 2006). Once the edge of a residential area was reached, additional building rows were assumed every 200 feet until the 10 dBA maximum attenuation was reached.

Residences potentially impacted by construction noise were quantified based on a database of geocoded addresses for Miami-Dade County.[6] The address database was reviewed in comparison to 2010 orthophotography and address points on vacant land and commercial properties in the study area were removed.

[6] http://gisweb.miamidade.gov/GISSelfServices/Data/HTML/GeoAddress.htm.

TABLE 25: SUMMARY OF SHORT-TERM AND LONG-TERM SOUNDSCAPE IMPACTS BY TRANSMISSION LINE CORRIDOR

	Transmission Line Corridor	Temporary Construction Impacts		Long-term Corona Noise Impact		Notes
		3 dBA or greater increase[a]	10 dBA or greater increase[b]	3 dBA or greater increase[c]	10 dBA or greater increase[d]	
Square Miles of Park Impacted	FPL West Preferred Corridor	221.4	43.3	1.4	0.11	Impact on park soundscapes less than FPL West Secondary Corridor, but greater than east side of West Consensus Corridor
	FPL West Secondary Corridor	227.6	52.9	3.3	0.7	Largest potential for impact on park soundscapes
	West Consensus Corridor - East	221.9	42.6	0.1	0	Smallest potential for impact on park soundscapes
	West Consensus Corridor - West	221.2	43.7	1.8	0.6	Impact on park soundscapes less than the FPL West Secondary Corridor, but greater than the east side of the West Consensus Corridor and FPL West Preferred Corridor
Residential Structures Impacted	FPL West Preferred Corridor	155	70	NA	NA	Greater impacts on soundscapes in residential areas than FPL West Secondary Corridor, but less than West Consensus Corridor
	FPL West Secondary Corridor	109	11	NA	NA	Smallest potential for impacts on soundscapes in residential areas
	West Consensus Corridor - East	2,197	203	NA	NA	Largest potential for impacts on soundscapes in residential areas
	West Consensus Corridor - West	592	58	NA	NA	Less potential for impact on soundscapes in residential areas than east side of West Consensus Corridor but greater impacts than the FPL West Preferred and the FPL West Secondary Corridor

[a]13.7 miles in park, distance varies in residential areas depending on building row attenuation (maximum of 2.0 miles with no shielding).

[b]4.3 miles in park, distance varies in residential areas depending on building row attenuation (maximum of 0.6 miles with no shielding).

[c]0.23 miles in park.

[d]0.047 miles in park.

Long-term Operation Impact Methodology

The localized electric field near an energized conductor can produce tiny electric discharges that can ionize air close to the conductors.[7] This partial discharge of electrical energy is called corona discharge, or corona. Corona generates audible noise that can be characterized as a hissing, crackling sound, which under certain conditions is accompanied by a hum. This audible noise can barely be heard in fair weather conditions on higher-voltage lines. During wet weather conditions, water drops collect on the conductor and increase corona activity so that a crackling or humming sound may be heard at higher levels than those experienced under dry conditions.[8]

Corona noise calculations were performed by FPL for 14 representative transmission line cross sections at various locations along the FPL West Preferred and FPL West Secondary Corridors as part of the SCA (FPL 2009a; appendix F). Corona noise levels in terms of L_{50} were estimated using the Bonneville Power Administration's Corona and Field Effects Program. The Bonneville Power Administration's program calculates corona noise using empirical equations that have been developed from measurements on numerous high-voltage lines.[9] All four cross sections in the project area had an estimated maximum noise level of approximately 49 dBA (L_{50}) under foul weather conditions (FPL 2009a).

Noise from a "line source" such as a transmission line attenuates at a slower rate than noise from a point source, or approximately 4.5 dBA per doubling of distance over soft cover (e.g., vegetated areas). Based on this and assuming that the corona noise level of 49 dBA would occur at approximately 50 feet from the lines, worst-case corona conditions would drop to equal the park natural ambient of 28.4 dBA at a distance of 1,200 feet from the lines and would be 10 dBA over the natural ambient within 250 feet. Residential areas would not be affected by corona noise under any of the alternatives because the corona noise would be much less than the existing ambient of 45 dBA at the location of the closest receptors.

The following definitions were used to determine the magnitude of adverse impacts on soundscapes:

- **Negligible**: Natural or background sounds would prevail; activities associated with noise would be very infrequent or absent.
- **Minor**: Natural or background sounds would predominate and human-generated sounds would be heard occasionally. When noise is present, it would be passing and would occur at low to medium levels in local areas, rarely audible at a distance.
- **Moderate**: Natural or background sounds would predominate, but activities associated with noise would occur occasionally at low to moderate levels. When noise is present, it would be occasionally audible at a distance from the source and may mask natural sounds briefly. Noise would not be overly disruptive to noise-sensitive visitor or resident activities.
- **Major**: Natural or background sounds would be impacted by activities associated with noise frequently or for extended periods. Noise would disrupt conversation for long periods and make enjoyment of other activities in the area difficult.

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[7] http://www.cpuc.ca.gov/environment/info/aspen/deltasub/pea/16_corona_and_induced_currents.pdf.

[8] http://www.cpuc.ca.gov/environment/info/aspen/deltasub/pea/16_corona_and_induced_currents.pdf

[9] Big Eddy Knight EIS. http://efw.bpa.gov/environmental_services/Document_Library/Big_Eddy-Knight/pdf/BEK_FEIS_Volume2_Appendix_E_Electric_Fields_Magnetic_Fields_Noise_and_Radio_Interference.pdf

Duration definitions for noise are as follows:

- **Short Term**: Impacts on the natural soundscape occurring during the period of construction.
- **Long Term**: Impacts that affect visitor or resident use patterns and consequently the associated impacts of human-generated noise on the natural soundscape for years to come.

ANALYSIS AREA

The area of analysis for soundscapes includes the area of audibility along and adjacent to the various possible transmission corridors in the general project area, extending out from any source of noise to where noise would decrease to background levels, which will vary with the type of land use.

Summary of Indirect Impacts by Transmission Line Corridor

Table 25 summarizes the quantification of potential temporary construction and long-term corona noise impacts by transmission line corridor and help in assessing the differences among the corridors. The impacts are discussed by alternative below.

In interpreting table 25, note that the duration of noise exposure is not reflected by the impact metrics, which are a simple tabulation of the acres of park land or number of residences within certain buffers. The buffer distances reflect the maximum potential extent of impacts from every point along the various transmission line routes (e.g., construction equipment L_{max}). Particularly with respect to construction impacts, impacts would not occur simultaneously along the entire line as the buffers suggest. Construction would move gradually along the line, exposing adjacent areas to high noise levels temporarily, then moving on incrementally. Nonetheless, in the absence of very detailed construction staging information, the buffers provide a way of understanding the potential impacts of the alternatives. To supplement the quantitative analysis based on L_{max}, the duration of construction noise exposure was evaluated qualitatively based on the location of the various alignments in relation to the park:

- Relative to the other transmission line routes, the duration of construction noise impacts in the park would be the highest for the FPL West Secondary Corridor because this route is surrounded by park land on either side of the FPL corridor.

- The duration of construction noise impacts would be the lowest for a transmission line on the east side of the West Consensus Corridor because this is the route most distant from the park.

- The west side of the West Consensus Corridor and the FPL West Preferred Corridor would have a relatively similar duration of construction noise impacts to the park because of their close alignment along the eastern edge of the park. The duration of impacts from construction on the west side of the West Consensus Corridor would be slightly less than the FPL West Preferred Corridor because the West Consensus Corridor alignment turns towards the east (making it farther from the park) south of U.S. 41 / Tamiami Trail.

Figure 46 summarizes corona noise and temporary construction noise impact buffers for the park. To simplify the presentation, figure 46 shows the 4.3-mile buffer for areas of the park experiencing a 10 dBA or greater increase in sound levels over the natural ambient during construction, and not the larger area experiencing a 3 dBA or greater temporary increase. Figure 46 also shows the area experiencing 3 dBA or greater increase in sound levels due to corona noise during precipitation events. Because all of the potential transmission line corridors have the same southern starting point for analysis purposes, all the alignments have a similar extent of impact in the park in the southern portion of the project area. Moving further north, the distinctions between the alignments become clearer. The FPL West Secondary Corridor would have the greatest impact and the eastern edge of the West Consensus Corridor would have the least.

Figure 47 compares the construction noise impacts of the FPL West Secondary Corridor and eastern edge of the West Consensus Corridor. The FPL West Secondary Corridor has a small number of impacts on residences located near the park in the southern portion of the project area. The majority of the FPL West Secondary Corridor in the park does not impact residential areas. In contrast, the eastern edge of the West Consensus Corridor impacts several dense residential areas. For clarity of presentation, the impacts of the other alignments are not shown, but are intermediate between the FPL West Secondary Corridor and eastern edge of the West Consensus Corridor in terms of residential impacts (table 25).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, FPL retention of ownership of land in the EEEA would not have any impacts on soundscapes.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on soundscapes.

Cumulative Impacts – Alternative 1a

Because there would be no impacts on soundscapes under alternative 1a, there would be no cumulative impacts.

Conclusion – Alternative 1a

FPL retention of ownership of land in the EEEA would not have any impacts on soundscapes. Alternative 1a would not involve transmission line construction and therefore would have no impacts on soundscapes from transmission line construction or presence.

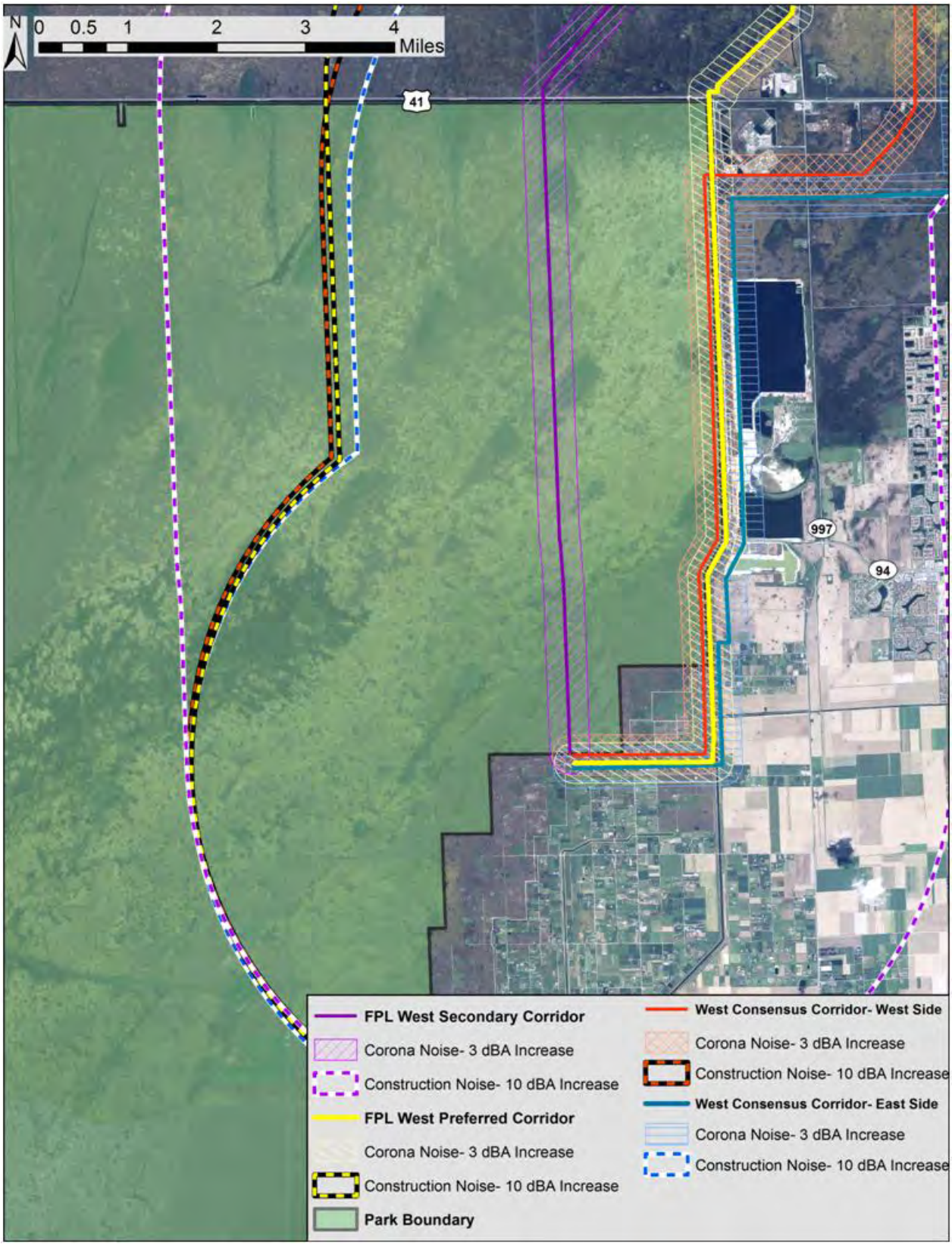


FIGURE 46: SOUNDSCAPES IMPACTS IN THE PARK – CORONA NOISE AND CONSTRUCTION NOISE

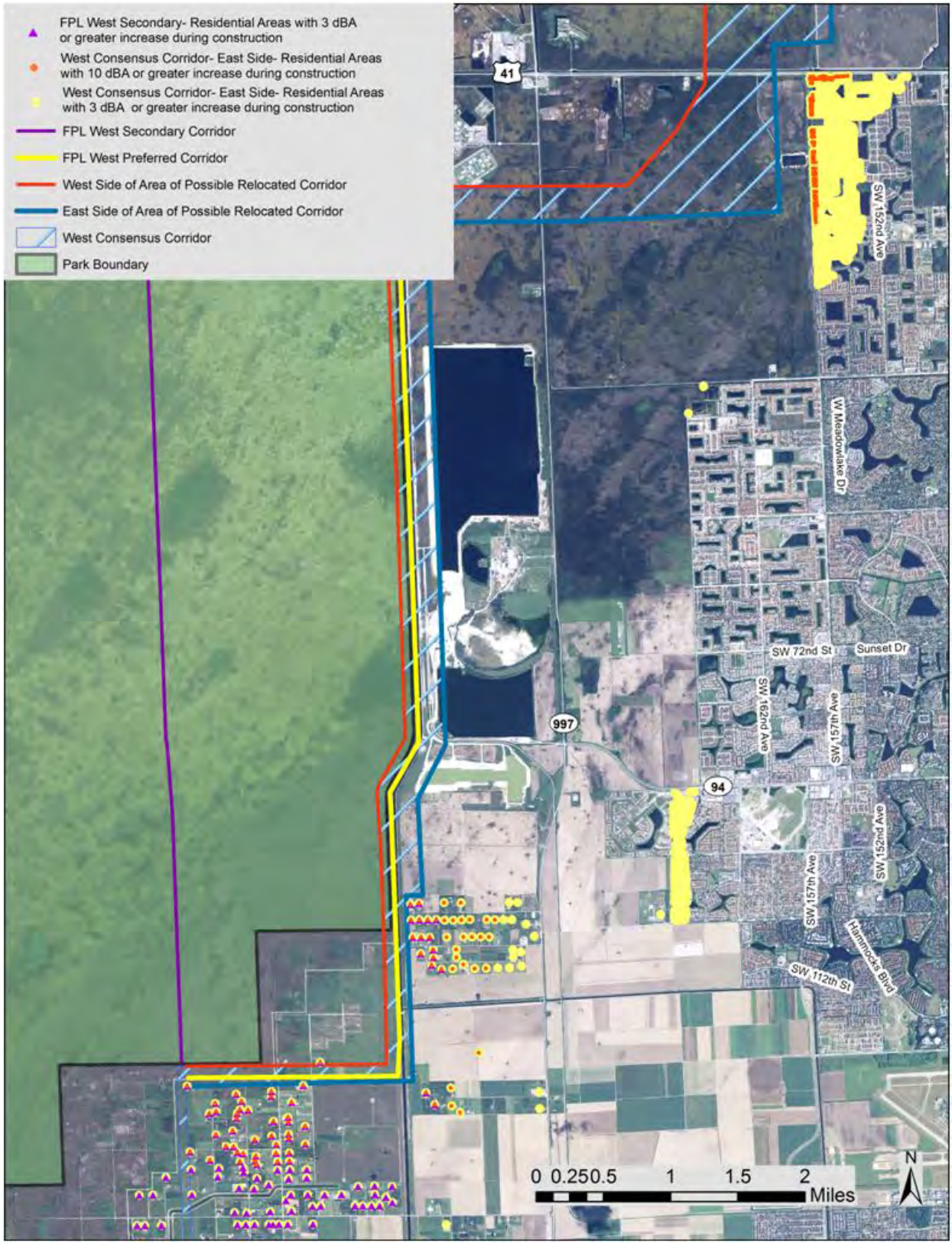


FIGURE 47: SOUNDSCAPES IMPACTS IN RESIDENTIAL AREAS – CONSTRUCTION IMPACTS OF FPL WEST SECONDARY CORRIDOR AND EAST SIDE OF WEST CONSENSUS CORRIDOR

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, FPL retention of ownership of land in the EEEA would not have any impacts on soundscapes.

Impacts of Transmission Line Construction

Under alternative 1b, it is assumed FPL would build a transmission line in the FPL West Secondary Corridor in the park. Heavy equipment used in the construction of the FPL West Secondary Corridor transmission lines (potentially including the use of helicopters in stringing the conductor) would result in short-term moderate adverse impacts on soundscapes in the park and on adjacent lands. Construction noise would be intense (over 90 dBA within 50 feet), but would also be intermittent and would not occur for long periods in one location as crews move along the transmission line alignment. No nighttime construction is anticipated in the park. The audibility of construction would vary day to day depending on factors such as the number of pieces of equipment in use at any one time and level of natural sounds (such as wind), which can mask human-caused sounds. Construction noise impacts would be the greatest in the winter when the natural ambient is the lowest (28.4 dBA), at which time the construction activity could equal the natural ambient out to a distance of 13.7 miles, thereby reducing listening area for wildlife and visitors. Approximately 227.6 square miles of the park are within 13.7 miles of the FPL West Secondary Corridor. Impacts would be greatest within 4.3 miles of the construction activity, where sound levels would be 10 dBA or higher than the natural ambient. Approximately 52.9 square miles of the park are within 4.3 miles of the FPL West Secondary Corridor.

Short-term construction impacts would also occur in the rural residential area to the east of where the FPL West Secondary Corridor enters the park. Approximately 109 residences could experience a 3 dBA increase in ambient levels at some point, and 11 residences could experience a 10 dBA increase as a result of construction.

Corona discharge from the FPL West Secondary Corridor transmission lines would result in long-term minor adverse impacts on soundscapes in the park because the natural soundscape would be mostly maintained, with localized impacts on soundscapes from corona noise. Corona noise would be greatest during foul weather (49 dBA at 50 feet from the lines), at which time it could increase ambient levels in the park by 3 dBA or more out to a distance of 0.23 miles. Approximately 3.3 square miles of the park would be affected by corona noise from the FPL West Secondary Corridor. Both inside and outside the park, predominantly natural areas would be within the corona noise effect zone—no residential areas would be impacted. During dry weather the corona noise would be less than during wet weather, and would be barely audible within the transmission line corridor and inaudible outside the corridor.

Long-term transmission line maintenance is assumed to include periodic inspections, primarily utilizing trucks, but also aerial surveys by helicopters or airplanes, and vegetation maintenance would likely take place periodically and involve trimming and mowing. The magnitude and geographic extent of maintenance-related soundscapes impacts would be similar to the temporary construction impacts described above. Because maintenance related activities would only occur in one place for a few days per year, overall soundscapes impacts on the park and adjacent residential areas would be long-term, negligible, and adverse.

Cumulative Impacts – Alternative 1b

There would be long-term minor adverse impacts on park soundscapes from operational activities (airboats, helicopter landings and overflights) and visitor use activities (private and commercial airboats), the use of heavy equipment for management activities, commercial aircraft overflights, and traffic on adjacent roadways; rock mining, and construction of seepage barrier along the L-31N canal. Impacts would vary substantially by geographic location, season, and time of day. Traffic, watercraft, and aircraft are accounted for in the soundscapes existing conditions assessment and are expected to continue in the future. As discussed in chapter 3, aircraft (general aviation, commercial jet, or military, not air tours) were audible 37 percent of the daytime during the summer, and 17 percent during the winter, at the EVER002 site south of the Shark Valley Visitor Center. Sounds from visitors (e.g., motor vehicles, conversation, music, and watercraft use) were audible 27 percent of the daytime during the summer, and 39 percent during the winter (NPS 2012d).

Construction of a transmission line in the park would result in long-term minor adverse impacts in the park due to corona noise, and short-term moderate adverse impacts from construction equipment use. Long-term negligible adverse impacts would result from periodic line maintenance. Alternative 1b would contribute noticeable adverse effects to cumulative impacts on soundscapes in the park, but little to no long-term cumulative impacts in residential areas.

Conclusion – Alternative 1b

Under alternative 1b, there would be no impacts on soundscapes from the FPL retention of property in the EEEA. Indirect impacts in the park resulting from the construction of the transmission lines in the FPL West Secondary Corridor would be short term, moderate, and adverse as a result of construction activities and long term, minor, and adverse from corona discharge during wet weather. There would be short-term moderate adverse construction-related impacts in residential areas. Long-term impacts from maintenance activities would be negligible and adverse. Actions under alternative 1b would contribute noticeable adverse effects to cumulative impacts on soundscapes in the park, but little to no long-term cumulative impacts in residential areas.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, the NPS would acquire the FPL property in the EEEA. No impacts would be expected from the acquisition of FPL land in the EEEA.

Impacts of Transmission Line Construction

Under alternative 2, it is assumed FPL would build a transmission line in the West Consensus Corridor east of the park. Heavy equipment used in the West Consensus Corridor would result in short-term moderate adverse impacts on soundscapes in the park and on adjacent lands. Construction noise would be intense (over 90 dBA within 50 feet), but would also be intermittent and would not occur for long periods in one location as crews move along the transmission line alignment. No nighttime construction is anticipated. The audibility of construction would vary day to day depending on factors such as the number of pieces of equipment in use at any one time and level of natural sounds (such as wind), which can mask human-caused sounds. Construction noise impacts would be the greatest in the winter when the natural ambient is the lowest (28.4 dBA), at which time the construction activity could equal the natural ambient in the park out to a distance of 13.7 miles, thereby reducing listening area for wildlife and visitors. Transmission lines on the eastern or western side of the West Consensus Corridor would result in

relatively similar areas of potential impact in the park within 13.7 miles (221 to 222 square miles). Impacts within 4.3 miles of construction activity would also be similar for the east and west sides of the West Consensus Corridor.

Short-term construction impacts would also occur in residential areas adjacent to the West Consensus Corridor. The potential for construction noise impacts on soundscapes in residential areas is substantially higher with transmission lines on the eastern side of the West Consensus Corridor (which passes closer to dense development) compared to the western side. Approximately 2,197 residences could experience a 3 dBA increase in ambient levels from a line on the eastern side of the West Consensus Corridor, compared to 592 residences for the western side of the West Consensus Corridor. Construction on the eastern side of the West Consensus Corridor could result in a 10 dBA increase in sound levels at 203 residences, compared to 58 residences on the western side of the West Consensus Corridor. Corona discharge from transmission lines in the West Consensus Corridor would result in long-term negligible to minor adverse impacts on soundscapes in the park. Corona noise would be greatest during foul weather (49 dBA at 50 feet from the lines), at which time it could increase ambient levels in the park by 3 dBA or more, out to a distance of 0.23 miles. Approximately 0.1 square mile of the park would be affected by corona noise from transmission lines on the eastern edge of the West Consensus Corridor, compared to 1.8 square miles that would be impacted by transmission lines on the western side of the West Consensus Corridor. No residential areas would be impacted, based on elevated background noise levels and proximity to homes. During dry weather the corona noise would be less than during wet weather, and would be barely audible within the transmission line corridor and inaudible outside the West Consensus Corridor.

As described under alternative 1a, long-term transmission line maintenance is assumed to include periodic inspections, primarily utilizing trucks, but also aerial surveys by helicopters or airplanes, and use of mowers and trimmers. And the magnitude and geographic extent of maintenance-related soundscapes impacts would be similar to the temporary construction impacts described above. Because maintenance related activities would only occur in one place for a few days per year, overall soundscapes impacts on the park or residences would be long-term, negligible, and adverse.

Cumulative Impacts

The cumulative impacts on soundscapes from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1b. Construction of a transmission line in the West Consensus Corridor would result in long-term minor adverse impacts, and construction noise would generate short-term moderate adverse impacts. Periodic line maintenance would result in long-term negligible adverse impacts. The contribution of these impacts on the overall cumulative effects in the park and residential areas would be imperceptible in the long term, but noticeable in the short-term. In addition, alternative 2 would not contribute noticeable long-term cumulative impacts in residential areas.

Conclusion

Under alternative 2, there would be no impacts on soundscapes from the acquisition of FPL property in the EEEA. Indirect impacts resulting from the construction of the transmission lines in the West Consensus Corridor would be short term, moderate, and adverse as a result of construction activities and long term, negligible to minor, and adverse from corona discharge during wet weather. There would be short-term moderate adverse construction-related impacts in residential areas. Long-term impacts from maintenance activities would be negligible and adverse. The geographic extent of impacts in the park and in residential areas would vary considerably depending on the exact route alignment. Alternative 2 would contribute imperceptible impacts to overall cumulative impacts in soundscapes in the park in the long

term, but noticeable adverse impacts in the short-term; alternative 2 would not contribute noticeable long–term adverse cumulative impacts in residential areas.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, there would be no impacts on soundscapes from the exchange of FPL and NPS lands in the EEEA. The terms and conditions of the land exchange under alternative 3 do not address transmission line noise requirements.

Impacts of Transmission Line Construction

Heavy equipment used in the construction of the FPL West Preferred Corridor transmission lines (potentially including the use of helicopters in stringing the conductor) would result in short-term moderate adverse impacts on soundscapes in the park and on adjacent lands. Construction noise would be intense (over 90 dBA within 50 feet), but would also be intermittent and would not occur for long periods in one location as crews move along the transmission line alignment. No nighttime construction is anticipated in the park. The audibility of construction would vary day to day depending on factors such as the number of pieces of equipment in use at any one time and level of natural sounds (such as wind), which can mask human-caused sounds. Construction noise impacts would be the greatest in the winter when the natural ambient is the lowest (28.4 dBA), at which time the construction activity could equal the natural ambient out to a distance of 13.7 miles, thereby reducing listening area for wildlife and visitors. Approximately 221 square miles of the park are within 13.7 miles of the FPL West Preferred Corridor. Impacts would be greatest within 4.3 miles of the construction activity, where sound levels would be 10 dBA or higher than the natural ambient (perceived by humans as a doubling of loudness). Approximately 43 square miles of the park are within 4.3 miles of the FPL West Preferred Corridor.

Short-term construction impacts would also occur in the residential areas. Approximately 155 residences could experience a 3 dBA increase in ambient levels at some point, and 70 residences could experience a 10 dBA increase as a result of construction.

Corona discharge from the FPL West Preferred Corridor transmission lines would result in long-term minor adverse impacts on soundscapes in the park. Corona noise would be greatest during foul weather (49 dBA at 50 feet from the lines), at which time it could increase ambient levels in the park by 3 dBA or more out to a distance of 0.23 miles. Approximately 1.4 square miles of the park would be affected by corona noise from the FPL West Preferred Corridor. No residential areas would be impacted. During dry weather the corona noise would be less than during wet weather, and would be barely audible within the transmission line corridor and inaudible outside the corridor.

Long-term transmission line maintenance is assumed to include periodic inspections, primarily utilizing trucks, but also aerial surveys by helicopters or airplanes including trimming and mowing. The terms and conditions under alternative 3 would allow other infrastructure to be located in the corridor, potentially increasing the amount maintenance activity and associated noise relative to alternative 4. The magnitude and geographic extent of maintenance-related soundscapes impacts would be similar to the temporary construction impacts described above. Because maintenance related activities would only occur in one place for several days per year, overall soundscapes impacts on the park would be long-term, negligible, and adverse. Terms and conditions are found in appendices G and H.

Cumulative Impacts

The cumulative impacts on soundscapes from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1b. Construction of a transmission line in the exchange corridor would result in long term negligible to minor adverse impacts on soundscapes from corona noise and periodic line maintenance, and short term moderate adverse impacts in the vicinity of the from construction noise. The contribution of these impacts on the overall cumulative impacts in the park would be somewhat noticeable. In addition, alternative 3 would not contribute noticeable long-term cumulative impacts in residential areas.

Conclusion

Under alternative 3, there would be no impacts on soundscapes from the fee for fee land exchange of FPL and NPS property within the EEEA. Indirect impacts in the park resulting from the construction of the transmission lines in the FPL West Preferred Corridor would be short term, moderate, and adverse as a result of construction activities and long term, minor, and adverse from corona discharge during wet weather. There would be short-term moderate adverse construction-related impacts on residential areas. Long-term impacts from maintenance activities would be negligible and adverse. Alternative 3 would contribute somewhat noticeable impacts to the overall cumulative impacts on soundscapes in the park; alternative 3 would not contribute noticeable long –term adverse cumulative impacts in residential areas.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, FPL would construct the transmission lines in the FPL West Preferred Corridor in the park. There would be no impacts on soundscapes from the easement for fee land exchange under alternative 4. As with alternative 3, the terms and conditions of the land exchange under alternative 4 do not address transmission line noise requirements. However, under the terms and conditions for alternative 4, no other utilities could be built in the corridor, which would lessen the risk of additional noise-related impacts of construction of these facilities. Terms and conditions are found in appendices G and H.

Impacts of Transmission Line Construction

Although FPL would not own the property, impacts on soundscapes would generally be the same as described under alternative 3. Heavy equipment used in the construction of the FPL West Preferred Corridor transmission lines (potentially including the use of helicopters in stringing the conductor) would result in short-term moderate adverse impacts on soundscapes in the park and on adjacent lands. Corona discharge from the FPL West Preferred Corridor transmission lines would result in long-term minor adverse impacts on soundscapes in the park and on adjacent lands. Transmission line maintenance activity would result in long-term negligible adverse impacts and other types of utility infrastructure would not be allowed in the corridor under the terms and conditions (unlike alternative 3, which would allow other utilities).

Cumulative Impacts

Cumulative impacts to soundscapes under alternative 4 would be the same as alternative 3. The contribution of the impacts of alternative 4 to the overall cumulative impacts in the park would be somewhat noticeable. In addition, alternative 3 would not contribute noticeable long-term cumulative impacts in residential areas.

Conclusion

Under alternative 4, there would be no impacts on soundscapes from the easement for fee land exchange with FPL in the EEEA. Construction of the transmission lines in the FPL West Preferred Corridor would have short-term moderate adverse impacts in the park as a result of construction activities and long-term minor adverse impacts from corona discharge during wet weather. Periodic line maintenance would have long-term negligible adverse impacts. No other utilities could be built in the corridor, which would lessen the risk of additional noise-related impacts of construction of these facilities.

There would be short-term moderate adverse impacts in residential areas. Maintenance activities would result in long-term negligible adverse impacts in residential areas. Alternative 4 would contribute somewhat noticeable adverse impacts to the overall cumulative impacts on soundscapes in the park; alternative 4 would not contribute noticeable long-term adverse cumulative impacts in residential areas.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, FPL retention of ownership of land in the EEEA would not have any impacts on soundscapes.

Impacts of Transmission Line Construction

Indirect adverse impacts on soundscapes under alternative 5 would be the same as described under alternative 1b. Heavy equipment used in the construction of the FPL West Secondary Corridor transmission lines (potentially including the use of helicopters in stringing the conductor) would result in short-term moderate adverse impacts on soundscapes in the park and on adjacent lands. Corona discharge from the FPL West Secondary Corridor transmission lines would result in long-term minor adverse impacts on soundscapes in the park and on adjacent lands. Maintenance-related impacts would be the same as alternative 1b (long term, negligible, adverse).

Cumulative Impacts

Cumulative impacts to soundscapes under alternative 5 would be the same as under alternative 1b. Alternative 5 would contribute noticeable adverse effects to cumulative impacts to soundscapes in the park, but little to no long-term cumulative impacts in residential areas.

Conclusion

Under alternative 5, there would be no impacts on soundscapes from the long-term flowage easement on FPL property. Construction of the transmission lines in the FPL West Secondary Corridor would have indirect, short-term moderate adverse impacts in the park as a result of construction activities and long-term minor adverse impacts from corona discharge during wet weather.

Construction would have short-term moderate adverse impacts in residential areas. Maintenance activities would have long-term negligible adverse impacts. Alternative 5 would contribute noticeable adverse effects to cumulative impacts to soundscapes in the park, but little to no long-term cumulative impacts in residential areas.

WILDLIFE

GUIDING REGULATIONS AND POLICIES

The NPS Organic Act of 1916 and the NPS *Management Policies 2006* (NPS 2006a) directs parks to provide for the protection of park resources. The NPS *Management Policies 2006* states, "The National Park Service will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term "plants and animals" refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals. The Service will successfully maintain native plants and animals by

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human-caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them."

The landmark Everglades Restoration Act, which President Clinton signed on December 11, 2000, authorized federal spending to begin work projects under the CERP. Implementation of the plan greatly improves the quality, quantity, timing, and distribution of flows into the park and in doing so, restores and supports the natural wildlife of the park. Provisions in the plan support the return of the large nesting rookeries of wading birds to the park and the recovery of several endangered species.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Information from park staff and publications was used to identify baseline conditions for wildlife. Available information was also taken from other NPS and non-NPS entities to describe these resources in more detail. In general, it was assumed that there would be impacts on wildlife during the construction phase, as well as post-construction effects. The primary steps taken in assessing impacts on wildlife included determining the following:

1. Which species are found in areas likely to be affected by management actions described in the alternatives
2. Habitat/vegetation loss or alteration caused by the alternatives
3. Displacement and disturbance potential of the actions and the species' potential to be affected by construction or future use and management activities.

Analysis of possible impacts on wildlife was based on review of existing literature and maps, information provided by the NPS and other agencies, experience related to effects of transmission line construction, and professional judgment.

The following definitions were used to determine the magnitude of adverse impacts on wildlife:

- **Negligible**: There would be no observable or measurable impacts on native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.
- **Minor**: A change in effects on wildlife would be localized within a small area. The change would be measurable or perceptible in terms of abundance, distribution, quantity, or quality of populations. While the mortality of individual animals might occur, the viability of wildlife populations would not be affected and the community, if left alone, would recover. Impacts would be detectable and are expected to be outside the natural range of variability.
- **Moderate**: A change in effects on wildlife would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of populations. Impacts would be outside the natural range of variability. Disruptions to key ecosystem processes that would be outside natural variation might occur, but the ecosystem would soon return to natural conditions. Mitigation measures would probably be necessary to compensate for adverse effects and would likely be successful.
- **Major**: A change in effects on wildlife would be readily apparent, and would substantially change wildlife populations over a large area in and out of the park. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and would be expected to be outside the natural range of variability or be permanent. Key ecosystem processes might be disrupted. Loss of habitat might affect the viability of at least some native species. Extensive mitigation would be needed to compensate for adverse effects, and its success would not be ensured.

ANALYSIS AREA

The area of analysis for wildlife (except avian species) includes the general project area. This includes the NESRS in the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see “Figure 4: General Project Area,” in chapter 1). The area of analysis for wildlife is focused on areas of disturbance along the possible transmission line corridors plus adjacent areas likely to experience adverse effects from noise of equipment and construction crews (see the “Soundscapes” section). For avian species, the area of analysis extends to the nearby foraging areas for wading birds, including areas around the coast to the southeast and the Pennsuco wetlands to the northeast, which includes the FPL corridor extending from Clear Sky to Pennsuco substations.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property’s status or ownership and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on wildlife. Alternative 1a would result in continued indirect, long-term moderate to major adverse impacts on wildlife, depending on the species being impacted, due to continued habitat degradation from altered hydrology. Impacts on wetland dependent species are expected to be major adverse, while impacts on non-wetland dependent species are expected to be moderate adverse. Habitat restoration and wildlife management efforts within the park would be hindered by FPL ownership of the parcel and the lack of a flowage easement, or sufficient interests in these properties, to

flow additional water across the FPL West Secondary Corridor. Alternative 1a would result in negative impacts on wildlife.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on wildlife.

Cumulative Impacts – Alternative 1a

The past, present, and reasonably foreseeable future actions impacting wildlife include the acquisition of lands in the expansion area under the Expansion Act and all present and future actions aimed at restoring habitat and delivering additional freshwater to the park. These projects would not all be completed as planned due to the inability to flow enough water over the FPL West Secondary Corridor to establish hydrologic restoration goals, a long-term moderate to major adverse impact. The overall direction of the GMP to preserve park resources would indirectly benefit the wildlife in the park. Other projects in the area of analysis with adverse effects on wildlife include ongoing urban development, road construction and use (car collisions), ongoing mining (minor to moderate adverse from habitat loss and direct mortality). Park plans and projects that can affect wildlife include periodic prescribed burns (short-term adverse impacts from the burning; long-term benefits from reduction in extreme wildfire risk), and vegetation (exotic plant) management, which benefits wildlife by eliminating nonnative plants and improving natural habitat. Alternative 1a would result in moderate to major adverse impacts because of the lack of flowage and would contribute appreciable adverse impacts to the overall cumulative effects on wildlife in this area.

Conclusion – Alternative 1a

There would be no direct impacts on wildlife from the land acquisition action. Long term, moderate to major, indirect adverse impacts are expected to wildlife due to continued FPL ownership of land within the park and the lack of a flowage easement. FPL ownership of land within the park and the inability to increase water levels across the FPL West Secondary Corridor is expected to hinder habitat restoration efforts. Since construction of transmission lines are not included as part of this alternative, there would be no impacts on wildlife from construction. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative effects on wildlife in this area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Impacts would be the same as alternative 1a, with no direct impacts but with continued long-term moderate to major adverse impacts on wildlife, depending on the species being impacted, due to continued habitat degradation from altered hydrology.

Impacts of Transmission Line Construction

General Construction-related Impacts

During construction, there would be construction equipment and associated noise in the vicinity of the construction area which may disrupt wildlife behaviors and travel patterns. If helicopters are needed during construction, they would introduce additional noise and disruption. The construction noise and activity may also temporarily drive some species out of the vicinity during the construction period.

Impacts would also occur due to ground disturbance and vegetation removal or treatment in work areas outside the access road and pad areas (see the “Vegetation and Wetlands” section) during the construction period; this would result in a temporary loss of nesting, resting, and foraging habitat along the corridor. Impacts on wildlife behavior from construction noise and activity and temporary ground disturbance are anticipated to be short term and adverse. The magnitude of these temporary adverse impacts would range from minor (if they are in non-critical periods) to moderate (occurring in breeding or nesting season). Less motile species may not be able to move out of the construction area and may be injured or killed during construction activities. Impacts from death of individual animals would be adverse, temporary, and minor as death of individual animals is not expected to have population impacts on non-special-status species.

Construction of access roads and structure pads would result in permanent loss of habitat for some species (see the “Soils” and “Vegetation and Wetlands” sections for details on acres lost). These activities may also fragment habitat, creating more edge habitat. The creation of edge habitat can allow nonnative species to invade an area and further reduce habitat quality. The loss or modification of habitat due to construction of the transmission lines and associated access roads would have long term minor to moderate adverse impacts, depending on the type of habitat impacted and the species that use the habitat.

General Line Maintenance–related Impacts

Line maintenance would be done about once every 2 years and would consist of line surveys conducted by helicopter and/or vehicle using the access road that was constructed. Noise from these activities would cause impacts similar to those from vehicle use and helicopter use during construction, but there would be less equipment used and lower noise levels for ground work. Therefore, there would be short-term minor to moderate adverse impacts.

Fish and Other Aquatic Species

Impacts on fish and other aquatic species from construction activities should be short term and minor adverse. Appropriate erosion and sedimentation control measures would be implemented during construction to prevent degradation of adjacent water bodies. Transmission line construction stormwater discharges released into waters of the state would be addressed through compliance with Rule 62-621.300(4) (Generic Permit for Stormwater from Large and Small Construction Activities). Culvert sizing for the access roads and structure pads in extensive wetland areas would be based on appropriate hydrological studies and comply with applicable codes and requirements. Where construction of access roads and structure pads is required in wetlands, turbidity screens and erosion control devices would be used to minimize construction impacts on wetlands and water bodies and ensure that state water quality standards for turbidity are met. Species using wetland environments would experience a permanent loss of habitat due to filling of wetlands for structure pads and access roads. Impacts related to wetland habitat loss are expected to be long term, moderate, and adverse. The filling of wetlands for access roads may create a barrier for movement of certain species. This impact can be mitigated by proper culvert design to accommodate wildlife passage. The impacts of access roads on movement of aquatic wildlife are expected to be long term, moderate adverse depending on culvert or wildlife crossing design. The lack of a flowage easement is expected to have continued adverse impacts on aquatic fauna since the inability to flow additional water across the FPL property is expected to hinder habitat restoration efforts.

Amphibians and Reptiles

Amphibians and reptiles are most vulnerable during colder or drier periods when they go into a dormant condition. During these periods, the animals are not able to quickly react to changing conditions. If construction activities were to take place during a period when amphibians and reptiles were dormant,

many individuals would not be able to flee and would be injured or killed. This would represent a short term minor to moderate adverse impact. Construction activities may also temporarily disrupt amphibian and reptile behavior resulting in short term minor to moderate adverse impacts. Amphibians and reptiles may experience a loss of habitat due to construction of structure pads and access roads. This is a long-term moderate adverse impact. The lack of a flowage easement is expected to have continued adverse impacts on amphibians and reptiles since the inability to flow additional water across the FPL property is expected to hinder habitat restoration efforts.

Birds

The behavior of bird species may be impacted by construction noise and traffic. The greatest impacts on avian species would occur if construction took place during breeding and nesting periods. Impacts on avian behavior related to construction noise and traffic are expected to be short term, minor to moderate, adverse depending on the season. Construction of structure pads and access roads would also result in a loss of foraging and nesting habitat for avian species. The loss of these habitats would have long-term moderate adverse impacts. The lack of a flowage easement is expected to have continued adverse impacts on birds since the inability to flow additional water across the FPL property is expected to hinder habitat restoration efforts. This effect may be more impactful on bird species whose main prey is aquatic species. Many bird species known in this area are also listed as endangered or threatened by USFWS and the state; these impacts are discussed in more detail in the “Special-status Species” section.

Construction of the transmission lines would create a permanent electrocution and strike hazard for bird species from structures, lines, and guy wires and can result in injury or death to individuals (APLIC and USFWS 2005). Although birds from a wide range of taxa and feeding guilds are exposed to these direct risks, wading birds (such as herons, egrets, storks, and cranes) are of particular concern because they make up such a large and important component of the birds found in Everglades region of South Florida. Wading birds are behaviorally predisposed to collision due to their large size, which makes it difficult for them to take evasive action when confronted with flight obstacles. Raptors (especially snail kites, hawks, falcons, vultures, and owls) are known to experience direct mortality from collision and electrocution (Madders and Whitfield 2006). Specifically, waders and raptors are both morphologically and behaviorally more vulnerable than many other birds and have greater risk of electrocution and collision from electric utility structures, lines, and guy wires (APLIC 2006; Hunting 2002). However, all birds that fly in flocks (such as songbirds, plovers, gulls, ducks, geese, and cranes) near lines and structures are susceptible to collisions due to their reduced ability to see and avoid obstacles (Exponent 2013, amended 2015). In the southeast United States, birds of prey (raptors, eagles, and owls) are especially vulnerable to electrocution because of their size, relative rarity as top-of-the-food chain predators, hunting behavior that can entail soaring at heights that can correspond to the height of transmission and distribution towers and lines, or hunting from perched positions on transmission and distribution structures. Electrocution may occur when a bird or other organism completes an electric circuit by simultaneously touching two energized parts or an energized part and a grounded part of electrical equipment. Most electrocutions occur on medium-voltage distribution lines (4 to 34.5 kV), in which the spacing between conductors may be small enough to be bridged by birds. Poles with energized hardware, such as transformers, can be especially hazardous, even to small birds, because poles contain numerous, closely spaced energized parts (APLIC and USFWS 2005). Even with adequate separation distances on utility structures, scavengers and predatory species that may perch on transmission line structures, such as vultures and herons, can be electrocuted when they expel large streams of excrement, called streamers that span from an energized conductor to another transmission line structure (APLIC 2006).

The risk of electrocution to raptors and other birds that perch and nest on transmission structures can be reduced, but not eliminated, by incorporating avian-safe design measures (increased separation between energized and/or grounded structures, conductors, hardware, etc.) and avian protection devices (perch

diverters, etc.). Similarly, line strikes may be reduced, but not eliminated, by installation of line markers to enhance the visibility of the transmission lines to avian species. However, proximity to transmission lines is a major risk factor for birds and the key recommendation for minimizing risk of collision mortality of flying birds or electrocution from birds landing on wires or tower is to avoid siting new transmission lines on or near to important bird flight paths (APLIC and USFWS 2005; APLIC 2006).

In 2010, the NPS conducted an evaluation of the potential impacts of placing FPL transmission lines in Everglades National Park. The report identified nine risk factors at Everglades National Park for avian injury and mortality resulting from contact with transmission lines:

1. Abundance and diversity of species that produce streamers
2. Transmission line crosses major wetland system
3. Transmission line crosses foraging, roosting, or nesting sites
4. Transmission line crosses migratory route
5. Abundance and diversity of roosting and/or breeding/nesting birds
6. Abundance and diversity of juvenile avian species
7. Abundance and diversity of nocturnal and crepuscular species
8. Abundance and diversity of birds with morphology susceptible to transmission line collisions (i.e., high wing loading ratio, such as wading birds and waterfowl)
9. Presence of federally and state-listed threatened and endangered avian species and special-status species.

An ARA was conducted as part of this EIS to attempt to estimate the relative risk to avian species from each of the alternatives (Exponent 2013, amended 2015). This ARA was completed at the time of the draft EIS and does not include analysis for the West Consensus Corridor route, which was developed after the draft EIS had been released. The Relative Risk Model and method as described by Landis and Wiegers (2004) was used to perform the assessment. The Relative Risk Model methodology integrated the following information:

- Proximity of each transmission corridor (a hypothetical corridor was chosen in the area of possible relocated corridor evaluated in the draft EIS for comparison purposes) to a particular species and/or group of birds.
- Linkage of bird species with particular habitat types and/or known locations of concentration areas (foraging, resting, breeding areas etc.) in order to identify preferred habitats.
- Estimation of preferred avian habitats potentially impacted by each of the three corridors under consideration.

The analysis relied upon a variety of existing avian survey data from both the scientific literature as well as data provided by the NPS. Because proximity to transmission lines and towers is a known risk factor for birds (APLIC and USFWS 2005; APLIC 2006), the approach to quantify relative risk among the three corridors was to focus on the spatial juxtaposition of avian resources relative to the location of each corridor. As such, a transmission corridor that is closest to a particular avian resource, such as a multispecies colony, an individual nest of a critical species, or an important foraging habitat, was construed as posing a greater risk of collision or electrocution than a corridor that is further from a resource (APLIC and USFWS 2005; APLIC 2006). For all three corridors, quantified risks were

associated with the entire corridor of each lines, which included the corridor sections that were unique to each line ***plus*** the sections referred to as "Common to All" (figure 48).

In the ARA (Exponent 2013, amended 2015), the relative risk of three potential transmission lines to 47 species from 23 different avian families was compared. The transmission lines are in the vicinity of the park and Biscayne National Park and are located in the FPL West Secondary and FPL West Preferred Corridors and a hypothetical route in an area of possible relocated corridor east of the park. Some focal species had multi-year survey data available, which included locations and number of birds either nesting or foraging (snail kite, wood stork, multiple waterbird species). For these species, relative risk was determined based on the available GIS data, comparing the distance and number of birds associated with each location to the three potential corridors. A habitat-based risk assessment was also conducted based on the GIS data, such that average distances from preferred foraging habitats, as identified by the GIS data, to each potential transmission corridor, was calculated. Risks to wood stork and Everglade snail kite were examined separately and the results of the assessment are presented in the "Special-status Species" section and in appendix J.

The data-based relative risk assessment looked found that for all 16 species included in this portion of the ARA, a hypothetical corridor in the area of possible relocated corridor (Route A corridor in the ARA) presented the least risk to birds, and the FPL West Secondary Corridor posed the most risk. However, for brown pelican, double crested cormorant, and reddish egret, there were no differences in relative risk between the three corridors, because only one data point was available for each. Therefore, the data-based relative risk assessments were not reliable for these three species. The relative risk of the West Consensus Corridor would be intermediate between the risks attributed to the FPL West Preferred Corridor, which it parallels east of the canal to about one mile south of the Tamiami Trail, and Route A, which it generally follows east of the park as the corridor approaches the Levee substation. For most species, the West Consensus Corridor would present a moderate risk to birds, and specific risks to wood stork and Everglade snail kite are addressed in the "Special-status Species" section.

The data-based relative risk assessment results were based on past survey data that included both locations and number of birds present at each location. This data set was limited, however, to the park and Biscayne National Park areas—very few studies included data outside the park boundary, although potential habitat does exist in those places. To address this lack of data outside the park boundary, the historical survey data set was linked in GIS to land use / landcover data. Each location was counted, to determine in which preferred habitats each species was found most often. The results based on preferred habitats were similar to those discussed above, such that for all focal species, the hypothetical corridor (Route A) within the area of possible relocated corridor posed the least risk to birds, while the FPL West Secondary Corridor posed the most risk. The exception was the reddish egret, for which the limited data suggested that the FPL West Secondary Corridor posed the least risk, and the hypothetical corridor posed the most risk. The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A and the FPL West Preferred Corridor, with increased risks for the reddish egret because of its nesting location southeast of the park.

The remaining 31 focal species used in the ARA did not have specific data sets available for analysis, so a habitat-based approach to relative risk was used. This analysis considered all potential habitats within the 30-mile radius of the transmission corridors. The average distance of preferred habitats to each of the transmission corridors was calculated in GIS. For 25 of the 31 focal species, the habitat-based assessment indicated that the hypothetical corridor in the area of possible relocated corridor posed the least risk, and the FPL West Secondary Corridor posed the most risk. For the remaining 6 birds (bobolink, eastern meadowlark, loggerhead shrike, barn owl, crested caracara, and northern harrier), the opposite was true: the FPL West Secondary Corridor posed the least risk, the FPL West Preferred Corridor posed intermediate risk, while the hypothetical corridor posed the most risk, based on potential habitat analysis.

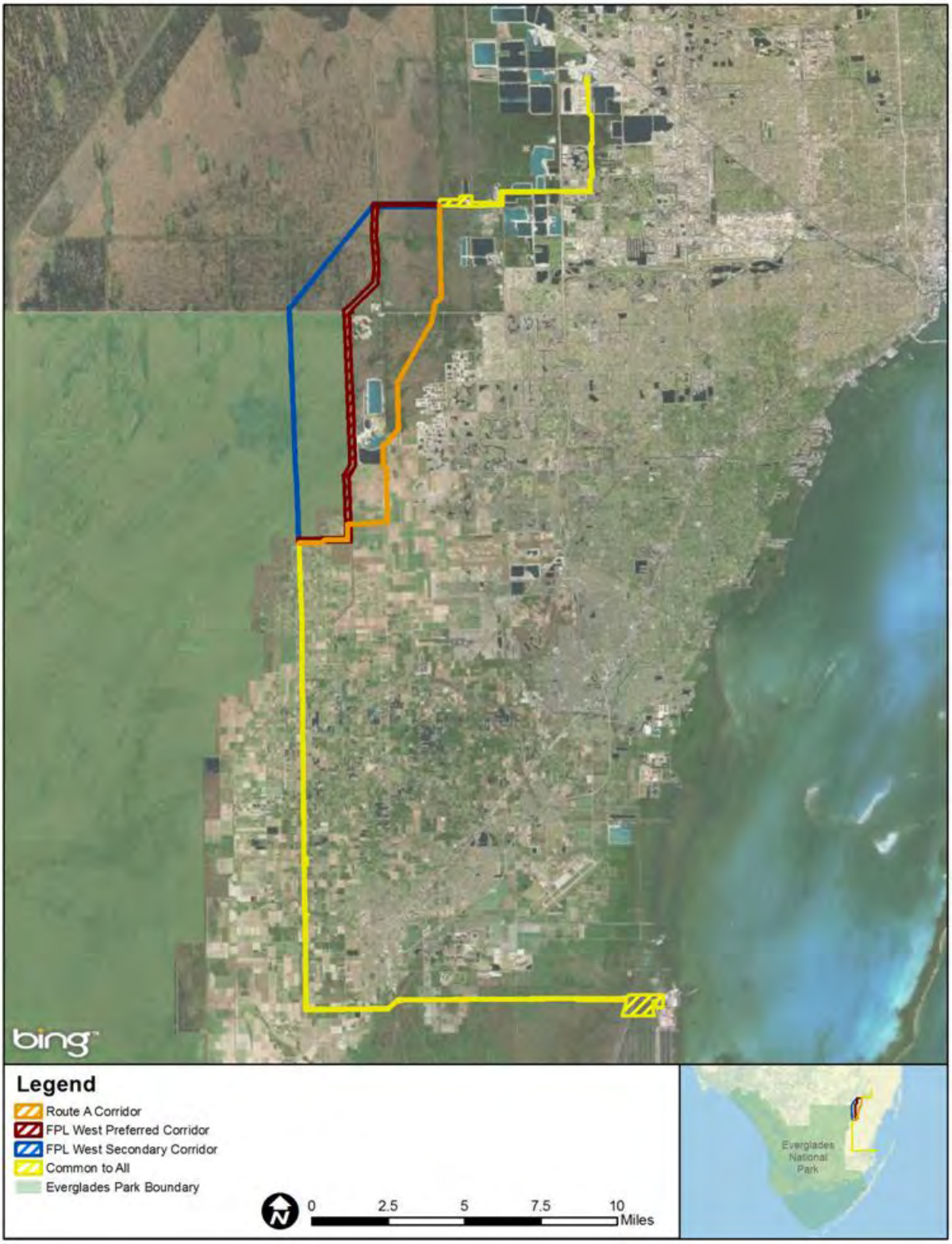


FIGURE 48: CORRIDORS EXAMINED IN THE AVIAN RISK ASSESSMENT

Species that use wetlands and associated water-based habitats are more likely to be found closer to the FPL West Secondary Corridor, and therefore experience higher risk as a result. In contrast, birds that use upland habitats to a greater extent would be at higher risk due to the proximity of the hypothetical corridor to those types of habitats. In all instances, the FPL West Preferred Corridor posed the intermediate in risk to all species. The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A in the area of possible relocated corridor and the FPL West Preferred Corridor.

Avian electrocutions and strikes on transmission lines and guy wires are considered long-term adverse impacts. The magnitude of the impact would vary from minor to moderate (for non-special-status species) depending on the species and the avian protection measures employed during design of the lines.

Mammals

Construction noise and traffic may impact mammal behavior. Impacts on behavior would likely be greatest during breeding and birthing seasons. There would be short-term minor to moderate adverse impacts depending on when construction takes place. Large mammals, such as white-tailed deer, are expected to move out of the area of construction due to the noise and traffic, and re-enter the area after construction is completed. This temporary displacement would have a short term minor to moderate adverse impact. Small mammals may be less likely to disperse from the construction area during periods of torpor or hibernation when their physiological processes are slowed down due to colder temperatures. If there is construction during these periods, small mammals may be injured or killed. This is considered a short-term moderate adverse impact. The permanent loss of habitat associated with construction of the transmission lines would result in long-term moderate adverse impact on mammals.

Cumulative Impacts – Alternative 1b

The cumulative impacts on wildlife from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 1b would contribute short- and long-term moderate to major adverse impacts from lack of a flowage easement and from construction of the transmission line without a flowage easement in the FPL corridor; these impacts would contribute appreciable adverse impacts to the overall cumulative effects on wildlife in this area.

Conclusion – Alternative 1b

Under alternative 1b, the lack of a flowage easement is expected to have moderate to major adverse impacts on wildlife since the inability to increase water levels across the FPL property is expected to hinder habitat restoration efforts. Short- to long-term minor to moderate adverse impacts would be expected on wildlife (fish and other aquatic species, amphibians and reptiles, birds, and mammals) from construction and operation of transmission lines and associated access roads within the FPL West Secondary Corridor. Short-term impacts would typically be related to construction or maintenance activities and would generally be minor adverse. Long-term moderate adverse impacts would be from permanent habitat loss due to transmission line structure pads and access roads. Avian collisions with transmission lines, guy wires, and structures as well as electrocution would be additional sources of long-term moderate adverse impacts. Certain groups of birds are more susceptible to collision and electrocution due to their behavior or morphology and may be impacted more from the construction and operation of the transmission lines than other groups of birds. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on wildlife in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, land acquisition would remove a large area of non-NPS ownership of land in the interior of the park, ensuring that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel. This would result in indirect long-term benefits to wildlife. The connectivity of the EEEA wetlands would be ensured and a potential source of nonnative vegetation not under NPS control would be removed. Placing ownership of this area solely with the NPS would enhance the ability to provide more natural water flows to the park, which in turn would enhance the conservation of the resources and values of the park, including wildlife, a long-term beneficial impact. The park would realize a net gain of 320 acres of land within the park boundary, which would result in a long-term beneficial direct impact on wildlife.

Impacts of Transmission Line Construction

Under alternative 2, FPL would build two 500-kV lines and one 230-kV line to the east of the park in the West Consensus Corridor. Similar to alternative 1b, there would be minor to moderate adverse impacts on wildlife, depending on the species and duration; however, impacts on wetland habitats are expected to be less in the West Consensus Corridor; therefore, impacts on species that use these habitats would be less if construction took place outside the EEEA. In general, there are fewer wetland areas in the West Consensus Corridor than in the EEEA and the wetlands are of lower quality due to hydrologic alteration and the presence of nonnative species. Impacts on wading birds are expected to be less than under alternative 1b due the increased distance of the lines from known colonies (Exponent 2013, amended 2015). The West Consensus Corridor alignment turns east about one mile south of the Tamiami Trail, and this change in direction avoids proximity to many of the wading bird nesting locations just to the west of the FPL West Preferred Corridor and along the FPL West Secondary Corridor further west and north. Impacts on wildlife within the park would be lessened under this alternative, but species that also utilize habitat outside the park may still experience impacts. There would be some risk for those birds that prefer croplands, pasturelands, and drier upland habitats in the southern portion of the corridor along the eastern edge of the canal, and risk similar to the FPL West Preferred Corridor where it crossed wetlands near the canal as it heads north toward the Tamiami Trail. However, the West Consensus Corridor would remain east of the park and within wetlands that are near mining operations and associated noise and disturbance, which would decrease its attractiveness to birds.

Cumulative Impacts

The cumulative impacts on wildlife from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would allow flowage/implementation of the restoration projects and benefit wildlife, but would also result in short and long term minor to moderate adverse impacts from construction of the transmission line in areas outside the park; these impacts would contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on wildlife in this area.

Conclusion

Under alternative 2, there would be benefits of the acquisition of the FPL-owned land within the park boundary due to removal of a large area of non-NPS ownership of land in the interior of the park. This would ensure that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel,

which would be a benefit to wildlife. Adverse impacts would result from the construction of the transmission lines in the West Consensus Corridor along the L-31 canal and east of the park and would range from short to long-term minor to moderate adverse impacts on wildlife. Impacts on species dependent on wetland habitats and impacts on wading birds are expected to be less in the West Consensus Corridor compared to construction within the park because of the reduced quality of the wetlands compared to those within the park and the avoidance of nesting locations in the park, but species that utilize habitat outside the park would be adversely affected. Alternative 2 contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on wildlife in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Long-term indirect beneficial impacts would accrue from alternative 3 similar to alternative 2. As a result of the exchange, the park would realize a net gain of 60 acres of higher value wetlands. The exchange corridor given to FPL would be 260 acres of mostly wetlands located at the edge of the park, close to developed areas, with high coverage of nonnative plants, which thereby reduces its value as wildlife habitat. The FPL corridor gained by the park would be 320 acres that is further from developed areas and has fewer nonnative species.

Although the park would realize a net gain of 60 acres from the exchange, alternative 3 would result in the loss of 260 acres of habitat in exchange corridor. The loss of park habitat (260 acres) and the loss of ability to maintain the habitat in the exchange corridor per NPS standards is considered a long-term major adverse impact on wildlife.

Impacts of the Transmission Line Construction

Impacts on wildlife under alternative 3 with construction of the transmission lines along the FPL West Preferred Corridor would generally be similar to those described for alternative 1b, but impacts would be lessened due to implementation of the terms and conditions of the land exchange (appendix G). Impacts on wading bird species are also expected to be less than alternative 1b because of the increased distance from the transmission lines to known nesting colonies. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in that area. NPS will no longer own or control the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange would minimize impacts on wildlife to the maximum extent practicable.

Impacts on wildlife from vegetation management in the nonnative vegetation management easement would occur due to access and vegetation management activities. Impacts would include disturbance from equipment and access by foot. Intensity would depend on frequency of treatment, area treated, and type of equipment and chemicals used for vegetation management activities.

Impacts on wildlife species would likely be reduced, especially for avian and bat species, due to requirements imposed by the terms and conditions of the land exchange (appendix G). Terms and conditions applicable to wildlife include:

- The FPL Fee Property will be subject to a perpetual flowage easement. FPL will allow the perpetual right, power, privilege and easement in, upon, over, and across the property for the purposes of overflowing, flooding, and submerging said property lying at a level consistent with hydrologic restoration requirements.

- Requirement to allow future use of the FPL Fee Property in furtherance of ecosystem restoration and/or environmental projects that would not interfere with FPL's proposed use of the property for utility-related facilities.
- Requirement for a construction work plan. The initial construction work plan shall address management of the FPL Fee Property and specifically efforts by FPL to avoid and minimize impacts on park resources to the maximum extent practicable. The construction work plan shall address topics such as control of nonnative and exotic species, fire management, provisions allowing ecosystem restoration activities to go forward, natural resource monitoring, impacts on visitor use and recreational opportunities on adjacent park property, access control, and visitor and resource protection activities.
- Requirement for plans to avoid or minimize impacts on wetlands; manage pollution, contaminants, hazardous materials; control erosion and sedimentation; and control exotic and invasive species.
- Requirement for an avoidance, minimization, and mitigation plan for impacts on special-status species.
- Requirement for avian protection:
    1. All utility-related infrastructure shall be constructed, operated, and maintained utilizing state-of-the-art practices to eliminate or reduce injury/mortality of avian species to the maximum extent practicable. These practices shall include mitigation measures that follow appropriate guidelines, including but not limited to Avian Power Line Interaction Committee guidelines, both during and after construction, including operations and maintenance activities. In locations where NPS determines, in consultation with FPL, that maximizing the level of protection of avian species is warranted, guy wires will not be used to the maximum extent practicable. Transmission structure spacing and sizing will be varied to lower certain structures or stagger the normal span distances in areas in proximity of wading bird colonies to minimize possible interactions. Other design alternatives may also be available in certain locales. Measures for eliminating or reducing injury/mortality of avian species would all be evaluated in consultation with appropriate agency personnel prior to implementation.
    2. Prior to commencing any construction, FPL shall develop a detailed pre- and post-construction avian and bat protection plan with concurrence of NPS and input from other appropriate federal and state agencies. The plan shall reflect the requirements for avian protection required by appropriate regulatory authorities. The plan will include pre- and post-construction monitoring to address avian and bat flight presence, flight level, position, and frequency in flight in relation to the transmission line configurations. The plan will focus on federal- and state-listed species in the vicinity of the proposed transmission route and assess impacts of transmission infrastructure on their populations. The pre-construction study will be conducted during an appropriate time period agreed upon by NPS and other appropriate federal and state agencies prior to initiating construction to address data variations related to inter-annual variation in the location and quality of habitat and food resources, and climatic variability. The study will be conducted throughout the year to address seasonal migratory species and flight patterns. The plan will be reviewed and updated on an annual basis.

The implementation of the terms and conditions represent an attempt at minimization of the overall impacts on wildlife by requiring FPL to avoid, minimize, and mitigate impacts on park resources during the construction and operation of the transmission lines within the FPL West Preferred Corridor.

Cumulative Impacts

The cumulative impacts on wildlife from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Although, alternative 3 would allow flowage/implementation of the ecosystem restoration projects and benefit wildlife, the land exchange and construction of the transmission line in the exchange corridor would result in short- and long-term minor to moderate adverse impacts. These impacts would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area.

Conclusion

Under alternative 3, there would be long-term benefits to wildlife because the exchange would remove a large area of non-NPS ownership of land in the interior of the park, ensuring that no other development would be proposed in the FPL corridor and that the various Everglades ecosystem restoration projects could be implemented without any obstacles relating to the presence of this parcel. However, there would be a long-term major adverse effect of removing 260 acres of habitat from the park. Impacts on wildlife from transmission line construction under alternative 3 would be similar to those described for alternative 1b. However, impacts on wildlife would be reduced by moving the construction of the transmission lines from the relatively unimpacted contiguous wetlands in the interior of the park (FPL West Secondary Corridor), to the edge of the park (FPL West Preferred Corridor). The FPL West Preferred Corridor is generally less desirable habitat due to its proximity to already disturbed upland and wetland areas outside the park. Impacts on wading bird species are also expected to be less than alternative 1b because of the increased distance from the transmission lines to known nesting colonies. NPS acquisition of the FPL West Secondary Corridor would allow for application of NPS policies and procedures in this area. NPS would no longer control the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange would minimize impacts on wildlife to the maximum extent practicable. Alternative 3 would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, the NPS would acquire fee title to the FPL property (FPL West Secondary Corridor) through an exchange for an easement on NPS property (exchange corridor). The indirect impacts on wildlife would be long term beneficial as described under alternative 3, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of habitat. Unlike alternative 3, alternative 4 would not have a major adverse impact due to loss of habitat because there is no loss of park acreage. Terms and conditions are found in appendices G and H.

Impacts of Transmission Line Construction

While FPL would not own the property, impacts on wildlife would be the same as described under alternative 3. There are no substantial differences in the terms and conditions for species protection under this alternative and no expected differences in how wildlife would be treated under an easement as opposed to under fee ownership, given the mitigation that FPL included in its SCA and expected conditions in the required resource stewardship plan.

Cumulative Impacts

The cumulative impacts on wildlife from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 3. Alternative 4 would allow flowage/implementation of the ecosystem restoration projects and benefit wildlife, but the land exchange and construction of the transmission line in the exchange corridor would result in short and long term minor to moderate adverse impacts; these impacts would contribute a noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area.

Conclusion

Under alternative 4, there would be benefits to wildlife as described under alternative 3, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance or removal of wildlife habitat. Overall impacts on wildlife would be short- to long-term, minor to moderate adverse, and impacts on wildlife species may be reduced, especially for avian and bat species, due to requirements imposed by the terms and conditions of the land exchange. Alternative 4 would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

There would be minor to moderate direct adverse effects from the continued inability to manage the corridor as NPS lands (i.e., FPL ownership of the parcel would hinder habitat restoration and wildlife management efforts within the park), thereby negatively impacting wildlife. However, alternative 5 would have a flowage easement on the FPL parcel in the EEEA, resulting in indirect long-term benefits to wildlife. With this flowage easement, there would be no impediments to ecosystem restoration projects from future use of this parcel, which would benefit park resources, including wildlife, by allowing for habitat restoration.

Impacts of Transmission Line Construction

Impacts of transmission line construction on wildlife under alternative 5 would be very similar to those described under alternative 1b, except NPS would acquire a perpetual flowage easement over the FPL property within the park (FPL West Secondary Corridor). This could result in some differences in construction and impacts, but it is not known at this time what the differences would be, since design is at a very preliminary stage.

Cumulative Impacts

The cumulative impacts on wildlife from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 5 would provide beneficial impacts because flowage easement would allow the ecosystem restoration projects to proceed. However, minor to long-term moderate adverse impacts would result from transmission line construction in the park with no gain of park protected habitat. These impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area; the benefits would not be as extensive as those under the alternatives that result in the acquisition of the FPL corridor in the park.

Conclusion

Under alternative 5, impacts would be similar to those described under alternative 1b, but there would be long-term benefits from having a flowage easement that would allow ecosystem restoration projects that benefit park resources to proceed over time. However, there would be long-term minor to moderate adverse effects from the continued inability to manage the corridor as NPS lands. Short and long-term minor to moderate adverse impacts would result from the construction of the transmission lines in the FPL West Secondary Corridor. Alternative 5 would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on wildlife in this area; the benefits would not be as extensive as those under the alternatives that result in the acquisition of the FPL corridor in the park.

SPECIAL-STATUS SPECIES

GUIDING REGULATIONS AND POLICIES

The primary regulation governing this topic is the Endangered Species Act (ESA), 16 USC 1531-1543. The purpose of the ESA is to conserve "the ecosystem upon which endangered and threatened species depend" and to conserve and recover listed species. The ESA is a comprehensive conservation law administered by the USFWS and National Oceanic and Atmospheric Administration National Marine Fisheries Service. This act mandates that all federal agencies protect listed species and preserve their habitats.

The state of Florida also has regulations for the protection of threatened and endangered species. The Florida Endangered and Threatened Species Act (Title 28, Florida Statutes, Natural Resources Conservation, Reclamation, and Use, Chapter 372, Wildlife, Section 372.072) is the primary regulation in the state, and sets the policy to conserve and wisely manage these resources, as well as provide for research and management to conserve and protect these species as a natural resource. This act also emphasizes coordination with state agencies, and outlines annual reporting requirements as well the development of specific biological goals for manatees.

The Endangered Species Protection Act (Florida Statutes Section 372.0725) prohibits the intentional wounding or killing of any fish or wildlife species designated by the Florida Fish and Wildlife Conservation Commission (FFWCC) as "endangered," "threatened," or of "special concern." This prohibition also extends to the intentional destruction of the nests or eggs of any such species.

The protection of endangered, threatened, or "commercially exploited" plants is addressed in the Preservation of Native Flora of Florida Act (Florida Statutes Section 581.185). Commercially exploited plants are defined as species native to the state which are subject to being removed in substantial numbers from native habitats in the state and sold or transported for sale. This act sets the policy for the state of Florida relating to these species, and includes several prohibitions covering the "willful destroying or harvesting" of such plants. It also contains an exemption for agricultural and silviculture uses.

NPS *Management Policies 2006* (NPS 2006a, Section 4.4.2.3) provides specific guidance for management of threatened or endangered plants and animals. These policies dictate that the NPS would survey for, protect, and strive to recover all species native to national park system units that are listed under the ESA. The NPS would fully meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and prevent detrimental effects on these species. This section also states that the NPS would inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the NPS would inventory other native species that are of special management concern to parks (such as rare,

declining, sensitive, or unique species and their habitats) and would manage them to maintain their natural distribution and abundance.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

The USFWS and National Oceanic and Atmospheric Administration National Marine Fisheries Service guidance for implementing Section 7 consultation under the ESA uses the following terminology to assess impacts on federally listed species (USFWS and NMFS 1998):

> **No Effect**: This conclusion is reached if the proposed action and its interrelated and interdependent actions will not directly or indirectly affect listed species or destroy/adversely modify designated critical habitat. Formal Section 7 consultation is not required when the no effect conclusion is reached.
>
> **May Affect, but is not likely to adversely affect**: This conclusion is appropriate when effects to the species or critical habitat are expected to be beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact (and should never reach the scale where take occurs), while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the project scientist making the determination and the project manager agree that the project "is not likely to adversely affect" listed species or critical habitat, the intra-Service Section 7 consultation process is completed.
>
> **May Affect, and is likely to adversely affect**: This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed Service action or its interrelated or interdependent actions, and the effect is not discountable or insignificant (see definition of "is not likely to adversely affect"). In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination should be "is likely to adversely affect." Such a determination requires formal Section 7 consultation.

Based on these impact levels, the following definitions were used to determine the magnitude of adverse impacts on special-status species:

- **Negligible***:* There would be no observable or measurable impacts on special-status species, their habitats, or the natural processes sustaining them in the proposed project area. This impact intensity would equate to a determination of "no effect" under Section 7 of the ESA.
- **Minor***:* Individuals may temporarily avoid areas. Impacts would not affect critical periods (e.g., breeding, nesting, denning, feeding, resting) or habitat. This impact intensity would equate to a determination of "may affect, not likely to adversely affect" under Section 7 of the ESA. Critical habitat may be affected, but the essential physical and biological features of the critical habitat would not be affected.
- **Moderate***:* Individuals may be impacted by disturbances that interfere with critical periods (e.g., breeding, nesting, denning, feeding, resting) or habitat; and the level of impact may result in physical injury or mortality of individuals, but would not be expected to affect the population's likelihood of persistence, or lead to extirpation or declines. This impact intensity would equate to

a determination of "may affect, likely to adversely affect" under Section 7 of the ESA. Critical habitat may be affected and the essential physical and biological features of the critical habitat could be minimally affected.

- **Major***:* Individuals may suffer physical injury or mortality such that populations may decline, perhaps even substantially, or be extirpated from the park. Critical habitat and the essential physical and biological features may be affected. This impact intensity would equate to a determination of "may affect, likely to adversely affect" under Section 7 of the ESA.

ANALYSIS AREA

The area of analysis for special-status species is the same as for wildlife (except for selected avian species): it includes the general project area. This includes the NESRS within the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1). The analysis is focused on areas of disturbance along the possible transmission line corridors plus adjacent areas that are likely to experience adverse effects from noise of equipment and construction crews. For avian species, the area of analysis extends to the foraging areas for wading birds in surrounding areas, including to the coast to the southeast and to the Pennsuco wetlands to the northeast and the FPL corridor extending from Clear Sky to Pennsuco substations. For special-status plant species, the area of analysis is limited to the construction disturbance area and long-term transmission line corridor along any of the corridor options in or outside of the parks and associated new access (if any).

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on special-status species. Alternative 1a would result in continued long-term negligible to major indirect adverse impacts on special-status species, depending on the species being impacted and its level of wetland dependence, due to continued habitat degradation from altered hydrology. However, because there is no federal action associated with this alternative (the no-action alternative), Everglades National Park would not consult with USFWS under Section 7 of the ESA on this alternative. Accordingly, the NPS does not make Section 7 determinations for this alternative, but the impacts on each of the species are described relative to the impact definitions to allow comparison with other alternatives. FPL ownership of the parcel and the lack of a flowage easement, or sufficient interests in these properties, to flow additional water across the FPL West Secondary Corridor are expected to hinder habitat restoration and wildlife management efforts within the park, thereby negatively impacting special-status species. Impacts on special-status species from the lack of a flowage easement, or sufficient interests in these properties, to flow additional water across the FPL West Secondary Corridor are discussed in detail below.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on special-status species.

Federally Listed Species

Six federally listed wildlife species potentially occur in the area of analysis: West Indian manatee, Florida Panther, Florida bonneted bat, wood stork, Everglade snail kite, and eastern indigo snake. Four federally listed plant species may occur in the area of analysis for the project, but surveys have not been carried to determine if they are present or not. For the purposes of this document, these species are considered to be potentially present.

West Indian Manatee—The West Indian Manatee may occasionally be found in the SFWMD canals crossed by the FPL West Secondary Corridor. FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels needed for ecosystem restoration projects, is expected to have little impact on water levels within the canals in the project area where manatee are found and no effect on the manatee.

Florida Panther—The Florida panther is known from the area of analysis, and the FPL West Secondary Corridor is within the Primary Zone of the Panther Focus Area. Prey species of the Florida panther that are more tolerant of continued drier conditions may become more abundant, while species that are more wetland-dependent become less abundant. Alternative 1a is expected to have long-term negligible adverse impacts on the Florida panther due to possible changes in prey species abundance and diversity in the EEEA.

Florida Bonneted Bat—There is a moderate probability of Florida bonneted bat roosting in the park in the vicinity of the FPL West Secondary Corridor on tree islands and in other areas with trees. The lack of flowage rights is not expected to reduce the acreage of tree cover within the area of analysis, but there may be increase in tree cover or a change in tree community composition due to continued drier conditions in the EEEA. Long-term negligible adverse impacts may occur to the Florida bonneted bat due to FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels for ecosystem restoration projects.

Wood Stork—Four wood stork colonies are known from within 5 miles of the corridors in the vicinity of Tamiami Trail. The corridors are within the Core Foraging Area of these four colonies and other colonies. Table 26 presents the distance from the colonies to the corridors and the range of the number of nests present in the colonies over the last 5 years (South Florida Natural Resources Center at Everglades National Park 2011; NPS 2010b; Frederick, Simon, and Borkhataria 2009; USACE 2009, 2010; USACE and USGS 2010; USGS 2011).

Alternative 1a is expected to have a long-term major adverse impact on wood stork due to degradation and loss of foraging habitat. Without the supplemented water levels, the EEEA will continue to be subjected to dry periods which will result in soil loss and continuing poor quality wood stork foraging habitat during dry periods and reduced fledging success. These impacts could cause a population level decline in wood storks within the park.

TABLE 26: WOOD STORK COLONIES WITHIN FIVE MILES OF THE CORRIDORS (MILES ARE DISTANCE FROM COLONIES TO THE CLOSEST LOCATION ON THE CORRIDOR BOUNDARY)

Wood Stork Colonies	FPL West Preferred Corridor (miles)	FPL West Secondary Corridor (miles)	Hypothetical Corridor (miles)	West Consensus Corridor	Number of Nests Present in the last 5 Years
Tamiami East 1	0.51	1.25	2.91	0.80	10–15[a]
Tamiami East 2	1.53	0.25	3.87	1.72	20–30[a]
Tamiami West (Coopertown)	2.81	0.96	4.94	2.90	50–1,300[b]
3B Mud East	0.30	0.21	2.49	2.20	7[c]

[a]No nests observed in 2007, 2008, and 2011.

[b]No nests observed in 2008.

[c]No nests observed in 2007, 2008, 2010, and 2011.

Everglade Snail Kite—The Everglade snail kite is known to nest in the eastern portion of the park near the FPL West Preferred Corridor and likely forages on apple snails in wetlands in the FPL West Secondary Corridor and throughout the EEEA. A continuation of limited and poor quality foraging habitat due to continuing dry conditions is expected to result in continuing poor reproductive success. Alternative 1a would have long-term major adverse impacts on the Everglade snail kite from continued poor reproductive success, including potential population declines within the park.

Eastern Indigo Snake—The eastern indigo snake may occasionally occur in tree inlands and other upland areas within and adjacent to the FPL West Secondary Corridor. The eastern indigo snake may also forage within wetland areas within and adjacent to the FPL West Secondary Corridor. Alternative 1a is expected to have negligible adverse impacts on eastern indigo snakes. Because eastern indigo snakes use a wide variety of habitats and consume a wide variety of prey, the eastern indigo snake is expected to adapt to the continuing dry condition of the EEEA.

Blodgett's Silverbush, Garber's Spurge, Sand Flax, and Tiny Polygala—These species do not occur within the FPL West Secondary Corridor due to lack of habitat. No effects on these species from FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels are expected since these species are not known to occur in this portion of the EEEA.

State-listed Species

Everglades Mink—The Everglades mink is likely to forage in wetland areas within and adjacent to the FPL West Secondary Corridor. FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels, is expected to have a long-term moderate adverse impact on Everglades mink due to continued degradation and loss of foraging habitat. Without the supplemented water levels, the EEEA will continue to be drier than its historical norm and fewer areas will support the prey species needed to sustain the Everglades mink. Alternative 1a would have long-term moderate adverse impacts on the Everglades mink due to continued degradation and loss of foraging habitat.

Florida Sandhill Crane—The Florida sandhill may occasionally forage within the FPL West Secondary Corridor, but does not nest in the EEEA. Since the Florida sandhill crane is known to forage within both

wetland and upland habitats, alternative 1a is expected to have no impact on the Florida sandhill crane since the species is known to use both wetland and upland areas.

White-crowned Pigeon—The white-crowned pigeon may forage on the fruit of poisonwood trees (*Metopium toxiferum*) in the FPL West Secondary Corridor and in the rest of the EEEA, but it is not known to nest in the EEEA. Impacts on white-crowned pigeons from alternative 1a, FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels, are expected to be negligible adverse since poisonwood trees are found in both wetland and upland areas.

Limpkin, Little Blue Heron, Snowy Egret, Tricolored Heron, and Roseate Spoonbill—These wading birds are likely to forage in wetland areas within the park in the vicinity of the FPL West Secondary Corridor. Mixed rookeries of wading birds also occur in the vicinity of the FPL West Secondary Corridor. FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels, is expected to have a long-term major adverse impact on these species due to continued degradation and loss of foraging habitat. Without the supplemented water levels, the EEEA will continue to be dry and fewer areas will support the forage fish needed to sustain these colonies during drier periods of the year. Alternative 1a is expected to have long-term moderate adverse impacts on wading birds from degradation and loss of foraging habitat. These impacts are not expected to result in population level changes for the species or in species being extirpated from the park.

Florida Burrowing Owl and Gopher Tortoise—Due to their preference for dry sandy habitats such as longleaf pine xeric oak sandhills, the Florida burrowing owl, and gopher tortoise are not likely to occur in the FPL West Secondary Corridor or to be adversely impacted from drier conditions in the EEEA; therefore, alternative 1a is expected to have no effect on the Florida burrowing owl or gopher tortoise due to their preference for xeric habitats.

Pineland Jacquemontia, Eaton's Spikemoss, Florida Royal Palm, Rockland-Painted Leaf—These species are found within disturbed wetlands and uplands, marl prairie, mesic flatwoods, floodplain forest, rockland hammock, strand swamp, and pine rocklands. These species have not been observed within the FPL West Secondary Corridor and have a low likelihood of occurrence in the FPL West Secondary Corridor. Alternative 1a is expected to have negligible adverse impacts on these plant species due to their low likelihood of occurrence within the FPL West Secondary Corridor and EEEA.

Southern Frog Fruit, Bahama Ladder Brake, Pineland Allamanda, Everglades (or Pinelands) Pencil Flower, Meadow Joint-vetch—These species are known to occur in or near the EEEA, with a few species known from the FPL West Secondary Corridor. Most of these species occupy a range of habitats from wetland to pine rocklands; therefore the impacts of the drying of the EEEA are expected to vary from moderate to major adverse depending on the degree of wetland dependence of the species. Alternative 1a is expected to have long-term moderate to major adverse impacts on these plant species because they are known to occur within the FPL West Secondary Corridor or the EEEA and many are found only within wetland habitat types.

Bahama Saschia and Pineland Noseburn—These species are found in disturbed uplands and pine rocklands. These species are not expected to occur within the FPL West Secondary Corridor. Due to their low likelihood of occurrence and preference for upland habitats, there will be no impact on these species from alternative 1a.

Small's Flax—There is a low likelihood that Small's flax could occur in disturbed uplands and disturbed wetlands, such as margins of canals, within the FPL West Secondary Corridor. Adverse impacts on this species from FPL's continued ownership of land within the EEEA and the lack of a perpetual flowage easement or sufficient interest or sufficient rights, on FPL's property in the EEEA to implement higher water levels are expected to be negligible adverse since this species is known to utilize both upland and wetland habitats.

Cumulative Impacts – Alternative 1a

The past, present, and reasonably foreseeable future actions impacting special-status species include the acquisition of lands in the expansion area under the Expansion Act and all present and future actions aimed at restoring habitat and delivering additional freshwater to the park. These projects would not all be completed as planned due to the inability to flow enough water over the FPL West Secondary Corridor to establish hydrologic restoration goals, a long-term negligible to major adverse impact depending on the species. The overall direction of the GMP to preserve park resources would indirectly benefit special-status species in the park. Other projects in the area of analysis with adverse effects on these species include ongoing urban development, road construction and use (car collisions), road expansion, ongoing mining (minor to major adverse from habitat loss and direct mortality). Other projects and actions in the park would be expected to have mostly beneficial effects on special-status species, including prescribed burns that decrease the risk of extreme wildfires and exotic plant management that improves natural habitat. Conduct of research and surveys to monitor park resources often focuses on special-status species and provides long-term benefits from the knowledge gained, with short-term adverse effects of the monitoring itself (noise and disturbance from use of helicopters and airboats). Alternative 1a would result in moderate to major adverse impacts because of the lack of flowage and would contribute appreciable adverse impacts to the overall cumulative effects on special-status species in this area.

Conclusion – Alternative 1a

Alternative 1a would result in a wide range of impacts on special-status species, as described for the individual species in the above analysis. Impacts on these species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, the lack of a flowage easement or sufficient rights to increase water levels over the FPL West Secondary Corridor would have effects on many listed species in the area. Due to the potential degradation and loss of foraging habitat from the lack of hydrologic restoration in the EEEA, alternative 1a would have moderate to major adverse impacts on many avian species, especially wood storks and Everglade snail kites. There would be no impacts related to transmission line construction under this alternative.

The park would continue to coordinate with the USFWS and state resource agencies, to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative effects on special-status species in this area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, there would be continued long term negligible to major adverse impacts on special-status species, depending on the species being impacted and its degree of wetland dependence, due to continued habitat degradation from altered hydrology as described under alternative 1a.

Impacts of Transmission Line Construction

Adverse impacts would result from the construction of transmission lines within the park, as described earlier in the "Wildlife" section of this chapter. Short- and long-term, negligible to potentially major adverse impacts would occur under alternative 1b and will vary by species. Construction of transmission lines in this corridor would have a high risk to avian species because of the proximity to nesting and foraging locations.

A general discussion of the indirect impacts of construction and maintenance of the transmission lines are presented below, with a discussion of the ARA conducted for this project and a more specific discussion by species presented in the following paragraphs. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determinations listed under this alternative represent the effect determinations that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

General Construction-related Impacts

During construction, there would be construction equipment and associated noise in the vicinity of the construction area which may disrupt wildlife behaviors and travel patterns. If helicopters are needed during construction, they would introduce additional noise and disruption. The construction noise and activity may also temporarily drive some species out of the vicinity during the construction period. Impacts would also occur due to ground disturbance and vegetation removal or treatment in work areas outside the access road and pad areas (see the "Vegetation and Wetlands" section) during the construction period; this would result in a temporary loss of nesting, resting, and foraging habitat along the corridor. Impacts on wildlife behavior from construction noise and activity and temporary ground disturbance are anticipated to be short term and adverse. The magnitude of these temporary impacts would range from minor (if they are in non-critical periods) to major (occurring in breeding or nesting season). Less motile species may not be able to move out of the construction area and may be injured or killed during construction activities. Construction of access roads and structure pads would result in permanent loss of habitat for some species (see the "Soils" and "Vegetation and Wetlands" sections for details on acres lost). These activities may also fragment habitat, making more edge habitat. The creation of edge habitat can allow nonnative species to invade an area and further reduce habitat quality. The impacts due to loss or modification of habitat due to construction of the transmission lines and associated access roads would be long term and adverse, and would range from minor to moderate depending on the type of habitat impacted and what species use it.

General Line Maintenance–related Impacts

Line maintenance would be done about once every 2 years and consist of line surveys conducted by helicopter and/or vehicle, using the access road that was constructed. Noise from these activities would cause impacts similar to those from vehicle use and helicopter use during construction, but there would be less equipment used and lower noise levels for ground work, resulting in short-term negligible to minor adverse impacts due to the frequency and limited nature of the vegetation management activities.

Avian Risk Assessment

Impacts on avian species from transmission lines include habitat loss, collision, and electrocution. These impacts are discussed in detail in the "Wildlife" section in this chapter. An ARA was conducted as part of this EIS to attempt to estimate the relative risk to avian species from each of the alternatives (Exponent 2013, amended 2015). This ARA was completed at the time of the draft EIS and does not include analysis for the West Consensus route, since that was developed after the draft EIS had been released. The ARA

Report and the appendix to the report are included as appendix J of this document. The Relative Risk Model and method as described by Landis and Wiegers (2004) was used to perform the assessment. The Relative Risk Model methodology integrated the following information:

1. Proximity of each transmission corridor (a hypothetical corridor was chosen within the area of relocated corridor for comparison purposes in the draft EIS) to a particular species and/or group of birds
2. Linkage of bird species with particular habitat types and/or known locations of concentration areas (foraging, resting, breeding areas etc.) in order to identify preferred habitats
3. Estimation of preferred avian habitats potentially impacted by each of the three corridors under consideration

The analysis relied on a variety of existing avian survey data from both the scientific literature as well as data provided by the NPS. Because proximity to transmission lines and towers is a known risk factor for birds (APLIC and USFWS 2005; APLIC 2006), the approach to quantify relative risk among the three corridors was to focus on the spatial juxtaposition of avian resources relative to the location of each corridor. As such, a transmission corridor that is closest to a particular avian resource, such as a multispecies colony, an individual nest of a critical species, or an important foraging habitat, was construed as posing a greater risk of collision or electrocution than a corridor that is farther from a resource (APLIC and USFWS 2005; APLIC 2006). For all three corridors, quantified risks were associated with the entire corridor of each line within the study area, which included the corridor sections that were unique to each line plus the sections referred to as “Common to All” (figure 48).Two types of relative risk assessments were conducted. The data-based relative risk assessment used actual locations and numbers of birds associated with each location within the 30-mile boundary of the study area. The relative risk was calculated by summing the risks associated with each nesting location, which were assessed based on the inverse of the distance to the nesting location from the corridor squared, multiplied by the number of individuals of the species found in the nesting location (see appendix J). As an example of how relative risk was calculated using these methods, if there was a colony of 100 birds located 1 mile away from a transmission corridor, versus a colony of 1000 birds located 10 miles away from a transmission corridor, the difference in relative risk would be 100 (100 birds × $[1/1^2]$; or 100 × 1) versus 10 (1000 birds × $[1/10^2]$; or 1000 × 0.01). The higher risk would be attributed to the colony of 100 birds located 1 mile away from the transmission corridor.

Because the survey data are biased for within the park boundary, an additional habitat-based relative risk assessment was conducted using the data for preferred habitats that were available in the GIS data sets. However, as mentioned above, these specific multi-year data were available only for snail kites, wood storks, and some waterbirds. For all other species for which GIS data were not available, only a habitat-based relative risk assessment was conducted. For these species, the Florida Breeding Bird Atlas was used to determine which types of habitats are preferred by each species. The average distance of each preferred habitat to each potential transmission corridor was calculated and compared.

The risk assessment findings for special-status avian species are incorporated in the following analysis.

Federally Listed Species

West Indian Manatee—The West Indian Manatee may occasionally be found in the SFWMD canals crossed by the FPL West Secondary Corridor. No in-water work in the canals is anticipated during construction of the transmission lines. Appropriate erosion control measures would be implemented during construction to prevent degradation of adjacent waterbodies. Transmission line construction stormwater discharges released into waters of the state will be addressed through compliance with Rule

62-621.300(4) (Generic Permit for Stormwater from Large and Small Construction Activities). In the event of inadvertent equipment or vehicle fluid release during construction, construction crews will be equipped with spill containment and absorption materials. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have no impact on the manatee since no in-water work in the canals is expected, appropriate sedimentation and erosion controls will be implemented during construction, and the lack of a flowage easement is expected to have minimal impacts on canal water levels. This would equate to a “no effect” determination. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Florida Panther—The Florida panther is known from the area of analysis, and the FPL West Secondary Corridor is within the Primary Zone of the Panther Focus Area. Panthers have been known to occur in the park in the vicinity of the FPL West Secondary Corridor. Construction traffic and noise and line maintenance activities are is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in this area. These impacts are considered short-term, minor, and adverse. Increases in connectivity between habitat types and areas due to the transmission corridor may have long-term minor adverse impacts on the Florida panther if they encourage movement between more developed areas where panther injury or mortality is more likely to occur. The loss of native wetland foraging habitat due to road and pad fill is considered a long-term moderate adverse impact. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. FPL will work with USFWS/FFWCC to mitigate any potential impacts on Florida panther habitat once a corridor is certified and a specific right-of-way is designed.

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term minor to moderate adverse impacts on Florida panther due to potential short-term behavior changes and long-term changes in prey abundance and diversity and habitat loss. This would equate to a “may affect, likely to adversely affect” determination. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Florida Bonneted Bat—There is a moderate probability of Florida bonneted bat occurring in the park in the vicinity of the FPL West Secondary Corridor. Right-of-way and access road clearing activities may result in loss of small amounts of roosting habitat (palm and other tree foliage), but there is relatively little amount of wetland forest or tree cover along this corridor; most is sawgrass wetland. If bats are roosting in the areas when clearing takes place, bat injury or mortality may occur. The loss of roosting habitat is considered a long-term moderate adverse impact on Florida bonneted bats. Injury or mortality to Florida bonneted bats from right-of-way or access road clearing would be considered short term, moderate, and adverse. For any species documented within the proposed right-of-way as a result of post-certification

surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 1b, t the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term moderate adverse impacts on the Florida bonneted bat due to the loss of potential roosting trees and the potential for mortality to occur during tree clearing. This would equate to a "may affect, and is likely to adversely affect" determination. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Wood Stork—Transmission line and access road construction would result in the loss or alteration of foraging habitat for this species when wetlands are filled to create access roads and structure pads and if the hydrology of wetlands adjacent to construction areas is altered. This loss of foraging habitat is considered a long-term moderate adverse impact on the species. Foraging and nesting behavior may also be altered during the construction period due to the construction noise and equipment traffic. These impacts are considered short term, moderate, and adverse. Minor adverse impacts may also result from line maintenance activities. The presence of the two 500-kV and one 230-kV transmission lines present a strike hazard that could result in wood stork injury or mortality. The impact of birds striking the lines is long term, major, and adverse.

Four wood stork colonies are known from within 5 miles of the corridors in the vicinity of Tamiami Trail (see "Figure 13: Wood Stork Colony and Nesting Data" in chapter 3). The corridors are within the Core Foraging Area of these four colonies and other colonies. The number of breeding birds present in the colonies varies from year to year (table 26).

The Tamiami West (Coopertown) wood stork colony is the largest colony within 5 miles of the corridors where they cross the Tamiami Trail. Over the past 5 years, 50 to 1,300 wood storks have been observed within the colony during an active nesting season. The colony is approximately 0.96 mile from the edge of the FPL West Secondary Corridor. Two smaller colonies, Tamiami East 2 and 3B Mud East, are located approximately 0.25 and 0.21 mile from the FPL West Secondary Corridor, respectively. Over the last 5 years, 20 to 30 nests were observed Tamiami East 2 during nesting seasons when the colony was active. Only 7 nests have been observed during an active nesting season at the 3B Mud East colony. Tamiami East 1, with 10 to 15 nests in an active nesting season, is located 1.25 miles from the FPL West Secondary Corridor. The proximity of the colonies to the corridor increases the likelihood that adults and fledglings from this colony will interact (collisions or electrocutions) with the transmission structures, guy wires, or lines as they are going back and forth from the colony to foraging areas.

According to the ARA (Exponent 2013, amended 2015), the relative risk to wood storks (based on number of birds present) is greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (figure 49). The relative risk of the West Consensus Corridor would be intermediate between the risks attributed to the FPL West Preferred Corridor, which it parallels east of the canal to about one mile south of the Tamiami Trail, and Route A (the hypothetical corridor along the eastern edge of the area of possible relocated corridor), which it generally follows east of the park as the corridor approaches the Levee substation.

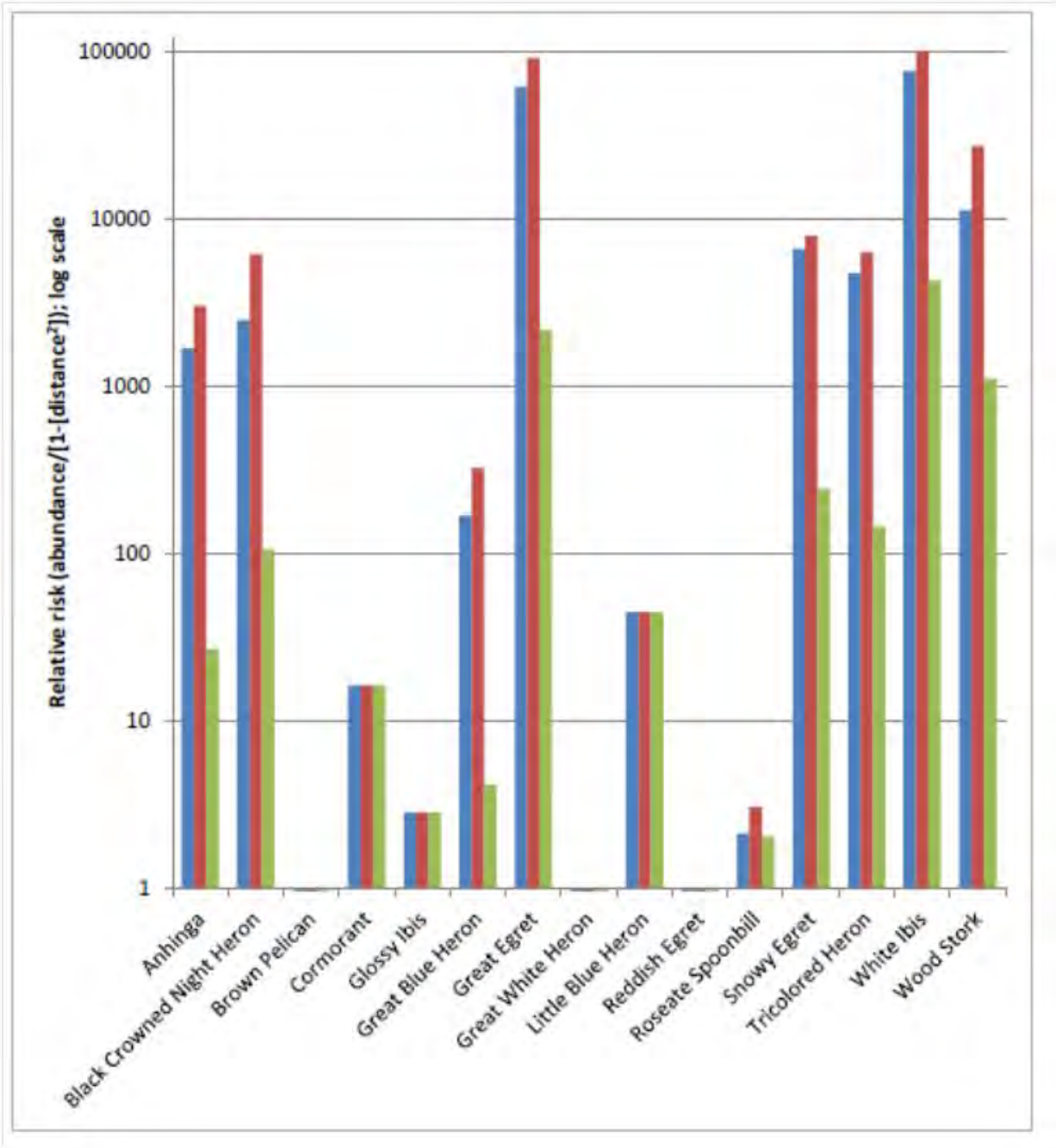
The data-based relative risk assessment used actual locations and numbers of birds associated with each location within the 30-mile boundary of the study area. The relative risk was calculated as a function of the distance from any nest or nesting colony to a particular line segment for each species, and accounting for the number of individual birds in each colony, as described in the ARA in appendix J.

The preferred habitat for the wood stork was freshwater marshes, followed by mangrove swamps, mixed shrubs, embayments, saltwater marshes, tidal flats, cypress stands, wet prairies, natural waterways, and mixed wetland hardwoods (Exponent 2013, amended 2015) (figure 50).

The ARA found that the relative risk to wood storks, based on distance of the preferred habitat from the transmission corridors, was generally greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (figure 51). The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A in the area of possible relocated corridor and the FPL West Preferred Corridor. FPL will comply with any federal permit conditions regarding wood stork colonies, including those related to mitigation for lost foraging habitat. The FPL construction designs would include features to minimize impacts on avian species including the wood stork. For example, the spacing between transmission conductors (wires) for the proposed 230- and 500-kV lines would be far greater than the 61-inch wingspan for the wood stork, greatly minimizing the threat for electrical harm to the bird. These designs would be consistent with FFWCC-recommended Conditions of Certification to install flight diverters on overhead ground wires to minimize bird interactions with the lines in areas within 1/2 mile of active wood stork colonies and the FPL design standard of installing perch discouragers on all new 230- and 500-kV transmission line structures. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on wood storks.

Further, an Avian Protection Plan specifically for this project, consistent with the Mitigation Concepts document and Avian Power Line Interaction Committee guidelines, would be developed in consultation with USFWS. In the mitigation concepts document, FPL suggested that various mitigation options are available in certain areas to reduce potential impacts on wading birds. These options include wildlife and wading bird colony surveys to document which species and in what areas of the right-of-way alignment potential impacts are possible in addition to the design features, such as perch discouragers on the towers and flight diverters mentioned above.

Subsequent to submission of that document to the NPS, FPL has been negotiating proposed Conditions of Certification with the FFWCC and SFWMD. Included in those proposed Conditions of Certification are requirements for pre-construction listed species surveys all along the right-of-way and ground and follow-flight surveys of wading bird usage along the right-of-way in areas of known wading bird colonies. The proposed Conditions of Certification also require potential design alternatives such as perch discouragers and flight diverters in areas of those known colonies. FPL would also work with FFWCC to design a post-construction mitigation effectiveness monitoring study. Based on the results of such a study, FPL may be required to implement further mitigation measures, such as additional flight diverters. A specific design has not yet been selected, so these measures are not specifically incorporated into the analysis in this EIS.



Legend: Blue = FPL West Preferred Corridor, Red = FPL West Secondary Corridor, Green = Hypothetical Corridor

FIGURE 49: RELATIVE RISK OF NUMBER OF BIRDS LOCATED AT DISTANCES FROM THE THREE POTENTIAL TRANSMISSION CORRIDORS

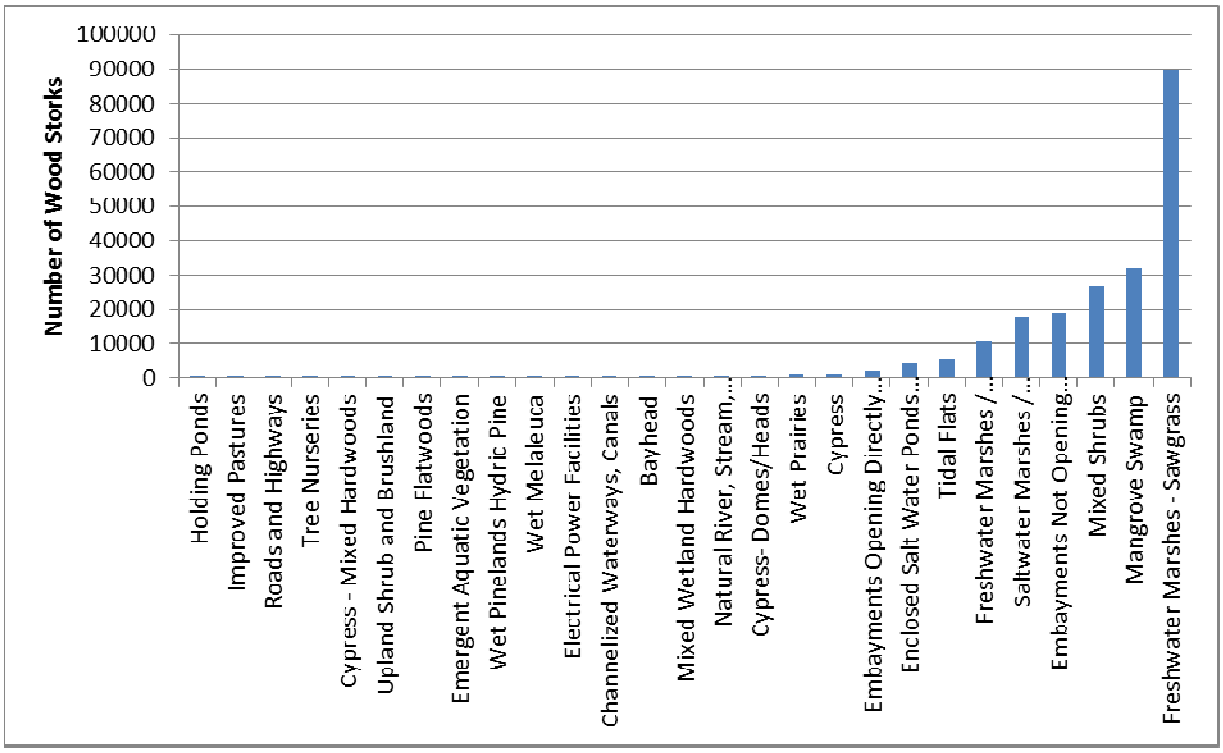
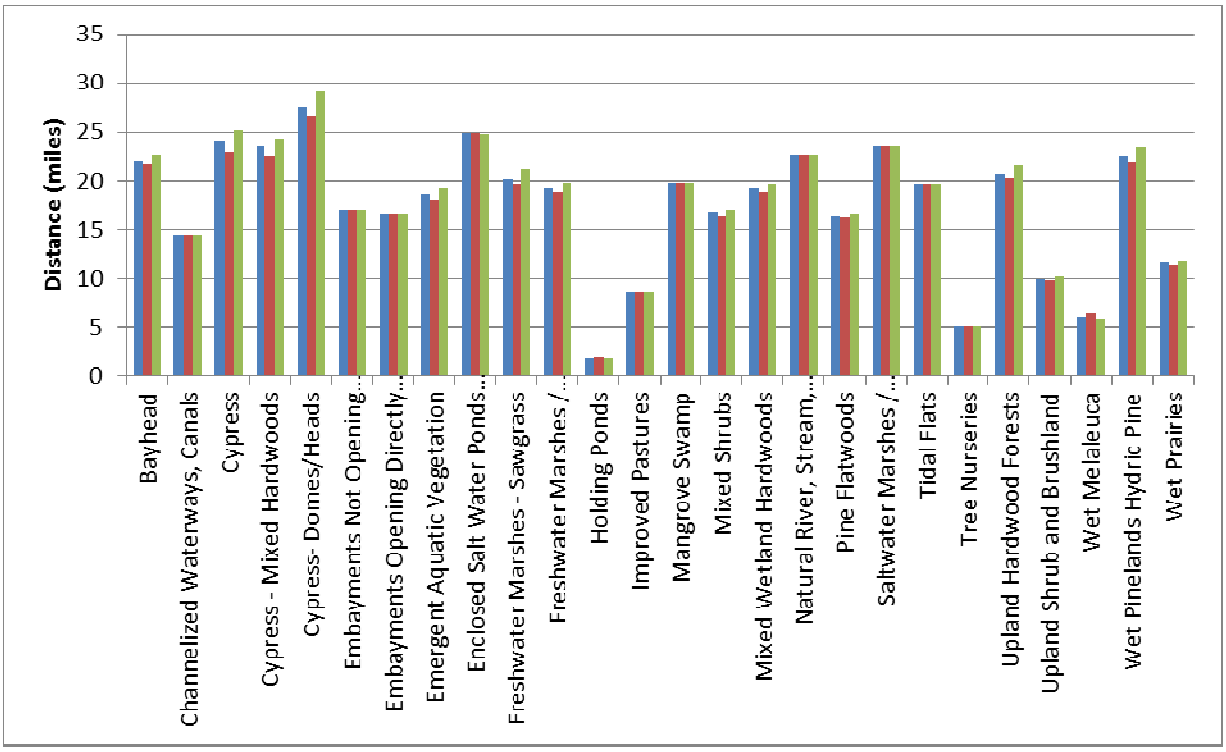


FIGURE 50: NUMBER OF WOOD STORKS ASSOCIATED WITH EACH LEVEL 3 LAND USE LAND COVER CATEGORY IN THE GIS DATABASE WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA



Legend: Blue = FPL West Preferred Corridor, Red = FPL West Secondary Corridor, Green = Hypothetical Corridor

FIGURE 51: RELATIVE RISK IN TERMS OF DISTANCE OF WOOD STORK PREFERRED HABITAT TO EACH POTENTIAL TRANSMISSION CORRIDOR WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term moderate to major adverse impacts on locally significant colonies or aggregations of wood storks due primarily to loss and degradation of foraging habitat and the risk of line strikes and electrocutions. The impacts may result in population-level declines of wood storks as a result of the population-wide significance of the affected colonies to the wood stork population. This would equate to a "may affect, likely to adversely affect" determination. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (NPS 2010e) are incorporated by reference into this EIS. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Everglade Snail Kite—The Everglade snail kite is known to nest in the eastern portion of the park near the FPL West Preferred Corridor and likely forages on apple snails in wetlands in the FPL West Secondary Corridor. The noise and vehicular traffic associated with construction of the transmission lines and access road construction is likely to cause changes in Everglade snail kite behaviors such as foraging, breeding, and nesting. These impacts would be considered short term, moderate, and adverse. Minor adverse impacts may also result from line maintenance activities. Filling of wetlands for structure pads and access roads would also result in loss or alteration of foraging and nesting habitat for Everglade snail kite. The loss of foraging and nesting habitat would be considered a long-term moderate adverse impact. Snail kites may also be injured or killed by collisions with transmission structures, guy wires, and lines, especially during the breeding season when birds may be distracted by aerial displays. Impacts from collision with the transmission line are considered long term, major, and adverse.

The risk assessment conducted by Exponent (2013, amended 2015), found that the FPL West Secondary Corridor posed the highest risk to snail kite nests, while the FPL West Preferred Corridor posed an intermediate risk, and the hypothetical corridor within the area of possible relocated corridor posed the least risk. Snail kite habitat preferences include freshwater marshes, lakes, emergent aquatic wetlands, mixed shrubs, and cypress stands (Exponent 2013, amended 2015) (figure 52).

The ARA found relative risk to snail kites, based on distance of the preferred habitat from the transmission corridors, was generally greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor (figure 53). This is because preferred habitats are closer to the two FPL corridors than to the hypothetical corridor within the area of possible relocated corridor. The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A in the area of possible relocated corridor and the FPL West Preferred Corridor.

The FPL construction designs would include features to minimize impacts on avian species including the Everglade snail kite. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on the Everglade snail kite. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

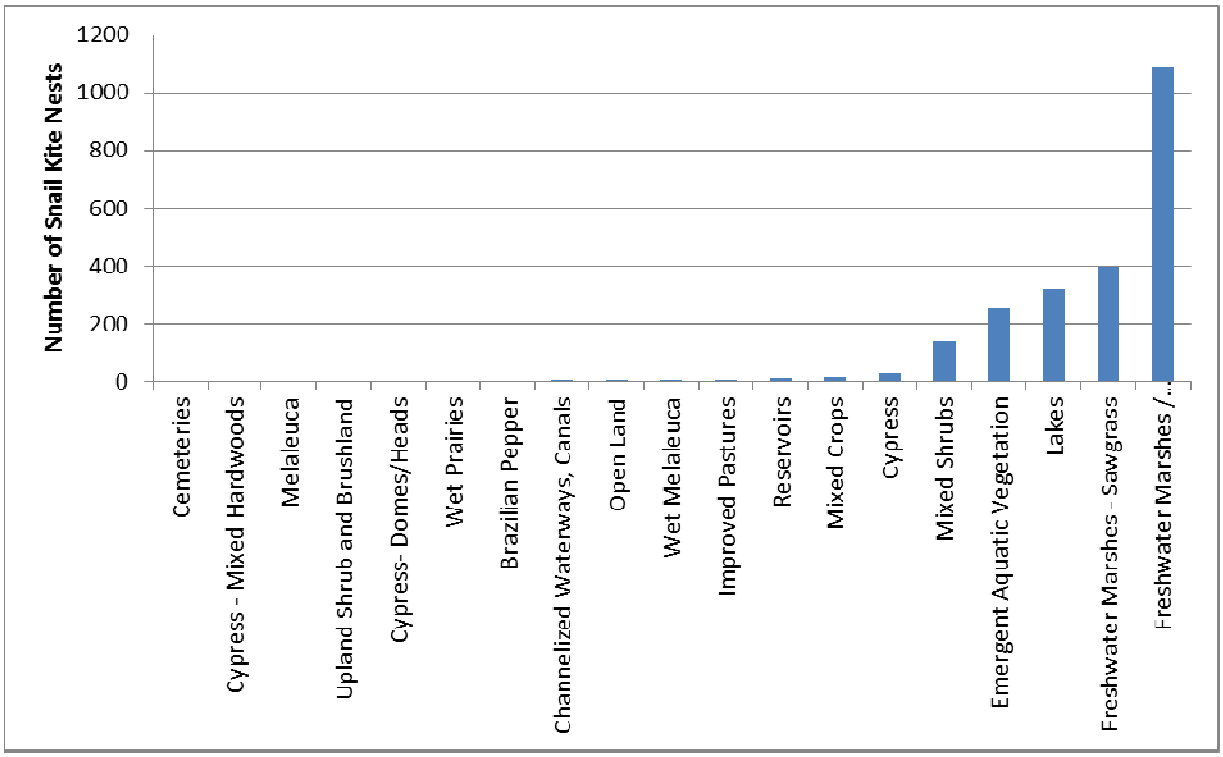
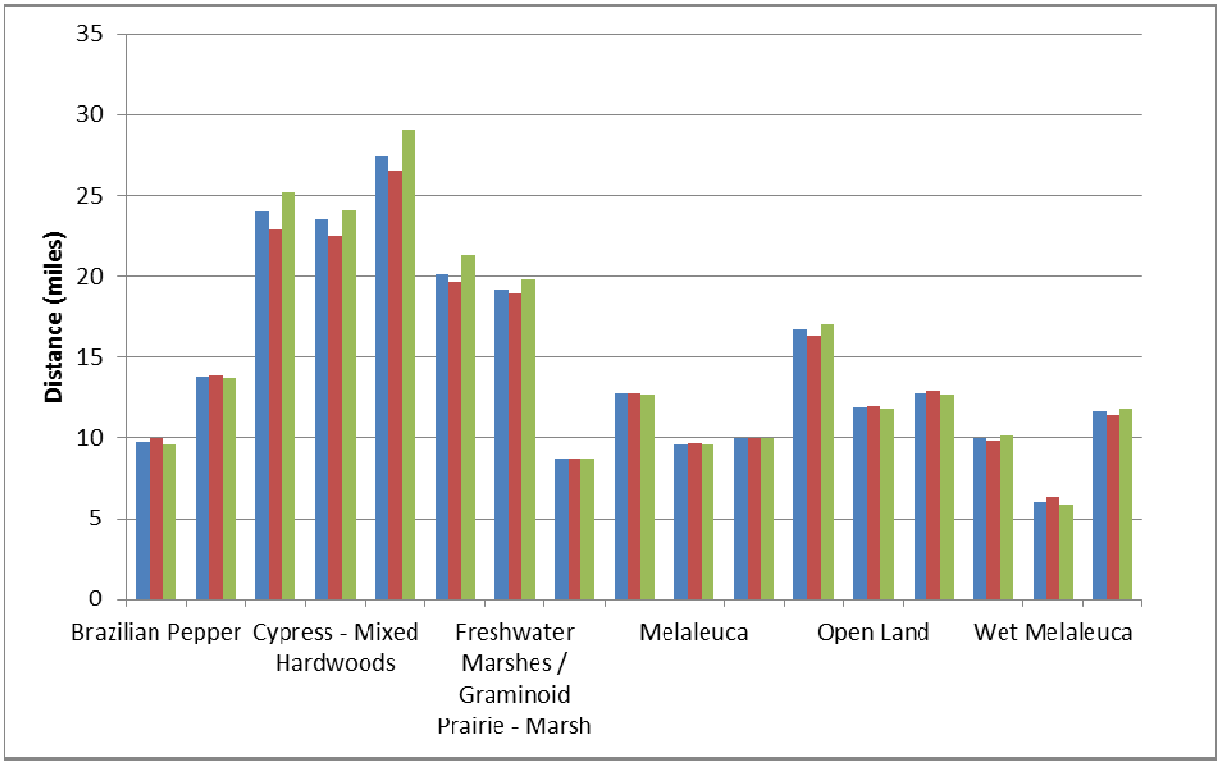


FIGURE 52: NUMBER OF SNAIL KITE NESTS ASSOCIATED WITH EACH LEVEL 3 LAND USE LAND COVER CATEGORY IN THE GIS DATABASE WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA



Legend: Blue = FPL West Preferred Corridor, Red = FPL West Secondary Corridor, Green = Hypothetical Corridor

FIGURE 53: RELATIVE RISK IN TERMS OF DISTANCE OF SNAIL KITE PREFERRED HABITAT TO EACH POTENTIAL TRANSMISSION CORRIDOR WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term moderate to major adverse impacts on the Everglade snail kite due primarily to loss and degradation of foraging habitat, and the risk of line strikes and electrocutions. These impacts may result in declines in the snail kite population due to the highly imperiled condition of this species and its use of wetlands in the project area. This would equate to a "may affect, and is likely to adversely affect" determination. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (2010) are incorporated by reference into this EIS. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Eastern Indigo Snake—The eastern indigo snake may occasionally occur in tree inlands and other upland areas within and adjacent to the FPL West Secondary Corridor. Construction noise and vehicle traffic may result in changes in eastern indigo behavior. These impacts are considered short term, minor, and adverse. Indigo snakes may be killed or injured during clearing and construction activities if they are present. These impacts would be considered short to long term, moderate, and adverse. Construction of structure pads and access roads would also eliminate habitat for indigo snakes. These impacts would be considered long term, moderate, and adverse. There is a low probability that eastern indigo snakes will be present in this area, so consequently there is a low level of expected impacts relative to the population. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term minor to moderate adverse impacts on the eastern indigo snake. Impacts related to the lack of a flowage easement or sufficient rights to flow additional water over the FPL property are expected to be negligible adverse. Impacts from transmission line construction and maintenance are expected to be minor to moderate adverse. This would equate to a "may affect, and is likely to adversely affect" determination. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Blodgett's Silverbush, Garber's Spurge, Sand Flax, and Tiny Polygala—These species are unlikely to occur within the FPL West Secondary Corridor due to lack of habitat. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Effects on these species from construction, operation, and maintenance of the transmission lines are expected to be discountable since these species are not known to occur in this portion of the EEEA.

Section 7 Determination of Effect—Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have adverse impacts on Blodgett's silverbush, Garber's spurge, sand flax, and tiny polygala since these species are not expected to occur within the FPL West Secondary Corridor or EEEA. This would equate to a "no effect" determination. There is no NPS action under this alternative, so ESA Section 7 consultation rules would not apply to this

alternative. However, the effects determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

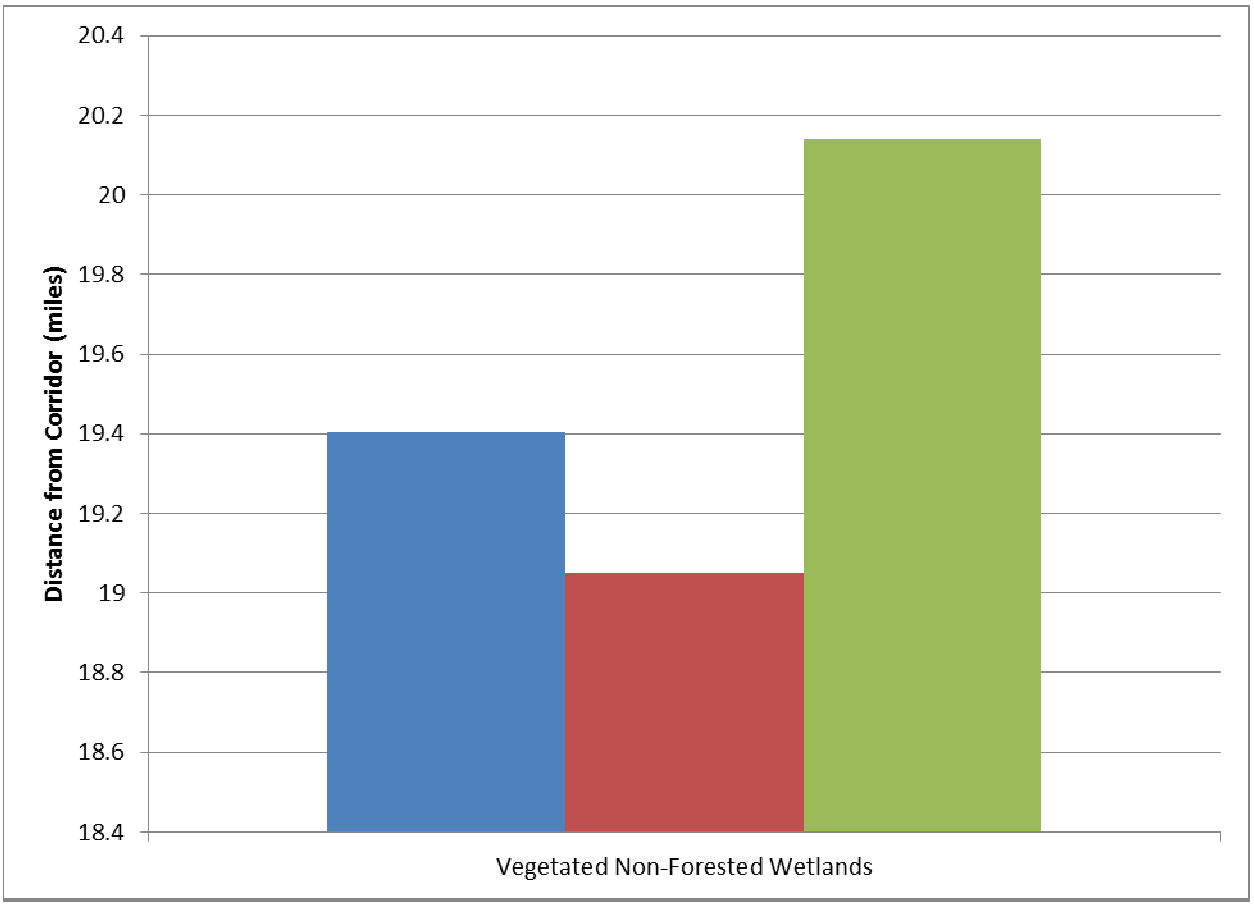
State-listed Species

Everglades Mink—The Everglades mink is likely to forage in wetland areas within and adjacent to the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. Construction noise and traffic may alter the behavior of Everglades mink in the area during the construction period. This would also be true for maintenance activities. These impacts would be considered short term, minor, and adverse. Filling of wetlands for structure pads and access roads would result in long-term moderate adverse impacts. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow water over the FPL property in the EEEA, would have short- and long-term minor to moderate adverse impacts on the Everglades mink.

Florida Sandhill Crane—The Florida sandhill may occasionally forage within the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. Construction noise and traffic may impact Florida sandhill crane behavior during the construction period. This would also be true for maintenance activities. These impacts are considered short term, minor and adverse. Construction of the access roads and structure pads may result in a loss of foraging habitat for this species. These impacts are considered long term, minor, and adverse. In addition, construction of the transmission lines, including poles, lines and guy wires, would create a strike hazard for Florida sandhill crane. Impacts from Florida sandhill crane line strikes are considered long term, moderate, and adverse.

Preferred habitats of the Florida sandhill crane include freshwater herbaceous wetlands (Exponent 2013, amended 2015). According to the ARA, relative risk to cranes was generally greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated. This is because preferred habitats were closer to the FPL corridors than the hypothetical corridor within the area of possible relocated corridor (Exponent 2013, amended 2015) (figure 54). The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A in the area of possible relocated corridor and the FPL West Preferred Corridor.

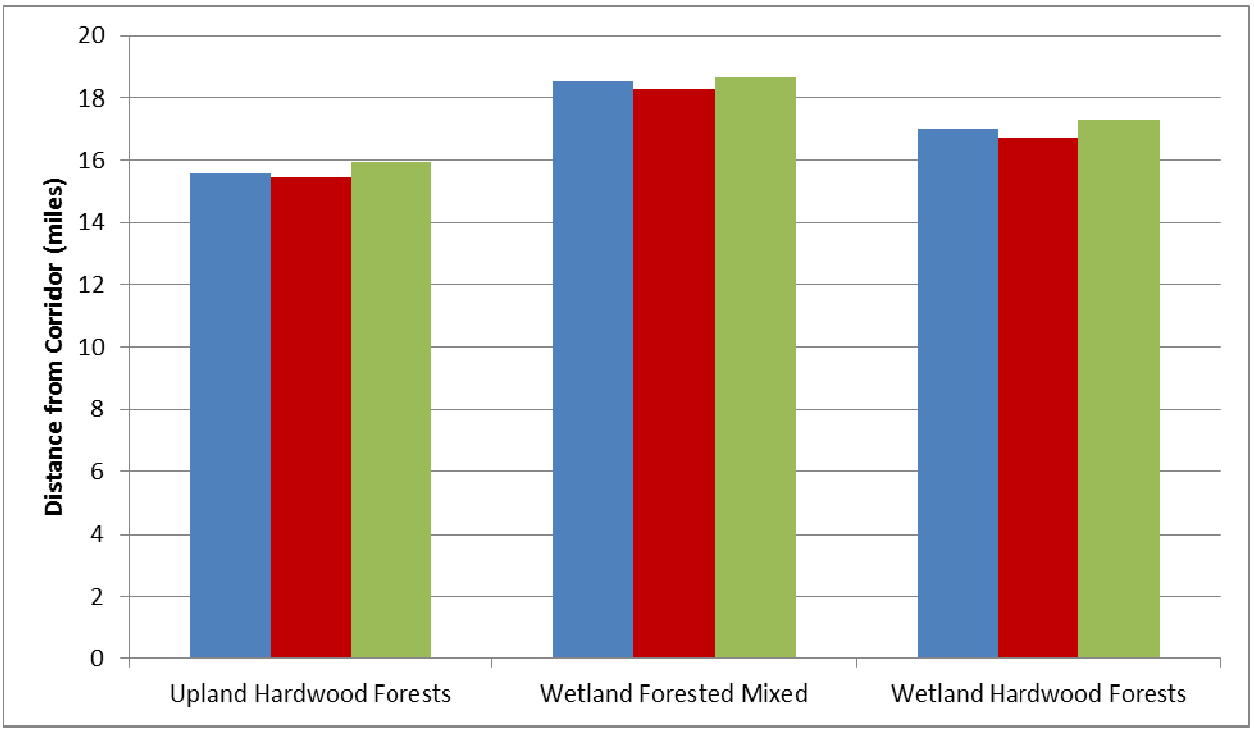
For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, would have short- and long-term minor to moderate adverse impacts on the Florida sandhill crane.



Legend: Blue = FPL West Preferred Corridor, Red = FPL West Secondary Corridor, Green =Hypothetical Corridor

FIGURE 54: RELATIVE RISK IN TERMS OF DISTANCE OF FLORIDA SANDHILL CRANE PREFERRED HABITAT TO EACH POTENTIAL TRANSMISSION CORRIDOR WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA

White-crowned Pigeon—The white-crowned pigeon may forage on the fruit of poisonwood trees (Metopium toxiferum) in the FPL West Secondary Corridor and in the rest of the EEEA, but it is not known to nest in the EEEA. The impacts of the land acquisition would be the same as under alternative 1a. The ARA found that the relative risk to white-crowned pigeons was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor. This is because preferred habitats were generally closer to the FPL corridors than to the hypothetical corridor within the area of possible relocated corridor (figure 55), although the difference among the corridors is relatively small. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 1b would result in minor adverse impacts on white-crowned pigeons because poisonwood trees are found throughout the Everglades region in both wetland and upland habitats.



Legend: Blue = FPL West Preferred Corridor, Red = FPL West Secondary Corridor, Green = Hypothetical Corridor

FIGURE 55: RELATIVE RISK IN TERMS OF DISTANCE OF WHITE CROWNED PIGEON PREFERRED HABITAT TO EACH POTENTIAL TRANSMISSION CORRIDOR WITHIN THE 30-MILE BOUNDARY THAT SURROUNDS THE STUDY AREA

Limpkin, Little Blue Heron, Snowy Egret, Tricolored Heron, and Roseate Spoonbill—These wading birds are likely to forage within the park in the vicinity of the FPL West Secondary Corridor. Mixed rookeries of wading birds also occur in the vicinity of the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. The ARA found that the relative risk to these wading bird species was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor. This is because preferred habitats were generally closer to the FPL corridors than to the hypothetical corridor within the area of possible relocated corridor (Exponent 2013, amended 2015). The West Consensus Corridor would be expected to have risks intermediate between the risks of Route A in the area of possible relocated corridor and the FPL West Preferred Corridor, and the change in route to the east about one mile south of the Tamiami Trail avoids many of the wading bird nesting locations further to the north.

The behavior of these birds is likely to be impacted by the increased noise and vehicle levels during the construction period. This is also true for line maintenance activities. These impacts are considered short term, moderate, and adverse. Construction of access roads and structure pads would result in loss or alteration of wetland foraging habitats. The impact of the lost habitat is expected to be long term, moderate, and adverse. Construction of the transmission lines would create a strike hazard for the wading birds. The impact of bird injury and mortality due to line strikes is considered long term, moderate, and adverse. The FPL construction designs would include features to minimize impacts on avian species. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on avian species. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize,

mitigate, or otherwise appropriately address impacts on the species. Adverse impacts on wading birds from alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, are expected to be short to long term, minor to moderate, and adverse. These impacts are not expected to result in population level changes for the species or in species being extirpated from the park.

Florida Burrowing Owl and Gopher Tortoise—Due to their preference for dry sandy habitats such as longleaf pine xeric oak sandhills, the Florida burrowing owl and gopher tortoise are not likely to occur in the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Adverse impacts on Florida burrowing owl and gopher tortoise from alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, are expected to be negligible adverse.

Pineland Jacquemontia, Eaton's Spikemoss, Florida Royal Palm, Rockland-Painted Leaf—These species have a low likelihood of occurrence in the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the Florida Department of Agriculture and Consumer Services (FDACS) (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Adverse impacts on these plant species from alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, are expected to be negligible adverse.

Southern Frog Fruit, Bahama Ladder Brake, Pineland Allamanda, Everglades (or Pinelands) Pencil Flower, and Meadow Joint-vetch—These species are known to occur in or near the EEEA, with a few species known from the FPL West Secondary Corridor. The impacts of the land acquisition would be the same as under alternative 1a. Individuals of these species may be harmed or killed during construction of the transmission lines if they are present in the right-of-way. Also, habitat for these species may be lost during construction of the transmission lines. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Impacts on these plant species from alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA, are expected to be long-term negligible to moderate adverse.

Bahama Saschia and Pinelands Noseburn – are found in disturbed uplands and pine rocklands. These species are not expected to occur within the FPL West Secondary Corridor within the park or in the area of analysis. The impacts of the land acquisition would be the same as under alternative 1a. Due to their low likelihood of occurrence, there will be no impact on these species from alternative 1b, the retention of ownership of land within the EEEA by FPL and the resulting transmission line construction and the lack of an easement or sufficient rights to flow additional water over the FPL property in the EEEA. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Small's Flax—There is a low likelihood that Small's flax could occur in disturbed uplands and disturbed wetlands, such as margins of canals, within the FPL West Secondary Corridor or the EEEA. The impacts of the land acquisition would be the same as under alternative 1a. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Adverse impacts on this species from construction, operation, and maintenance of the transmission lines are not expected.

Cumulative Impacts – Alternative 1b

The cumulative impacts on special-status species from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 1b would have short-and long term negligible to major adverse impacts (dependent on the species) from construction of the transmission line without a flowage easement in the FPL corridor. These impacts would contribute appreciable adverse impacts to the overall cumulative effects on special-status species. The cumulative contribution to adverse effects on avian species would be high under alternative 1b because of the proximity to nesting and foraging locations.

Conclusion – Alternative 1b

Impacts on special-status species would be varied as noted in the analysis above. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, construction and operation of transmission lines in the FPL West Secondary Corridor would have effects on many listed species in the area and have high risks to avian species, especially wood storks and Everglade snail kites, due to proximity of the lines to nesting and foraging locations. Impacts from the lack of a flowage easement or sufficient rights to increase water levels over the FPL West Secondary Corridor would be the same as described for alternative 1a.

The park would continue to coordinate with the USFWS and state resource agencies, to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on special-status species. The cumulative contribution to adverse effects on avian species would be high under this alternative because of the proximity to nesting and foraging locations.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, the park would realize a net gain of 320 of land within the park boundary. Alternative 2 would have long-term indirect benefits to special-status species because acquisition of the FPL corridor would remove a large area of non-NPS ownership of land in the interior of the park. This would ensure that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel. The connectivity of the EEEA wetlands would be ensured, and a potential source of nonnative vegetation not under NPS control would be removed. Placing ownership of this area solely with the NPS would enhance the ability to provide more natural water flows to the park, which in turn would enhance the conservation of the resources and values of the park, including special-status species, a long-term beneficial impact. A detailed discussion of the impacts of the land acquisition on individual species is provided in the discussion below.

Impacts of Transmission Line Construction

In general, construction and operation of transmission lines in the West Consensus Corridor east of the park would have effects on many listed species similar to other alternatives but would have lower risks to wood storks and Everglade snail kites due to the location of the lines farther away from nesting and foraging locations than the FPL corridors. Impacts on species that are known to inhabit disturbed or more upland areas would be expected to be higher due to the land uses in the West Consensus Corridor along the canal and in the pasture and agricultural areas in the south. Impacts on special-status species within the park would be minimized under this alternative. In general, impacts on avian species using wetland habitats would be less under this alternative since the wetlands impacted are considered to be of lower quality based on connectivity and integrity. The West Consensus Corridor alignment turns east about one mile south of the Tamiami Trail, and this change in direction avoids proximity to many of the nesting locations of several state and federally listed wading birds just to the west of the FPL West Preferred Corridor and along the FPL West Secondary Corridor further west and north.

A detailed discussion of the impacts of the transmission line construction on individual species is provided below.

Federally Listed Species

West Indian Manatee—The West Indian Manatee may occasionally be found in the SFWMD canals in West Consensus Corridor and in the EEEA. The NPS acquisition of the FPL West Secondary Corridor within the park and subsequent water flows for habitat restoration projects are not anticipated to have a noticeable effect on water levels or water quality within the canals. No in-water work in the canals is anticipated during construction of the transmission lines. Appropriate erosion control measures will be implemented during construction to prevent degradation of adjacent waterbodies. Transmission line construction stormwater discharges released into waters of the state will be addressed through compliance with Rule 62-621.300(4) (Generic Permit for Stormwater from Large and Small Construction Activities). In the event of inadvertent equipment or vehicle fluid release during construction, construction crews will be equipped with spill containment and absorption materials. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Under alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, there may be a discountable, short-term adverse effect on the manatee from construction and maintenance of the transmission lines. There would be no impacts on manatee from NPS acquisition of the FPL West Secondary Corridor within the park. This would equate to a “no effect” determination. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Florida Panther—The Florida panther is known from the area of analysis. Panthers have been known to occur along the Tamiami Trail. NPS acquisition of the FPL West Secondary Corridor within the park is expected to have a long-term beneficial impact on the Florida Panther because it will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership.

Construction traffic and noise is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in the West Consensus Corridor. This is also true for line maintenance activities. These impacts are considered short term, minor, and adverse. Increases in connectivity between habitat

types and areas due to the transmission corridor may have long-term minor adverse impacts on the Florida panther if they encourage movement between more developed areas where panther injury or mortality is more likely to occur. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. FPL will work with USFWS/FFWCC to mitigate any potential impacts on Florida panther habitat once a corridor is certified and a specific right-of-way is designed.

Section 7 Determination of Effect—Under alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have minor short- and long-term adverse impacts on the Florida panther from transmission line construction and operation. Long-term beneficial impacts would accrue from NPS acquisition of the FPL West Secondary Corridor within the park. This would equate to a "may affect, not likely to adversely affect" determination. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Florida Bonneted Bat—NPS acquisition of the FPL West Secondary Corridor may have a long-term beneficial effect on the Florida bonneted bat by protecting tree islands that may be used for roosting from clearing for transmission line construction.

There is a moderate probability of Florida bonneted bat occurring in the West Consensus Corridor. Right-of-way and access road clearing activities in the West Consensus Corridor may result in the loss of roosting habitat (palm and other tree foliage). If bats are roosting in the areas when clearing takes place, bat injury or mortality may occur. The loss of roosting habitat is considered a long-term moderate adverse impact on Florida bonneted bats. Injury or mortality to Florida bonneted bats from right-of-way or access road clearing would be considered short term, moderate, and adverse. These impacts could also occur during line maintenance activities. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long-term moderate adverse impacts on Florida bonneted bat from construction, operation, and maintenance of the transmission lines with some long term benefits from the acquisition of the FPL West Secondary Corridor within the park. This would equate to a "may affect, likely to adversely affect" determination. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Wood Stork—NPS acquisition of the FPL West Secondary Corridor within the park would have long-term benefits to wood stork. NPS acquisition of the FPL West Secondary Corridor would prevent the fragmentation and loss of high quality foraging and potential nesting habitat that would occur if a transmission line was built in this corridor. Acquisition of the FPL West Secondary Corridor by NPS would also remove the risk of line strikes and electrocution associated with transmission lines built within the FPL West Secondary Corridor. In addition, NPS acquisition of the FPL West Secondary Corridor would allow for the additional flow of water across this corridor as needed for ecosystem restoration projects. Ecosystem restoration is expected to significantly benefit wood storks and other wading birds in the area by restoring the natural seasonal patterns of flow and improving prey availability across the landscape.

Transmission line and access road construction would result in the loss of foraging habitat for this species when wetlands are filled to create access roads and structure pads and if the hydrology of wetlands adjacent to construction areas is altered. This loss of foraging habitat within the West Consensus Corridor is considered a long term, moderate, adverse impact on the species. Foraging and other behavior may also be altered during the construction period due to the construction noise and equipment traffic. These impacts are considered short term, moderate, and adverse. Minor impacts may also occur from line maintenance activities. The presence of the two 500-kV and one 230-kV transmission lines in the West Consensus Corridor present a strike hazard that could result in wood stork injury or mortality. The impact of birds striking the structures, lines, or guy wires in the West Consensus Corridor is long term, moderate, and adverse.

Four wood stork colonies are known from within 5 miles of the FPL corridors and the West Consensus Corridor in the vicinity of Tamiami Trail (see figure 14). The corridors are within the Core Foraging Area of these four colonies and other colonies. However, the colonies are not within West Consensus Corridor. The closest colony to the West Consensus Corridor is the Tamiami East 1 colony, which is 0.8 miles away (table 26). About 10–15 wood stork nests have been observed at this colony during nesting periods over the last 5 years. The Tamiami East 2 colony is 1.72 miles away from the West Consensus Corridor; 20–30 wood stork nests have been observed during nesting periods at this colony over the last 5 years. The Tamiami West (Coopertown) colony is the largest colony in the 5-mile radius and the furthest away from the West Consensus Corridor (2.90 miles). Over the last 5 years, 50 to 1,300 wood stork nests have been observed at this colony during nesting periods. The risk assessment conducted by Exponent (2013, amended 2015) found that construction in the area of possible relocated corridor poses the least risk to wood stork when compared to the FPL West Secondary and FPL West Preferred Corridors (figures 49 and 52). This is also true of the West Consensus Corridor, although the corridor is closer to the wood stork colonies than the area of possible relocated corridor, because it follows the canal to a point about one mile south of the Tamiami Trail. It turns east about one mile south of the Tamiami Trail, and this change in direction keeps the West Consensus Corridor at a distance farther from the wood stork nests than the FPL West Preferred Corridor.

FPL will comply with any federal permit conditions regarding wood stork colonies, including those related to mitigation for lost foraging habitat. The FPL construction designs would include features to minimize impacts on avian species including the wood stork. For example, the spacing between transmission conductors (wires) for the proposed 230- and 500-kV lines would be far greater than the 61-inch wingspan for the wood stork, greatly minimizing the threat for electrical harm to the bird. These designs would be consistent with the FFWCC-recommended Conditions of Certification to install flight diverters on overhead ground wires to minimize bird interactions with the lines in areas within 1/2 mile of active wood stork colonies and the FPL design standard of installing perch discouragers on all new 230- and 500-kV transmission line structures. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on wood storks.

Further, an Avian Protection Plan specifically for this project, consistent with the Mitigation Concepts document and Avian Power Line Interaction Committee guidelines, would be developed in consultation with USFWS. In the mitigation concepts document, FPL suggested that various mitigation options are available in certain areas to reduce potential impacts on wading birds. These options include wildlife and wading bird colony surveys to document which species and in what areas of the right-of-way alignment potential impacts are possible in addition to the design features, such as perch discouragers on the towers and flight diverters mentioned above.

Subsequent to submission of that document to the NPS, FPL has been negotiating proposed Conditions of Certification with the FFWCC and SFWMD. Included in those proposed Conditions of Certification are

requirements for pre-construction listed species surveys all along the right-of-way and ground and follow-flight surveys of wading bird usage along the right-of-way in areas of known wading bird colonies. The proposed Conditions of Certification also require potential design alternatives such as perch discouragers and flight diverters in areas of those known colonies. FPL would also work with FFWCC to design a post-construction mitigation effectiveness monitoring study. Based on the results of such a study, FPL may be required to implement further mitigation measures, such as additional flight diverters. A specific design has not yet been selected, so these measures are not specifically incorporated into the analysis in this EIS.

Section 7 Determination of Effect—Alternative 2 NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long-term minor to moderate adverse impacts on the wood stork from construction, operation, and maintenance of the transmission lines along with long-term benefits from NPS acquisition of the FPL West Secondary Corridor within the park. This would equate to a "may affect, likely to adversely affect" determination. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (2010) are incorporated by reference into this EIS, and the West Consensus Corridor would have effects that fall between those assessed for the FPL West Preferred Corridor and the hypothetical corridor addressed in the risk assessment. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Everglade Snail Kite—The Everglade snail kite is known to nest in the eastern portion of the park in the area of analysis and may forage within herbaceous wetland areas in the area of analysis. There are no known nesting sites in the West Consensus Corridor. The closest nesting site is 0.16 miles to the west of the corridor, just west of the park boundary where the corridor turns to the east. The rest of the snail kite nests are to the north and west in the park, ranging from 0.74 to 2.06 miles from the closest location on the corridor boundary (see figure 16). NPS acquisition of the FPL West Secondary Corridor would provide long-term benefits to the Everglade snail kite. NPS acquisition of the FPL West Secondary Corridor would prevent the fragmentation and loss of high quality foraging and nesting habitat that would occur if a transmission line was built in this corridor. Acquisition of the FPL West Secondary Corridor by NPS would also remove the risk line of strikes and electrocution associated with transmission lines built within the FPL West Secondary Corridor. In addition, NPS acquisition of the FPL West Secondary Corridor would allow for the flow of water across this corridor as needed for wetland habitat and hydrologic restoration projects. Hydrologic restoration would result in beneficial effects to kites through habitat improvement in EEEA.

The noise and vehicular traffic associated with the construction of the transmission lines and access road construction within the West Consensus Corridor may cause changes in Everglade snail kite behaviors such as foraging, breeding, and nesting. This would also be true for line maintenance activities. These impacts would be considered short term, minor, and adverse. Filling of wetlands for structure pads and access roads within the West Consensus Corridor would also result in loss of foraging habitat for Everglade snail kite. The loss of foraging habitat in the West Consensus Corridor would be considered a long-term moderate adverse impact.

The risk assessment conducted by Exponent (2013, amended 2015), found that construction in the area of possible relocated corridor poses the least risk to Everglade snail kite when compared to the FPL West Secondary and FPL West Preferred Corridors (figure 53). The West Consensus Corridor would represent a risk that is higher than a route in the area of possible relocated corridor due to the proximity of nests to the northern section of the corridor along the canal, where the corridor turns to the east, but a reduced risk compared to the FPL West Preferred Corridor, which continues directly north and passes close to several snail kite nest locations (see figures 15 and 16).

The FPL construction designs would include features to minimize impacts on avian species including the Everglade snail kite. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010) and the Avian Power Line Interaction Committee guidelines. However, these measures are not expected to eliminate all impacts on the Everglade snail kite. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA in the West Consensus Corridor, would have short- and long-term minor to moderate adverse impacts on the Everglade snail kite from construction, operation, and maintenance of the transmission lines along with long term benefits from NPS acquisition of the FPL West Secondary Corridor within the park. This would equate to a "may affect, likely to adversely affect" determination. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (2010) are incorporated by reference into this EIS, and the West Consensus Corridor would have effects that fall between those assessed for the FPL West Preferred Corridor and the hypothetical corridor addressed in the risk assessment. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Eastern Indigo Snake—The eastern indigo snake may occasionally occur in upland and wetland areas within the area of analysis. The NPS acquisition of the FPL West Secondary Corridor is expected to have long-term benefits to the eastern indigo snake from protection of potential foraging habitat from development.

Construction noise and vehicle traffic in the West Consensus Corridor may result in changes in eastern indigo behavior. These impacts are considered short term, minor, and adverse. Indigo snakes may be killed or injured during clearing and construction activities in the West Consensus Corridor. These impacts would be considered short to long term, moderate, and adverse. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Alternative 2 NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long-term minor to moderate adverse impacts on the eastern indigo snake from construction, operation, and maintenance of the transmission lines along with long term benefits from NPS acquisition of the FPL West Secondary Corridor within the park. This would equate to a "may affect, likely to adversely affect" determination. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Blodgett's Silverbush, Garber's Spurge, Sand Flax, and Tiny Polygala—Blodgett's Silverbush, Garber's spurge, sand flax, and tiny polygala are unlikely to occur within the FPL West Secondary Corridor; therefore, no impacts are expected to these species from NPS acquisition of the FPL West Secondary Corridor. These species have a low likelihood of occurrence in disturbed uplands in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Effects to these species from construction, operation, and maintenance of the transmission lines in the West Consensus Corridor are expected to be negligible adverse.

Section 7 Determination of Effects—Alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have no impacts on Blodgett's Silverbush, Garber's spurge, sand flax, and tiny polygala. This would equate to a "no effect" determination. The effect determination listed here represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

State-listed Species

Everglades Mink— The Everglades mink is likely to forage in wetland areas within the FPL West Secondary Corridor. NPS acquisition of the FPL West Secondary Corridor would provide long-term benefits by protecting Everglades mink habitat from loss or degradation resulting from construction of transmission lines in this corridor. In addition, NPS acquisition of the FPL West Secondary Corridor would allow for the flow of water across this corridor as needed for ecosystem restoration projects.

The Everglades mink is also likely to forage in wetland areas within the West Consensus Corridor. Construction noise and traffic may alter the behavior of Everglades mink in the area during the construction period. These impacts would be considered short term, minor, and adverse. Filling of wetlands for structure pads and access roads would result in long term, moderate, adverse impacts. Alternative 1b, construction of the transmission lines outside the EEEA, would have short- and long-term moderate adverse impacts on the Everglades mink. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long- minor to moderate adverse impacts on the Everglades mink.

Florida Sandhill Crane—The Florida sandhill crane may occasionally forage within the FPL West Secondary Corridor. Since the Florida sandhill crane is known to forage within both wetland and upland habitats within the region, NPS acquisition of the FPL West Secondary Corridor is expected to have limited long-term benefits on the species.

The Florida sandhill may occasionally forage within the West Consensus Corridor. Construction noise and traffic in the West Consensus Corridor may impact Florida sandhill crane behavior during the construction period. Similar impacts may occur during line maintenance. These impacts are considered short term, minor, and adverse. Construction of the access roads and structure pads in the West Consensus Corridor may result in a loss of foraging habitat for this species. These impacts are considered long term, minor, and adverse. In addition, construction of the transmission lines in the West Consensus Corridor would create a strike hazard for Florida sandhill crane. Impacts from Florida sandhill crane line strikes are considered long term, moderate, and adverse. Preferred habitats of the Florida sandhill crane include freshwater herbaceous wetlands (Exponent 2013, amended 2015). According to the ARA, relative risk to cranes, based on distance of the preferred focal habitats from the transmission corridors, was generally greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated (Exponent 2013, amended 2015) (figure 54).Risk for the West Consensus Corridor would be intermediate between the risk for the FPL West Preferred Corridor and the area of possible relocated corridor, but risk along the area that parallels the canal near the mining operation would be minimal due to the limited extent and disturbed condition of wetlands in that area.

FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 2, NPS acquisition of the

FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long-term minor to moderate adverse impacts on the Florida sandhill crane.

White-crowned Pigeon—The white-crowned pigeon may forage on the fruit of poisonwood trees in the FPL West Secondary Corridor and in the rest of the EEEA, but it is not known to nest in the EEEA. Since poisonwood trees are known to occur in wetlands and uplands throughout south Florida, NPS acquisition of the FPL West Secondary Corridor is expected to have limited long-term beneficial impacts on white-crowned pigeon.

The white-crowned pigeon is has a moderate likelihood of foraging within the West Consensus Corridor, but is not known to nest in this area. The ARA found that the relative risk to white-crowned pigeons, based on distance of the preferred habitats from the transmission corridors, was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (figure 55), although the difference among the corridors is minimal. Risk related to the West Consensus Corridor would be similar to the FPL West Preferred Corridor, but minimal because of the lack of forested wetlands and forests along the path of the corridor. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. The behavior of these birds is may be impacted by the increased noise and vehicle levels within West Consensus Corridor during the construction period. Similar impacts are expected to occur during line maintenance activities. These impacts are considered short term, minor, and adverse. Construction of access roads and structure pads would result in loss of foraging habitats. The impact of the lost habitat is expected to be long term, minor, and adverse. Construction of the transmission lines would create a strike hazard for white crowned pigeons. The impact of injury and mortality due to line strikes is considered long term, minor, and adverse. Alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, would have short- and long-term minor adverse impacts on the white-crowned pigeon.

Limpkin, Little Blue Heron, Snowy Egret, Tricolored Heron, and Roseate Spoonbill—These wading birds are likely to forage within the park in the vicinity of the FPL West Secondary Corridor. Mixed rookeries of wading birds also occur in the vicinity of the FPL West Secondary Corridor. NPS acquisition of the FPL West Secondary Corridor would provide long-term benefits to these wading bird species. NPS acquisition of the FPL West Secondary Corridor would prevent the fragmentation and loss of high quality foraging and nesting habitat that would occur if a transmission line was built in this corridor. Acquisition of the FPL West Secondary Corridor by NPS would also remove the risk line strikes and electrocution associated with transmission lines built within the FPL West Secondary Corridor. In addition, NPS acquisition of the FPL West Secondary Corridor would allow for the flow of water across this corridor as needed for wetland habitat and hydrologic restoration projects.

Limpkin, little blue heron, snowy egret, tricolored heron, and roseate spoonbill are also likely to forage within freshwater wetland areas in the West Consensus Corridor. Mixed rookeries of wading birds also occur in the park west of the West Consensus Corridor, although the turn to the east about one mile south of the Tamiami Trail helps to reduce proximity to known nest locations of most of these state-listed wading birds in the park and to the north of the park (see figures 18, 19, 20, and 21). The behavior of these birds is likely to be impacted by the increased noise and vehicle levels during the construction period. Similar impacts are expected to occur during line maintenance activities. These impacts are considered short term, minor, and adverse. Construction of access roads and structure pads would result in loss of wetland foraging habitats. The impact of the lost habitat is expected to be long term, moderate, and adverse. Construction of the transmission lines would create a strike hazard for the wading birds. The impact of bird injury and mortality due to line strikes is considered long term, moderate, and adverse. The ARA found that. the relative risk to these wading bird species, based on distance of the preferred habitats

from the transmission corridors, was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (Exponent 2013, amended 2015). The West Consensus Corridor would represent a moderate risk to wading birds that is higher than a route in the area of possible relocated corridor due to the proximity of nests to its northern section along the park boundary, but a reduced risk compared to the FPL West Preferred Corridor, which continues directly north and passes close to several known nest locations. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 2 is expected to have short- to long-term minor to moderate adverse impacts on these species. These impacts are not expected to result in population level changes for the species or in species being extirpated from the park.

Florida Burrowing Owl and Gopher Tortoise—Due to their preference for dry sandy habitats such as longleaf pine xeric oak sandhills, the Florida burrowing owl and gopher tortoise are not likely to occur in the FPL West Secondary Corridor. Therefore, NPS acquisition of the FPL West Secondary Corridor within the park is expected to have no effect on these species.

The Florida burrowing owl and gopher have a low likelihood of occurrence in xeric habitats in the West Consensus Corridor. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Impacts on Florida burrowing owl and gopher tortoise from alternative 2, NPS acquisition of the FPL West Secondary Corridor and construction of the transmission lines outside the EEEA, are expected to be short- to long-term, negligible to minor, and adverse. Short-term impacts would be related to disturbance during construction or maintenance, while long-term impacts would be related to habitat loss.

Pineland Jacquemontia, Eaton's Spikemoss, Florida Royal Palm, Southern Frog Fruit, Bahama Ladder Brake, Pineland Allamanda, Rockland Painted Leaf, Pinelands (or Everglades) Pencil Flower, Bahama Saschia, Pineland Noseburn, and Meadow Joint-vetch—Most of these species are have a low to moderate likelihood of occurrence within the FPL West Secondary Corridor. Southern frog-fruit is known from the FPL West Secondary Corridor. Acquisition of the FPL West Secondary Corridor by NPS is expected to have long-term beneficial impacts on these species due to preservation and restoration of habitat for these plant species.

These species have a low to moderate likelihood of occurrence in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 2 is expected to have short- to long-term negligible to minor adverse impacts on these plant species. Short-term impacts would be related to disturbance during construction or maintenance, whereas long-term impacts would be related to habitat loss.

Small's Flax—There is a low likelihood that Small's flax could occur in disturbed uplands and disturbed wetlands, such as margins of canals, within the FPL West Secondary Corridor. NPS acquisition of the FPL West Secondary Corridor is expected to have no impact on Small's flax. There is a moderate likelihood that Small's flax could occur in disturbed uplands and disturbed wetlands, such as margins of canals, within the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Effects to this species from construction and maintenance of the transmission lines are expected to be negligible to minor adverse.

Cumulative Impacts

The cumulative impacts on special-status species from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would allow flowage/implementation of the ecosystem restoration projects and benefit some species. However, alternative 2 would also result in short- and long-term negligible to major adverse impacts from construction of the transmission line in areas outside the park. These impacts would contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species utilizing wetland habitats are generally less under this alternative than under other alternatives.

Conclusion

NPS acquisition of the FPL West Secondary Corridor would provide long-term benefits to special-status species since this would mean there would be no impediments to water restoration projects from future use of this parcel. Impacts on special-status species would be varied as noted in the alternative 2 analysis. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, construction and operation of transmission lines in the West Consensus Corridor east of the park would have effects on many listed species in the area. Alternative 2 would have lower risks to wood storks and Everglade snail kites than construction on the FPL corridors due to the location of the lines farther away from known nesting and foraging locations. The routing of the corridor east about one mile south of the Tamiami Trail helps to decrease (but not eliminate) the risk to wood stork, snail kite, and wading birds that nest in the northeast corner of the park. Impacts on species that are known to inhabit disturbed or open areas would be expected to be higher due to the land uses in the West Consensus Corridor.

The park would continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 2 would contribute appreciable beneficial and noticeable adverse impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species using wetland habitats are generally less under this alternative than under other alternatives.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, there would be benefits to special-status species because the exchange would remove a large area of non-NPS ownership of land within the interior of the park, ensuring that no other development would be proposed in this area and that the various Everglades ecosystem restoration projects could occur without any obstacles relating to the presence of this parcel. The connectivity of the EEEA wetlands would be ensured, and a potential source of nonnative vegetation not under NPS control would be removed. Placing ownership of this area solely with the NPS would enhance the ability to provide more natural water flows to the park, which in turn would enhance the conservation of the resources and values of the park, including special-status species, a substantial long –term beneficial impact. In addition, as a result of the exchange, the park would realize a net gain of 60 acres of higher value wetlands. The exchange corridor given to FPL is 260 acres of mostly wetlands located at the edge of the park, close to developed areas, some of which are infested with nonnative species, which thereby reduces its value as wildlife habitat. The FPL corridor gained by the park is 320 acres that is farther from developed areas and generally has fewer nonnative species than the corridor gained by FPL. Impacts on

individual special-status species from NPS acquisition of the FPL West Secondary Corridor would the same as discussed under alternative 2 for this action and are not repeated in the species discussion below.

Impacts of Transmission Line Construction

Under alternative 3, impacts would result from the construction of transmission lines within the exchange corridor, directly adjacent to park lands on the eastern edge of the park, as described earlier in this chapter and appendix F. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will no longer own or control the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. Terms and conditions are found in appendix G.

Indirect short- and long-term impacts, ranging from no effect / negligible to potentially major adverse impacts will accrue to special-status species from transmission line construction and presence along FPL West Preferred Corridor. Construction of transmission lines in this corridor would have a relatively high risk to avian species because of the proximity to nesting and foraging locations.

In addition to the mitigation measures included in the SCA, any construction in this corridor would need to adhere to all terms and conditions of the land exchange. Terms and conditions applicable to special-status species include:

1. Requirement for pre-construction and construction surveys for plants, wildlife, and habitat
2. Requirement for an avoidance, minimization, and mitigation plan for impacts on special-status species
3. Requirement for avian and bat protection:
    - All utility-related infrastructure shall be constructed, operated, and maintained utilizing state-of-the-art practices to eliminate or reduce injury/mortality of avian and bat species to the maximum extent practicable. These practices shall include mitigation measures that follow appropriate guidelines, including but not limited to Avian Power Line Interaction Committee guidelines, both during and after construction, including operations and maintenance activities. In locations where NPS determines, in consultation with FPL, that maximizing the level of protection of avian species is warranted, guy wires will not be used to the maximum extent practicable. Transmission structure spacing and sizing will be varied to lower certain structures or stagger the normal span distances in areas within proximity of wading bird colonies to minimize possible interactions. Other design alternatives may also be available in certain locales. Measures for eliminating or reducing injury/mortality of avian and bat species would all be evaluated in consultation with appropriate agency personnel prior to implementation.
    - Prior to commencing any construction, FPL shall develop a detailed pre- and post-construction avian and bat protection plan with concurrence of NPS and other appropriate federal and state agencies. The plan shall reflect the requirements for avian protection required by appropriate regulatory authorities. The plan will include pre- and post-construction monitoring to address avian and bat flight presence, flight level, position, and frequency in flight in relation to the transmission line configurations. The plan will focus on federal- and state-listed species in the vicinity of the proposed transmission route and assess impacts of transmission infrastructure on their populations. The pre-construction study will be conducted over an appropriate time period agreed upon by NPS and other appropriate federal and state agencies prior to initiating construction to address data variations related to inter-annual variation in the location

and quality of habitat and food resources, climatic variability. The study will be conducted throughout the year to address seasonal migratory species and flight patterns. The plan will be reviewed on an annual basis.

Since publication of the draft EIS, alternative 3 was modified to include the expectation that FPL would endeavor to locate transmission lines outside the current park boundary to the extent possible. Any of the NPS lands not needed for proposed transmission line construction would be reconveyed to the NPS. Based on this change, the NPS action under alternative 3 no longer results in a clear expectation that transmission lines would be built on exchanged lands and, consequently, the construction of transmission lines no longer meets the definition of an interrelated and interdependent action for Section 7 consultation. As a result, the NPS consultation for the preferred alternative, alternative 3, is limited to those effects resulting from the land exchange. The Section 7 determinations related to transmission line construction identified below are those the USACE would be expected to make when consulting on the issuance of permits for transmission line construction under the CWA. The Section 7 determinations were made as if the transmission line structures were constructed entirely within the FPL West Preferred Corridor for a conservative analysis; however, if the structures were constructed outside of the FPL West Preferred Corridor, Section 7 determinations would be similar to those described for alternative 2.

Impacts on special-status species are presented below.

Federally Listed Species

West Indian Manatee—The West Indian Manatee may occasionally be found in the SFWMD canals crossed by the FPL West Preferred Corridor. No in-water work in the canals is anticipated during construction of the transmission lines. Appropriate erosion control measures will be implemented during construction to prevent degradation of adjacent waterbodies. Transmission line construction stormwater discharges released into waters of the state will be addressed through compliance with Rule 62-621.300(4) (Generic Permit for Stormwater from Large and Small Construction Activities). In the event of inadvertent equipment or vehicle fluid release during construction, construction crews will be equipped with spill containment and absorption materials. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect—Under alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, there would be no impacts on the manatee. This would equate to a, “no effect” determination.

Florida Panther—The Florida panther is known from the area of analysis and the FPL West Preferred Corridor is within the Primary Zone of the Panther Focus Area. Panthers have been known to occur in the park in the vicinity of the FPL West Preferred Corridor. Construction traffic and noise is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in this area. This would also be true for line maintenance activities. These impacts are considered short-term, minor, and adverse. The loss of native wetland foraging habitat due to road and pad fill is considered a long-term moderate adverse impact. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. FPL will work with USFWS/FFWCC to mitigate any potential impacts on Florida panther habitat once a corridor is certified and a specific right-of-way is designed.

Section 7 Determination of Effect— Alternative 3, the exchange of FPL and NPS lands within the EEEA may affect, but is not likely to adversely affect the Florida panther. Subsequent construction of transmission lines in the FPL West Preferred Corridor would have minor to moderate, short and long term, adverse impacts on Florida panther. This would equate to a "may affect, likely to adversely affect" determination. This represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Florida Bonneted Bat—The Florida bonneted bat has been recorded in the park in the vicinity of the FPL West Preferred Corridor. Right-of-way and access road clearing activities may result in loss of small amounts of roosting habitat (palm and other tree foliage). If bats are roosting in the areas when clearing takes place, bat injury or mortality may occur. These impacts may also occur during line maintenance activities. The loss of roosting habitat is considered a long-term, moderate, adverse impact on Florida bonneted bats. Injury or mortality to Florida bonneted bats from right-of-way or access road clearing would be considered short term, moderate, and adverse. Protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts on Florida bonneted bats, but mortality could still occur. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect— Alternative 3, the exchange of FPL and NPS lands within the EEEA may affect, but is not likely to adversely affect the Florida bonneted bat. Subsequent construction of transmission lines in the FPL West Preferred Corridor, would have moderate adverse impacts on Florida bonneted bat. This would equate to a "may affect, likely to adversely affect" determination. This represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Wood Stork—Four wood stork colonies are known from the vicinity of the FPL West Preferred Corridor and the corridor is within the Core Foraging Area of these four colonies and additional colonies. As shown in table 26, the largest colony (Tamiami West/Coopertown) within a five radius of where the corridors cross Tamiami Trail is closer to the FPL West Secondary Corridor than to either the FPL West Preferred Corridor or the West Consensus Corridor. The Tamiami West (Coopertown) is located 0.96 mile from the FPL West Secondary Corridor, while the colony is located 2.81 miles from the FPL West Preferred Corridor. Moving construction of the transmission line from the FPL West Secondary Corridor to the FPL West Preferred Corridor also increases the distance from the Tamiami East 2 and 3B Mud East colonies from the transmission lines (table 26). However, the distance from the Tamiami East 1 colony to the FPL West Preferred Corridor (0.51 mile) is less than that between the colony and the FPL West Secondary Corridor (1.25 miles). Overall, construction in the FPL West Preferred Corridor instead of the FPL West Secondary Corridor moves the transmission lines further away from a greater number of nesting wood storks. The results of the risk assessment indicate that the FPL West Preferred Corridor poses an intermediate risk to wood storks when compared to the other two corridors (Exponent 2013, amended 2015) (figures 49 and 52).

FPL will comply with any federal permit conditions regarding wood stork colonies, including those related to mitigation for lost foraging habitat. The FPL construction designs would include features to minimize impacts on avian species including the wood stork. For example, the spacing between transmission conductors (wires) for the proposed 230- and 500-kV lines would be far greater than the 61-inch wingspan for the wood stork, greatly minimizing the threat for electrical harm to the bird. These designs would be consistent with the FFWCC-recommended Conditions of Certification to install flight diverters on overhead ground wires to minimize bird interactions with the lines in areas within 1/2 mile of active wood stork colonies and the FPL design standard of installing perch discouragers on all new 230-

and 500-kV transmission line structures. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on wood storks.

Further, an Avian and Bat Protection Plan, consistent with the Mitigation Concepts document, and Avian Power Line Interaction Committee guidelines, and terms and conditions would be developed in consultation with USFWS. In the mitigation concepts document, FPL suggested that various mitigation options are available in certain areas to reduce potential impacts on wading birds. These options include wildlife and wading bird colony surveys to document which species and in what areas of the right-of-way alignment potential impacts are possible in addition to the design features, such as perch discouragers on the towers and flight diverters mentioned above.

Subsequent to submission of that document to NPS, FPL has been negotiating proposed Conditions of Certification with the FFWCC and SFWMD. Included in those proposed Conditions of Certification are requirements for pre-construction listed species surveys all along the right-of-way and ground and follow-flight surveys of wading bird usage along the right-of-way in areas of known wading bird colonies. The proposed Conditions of Certification also require potential design alternatives such as perch discouragers and flight diverters in areas of those known colonies. FPL would also work with FFWCC to design a post-construction mitigation effectiveness monitoring study. Based on the results of such a study, FPL may be required to implement further mitigation measures, such as additional flight diverters. A specific design has not yet been selected, so these measures are not specifically incorporated into the analysis in this EIS.

Transmission line and access road construction would result in the loss or alteration of foraging habitat for this species when wetlands are filled to create access roads and structure pads and if the hydrology of wetlands adjacent to construction areas is altered. This loss of foraging habitat is considered a long term, moderate, adverse impact on the species. Ecosystem restoration is expected to significantly benefit wood storks and other wading birds in the area by restoring the natural seasonal patterns of flow and improving prey availability across the landscape. Foraging and nesting behavior may also be altered during the construction period due to the construction noise and equipment traffic. These impacts are considered short term, moderate, and adverse. The presence of the two 500-kV and one 230-kV transmission lines (tower structures, guy wires, and electrical transmission cable lines) present a strike hazard that could result in wood stork injury or mortality. Avian protection devices, such as line markers may be installed on the lines as part of the terms and conditions of the land exchange, which could reduce the likelihood of line strikes, but will not eliminate all mortality. The impact of birds striking the lines is long term, major, and adverse. The impacts of powerline collisions may lead to population decline as a result of the population-wide significance of the affected colonies to the wood stork population.

Section 7 Determination of Effect— Alternative 3, the exchange of FPL and NPS lands within the EEEA may affect, but is not likely to adversely affect the wood stork. Subsequent construction of transmission lines in the FPL West Preferred Corridor would have moderate to major short- and long-term adverse impacts on the wood stork. This would equate to a “may affect, likely to adversely affect” determination. This represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (2010) are incorporated by reference into this EIS.

Everglade Snail Kite—The Everglade snail kite is known to nest in the eastern portion of the park in the footprint of the FPL West Preferred Corridor and forages on apple snails in wetlands in the area of analysis. The noise and vehicular traffic associated with construction of the transmission lines and access road construction is likely to cause changes in Everglade snail kite behaviors such as foraging, breeding,

and nesting. These impacts would be considered short term, minor, and adverse. Filling of wetlands for structure pads and access roads would also result in loss or alteration of foraging and nesting habitat for Everglade snail kite. The loss of foraging and nesting habitat would be considered a long term, moderate, adverse impact. Avian protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions on the land exchange may lessen the impacts of the line construction and operation on snail kite.

The risk assessment conducted by Exponent (2013, amended 2015), found that the FPL West Preferred Corridor posed an intermediate risk to snail kites (figure 53). Snail kite collisions with powerlines may rarely occur, but are not expected to cause a decline in the population because of the low expected occurrence. Impacts on Everglade snail kite from line collisions and electrocutions are expected to be long term, moderate, and adverse. The FPL construction designs would include features to minimize impacts on avian species including the Everglade snail kite. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010) and the Avian Power Line Interaction Committee guidelines. However, these measures are not expected to eliminate all impacts on the Everglade snail kite. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Section 7 Determination of Effect— Alternative 3, the exchange of FPL and NPS lands within the EEEA may affect, but is not likely to adversely affect the Everglade snail kite. Subsequent construction of transmission lines in the FPL West Preferred Corridor, would have minor to moderate short- and long-term adverse impacts on the Everglade snail kite. This would equate to a “may affect, and is likely to adversely affect” determination. This represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit. The findings of the Exponent Risk Assessment (Exponent 2013, amended 2015) and the NPS risk assessment (2010) are incorporated by reference into this EIS.

Eastern Indigo Snake—The eastern indigo snake may occasionally occur in tree inlands and other upland areas within and adjacent to the FPL West Preferred Corridor. Construction noise and vehicle traffic may result in changes in eastern indigo behavior. These impacts are considered short term, minor, and adverse. Indigo snakes may be killed or injured during clearing and construction activities if they are present. These impacts would be considered short term, moderate, and adverse. Terms and conditions may limit these impacts if surveys are conducted prior to construction. Construction of structure pads and access roads would also eliminate habitat for indigo snakes. These impacts would be considered moderate, long term, and adverse.

Section 7 Determination of Effect— Alternative 3, the exchange of FPL and NPS lands within the EEEA may affect, but is not likely to adversely affect the Eastern indigo snake. Subsequent construction of transmission lines in the FPL West Preferred Corridor would have moderate short term and long term adverse impacts on the eastern indigo snake. This would equate to a “may affect, likely to adversely affect” determination. This represents the effect determination that the NPS expects the USACE to make in consultation with the USFWS if or when FPL seeks issuance of a CWA Section 404 permit.

Blodgett’s Silverbush, Garber’s Spurge, Sand Flax, and Tiny Polygala—These species are unlikely to occur within the FPL West Preferred Corridor due to lack of habitat. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS (for any federally listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. No effects to these species from transmission line construction and maintenance are expected

Section 7 Determination of Effects— Alternative 3, the exchange of FPL and NPS lands within the EEEA will have no effect on these species. Subsequent construction of transmission lines in the FPL West Preferred Corridor, would have negligible adverse impacts on Blodgett's silverbush, Garber's spurge, sand flax, and tiny polygala. This would equate to a "no effect" determination.

State-listed Species

Everglades Mink—The Everglades mink is likely to forage in wetland areas within and adjacent to the FPL West Preferred Corridor. Construction noise and traffic may alter the behavior of Everglades mink in the area during the construction period. This is also likely true for line maintenance activities. These impacts would be considered short term, minor, and averse. Filling of wetlands for structure pads and access roads would result in long term, moderate, adverse impacts. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, would have short- and long-term minor to moderate adverse impacts on the Everglades mink.

Florida Sandhill Crane—The Florida sandhill may occasionally forage within the FPL West Preferred Corridor. Preferred habitats of the Florida sandhill crane include freshwater herbaceous wetlands (Exponent 2013, amended 2015). According to the ARA, relative risk to cranes, based on distance of the preferred focal habitats from the transmission corridors, was generally greatest for the FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated (Exponent 2013, amended 2015) (figure 54).

Construction noise and traffic may impact Florida sandhill crane behavior during the construction period. This would also be true for line maintenance activities. These impacts are considered short term, minor and adverse. Construction of the access roads and structure pads may result in a loss of foraging habitat for this species. These impacts are considered long term, minor, and adverse. In addition, construction of the transmission lines would create a strike hazard for Florida sandhill crane. Impacts from Florida sandhill crane line strikes are considered long term, moderate, and adverse. Avian protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts of the line construction and operation on Florida sandhill crane. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor would have short- and long-term minor to moderate adverse impacts on the Florida sandhill crane.

White-crowned Pigeon—The white-crowned pigeon is moderately likely to forage on the fruit of poisonwood trees in the FPL West Preferred Corridor, but is not known to nest in this area. The ARA found that the relative risk to white-crowned pigeons, based on distance of the preferred habitats from the transmission corridors, was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (figure 55). Impacts on white-crowned pigeons from alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, are expected to be minor adverse as poisonwood trees are found in wetland and upland areas throughout south Florida. Avian protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions on the land exchange may lessen the impacts of the line construction and operation on the white-crowned pigeon. FPL will work with FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.

Limpkin, Little Blue Heron, Snowy Egret, Tricolored Heron, and Roseate Spoonbill—These wading birds are likely to forage within the park in the vicinity of the FPL West Preferred Corridor. Mixed rookeries of wading birds also occur within the vicinity of the FPL West Preferred Corridor. The ARA found that the relative risk to these wading bird species, based on distance of the preferred habitats from the transmission corridors, was generally greatest for FPL West Secondary Corridor, intermediate for the FPL West Preferred Corridor, and least for the hypothetical corridor within the area of possible relocated corridor (Exponent 2013, amended 2015). The behavior of these birds is likely to be impacted by the increased noise and vehicle levels during the construction period. The same would also be true for line maintenance activities. These impacts are considered short term, minor, and adverse. Construction of access roads and structure pads would result in loss or alteration of wetland foraging habitats. The impact of the lost habitat is expected to be long term, moderate, and adverse. Construction of the transmission lines and the associated towers and guy wires would create a strike hazard for the wading birds. The impact of bird injury and mortality due to line strikes is considered long term, moderate, and adverse. Avian protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions on the land exchange may lessen the impacts of the line construction and operation on wading birds. The FPL construction designs would include features to minimize impacts on avian species. The FPL designs would be consistent with the Mitigation Concepts document FPL provided to the NPS (FPL 2010). However, these measures are not expected to eliminate all impacts on avian species.

For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with the FFWCC (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Impacts on wading birds from alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, are expected to be short to long term, minor to moderate, and adverse. These impacts are not expected to result in population level changes for the species or in species being extirpated from the park.

Florida Burrowing Owl and Gopher Tortoise—Due to their preference for dry sandy habitats such as longleaf pine xeric oak sandhills, the Florida burrowing owl and gopher tortoise are not likely to occur in the FPL West Preferred Corridor. Impacts on Florida burrowing owl and gopher tortoise from alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, are expected to be negligible adverse.

Pineland Jacquemontia, Eaton’s Spikemoss, Florida Royal Palm, Rockland Painted-Leaf, Everglades (or Pinelands) Pencil Flower, Bahama Saschia, Pinelands Noseburn, and Small’s Flax—These species have a low to moderate likelihood of occurrence in the FPL West Preferred Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Impacts on these plant species from alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, are expected to be negligible to minor, long term, and adverse.

Meadow Joint-vetch, Southern Frog Fruit, Bahama Ladder Brake, and Pineland Allamanda—These plant species are known to occur in the EEEA and southern frog fruit, Bahama ladder brake and pineland allamanda have been observed in the proposed exchange corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. Impacts on these plant species from alternative 3, the exchange of FPL and NPS lands within the EEEA and subsequent construction of transmission lines in the FPL West Preferred Corridor, are expected to be negligible to moderate, long term, and adverse.

Cumulative Impacts

The cumulative impacts on special-status species from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 3 would allow flowage/implementation of the ecosystem restoration projects and benefit many species, but the land exchange and construction of the transmission line in the exchange corridor would result in short- and long-term negligible to major adverse impacts. These impacts would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species would be high under this alternative because of the proximity to nesting and foraging locations.

Conclusion

NPS acquisition of the FPL West Secondary Corridor would provide long-term benefits to special-status species since this would mean no impediments to water restoration projects could occur from future use of this parcel. Alternative 3 would result in a wide range of impacts on special-status species, as described for the individual species in the above analysis. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, construction and operation of transmission lines in the FPL West Preferred Corridor would have effects on many listed species in the area and has high risks to wood storks and Everglade snail kites due to proximity of the lines to nesting and foraging locations

The park would continue to coordinate with the USFWS and state resource agencies, to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 3 would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species would be high under this alternative because of the proximity to nesting and foraging locations.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, the NPS would acquire fee title to the FPL property (FPL West Secondary Corridor) through an exchange for an easement on NPS property (exchange corridor). Under alternative 4, there would be benefits to special-status species as described under alternative 3, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.

Impacts of Transmission Line Construction

Although FPL would not own the property, impacts on special-status species would be the same as described under alternative 3. This is because there are no substantial differences in the terms and conditions under this alternative and no expected differences in how special-status species would be treated under an easement as opposed to under fee ownership, given the mitigation that FPL included in its SCA and expected conditions in the required resource stewardship plan. With an easement, the land would be used for transmission lines only and there would be less chance of other types of utility related facilities being constructed that could disrupt species in the area. The implementation of the terms and conditions represent an attempt at minimization of the overall impacts to wildlife by requiring FPL to avoid, minimize, and mitigate impacts on park resources during the construction and operation of the

transmission lines within the FPL West Preferred Corridor. Overall impacts on special-status species would be short- to long-term, negligible to major, and adverse; see descriptions under alternative 3 for details for each species.

Cumulative Impacts

Cumulative impacts under alternative 4 would be similar to alternative 3 with some additional cumulative benefits from having an easement arrangement and having NPS policies apply to the easement area. Also, the terms and conditions for alternative 4 result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat. Alternative 4 would allow flowage and implementation of the ecosystem restoration projects, which would benefit many species. But the land exchange and construction of the transmission line in the exchange corridor would result in short- and long-term negligible to major adverse impacts. These impacts would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species would be high under this alternative because of the proximity to nesting and foraging locations.

Conclusion

Impacts associated with alternative 4 would be essentially the same as described for alternative 3 except that no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on special-status species. A wide range of impacts would occur on special-status species, as described for the individual species in the analysis for alternative 3. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, construction and operation of transmission lines in the FPL West Preferred Corridor would have effects on many listed species in the area and have high risks to wood storks and Everglade snail kites due to proximity of the lines to nesting and foraging locations

The park would continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 4 would contribute noticeable adverse and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The cumulative contribution to adverse effects on avian species would be high under this alternative because of the proximity to nesting and foraging locations.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

There would be substantial long-term benefits to special-status species from having a flowage easement on the FPL parcel in the EEEA, since this would mean no impediments to ecosystem restoration projects could occur from future use of this parcel. This would benefit park resources, including special-status species, by allowing habitat and hydrologic restoration projects to continue in the EEEA.

Impacts of Transmission Line Construction

Impacts on special-status species from transmission line construction under alternative 5 would be the same as those described under alternative 1b. Please see the discussion there for impacts on individual species.

Cumulative Impacts

The cumulative impacts on special-status species from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 5 would provide substantial beneficial impacts because flowage easement would allow the ecosystem restoration projects to proceed. However, alternative 5 would have negligible to major long-term adverse impacts due to transmission line construction in the park with no gain of park protected habitat. These impacts would contribute both appreciable adverse and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The benefits would not be as extensive as those under the alternatives that result in the acquisition of the FPL corridor in the park.

Conclusion

NPS acquisition of a flowage easement, or sufficient rights to flow additional water over the FPL West Secondary Corridor would provide substantial long-term benefits to special-status species since this would mean no impediments to ecosystem restoration projects could occur from future use of this parcel. A wide range of impacts would occur on special-status species from transmission line construction, as described for the individual species in the analysis for alternative 1b. The Section 7 determinations for the federally listed species and the impacts on the state-listed species that could potentially occur in the area of analysis are summarized for this and other alternatives in tables 27 and 28 at the end of this section. In general, construction and operation of transmission lines in the FPL West Secondary Corridor would have impacts on many listed species in the area and have high risks to avian species, especially wood storks and Everglade snail kites, due to proximity of the lines to nesting and foraging locations.

The park would continue to coordinate with USFWS and state resource agencies to participate in the Turkey Point Power Plant Units 6 and 7 project, and work to mitigate adverse impacts on these species. However, some losses may be unavoidable. Alternative 5 would contribute both appreciable adverse impacts and appreciable beneficial impacts to the overall cumulative effects on special-status species in this area. The benefits would not be as extensive as those under the alternatives that result in the acquisition of the FPL corridor in the park.

ESA Section 7 Impact Determination Conclusion

A summary of the ESA Section 7 determinations for each species and alternative is presented in table 27. Although the Section 7 determination is the same for all scenarios for each species, there may be difference in the relative risk of impact or potential for occurrence that are noted in the discussion above. For example, there are differences in risk for the avian species especially between the routes in the park and the route outside the park that are discussed in the text of this section and are addressed in more detail in the ARA completed for this project (Exponent 2013, amended 2015). However, the potential effects indicate that there may be adverse effects on individuals even in a lower risk situation, and so the determination remains “may affect, likely to adversely affect” in those cases.

TABLE 27: ENDANGERED SPECIES ACT SECTION 7 DETERMINATIONS BY SPECIES AND ALTERNATIVE

Note: Refer to table 3 in chapter 2 for a summary of cumulative impacts for each impact topic.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
West Indian Manatee (*Trichechus manatus*)					
Impacts of the Land Acquisition Decision					
No impact—lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have no impact on water levels within the canals in the project area where manatee are found.	**Same as 1a.**	**No impact—**the West Indian Manatee may occasionally be found in the SFWMD canals in the West Consensus Corridor and in the EEEA. The NPS acquisition of the FPL West Secondary Corridor within the park and subsequent water flows for habitat restoration projects are not anticipated to have a noticeable effect on water levels or water quality within the canals. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No impact—**the West Indian Manatee may occasionally be found in the SFWMD canals in area the EEEA. The NPS land exchange with FPL is not anticipated to have a noticeable effect on water levels or water quality within the canals. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**No impact—**the NPS acquisition of a flowage easement over the FPL West Secondary Corridor and subsequent water flows for habitat restoration projects are not anticipated to have a noticeable effect on water levels or water quality within the canals.
Impacts of Transmission Line Construction					
No impact.	**No impact—**since no in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during construction.	**No impact—**since no in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during construction.	**No impact—**since no in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during construction.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
ESA Section 7 Determination					
Not applicable.	**No Effect—**lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have negligible adverse impacts on water levels within the canals in the area of analysis where manatee are found. No in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during construction.	**No Effect—**NPS acquisition of the FPL West Secondary Corridor within the park and subsequent water flows for habitat restoration projects are not anticipated to have a noticeable effect on water levels or water quality within the canals. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. No in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during transmission line construction.	**No Effect—**The NPS land exchange with FPL is not anticipated to have a noticeable effect on water levels or water quality within the canals. No in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during transmission line construction. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3**	**No Effect—**the flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have negligible adverse impacts on water levels within the canals in the area of analysis where manatee are found. No in-water work in the canals is expected and appropriate sedimentation and erosion controls will be implemented during construction.
Florida Panther (*Felis concolor coryi*)					
Impacts of the Land Acquisition Decision					
Long-term negligible adverse impacts—lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West	**Same as alternative 1a.**	**Long-term beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor within the park will prevent the fragmentation and loss of habitat that would result if	**Long-term beneficial impacts—**The land exchange will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated	**Limited long-term beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Secondary Corridor is expected to have negligible adverse impacts on the Florida panther. There may be some changes in species diversity and abundance in the area of analysis, but these changes are not expected to have an adverse impact on the Florida panther.		development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. The FPL West Secondary Corridor is more interior to the Primary and Secondary Panther Focus Areas than the FPL West Preferred Corridor and therefore is considered higher value habitat.	disturbance to special-status species or removal of habitat.	
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term minor adverse impacts—**Construction traffic and noise and line maintenance activities are is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in this area. Increases in connectivity between habitat types and areas due to the transmission corridor may have long-	**Short- and long-term minor adverse impacts—** Construction traffic and noise and line maintenance activities are is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in this area. Increases in connectivity between habitat types and areas due to the transmission corridor may have long-	**Short- and long-term minor adverse impacts—** Construction traffic and noise and line maintenance activities are is likely to cause short-term changes to the travel patterns and hunting behaviors of panthers in this area. Increases in connectivity between habitat types and areas due to the transmission corridor may have long-term minor	**Same as alternative 3.**	**Same as alternative 1b.**

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	term minor adverse impacts on the Florida panther if they encourage movement between more developed areas where panther injury or mortality is likely to occur. Also, loss of native wetland foraging habitat in the Primary Panther Zone due to road and pad fill would be considered a long term, moderate adverse impact.	term minor adverse impacts on the Florida panther if they encourage movement between more developed areas where panther injury or mortality is likely to occur.	adverse impacts on the Florida panther if they encourage movement between more developed areas where panther injury or mortality is likely to occur. Also, loss of native wetland foraging habitat in the Primary Panther Zone due to road and pad fill would be considered a long-term moderate adverse impact.		
ESA Section 7 Determination					
Not applicable.	**May affect, likely to adversely affect—**lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have negligible adverse impacts on Florida panther prey diversity and abundance in the area of analysis. Construction of the transmission line is expected to have short and long term, minor adverse impacts on Florida panther behavior and result in a loss of native wetland foraging habitat in the Primary Panther Zone, a long-term moderate adverse impact.	**May affect, not likely to adversely affect—**NPS acquisition of the FPL West Secondary Corridor within the park will provide long term benefits by preventing the fragmentation and loss of habitat that would occur if a transmission line was built through the park. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. Construction of the transmission line is expected to have short and long term, minor adverse impacts on Florida panther behavior.	**May affect, not likely to adversely affect for the land exchange, May affect, likely to adversely affect** for subsequent construction of powerlines—the land exchange between FPL and NPS will provide long-term benefits by preventing the fragmentation and loss of habitat that would occur if a transmission line was built through the park. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will	**Same as alternative 3.**	**May affect, likely to adversely affect—**the flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have limited long-term beneficial impacts on Florida panther from completion of the hydrologic restoration component of planned ecosystem restoration projects. Construction of the transmission line is expected to have short and long term, minor adverse impacts on Florida panther behavior and result in a loss of native wetland

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			minimize impacts on special-status species to the maximum extent practicable. The FPL West Secondary Corridor is more interior to the Primary and Secondary Panther Focus Areas than the FPL West Preferred Corridor and therefore is considered higher value habitat. Construction of the transmission line is expected to have short and long term, minor adverse impacts on Florida panther behavior and result in a loss of native wetland foraging habitat in the Primary Panther Zone, a long-term moderate adverse impact.		foraging habitat in the Primary Panther Zone, a long-term moderate adverse impact.
Florida Bonneted Bat (*Eumops floridanus*)					
Impacts of the Land Acquisition Decision					
Long-term negligible adverse impacts—lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have negligible adverse impacts on the Florida bonneted bat. The lack of flowage rights is not expected to reduce the acreage of tree cover	**Same as alternative 1a.**	**Long-term beneficial impacts—**by protecting tree islands in the park that may be used for roosting from clearing for transmission line construction. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Long-term beneficial impacts—**the land exchange will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Same under alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**Limited long-term beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.

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within the area of analysis, but there may be increase in tree cover or a change in tree community composition due to continued drier conditions in the EEEA. This is expected to have negligible adverse effects on Florida bonneted bat roosting habitat.			NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species (avian and bat protection plan) to the maximum extent practicable.		
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term moderate adverse impacts—**the possible mortality of Florida bonneted bats during construction is considered a short term, moderate, adverse impact. The loss of potential roosting trees during right-of-way clearing is considered a long-term moderate impact.	**Short- and long-term moderate adverse impacts—**the possible mortality of Florida bonneted bats during construction is considered a short term, moderate, adverse impact. The loss of potential roosting trees during right-of-way clearing is considered a long-term moderate impact.	**Short- and long-term moderate adverse impacts—**the possible mortality of Florida bonneted bats during construction is considered a short term, moderate, adverse impact. The loss of potential roosting trees during right-of-way clearing is considered a long-term moderate impact. Protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts on Florida bonneted bats, but mortality could still occur.	**Same as alternative 3.**	**Same as alternative 1b.**

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ESA Section 7 Determination					
Not applicable.	**May affect, likely to adversely affect—**lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have negligible adverse impacts on Florida bonneted bat in the area of analysis. Construction of the transmission line is expected to have short and long term, moderate adverse impacts on Florida bonneted bat due to potential mortality during construction and the loss of potential roosting trees.	**May affect, likely to adversely affect—t**he NPS acquisition of the FPL West Secondary Corridor within the park will provide long-term benefits by protecting tree islands in the park that may be used for roosting from clearing for transmission line construction. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. Construction of the transmission line outside the park is expected to have short and long term, moderate adverse impacts on Florida bonneted bat due to potential mortality during construction and the loss of potential roosting trees.	**May affect, not likely to adversely affect** for the land exchange; **May affect, likely to adversely affect** for subsequent construction of powerlines**—**the land exchange will provide long term benefits by preventing the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. Construction of the transmission line is expected to have short and long term, moderate adverse impacts on Florida bonneted bat due to potential mortality during construction and the loss of potential roosting trees.	**Same as alternative 3.**	**May affect, likely to adversely affect—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA. Construction of the transmission line is expected to have short and long term, moderate adverse impacts on Florida bonneted bat due to potential mortality during construction and the loss of potential roosting trees.

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Wood Stork (*Mycteria americana*)					
Impacts of the Land Acquisition Decision					
Long-term major adverse impacts—without the supplemented water levels, the EEEA would continue to be subjected to dry periods which would result in soil loss and continuing poor quality wood stork foraging habitat during dry periods and reduced fledging success. These impacts could cause a population level decline in wood storks within the park.	**Same as alternative 1a.**	**Long term, substantial beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor within the park would prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA. Acquiring ownership NPS acquisition of the FPL West Secondary Corridor would allow for application of NPS policies and procedures in this area.	**Long-term substantial beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor within the park through a land transfer will prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3,** but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**Long-term substantial beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA, which are expected to improve foraging and potential nesting habitat for the wood stork.
Impacts of Transmission Line Construction					
No impacts.	**Short- and long-term minor to major adverse impacts—**short-term minor to moderate adverse impacts would be	**Short- and long-term minor to moderate adverse impacts—**short-term minor to moderate adverse impacts would be	**Short- and long-term minor to major adverse impacts—**short-term minor to moderate adverse impacts would be related to	**Same as alternative 3.**	**Same as alternative 1b.**

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	related to disturbance during the construction period and during line maintenance. Long-term moderate to major adverse impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution. These impacts could cause a population level decline in wood storks within the park.	related to disturbance during the construction period and during line maintenance. Long-term minor to moderate adverse impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution. An ARA conducted for this project indicates that construction in the area of possible relocated corridor poses the least risk to wood stork when compared to the FPL West Secondary and FPL West Preferred Corridors; the West Consensus Corridor would present risk that falls between the FPL West Preferred Corridor and the area of possible relocated corridor, and would be further away from known colonies in the northeast section of the EEEA.	disturbance during the construction period and during line maintenance. Long-term moderate to major adverse impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution. These impacts could cause a population level decline in wood storks within the park. Protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts on wood storks, but mortality could still occur. An ARA conducted for this project indicates that construction of transmission lines within the FPL West Preferred Corridor poses less risk to wood stork than construction in the FPL West Secondary Corridor.		
ESA Section 7 Determination					
Not applicable.	**May affect, likely to adversely affect—**lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have long term, major adverse impacts due to the	**May affect, likely to adversely affect—**NPS acquisition of the FPL West Secondary Corridor within the park will prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West	**May affect, not likely to adversely affect** for the land exchange; **May affect, likely to adversely affect** for subsequent construction of powerlines**—**NPS acquisition of the FPL West Secondary Corridor within the park through the land transfer will prevent the	**Same as alternative 3.**	**May affect, likely to adversely affect—**the flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have long-term beneficial impacts

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	continued presence of degraded foraging and nesting habitat within the EEEA. The construction of the transmission line will result in loss of foraging and potential nesting habitat and will present an ongoing risk to wood storks from line collisions and electrocutions.	Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor within the park and the subsequent construction of the transmission lines outside the park in the West Consensus Corridor will reduce but not eliminate risks to wood storks from line strikes and electrocution when compared to construction in either the FPL West Secondary or FPL West Preferred Corridors.	fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. The construction of the transmission line will result in loss of foraging and potential nesting habitat and will present an ongoing risk to wood storks from line collisions and electrocutions. Protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts on wood storks, but mortality could still occur.		on wood stork. This alternative would allow for completion of the hydrologic restoration portion of planned ecosystem restoration projects, which are expected to improve foraging and nesting habitat within the area of analysis. The construction of the transmission line would result in loss of foraging and potential nesting habitat and would present an ongoing risk to wood storks from line collisions and electrocutions.
Everglade snail kite (*Rostrhamus sociabilis plumbeus*)					
Impacts of the Land Acquisition Decision					
Long-term major adverse impacts—A continuation of limited and poor quality foraging habitat due to continuing dry conditions is expected to result in continuing poor reproductive success. This may result in population	**Same as alternative 1a.**	**Long-term substantial beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor would prevent the fragmentation and loss of high-quality foraging and nesting habitat that would occur if a transmission line were built in this corridor. This alternative would	**Long-term substantial beneficial** impacts**—**NPS acquisition of the FPL West Secondary Corridor through a land exchange would prevent the fragmentation and loss of high quality foraging and nesting habitat that would occur if a transmission line was built in this corridor and would	**Same as alternative 3,** but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**Long-term substantial beneficial impacts—** would result from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA. These projects are expected to improve foraging and potential

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declines within the park.		allow for application of NPS policies and procedures in this area and would allow for the flow of water across this corridor as needed for wetland habitat and hydrologic restoration projects. Hydrologic restoration would result in beneficial effects to kites through habitat improvement in EEEA.	allow for the flow of water across this corridor as needed for wetland habitat and hydrologic restoration projects. Hydrologic restoration would result in beneficial effects to kites through habitat improvement in EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.		nesting habitat for the Everglade snail kite.
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term minor to major adverse impacts—**short-term minor to moderate adverse impacts would be related to disturbance during the construction period and during line maintenance. Long-term moderate to major adverse impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution.	**Short and long-term minor to moderate adverse impacts—**short-term minor to moderate adverse impacts would be related to disturbance during the construction period and during line maintenance. Long-term moderate impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution. An ARA conducted for this project	**Short and long-term, minor to moderate adverse impacts—**short-term minor to moderate adverse impacts would be related to disturbance during the construction period and during line maintenance. Long-term moderate impacts would be due to habitat loss or degradation and the risk of mortality from line strikes or electrocution. An ARA conducted for this project	**Same as alternative 3.**	**Same as alternative 1b.**

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	These impacts could cause a population level decline in Everglade snail kites within the park.	indicates that construction in the area of possible relocated corridor poses the least risk to Everglade snail kite when compared to the FPL West Secondary and FPL West Preferred Corridors. The West Consensus Corridor would present risk that falls between the FPL West Preferred Corridor and the area of possible relocated corridor and would be further away from known nesting locations in the northeast section of the EEEA.	indicates that construction in the FPL West Secondary Corridor poses a greater risk to Everglade snail kite when compared to the FPL West Preferred Corridor and the hypothetical corridor within the area of possible relocated corridor. Protection measures implemented as part of the Avian and Bat Protection Plan required under the terms and conditions of the land exchange may lessen the impacts on snail kites, but mortality could still occur.		
ESA Section 7 Determination					
Not applicable.	**May affect, likely to adversely affect—**due to continued poor reproductive success from continued dry conditions that result in limited and poor quality foraging habitat in the area of analysis. Also due to the loss and degradation of habitat associated with the transmission line construction and the ongoing risk to Everglade snail kites from line collisions and electrocutions.	**May affect, likely to adversely affect—**NPS acquisition of the FPL West Secondary Corridor within the park will prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS acquisition of the FPL	**May affect, not likely to adversely affect** for the land exchange; **May affect, likely to adversely affect** for subsequent construction of powerlines **—**NPS acquisition of the FPL West Secondary Corridor within the park will through land transfer will prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West	**Same as alternative 3.**	**May affect, likely to adversely affect—**long term benefits would accrue from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA, which are expected to improve foraging and potential nesting habitat for the Everglade snail kite. Adverse impacts would accrue from the loss and degradation of habitat associated with the transmission line construction and the ongoing risk to

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		West Secondary Corridor within the park and the subsequent construction of the transmission lines outside the park in the West Consensus Corridor will reduce but not eliminate risks to Everglade snail kite from line strikes and electrocution when compared to construction in either the FPL West Secondary or FPL West Preferred Corridors.	Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. NPS acquisition of the FPL West Secondary Corridor within the park and the subsequent construction of the transmission lines in the FPL West Preferred Corridor will reduce but not eliminate risks to Everglade snail kite from line strikes and electrocution.		Everglade snail kites from line collisions and electrocutions.
Eastern Indigo Snake (*Drymarchon corais couperi*)					
Impacts of the Land Acquisition Decision					
Long-term negligible adverse impacts— Because eastern indigo snakes utilize a wide variety of habitats and consume a wide variety of prey, the eastern indigo snake is expected to adapt to the continuing dry condition of the EEEA.	**Same as alternative** 1a.	**Long-term beneficial impacts—**from protection of potential foraging habitat from development. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Long-term beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor through a land exchange would prevent the fragmentation and loss of foraging habitat that would occur if a transmission line was built in this corridor. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**Limited long-term beneficial impacts—** from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.

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			NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.		
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term, minor to moderate adverse impacts—** construction noise and vehicle traffic may result in changes in short term, minor, and adverse impacts on eastern indigo behavior. Loss of habitat and mortality of eastern indigo snakes due to construction are considered long term, moderate adverse impacts.	**Short- and long-term minor to moderate adverse impacts—c**onstruction noise and vehicle traffic may result in changes in short term, minor, and adverse impacts on eastern indigo behavior. Loss of habitat and mortality of eastern indigo snakes due to construction are considered long term, moderate adverse impacts.	**Short- and long-term minor to moderate adverse impacts—c**onstruction noise and vehicle traffic may result in changes in short term, minor, and adverse impacts on eastern indigo behavior. Loss of habitat and mortality of eastern indigo snakes due to construction are considered long term, moderate adverse impacts.	**Same as alternative 3.**	**Same as alternative 1b.**
ESA Section 7 Determination					
Not applicable.	**May affect, likely to adversely affect—**lack of a flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to have no effect on the eastern indigo snake since the species is known to utilize both upland and wetland	**May affect, likely to adversely affect—**The NPS acquisition of the FPL West Secondary Corridor is expected to have long-term benefits to the eastern indigo snake from protection of potential foraging habitat from development. NPS acquisition of the FPL West Secondary Corridor	**May affect, not likely to adversely affect** for the land exchange; **May affect, likely to adversely affect** for subsequent construction of powerlines **—**The NPS acquisition of the FPL West Secondary Corridor through a land exchange is expected to have long-term benefits to the eastern indigo snake from	**Same as alternative 3.**	**May affect, likely to adversely affect—**the flowage easement or sufficient rights or interest to flow additional water over the FPL West Secondary Corridor is expected to limited long term benefits to the eastern indigo snake since the species is

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	habitats. Behavioral changes, loss of habitat, and potential mortality from line construction and maintenance activities are expected to have minor to moderate adverse impacts on eastern indigo snake.	will allow for application of NPS policies and procedures in this area. Behavioral changes, loss of habitat, and potential mortality from line construction and maintenance activities are expected to have minor to moderate adverse impacts on eastern indigo snake.	protection of potential foraging habitat from development. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. Behavioral changes, loss of habitat, and potential mortality from line construction and maintenance activities are expected to have minor to moderate adverse impacts on eastern indigo snake.		known to utilize both upland and wetland habitats. Behavioral changes, loss of habitat, and potential mortality from line construction and maintenance activities are expected to have minor to moderate adverse impacts on eastern indigo snake.
Blodgett's Silverbush (*Argythamia blodgettii*)					
Impacts of the Land Acquisition Decision					
No impact—this species and its habitat are not known to occur in this area.	**No impact—**this species and its habitat are not known to occur in this area.	**No impact—**this species and its habitat are not known to occur in this area. NPS acquisition of the FPL West Secondary Corridor would allow for application of NPS policies and procedures in this area.	**No impact—**this species and its habitat are not known to occur in this area. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-status species or removal of habitat.	**Same as alternative 1b.**

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			conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.		
Impacts of Transmission Line Construction					
No impact.	**No impact—t**his species and its habitat are not known to occur in this portion of the EEEA.	**No impact—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL would work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**No impact—**this species is unlikely to occur in the FPL West Preferred Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL would work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
ESA Section 7 Determination					
Not applicable.	**No Effect—**this species and its habitat are not known to occur in this portion of the EEEA.	**No Effect—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL would work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor would allow for application of NPS policies and procedures in this area.	**No Effect—**this species is unlikely to occur in the FPL West Preferred Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL would work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Same as alternative 1b.**
Garber's Spurge (*Chamaesyce garberi*)					
Impacts of the Land Acquisition Decision					
No impact—this species and its habitat are not known to occur in this portion of the EEEA.	**Same as alternative 1a.**	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated	**Same as alternative 1a.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
		NPS policies and procedures in this area.	policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	disturbance to special-status species or removal of habitat.	
Impacts of Transmission Line Construction					
No impact.	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA.	**No impact—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No impact—**this species is unlikely to occur in this portion of the EEEA. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
ESA Section 7 Determination					
Not applicable.	**No Effect—**this species and its habitat are not known to occur in this portion of the EEEA.	**No Effect—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No Effect—**this species is unlikely to occur in this portion of the EEEA. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Same as alternative 1b.**
Sand Flax (*Linum arenicola*)					
Impacts of the Land Acquisition Decision					
No impact—this species and its habitat are not known to occur in this portion of the EEEA.	**Same as alternative 1a.**	**No impact—**this species and its habitat are not known to occur in the area of relocated corridor. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in	**Same as alternative 3**, but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated disturbance to special-	**Same as alternative 1a.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
		procedures in this area.	this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	status species or removal of habitat.	
Impacts of Transmission Line Construction					
No impact.	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA.	**No impact—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No impact—**this species is unlikely to occur in this portion of the EEEA. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
ESA Section 7 Determination					
Not applicable.	**No Effect—**this species and its habitat are not known to occur in this portion of the EEEA.	**No Effect—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No Effect—**this species is unlikely to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**
Tiny Polygala (*Polygala smallii*)					
Impacts of the Land Acquisition Decision					
No impact—this species and its habitat are not known to occur in this portion of the EEEA.	**Same as alternative 1a.**	**No impact—**this species and its habitat are not known to occur in the area of relocated corridor. NPS acquisition of the FPL West Secondary Corridor will allow for application of	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS	**Same as alternative 3,** but with terms and conditions that result in the reduced risk of having additional utility facilities on the exchange corridor and associated	**Same as alternative 1a.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
		NPS policies and procedures in this area.	policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	disturbance to special-status species or removal of habitat.	
Impacts of Transmission Line Construction					
No impact.	**No impact—**this species and its habitat are not known to occur in this portion of the EEEA.	**No impact—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**No impact—**this species is unlikely to occur in the area of possible relocated corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**
ESA Section 7 Determination					
Not applicable.	**No Effect—**this species and its habitat are not known to occur in this portion of the EEEA.	**No Effect—**this species is unlikely to occur in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid,	**No Effect—**this species is unlikely to occur in this portion of the EEEA. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
		minimize, mitigate, or otherwise appropriately address impacts on the species. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with USFWS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.		

The NPS is not seeking consultation or concurrence on species occurring on private lands. The NPS is only seeking concurrence on determinations for species occurring on federal lands. It should also be noted that the USFWS will only respond to effect determinations for the NPS preferred alternative, alternative 3. Under the revised alternative 3, the lands that NPS would provide for exchange may not be used, and would be reconveyed to the park if not needed for proposed transmission line construction. Based on this change from the draft EIS, the NPS action no longer results in a clear expectation that transmission lines would be built on exchanged lands and, consequently, the construction of transmission lines does not meet the definition of an interrelated and interdependent action. As a result, the scope of effects to listed species is limited to those effects resulting from the land exchange itself. Under alternative 3, these effects would be insignificant and discountable, and formal consultation with USFWS would not be required. However, additional consultation between the USACE and the USFWS would be required in the future to address the impacts specific to the route and design of the transmission lines once they are finalized. This final EIS still includes the description of the expected effects of transmission line construction since the NPS continues to believe that construction is reasonably foreseeable.

A summary of impacts on state-listed species is presented below as well (table 28).

VIEWSHED (VISUAL RESOURCES)

GUIDING REGULATIONS AND POLICIES

The NPS *Management Policies 2006* (NPS 2006a) states that scenic views and visual resources are considered highly valued associated characteristics. More specifically, Section 4.7 of those policies states that the Clean Air Act recognizes *integral vistas* as those views perceived from within areas of a specific landmark or panorama located outside the boundary of the area. Integral vistas are listed in Reference Manual 77 (NPS 2009a). There are no regulations requiring special protection of these integral vistas, but the NPS strives to protect these resources through cooperative means.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Impacts on scenic views and visual resources were determined by considering the effect of the existing conditions and the proposed construction and operation of the transmission lines on the overall visual experience of visitors who use the area and residents in the area.

As part of the analysis, photographs were taken from key observation points (KOPs) within the park and the West Consensus Corridor, as determined appropriate by park staff. Several site visits were conducted to obtain the appropriate photography required for the completion of photographic simulations. Weather conditions were not ideal during two of the major site visits, resulting in darker photographs than would be obtained on a perfectly clear day. Photographs were not digitally altered to improve visibility or brightness.

TABLE 28: IMPACTS ON STATE-LISTED SPECIES

Note: Refer to table 3 in chapter 2 for a summary of cumulative impacts for each impact topic.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Everglades Mink (*Mustela vison evergladensis*)					
Impacts of the Land Acquisition Decision					
Long-term moderate adverse impacts—due to continued degradation and loss of foraging habitat due to continued dry conditions in the EEEA.	**Same as alternative 1a.**	**Long-term substantial beneficial impacts—**by protecting Everglades mink habitat from loss or degradation resulting from construction of transmission lines in this corridor and allowing for the flow of water across this corridor as needed for ecosystem restoration projects. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Long-term substantial beneficial impacts—**The land exchange will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable (resource stewardship plan).	**Same as alternative 3.**	**Long-term substantial beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term minor to moderate adverse impacts—**short term, minor adverse impacts would occur from disturbance during construction and	**Short- and long-term minor to moderate adverse impacts—**short term, minor adverse impacts would occur from disturbance during construction and	**Short- and long-term minor to moderate adverse impacts—**short term, minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
	maintenance activities. Long-term moderate adverse impacts would result from loss of habitat.	maintenance activities. Long-term moderate adverse impacts would result from loss of habitat.	adverse impacts would result from loss of habitat. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.		
Florida Sandhill Crane (*Grus canadensis pratensis*)					
Impacts of the Land Acquisition Decision					
No impact—since the Florida sandhill crane is known to utilize both wetland and upland areas for foraging.	**Same as alternative 1a**.	**Limited long-term beneficial impacts—**since the Florida sandhill crane is known to forage within both wetland and upland habitats within the region, NPS acquisition of the FPL West Secondary Corridor is expected to have limited long term benefits to the species because the corridor will now be under NPS control/management and NPS policies and protection for state-listed species would apply.	**Long-term beneficial impacts**—the land exchange will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Limited long-term beneficial impacts—** from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA, since the Florida sandhill crane is known to forage within both wetland and upland habitats within the region.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution.	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution. Preferred foraging habitats for the Florida sandhill crane are located closer to the hypothetical corridor within the area of possible relocated corridor, which increases the risk of line strikes and electrocutions when compared to the FPL West Secondary and FPL West Preferred Corridors. Risk for the West Consensus Corridor would be intermediate between the risk for the FPL West Preferred Corridor and the area of possible relocated corridor, but risk along the area that parallels the canal near the mining operation would be minimal due to the limited extent and disturbed condition of wetlands in that area.	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution. Preferred foraging habitats for the Florida sandhill crane are located closer to the FPL West Preferred Corridor, which increases the risk of line strikes and electrocutions when compared to the FPL West Secondary Corridor and the hypothetical corridor within the area of possible relocated corridor.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
White-crowned Pigeon (*Patagioenas leucocephala*)					
Impacts of the Land Acquisition Decision					
Negligible adverse **/ no impact—**since the forage tree utilized by the white-crowned pigeon (poisonwood) is found in both upland and wetland habitats in south Florida.	**Same as alternative 1a**.	**Limited long-term benefits—**since the forage tree utilized by the white-crowned pigeon (poisonwood) is found in both upland and wetland habitats in south Florida, acquisition of the FPL West Secondary Corridor is expected to provide limited long term benefits to white-crowned pigeon because of NPS protection and management ability.	**Limited long-term benefits—**since the forage tree utilized by the white-crowned pigeon (poisonwood) is found in both upland and wetland habitats in south Florida, acquisition of the FPL West Secondary Corridor through land transfer is expected to provide limited long term benefits to white-crowned pigeon. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.	**Same as alternative 3.**	**Negligible** adverse **/ no impact—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA, since the forage tree utilized by the white-crowned pigeon (poisonwood) is found in both upland and wetland habitats in south Florida.
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term minor adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term minor adverse impacts would result from loss of	**Short- and long-term minor adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term minor adverse impacts would result from loss of foraging habitat and the ongoing risk of line.	**Short- and long-term minor adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term minor adverse impacts would result from loss of foraging habitat and the ongoing risk of line. Preferred foraging habitats for white-crowned pigeon area	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
	foraging habitat and the ongoing risk of line.	Preferred foraging habitats for white-crowned pigeon area are located further from the hypothetical corridor within the area of possible relocated corridor than from either the FPL West Preferred or FPL West Secondary Corridors thereby reducing the risks to white-crowned pigeon from the transmission lines. when compared to construction in the FPL corridors. Risk related to the West Consensus Corridor would be similar to the FPL West Preferred Corridor, but minimal because of the lack of forested wetlands and forests along the path of the corridor.	are located further from the FPL West Preferred Corridor than from the FPL West Secondary Corridor thereby reducing the risks to white-crowned pigeon from the transmission lines when compared to construction in the FPL corridors.		
Limpkin (*Aramus guarauna*), Little Blue Heron (*Egretta caerulea*), Snowy Egret (*Egretta thula*), Tricolored Heron (*Egretta tricolor*), Roseate Spoonbill (*Platalea ajaja*)					
Impacts of the Land Acquisition Decision					
Long-term moderate adverse impacts—due to continued degradation and loss of foraging habitat. Without the supplemented water levels, the EEEA will continue to be dry and fewer areas will support the forage fish needed to sustain these colonies during drier periods of the	**Same as alternative 1a.**	**Long-term substantial beneficial impacts—**NPS acquisition of the FPL West Secondary Corridor within the park will prevent the fragmentation and loss of foraging and potential nesting habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic	**Long-term substantial beneficial impacts**—the land exchange will prevent the fragmentation and loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow	**Same as alternative 3.**	**Long-term substantial beneficial impacts—** from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA, which are expected to improve foraging and potential nesting habitat for wading bird species.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
year.		restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable.		
Impacts of Transmission Line Construction					
No impacts.	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution.	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution. In general, for most species, nesting locations and higher quality foraging habitats are located closer to the FPL West Secondary and FPL West Preferred Corridors than to the hypothetical corridor within the area of possible relocated corridor; therefore, construction of the transmission line in this corridor reduces the risk to wading bird species when compared to construction in	**Short- and long-term minor to moderate adverse impacts—**short-term minor adverse impacts would occur from disturbance during construction and maintenance activities. Long-term moderate adverse impacts would result from loss of foraging habitat and the ongoing risk of line strikes and electrocution. In general, for most species, nesting locations and higher quality foraging habitats are located closer to the FPL West Secondary Corridor than the FPL West Preferred Corridor; therefore, construction of the transmission line in the FPL West Preferred Corridor reduces the risk to wading bird species when compared to construction in the FPL West Secondary Corridor.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
		the FPL corridors. The West Consensus Corridor would represent a moderate risk to wading birds that is higher than a route in the area of possible relocated corridor due to the proximity of nests to its northern section along the park boundary, but a reduced risk compared to the FPL West Preferred Corridor, which continues directly north and passes close to several known nest locations.			
Florida Burrowing Owl (*Athene cunicularia floridana*) and Gopher Tortoise (*Gopherus polyphemus*)					
Impacts of the Land Acquisition Decision					
No impact—due to these species preference for xeric habitats, they are not expected to occur in the FPL West Secondary Corridor in the area of analysis.	**Same as alternative 1a.**	**No impact—**due to these species preference for xeric habitats, they are not expected to occur in the FPL West Secondary Corridor in the area of analysis or in the West Consensus Corridor. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**No impact—**due to these species preference for xeric habitats, they are not expected to occur in the FPL West Secondary Corridor in the area of analysis or in the exchange corridor.	**Same as alternative 3.**	**No impact—**due to these species preference for xeric habitats, they would not be greatly affected by the flowage provided here.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Impacts of Transmission Line Construction					
No impact.	**No impact—**due to these species preference for xeric habitats, they are not expected to occur in the FPL West Secondary Corridor in the area of analysis.	**Short- to long-term negligible to minor adverse impacts—**due to disturbance and loss of habitat from construction of the transmission lines.	**No impact—**due to these species preference for xeric habitats, they are not expected to occur in the FPL West Preferred Corridor (exchange corridor) in the area of analysis or in the exchange corridor.	**Same as alternative 3.**	**Same as alternative 1b.**
Southern Frog Fruit, Bahama Ladder Brake, Pineland Allamanda, Everglades (or Pinelands) Pencil Flower, Meadow Joint-vetch					
Impacts of the Land Acquisition Decision					
Long-term moderate to major, adverse—these species are known to occur in or near the EEEA, with a few species known from the FPL West Secondary Corridor within the park. Most of these species occupy a range of habitats from wetland to pine rocklands; therefore the impacts of the drying of the EEEA are expected to vary from moderate to major adverse depending on the degree of wetland dependence of the species.	**Same as alternative 1a.**	**Long-term beneficial impacts—**These species are known to occur in or near the EEEA, with a few species known from the FPL West Secondary Corridor within the park. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Long-term beneficial impacts—**the land exchange will prevent the loss of habitat that would result if development occurred in the FPL West Secondary Corridor and allow for hydrologic restoration in the EEEA by acquiring ownership. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area. NPS will lose control over the exchange corridor; however, it is expected that application of the terms and conditions of the land exchange will minimize impacts on special-status species to the maximum extent practicable (resource stewardship plan).	**Same as alternative 3.**	**Long-term beneficial impacts—**especially for wetland dependent species from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Impacts of Transmission Line Construction					
No impact.	**Short- and long-term negligible to moderate adverse impacts—i**ndividuals of these species may be harmed or killed during construction of the transmission lines if they are present in the right-of-way. Also, habitat for these species may be lost during construction of the transmission lines, but would follow SCA that states that FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Short- and long-term negligible to minor adverse impacts**—most of these species have a low to moderate likelihood of occurrence in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS (for any state-listed species) to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Short- and long-term negligible to moderate adverse impacts—**southern frog fruit, Bahama ladder brake and pineland allamanda have all been observed in the proposed exchange corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Bahama Saschia and Pineland Noseburn					
Impacts of the Land Acquisition Decision					
No impact—these species are found in disturbed uplands and pine rocklands. These species are not expected to occur within the FPL West Secondary Corridor within area of analysis.	**Same as alternative 1a**.	**No impact—**these species are found in disturbed uplands and pine rocklands. These species are not expected to occur within the FPL West Secondary Corridor within the area of analysis. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Same as alternative 1a**.	**Same as alternative 3.**	**No impact—**due to these species preference for more xeric habitats, they would not be greatly affected by the flowage provided here.
Impacts of Transmission Line Construction					
No impacts.	**No impact—**these species are found in disturbed uplands and pine rocklands. These species are not expected to occur within the FPL West Secondary Corridor within the park or within the area of analysis.	**Short- and long-term negligible to minor adverse impacts—t**hese species have a low to moderate likelihood of occurrence in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Short- and long-term negligible to minor adverse impacts—**these species have a low to moderate likelihood of occurrence in the exchange corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Small's Flax					
Impacts of the Land Acquisition Decision					
No impacts—since this species is not known to occur but is known to utilize both upland and wetland habitats and has a low likelihood of occurrence within the FPL West Secondary Corridor within the park or in the area of analysis.	**Same as alternative 1a.**	**No impacts—**since this species is known to utilize both upland and wetland habitats and has a low likelihood of occurrence within the FPL West Secondary Corridor within the park or in the area of analysis. NPS acquisition of the FPL West Secondary Corridor will allow for application of NPS policies and procedures in this area.	**Same as alternative 1a.**	**Same as alternative 3.**	**Limited long-term beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.
Impacts of Transmission Line Construction					
No impact.	**No impacts—**since this species is known to utilize both upland and wetland habitats and has a low likelihood of occurrence within the FPL West Secondary Corridor within the park or in the area of analysis.	**Short- and long-term negligible to minor adverse impacts**—this species has a moderate likelihood of occurrence in the West Consensus Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Short- and long-term negligible to minor adverse impacts—**this species has a low likelihood of occurrence in the FPL West Preferred Corridor. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**

Alternative 1a: No NPS Action – No FPL Construction	Alternative 1b: No NPS Action – FPL Construction in the Park	Alternative 2: NPS Acquisition of FPL Land	Alternative 3: Fee for Fee Land Exchange	Alternative 4: Easement for Fee Land Exchange	Alternative 5: Perpetual Flowage Easement on FPL Property
Pineland Jacquemontia, Eaton's Spikemoss, Florida Royal Palm, Rockland-Painted Leaf					
Impacts of the Land Acquisition Decision					
Negligible adverse impacts—impacts are expected to be negligible adverse due to the low likelihood of occurrence of these species within the FPL West Secondary Corridor and EEEA.	**Same as alternative 1a.**	**Long term beneficial—**due to preservation and restoration of habitat for these plant species.	Same as alternative 1a.	**Same as alternative 3.**	**Limited long-term beneficial impacts—**from completion of the hydrologic restoration portions of planned ecosystem restoration projects in the EEEA.
Impacts of Transmission Line Construction					
No impact.	**Negligible adverse impacts—**impacts are expected to negligible adverse due to the low likelihood of occurrence of these species.	**Short- and long-term, negligible to minor adverse impacts**—these species have a low to moderate likelihood of occurrence in the West Consensus Corridor. Short-term impacts would be related to disturbance during construction or maintenance, while long-term impacts would be related to habitat loss. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Short- and long-term negligible to minor adverse impacts—**these species have a low likelihood of occurrence in the FPL West Preferred and FPL West Secondary Corridors. For any species documented within the proposed right-of-way as a result of post-certification surveys, FPL will work with FDACS to identify appropriate steps to avoid, minimize, mitigate, or otherwise appropriately address impacts on the species.	**Same as alternative 3.**	**Same as alternative 1b.**

Photographic simulations were created to simulate the visual impacts of the FPL West Preferred and FPL West Secondary Corridors, as well as a route in the West Consensus Corridor. The photographs selected for simulation demonstrate what was perceived to be a representative sampling from the determined KOPs within the park. Information on tower height was provided by FPL's SCA filing (appendix F). The following assumptions were used in creating the 3-dimensional (3-D) model to simulate the proper tower height, type, and location for each routing scenario by mimicking the viewing perspective of the photograph (see figure 56):

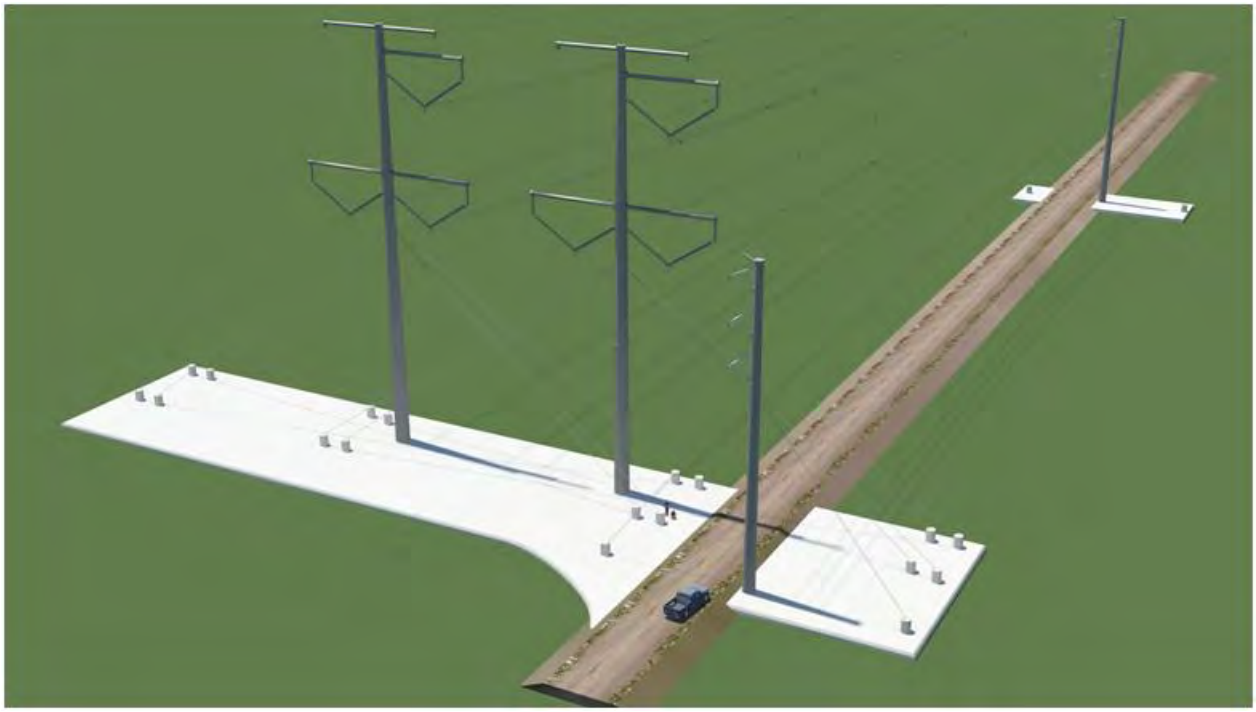
- The structures carrying the 500-kV lines would be tubular steel single pole structures.
- The 500-kV structures would have an average height of 145 feet, and would be single-circuit, guyed, and directly embedded into the ground.
- The structure carrying the new 230-kV transmission line would be a single-pole with a concrete pole design, would have an average height of 100 feet, and be directly embedded into the ground. The right-of-way would be 330 feet, and concrete pads would be constructed to support all structures within the right-of-way.

With the towers oriented properly in space, a "camera" was set up in the same 3-D space at the photographer's height and location relative to the appropriate routing option. The camera's focal length and point of view were set to those of the camera that took the photograph to obtain the correct perspective. Light sources were set up to simulate the lighting conditions and look of the towers in the photograph. Once the perspective and sizing was comparable to the photograph, the 3-D rendered structure was placed in the digital photograph. The process of photo-simulation was accompanied by a collaborative review to ensure that the simulated route alignment appeared the way it should in the photograph. Staff from The Louis Berger Group and the park reviewed each photograph to comment on the perspective and look of the simulation so that any necessary alterations could be made to fairly represent the way in which the towers would likely appear.

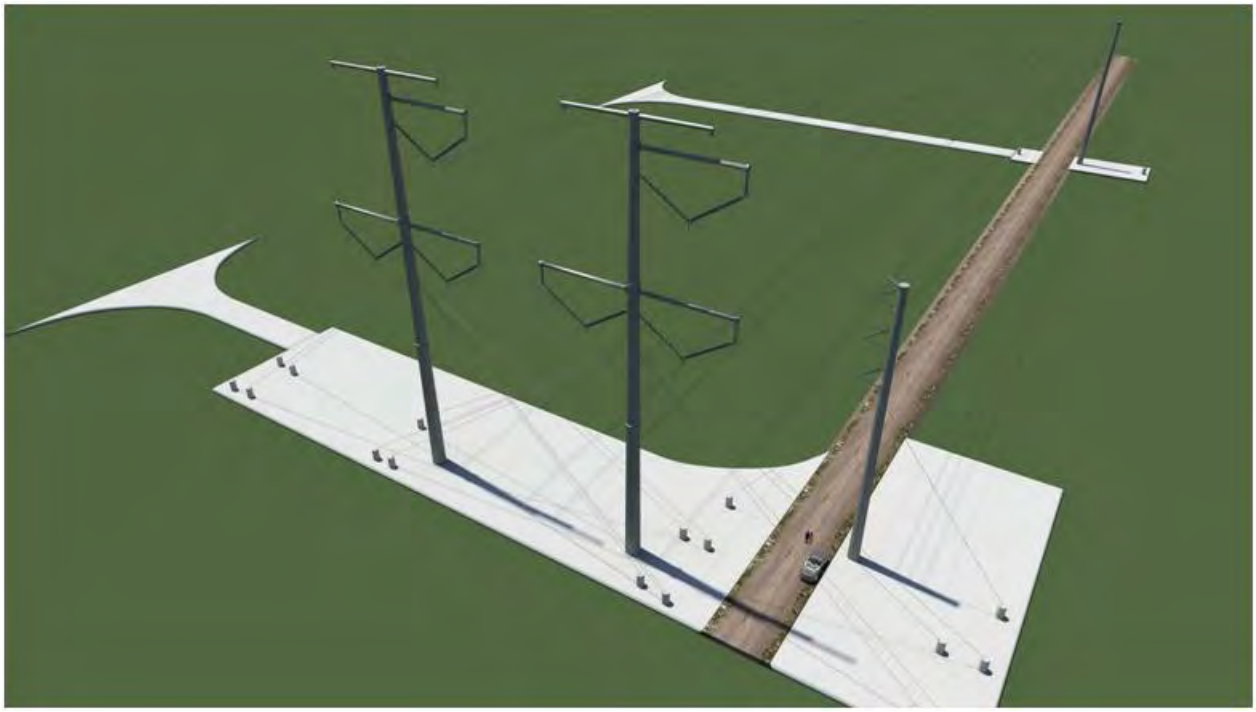
It is important to note the potential limitations of photo simulations. The ability for a camera to completely and accurately capture what the human eye is able to see when standing at a location is not possible, as the human eye can see wider view of a landscape and a richer depth of perspective. A camera lens can slightly alter the depth of perspective compared with physically standing at a location and experiencing the entire viewshed. These limitations are offset through the description text in this section and through the determination of the magnitude of adverse impacts.

Lighting or marking transmission lines are sometimes required if a project is in the vicinity of an airport. Markings and lighting can have visual impacts on a landscape, particularly in regards to night lighting of an area. The Federal Aviation Administration (FAA) CFR part 77 Section 14, describes the filing requirements for the construction of air obstructions. An application must be filed if construction or alternations are greater than 200 feet above ground level or if structures are within a certain distance of a runway (FAA 2012), listed below:

- within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet
- within 10,000 feet of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet
- within 5,000 feet of a public use heliport which exceeds a 25:1 surface



FPL West Secondary Corridor with Vehicle



FPL West Preferred Corridor with Vehicle

FIGURE 56: 3-D MODEL USED FOR PHOTOGRAPHIC SIMULATIONS

The closest airport is the Kendall-Tamiami Executive Airport, which has a runway more than 3,200 feet away. The average tower height for the 500-kV transmission lines is 145 feet; thus, any towers within 14,500 feet of the end of the Kendall-Tamiami Executive Airport would have to file an application with the FAA. The edge of the West Consensus Corridor is within this distance (however the FPL West Preferred and FPL West Secondary Corridors are not; therefore no lights or markers are expected within the park). Depending on where the right-of-way would be located within the West Consensus Corridor, mitigation (lighting or markings) could be required and would be determined through negotiations with the FAA. For the purposes of this analysis, it is assumed towers could be configured to be outside the FAA notification zone and no lighting would be required.

The following definitions were used to determine the magnitude of adverse impacts on visual resources:

- **Negligible**: Visitors or residents would likely be unaware of impacts associated with the implementation of the alternative. There would be no noticeable change to the scenic views and visual resources or in any defined indicators of the scenic landscape.
- **Minor**: Changes in scenic views and visual resources would be slight and detectable, but would not appreciably limit critical characteristics of the area. Visitor satisfaction would remain stable or residents would not likely register complaints.
- **Moderate**: Few critical characteristics of the desired scenic views and visual resources would change. The number of participants engaging in a specified activity could be altered. Some visitors who want to continue using and enjoying the area might pursue their choices in other available local or regional areas. Visitor satisfaction would begin to decline, or residents would express some dissatisfaction in the change of landscape.
- **Major**: Multiple critical characteristics of the desired scenic views and visual resources would change and/or the number of participants engaging in an activity would be greatly reduced. Visitors who want to continue using and enjoying the area would pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline or residents would register numerous complaints due to the heavily altered natural landscape.

ANALYSIS AREA

The area of analysis for visual resources includes areas where the transmission lines would be visible from the foreground and middleground (up to about 4 miles from the corridor), along the transmission line corridors in and around the park (between points where alternative routes diverge and then merge again). Any area beyond 4 miles is considered as background and generally experiences minimal impacts due to distance and intervening structures, vegetation, or topography, but is addressed qualitatively as needed.

Potential visual impacts include temporary visual changes during construction and the overall permanent visual changes caused by the presence of the structures, conductors, and access roads. Existing and potential change in visual quality and viewer sensitivity are combined to determine visual impacts. The level of visual intrusion created by any alternative is described with respect to the different relative distance zones, types of observers, and observation points. Relative distance zones include the immediate foreground (0 to 300 feet), foreground (300 feet to 0.5 mile), middleground (0.5 mile to 4 miles), and background (4 miles to the horizon). Many factors influence the visual impact of any route. The viewer is one of these factors. A viewer is defined as not only the person who is viewing the line, but also as their expectations, activities, and frequency of viewing the line. Types of observers include park visitors and recreational users, local residents, employees, commuters, and people traveling in the area.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on visual resources.

Cumulative Impacts – Alternative 1a

Because there would be no impacts on visual resources under alternative 1a, there would be no cumulative impacts. See the cumulative impact discussion under alternative 1b for a description of the impacts of actions by others on visual resources.

Conclusion – Alternative 1a

Alternative 1a would have no impacts on visual resources from the land acquisition decision and there would be no construction of any transmission lines; therefore visual resources would not be impacted and there would be no impacts (including cumulative impacts).

IMPACTS OF ALTERNATIVE 1B: NO NPS-ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

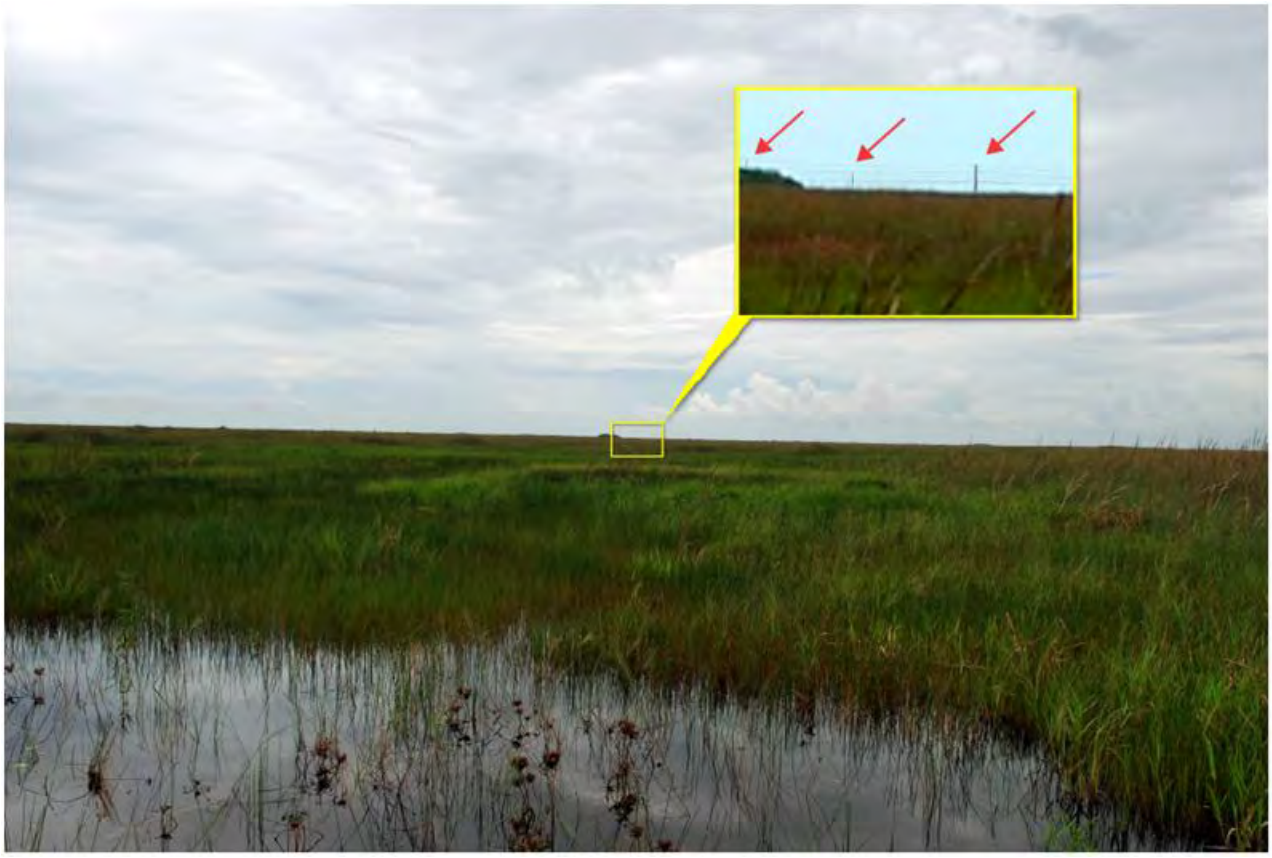
Under alternative 1b, there would be indirect impacts associated with the construction of the transmission lines in the park, as described earlier in this chapter and appendix F. Under alternative 1b, the transmission lines would be constructed directly south of the new 1-mile bridge, continuing for 7.5 miles within the park. The transmission lines would also continue north within WCA 3B and farther south where they exit Everglades National Park.

Natural vistas provide park visitors with an immediate and lasting sensory experience that strongly conveys the character of the park. The construction of transmission towers, pads, and access roads would alter the current natural and undisrupted landscape of the park and adversely impact visitor viewpoints in this portion of the park. Under this alternative, FPL would construct one 230-kV and two 500-kV transmission lines with heights from 80 to 105 feet (average 100 feet) and from 135 to 150 feet (average 145 feet), respectively. The 500-kV towers would be placed every 1,000 feet along the approximate 7.4-mile length of the corridor within the park. The 230-kV towers would be placed every 500 feet for the length of the corridor; preliminary GIS analysis done to estimate acres of disturbance indicates that there would be approximately 77 tower pads total in the park. Additionally, a permanent access road will be constructed for the entire length of the right-of-way through the park, transecting the construction pads.

Construction activities would create temporary changes in scenery by introducing brightly colored signs, helicopters (potentially), trucks, and heavy equipment such as cranes and bulldozers to the area. Construction crews would complete the construction of the transmission lines in phases and activity will likely be intermittent during the construction period for the entire project. Short term minor to moderate adverse impacts would occur due to the presence of construction equipment and construction of access roads and pads.

Under alternative 1b, the construction of the transmission lines would impact the visual quality in certain portions of the park, due to presence of new vertical infrastructure within Everglades National Park. Long-term operation and maintenance of the transmission lines would be minimal and infrequent. Most common long-term operation and maintenance activities are related to vegetation maintenance, and as stated in the vegetation section, long-term maintenance would negligible adverse because FPL would use existing roads and because of the existing and naturally low growing vegetation. The FPL West Secondary Corridor crosses the Tamiami Trail approximately 2.3 miles east of Coopertown Airboat. Current views in the park primarily include natural scenes situated in an expansive landscape of sawgrass marsh continuing toward the horizon, in all directions within the park, with very distant views of developed lands to the east. With the addition of the transmission lines along the FPL West Secondary Corridor through the park, human-made structures would be visible in the distance from KOPs within the park. The KOPs, areas of visual concern, are described in chapter 3 and include the airboat recreational areas, Shark Valley, Chekika Park, the Tamiami Trail, and the L-31N canal. Several photo simulations were completed for the FPL West Secondary Corridor at various locations in the park. All simulations are shown in appendix K. Impacts on visual resources would vary from minor to major adverse dependent on the proximity to the transmission lines and period of exposure, described in more detail throughout the following paragraphs.

The closest airboat operation, and the designated recreational area likely to have the most visual impacts, is Coopertown. Figure 57 depicts the change to the existing eastern view from an airboat on the Coopertown Airboat route within the Everglades. The photograph used in the simulation was taken approximately 3.4 miles from the FPL West Secondary Corridor and indicates that the change would be nearly imperceptible from this location in the park. Impacts on visual resources viewed from the Coopertown Airboat route, and all other airboat routes (farther from the FPL West Secondary Corridor), would be minor and adverse, because these routes generally go south from their base of operations and not east toward the lines. Impacts on visual resources would rise to a level of moderate to major intensity at less frequently visited locations, farther east, where kayakers and canoeists would be exposed to the transmission lines for a longer period of time and in close proximity to the tower.



Note: The inset box is a zoomed-in representation of the transmission lines. These towers may not be visible in a normal line of sight.

Refer to figure 23 and figure 26 in chapter 3.

FIGURE 57: PHOTO SIMULATION 1—LOOKING EASTWARD FROM WITHIN THE EVERGLADES

Visual impacts on views of the Everglades will be highest along Tamiami Trail, particularly at the crossing location, located at the newly constructed 1-mile bridge that is a key location of long-term ecosystem restoration in the park. The Tamiami Trail provides direct views of the Everglades to all user groups, including residents, commuters, and recreational users. The bridge is close to numerous visitor uses, primarily airboat tours with more than 300,000 visitors a year, but also to those using the park for canoeing, hiking, educational programs, bicycling, etc. Those wishing to take an airboat tour and traveling from Miami would cross directly under the transmission lines, which would impact their view. The FPL West Secondary Corridor is located just over 2 miles from the eastern border of the Everglades, thus 2 miles past any industrial or commercial development. The Tamiami Trail was recently raised above ground elevation and vegetation, for one mile, creating more expansive views of the Everglades for those traveling on Tamiami Trail (figure 58). The photo simulation shown in figure 58 was taken approximately 550 feet west of the FPL West Secondary Corridor during the construction of the 1-mile bridge. Moderate to major adverse visual impacts would occur immediately approaching and under the right-of-way and impacts would lessen as a visitor travels away from the crossing. The Tamiami Trail is most commonly traveled by car, so it would not take a viewer long to pass through the affected area, but given the construction of the bridge, the transmission lines would likely be highly visible in all directions to visitors traveling in either direction on the Tamiami Trail. The lines would likely be visible for several miles upon approaching the crossing point, but they should appear in the middleground or background of the landscape, reducing the intensity of impacts. Also, vegetation in the immediately foreground along the Tamiami Trail (where it has not been raised above ground level) would aid in blocking a traveler's line of sight as they move away from the crossing. Given the limited amount of human-made features in the landscape at the Tamiami Trail crossing, visual impacts under alternative 1b from the FPL West Secondary Corridor would be expected to be major and adverse, reducing to moderate and minor adverse levels as a visitor moves away from the crossing.

The last area of potential visible impact is from the L-31N canal. The L-31N canal directly parallels the eastern border of the Everglades, providing direct views of the park for recreational users who use the L-31N canal as a hiking and biking trail. The towers and transmission lines would be a noticeable component of the viewshed; however, at a distance of over 2 miles, the lines would not be a dominant feature of the landscape (figure 59). Note, the radio tower visible in the photograph is estimated to be approximately 250 feet tall and is located only 1,350 feet (0.26 mile) away from where the photograph was taken. Commercial and industrial development is located on the eastern side of the L-31N canal and other radio towers are visible from the north end of the L-31N canal, which reduce the overall scenic integrity of the landscape. The adverse impacts on visual resources viewed from this KOP would be minor.

Short-term impacts on visual resources would occur during construction. Throughout this period, observers would notice an increase in construction equipment and associated disturbances in the vicinity of the construction area. If helicopters are needed during construction, they would introduce additional sources of short-term visual disturbance. Visual impacts would be most readily apparent from the observation points described above. Further, visual impacts along the Tamiami Trail from the construction of several bridges have been ongoing; therefore, if this project were to undergo construction at the same or a similar time, the presence of project-related construction equipment in addition to the current visual impacts from construction in the area would not significantly add impacts. During construction, impacts on visual resources would be short term, localized, minor to moderate, and adverse.

Cumulative Impacts – Alternative 1b

Present and future actions that impact visual resources include all projects intended to restore habitat and deliver additional freshwater to the park. As a result of these actions, there would be a sustained preservation of the natural aesthetic, resulting long-term beneficial impacts on visual resources. Any

projects in the area of analysis that require construction would result in short-term adverse impacts on visual resources (degrees of impact would vary based on the construction project) and long-term minor to possible major adverse impacts. Fire management actions (prescribed burns, wildland fire control actions) can adversely affect visual resources in the park by creating short-term contributions to airborne particulates, which can limit visibility by obscuring distant views. Alternative 1b would contribute long-term minor to major adverse impacts on visual resources; these impacts would be an appreciable adverse impact to overall cumulative impacts on visual resources.

Conclusion – Alternative 1b

Under alternative 1b, there would be no direct impacts from the FPL retention of property in the EEEA. Indirect impacts on visual resources would result from the construction of the transmission lines in the FPL West Secondary Corridor and would be short term, minor to moderate, and adverse during construction and long term, ranging from minor to major and adverse from the introduction of a transmission lines into a wilderness-like setting. The intensity of the adverse impact would vary with the location in the park and be greatest for recreationists such as canoeists near the Tamiami trail and for others as they approach this area and the transmission lines from trails or on the roadway. Alternative 1b would contribute long-term minor to major adverse impacts on visual resources and would be an appreciable adverse impact on overall cumulative impacts on visual resources.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

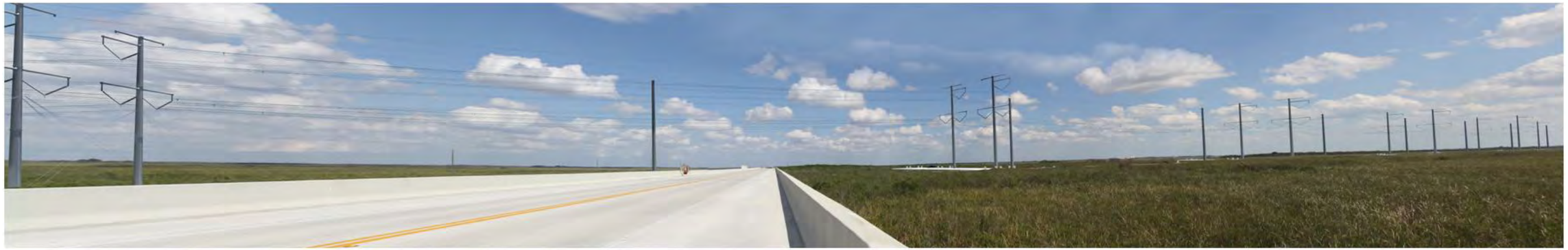
Impacts of the Land Acquisition Action

Under alternative 2, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

Under alternative 2, FPL would build two 500-kV lines and one 230-kV line to the east of the park in the West Consensus Corridor and no transmission lines would be constructed in the EEEA or on FPL property in the park. Within the West Consensus Corridor, impacts on visual resources of the park would be highest where the corridor parallels the L-31N canal which is adjacent to the park boundary. Transmission lines would not be visible to visitors after the corridor heads east and away from the park, about one mile south of the Tamiami Trail. During construction, there would be short-term adverse impacts from the increase in construction equipment on Tamiami Trail and in the vicinity of the selected route. During construction impacts on visual resources would be short term, localized, minor to moderate, and adverse.

Once the construction of the transmission lines is completed, impacts on visual resources would occur over the operational lifetime of the transmission lines. Observers in the eastern portion of the park could note the presence of transmission lines to the east of the L-31N canal. These impacts would be expected to be minor and adverse due to adjacent industrial development and vegetation between the park boundary and the West Consensus Corridor. Further, visitors to the Everglades would likely be facing west when observing the park from the L-31N canal (closest viewing location), not toward the correctional facility or the cement plant to the east



Refer to figure 23 and figure 27 in chapter 3. Photograph was taken approximately 550 feet west of the closest structure in the FPL West Secondary Corridor.

FIGURE 58: PHOTO SIMULATION 2—LOOKING EAST FROM THE TAMIAMI TRAIL AND 1-MILE BRIDGE

Note: The radio tower visible in the photograph is approximately 0.26 mile away (foreground). The FPL West Secondary Corridor is approximately 2 miles away (middleground). Photograph was taken approximately 315 feet from closest structure.

Refer to figure 23 and figure 31 in chapter 3.

FIGURE 59: PHOTO SIMULATION 3—LOOKING WEST FROM THE L-31N CANAL

Impacts on visual resources outside the park would occur for observation points in adjacent lands, particularly residential neighborhoods located east of the eastern border of the West Consensus Corridor. Vantage points (looking west toward Bird Drive Basin) from the dense residential development east of the West Consensus Corridor would experience the greatest degree of visual impacts. If the transmission lines were built at the far eastern edge of the West Consensus Corridor, they would be within 0.2 mile of residential development at the closest point and within 1.7 miles in other areas; most portions of the eastern border of this area are at least 0.5 mile from the urban development boundary. Viewers (most likely local residents) in this area (see the "Socioeconomics" section for further details regarding these residences) would be most able to see the lines and associated structures and would thus experience the highest visual impacts under alternative 2. There is an existing 230-kV FPL transmission line immediately adjacent to SW 157th Avenue; therefore, viewers would have to look through the existing transmission lines to see the new proposed lines in the West Consensus Corridor. Figure 60 is a simulation of the view from the residential development along SW 157th Avenue and approximately 0.25 mile away from the eastern boundary of the West Consensus Corridor. Note, the wires from the existing 230-kV transmission line are at the top of the photograph (no structures are shown). Impacts on visual resources outside the park would occur for observation points in adjacent lands, particularly residential neighborhoods located east of the eastern border of the West Consensus Corridor (figure 60). These impacts would be minor to moderate and adverse, given the presence of existing transmission lines and the distance from the residential areas.

Refer to figure 23 in chapter 3. Approximately 0.4 mile from the closest structure.

FIGURE 60: PHOTO SIMULATION 4—LOOKING WEST FROM SW 157TH AVENUE (BORDER OF RESIDENTAL DEVELOPMENT)

Cumulative Impacts

The impacts on visual resources from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1b. In the park, alternative 2 would result in long-term negligible to minor adverse impacts. These impacts would contribute a noticeable increment to overall visual resource cumulative impacts in the park where the West Consensus Corridor is adjacent to the park boundary. Outside the park, alternative 2 would have long-term minor to moderate adverse impacts and contribute a noticeable increment to visual resources cumulative impacts in the area.

Conclusion

Under alternative 2, there would be no direct impacts on visual resources, but indirect impacts on visual resources would result from the construction of the transmission lines in the West Consensus Corridor to the east of the park. Overall, impacts on visual resources under alternative 2 would range from negligible to a moderate adverse impact, depending on where the transmission lines were built in the West Consensus Corridor. Short-term impacts during construction would be minor to moderate and adverse. Generally, impacts on park visual resources would be greater along the portion of the corridor that parallels the L-31N canal next to the park, and minimal along the northeastern portion of the West Consensus Corridor. Impacts on visual resources viewed from residential locations would be greater along portions of the lines that occur in the northeastern portion of the West Consensus Corridor where it crosses Bird Drive Basin. In the park, alternative 2 would contribute no impacts to minor adverse impacts over the long term and contribute a noticeable increment to overall visual resource cumulative impacts in the park where the West Consensus Corridor is adjacent to the park boundary. Outside the park, alternative 2 would have long-term minor to moderate adverse impacts and contribute a noticeable increment to visual resources cumulative impacts in the area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

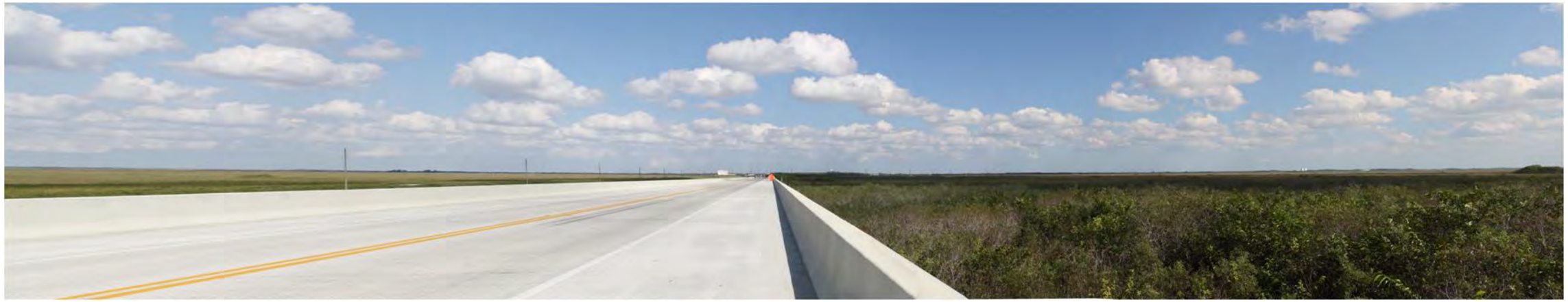
Indirect impacts under alternative 3 would result from the possible construction of transmission lines along the FPL West Preferred Corridor (parallel to the L-31N canal). Visual impacts on the airboat recreational tours would be negligible adverse, because the lines are farther east (and thus would have less impact) compared with alternative 1b. Impacts on visual resources would be most apparent at the Tamiami Trail crossing, along the eastern edge of the park, and on the L-31N canal. During construction, there would be short-term minor to moderate adverse impacts from the increase in construction equipment in the vicinity, most notably along the L-31N canal. Once the construction of the transmission lines is completed, visual resources would be affected over the operational lifetime of the transmission lines.

From observation points at the extreme eastern portion of the park, visual resources would be affected by the addition of new transmission line structures. The transmission lines would be visible to drivers traveling west on the Tamiami Trail, accessing the park and airboat recreation. At this location, the Tamiami Trail is located at ground level (no bridge) with vegetation in the immediate foreground. Drivers would cross under the lines after passing a landscape largely altered by the correctional facility, the casino, and other human-made features on the landscape and with a USACE dam and several radio towers just west of the FPL West Preferred Corridor. The most frequent form of travel on the Tamiami Trail is

vehicular, and while it would not take viewers long to pass through the impacted area the brief exposure approaching and immediately under the transmission lines would result in moderate to major adverse impacts on visual resources (figure 61). Note the poles in the foreground of figure 61 are approximately 250 feet and 525 feet from the location the photograph was taken. As a comparison, the FPL West Preferred Corridor is located approximately 800 feet from the location the photograph was taken. Additionally, a photosimulation was completed from 1-mile bridge on the Tamiami Trail looking east at the West Preferred Corridor (figure 62).

Refer to figure 23 and figure 29 in chapter 3.

FIGURE 61: PHOTO SIMULATION 5—LOOKING WEST ON THE TAMIAMI TRAIL (L-31N CANAL IN THE MIDDLEGROUND)



Refer to figure 23 in chapter 3. Approximately 1.5 miles from the closest structure.

FIGURE 62: PHOTO SIMULATION 6—LOOKING EAST FROM 1-MILE- BRIDGE ON THE TAMIAMI TRAIL

The area of greatest visual impact would be along the L-31N canal, which offers wide views of the park to the west and where viewers are typically walking, running, or biking. However, visitor use of the L-31N canal levee is very limited since there is no parking in the area for recreational use. Figure 63 shows the proposed transmission lines from the L-31N canal. At this location, observers are travelling slower (compared with drivers on the Tamiami Trail) and the FPL West Preferred Corridor parallels the L-31N for a greater distance, placing the transmission line in the direct foreground for extended periods of time. Although impacts in all other portions of the park would be reduced under this alternative, visual impacts along the L-31N canal would be much greater; resulting in long-term major adverse impacts along the L-31N canal due to prolonged exposure to views of the transmission lines in the park. Long-term moderate to major adverse impacts would occur along the Tamiami Trail (and within the park) due to the presence of human-made features in the landscape, but would quickly lessen as a traveler drives away from the transmission line crossing and the structures move to the middle and background of the viewshed.

Refer to figure 23 and figure 30 in chapter 3.

FIGURE 63: PHOTO SIMULATION 6—LOOKING NORTHWEST FROM THE L-31N CANAL AT THE TAMIAMI TRAIL

Cumulative Impacts

The impacts on visual resources from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1b. Alternative 3 would contribute long-term minor to major adverse impacts; these impacts would contribute noticeable to appreciable impacts to overall cumulative impacts on visual resources.

Conclusion

Under alternative 3, there would be no direct impacts on visual resources from the fee for fee land exchange, but indirect impacts on visual resources would result from the construction of the transmission lines on the eastern edge of the park and would include short-term minor to moderate adverse impacts during construction and minor to major adverse impacts from the introduction of transmission lines within the current eastern park boundary. The most severe impacts would be where the transmission lines cross the Tamiami Trail and from the L-31N canal. Alternative 3 would contribute long-term minor to major adverse impacts; these impacts would contribute noticeable to appreciable impacts to overall cumulative impacts on visual resources.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

Under alternative 4, impacts on visual resources would be the same as described under alternative 3, with potential for slightly reduced adverse impacts under this alternative from the restriction in the terms and conditions to only three transmission lines with no other utility infrastructure within the corridor. Terms and conditions are found in appendix H.

Cumulative Impacts

Cumulative impacts would be the same as described under alternative 3. Alternative 4 would contribute long-term minor to major adverse impacts; these impacts would contribute noticeable to appreciable impacts to overall cumulative impacts on visual resources.

Conclusion

Impacts on visual resources would be the same as described under alternative 3, with potential for slightly less adverse impacts under this alternative from the restriction to only three transmission lines with no other utility infrastructure within the corridor. There would be no direct impacts from the land exchange. Indirect impacts on visual resources would result from the construction of the transmission lines on the eastern edge of the park and would include short-term minor to moderate adverse impacts during construction and minor to major adverse impacts from the introduction of transmission lines within the current eastern park boundary. The most severe impacts would be where the transmission lines cross the Tamiami Trail and from the L-31N canal. Alternative 4 would contribute noticeable to appreciable impacts to overall cumulative impacts to visual resources.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, FPL retention of ownership of land in the EEEA would not have any impacts on visual resources.

Impacts of Transmission Line Construction

Under alternative 5, impacts on visual resources would be the same as described under alternative 1b and would include short-term minor to moderate adverse impacts during construction and long-term minor to major adverse impacts from the introduction of transmission lines into a wilderness-like setting.

Cumulative Impacts

Cumulative impacts would be the same as described under alternative 1b and include short-term adverse impacts from construction associated with projects intended to restore habitat and deliver additional freshwater to the park. Alternative 1b would contribute long-term minor to major adverse impacts on visual resources; these impacts would be an appreciable adverse impact to overall cumulative impacts on visual resources.

Conclusion

Impacts on visual resources would be the same as described under alternative 1b and include short term, minor to moderate, adverse impacts during construction and long term, adverse impacts ranging from minor to major adverse from the introduction of transmission lines into a wilderness-like setting. The intensity of the adverse impact would vary with the location in the park and be greatest for recreationists such as canoeists near the Tamiami trail and for others as they approach this area and the transmission lines from trails or on the roadway. Alternative 5 would contribute an appreciable adverse impact to overall cumulative impacts on visual resources.

WILDERNESS

GUIDING REGULATIONS AND POLICIES

The Wilderness Act, passed on September 3, 1964, established a National Wilderness Preservation System, “administered for the use and enjoyment of the American people in such manner as would leave designated wilderness areas unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness” (16 USC 1131). By policy, lands identified as being eligible for wilderness designation, wilderness study areas, proposed wilderness, and recommended wilderness (including potential wilderness) are managed to preserve their wilderness character and values in the same manner as “designated wilderness” until Congress has acted on the recommendations (NPS 2006a, sec. 6.3.1).

Within the NPS, Chapter 6 of the NPS *Management Policies 2006* addresses wilderness issues. The purpose of Chapter 6 of the NPS *Management Policies 2006* is to provide accountability, consistency, and continuity within the NPS wilderness management program, and to otherwise guide Service-wide efforts in meeting the letter and spirit of the 1964 Wilderness Act. In addition, policies are based on provisions of the 1916 NPS Organic Act, the 1964 Wilderness Act, and legislation establishing individual units of the national park system.

Chapter 6 of the NPS *Management Policies 2006* addresses all aspects of wilderness management and preservation of designated wilderness in units of the national park system. This chapter directs the NPS to integrate wilderness considerations into all planning documents to “guide the preservation, management, and use of the park’s wilderness area and ensure that wilderness is unimpaired for future use and enjoyment as a wilderness.” According to Section 6.1, the purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition

and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Section 6.2.1 of the NPS *Management Policies 2006* dictates that NPS lands would be considered eligible for wilderness if they are at least 5,000 acres or of sufficient size to make practicable their preservation and use in an unimpaired condition, and if they possess the following characteristics (as identified in the Wilderness Act):

- The earth and its community of life are untrammeled by humans, where humans are visitors and do not remain;
- The area is undeveloped and retains its primeval character and influence without permanent improvements or human habitation;
- The area generally appears to have been affected primarily by the forces of nature, with the imprint of humans' work substantially unnoticeable;
- The area is protected and managed so as to preserve its natural conditions; and
- The area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Per Section 6.3.4.3, in evaluating environmental impacts, this EIS considers (1) wilderness characteristics and values, including the primeval character and influence of the wilderness; (2) the preservation of natural conditions (including the lack of human-caused noise); and (3) assurances there would be outstanding opportunities for solitude, that the public would be provided with a primitive and unconfined type of recreational experience, and wilderness would be preserved and used in an unimpaired condition. Mitigation measures considered in this analysis are listed in appendix F and are mentioned in the analysis where appropriate.

The following definitions were used to determine the magnitude of adverse impacts on wilderness:

- **Negligible**: There would be little or no effect on wilderness character or wilderness experience. The effect on wilderness character would be so small that it would not be of any measurable or perceptible consequence.
- **Minor**: An effect on one or more attributes of wilderness character and wilderness experience and associated values would occur; it would be slightly detectable and highly localized.
- **Moderate**: Attributes of wilderness character and wilderness experience would be affected in a substantial way over a large area, or the impact would affect multiple areas but would not be permanent.
- **Major**: One or more attributes of wilderness character and wilderness experience would be affected substantially across a large area of the park on either a permanent or a frequent but temporary basis.

ANALYSIS AREA

The area of analysis for wilderness includes all areas eligible for wilderness designation in the EEEA. The draft General Management Plan / East Everglades Wilderness Study / EIS for Everglades National Park (NPS 2013a) found that approximately 102,100 acres of the EEEA is eligible for wilderness designation.

The eligible area includes most of the FPL West Secondary Corridor, but excludes the exchange corridor. Note: Only Congress can designate wilderness. Furthermore, the FPL corridor could at most be designated "potential" wilderness (as opposed to actual wilderness) until such time as it came into federal ownership.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership, and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on wilderness. The FPL corridor would remain under FPL ownership, which would preclude the area from being managed as part of a designated wilderness area and prevent the achievement of natural conditions in the corridor. Not having this area under NPS management means that the park cannot require that actions undertaken there undergo a minimum requirements analysis. In addition, FPL, as landowner, would have access to the area and could allow motorized access or other motorized/mechanical equipment uses such as chainsaws, tools, etc., which would adversely impact the untrammeled qualities of wilderness in that area. For these reasons, alternative 1a would result in indirect long-term major adverse impacts on wilderness.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on wilderness.

Cumulative Impacts – Alternative 1a

Ecosystem restoration projects in the Everglades and acquisition of property throughout the park as described on table 18 would result in beneficial impacts on wilderness throughout the Everglades (over a 20-30 year period, as associated projects are funded and implemented), but alternative 1a would prevent or obstruct implementation of many of these projects. However, the overall direction of the GMP and other park programs to preserve park resources would indirectly benefit wilderness in the park. Other projects in the area of analysis with adverse effects on wilderness include airboat operations and helicopter use over EEEA and park operations such as vegetation management that introduce noise and disturbance in wilderness (short term minor to moderate adverse impacts). Alternative 1a would result in major adverse impacts because of the lack of flowage and would contribute appreciable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no direct impacts on the wilderness character of the EEEA from the FPL retention of property in the EEEA, but there would be indirect long-term major adverse impacts because the FPL corridor would remain under FPL ownership, which precludes the area from being managed as part of a designated wilderness area, would result in the inability to restore natural water conditions to the area, preventing the reestablishment of wilderness character, and allows the introduction of disturbances to wilderness quality. Because there would be no transmission line construction under this alternative, no indirect impacts would occur to wilderness characteristics from construction of transmission lines. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative impacts on wilderness.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, as under alternative 1a, the retention of ownership of land in the EEEA by FPL would result in no direct impacts on the wilderness character of the EEEA because there would be no direct physical change to the land as a result of the land acquisition action. The FPL corridor would remain under FPL ownership, which would preclude the area from being managed as part of a designated wilderness area, resulting in indirect long-term major adverse impacts. Not having this area under NPS management means that the park cannot require that actions undertaken there undergo a minimum requirements analysis. In addition, FPL, as landowner, would have access to the area and could allow motorized access or other motorized/mechanical equipment uses such as chainsaws, tools, etc., which would adversely impact the untrammeled qualities of wilderness in that area.

Impacts of Transmission Line Construction

Under alternative 1b, the construction of transmission lines within the boundary of Everglades National Park would result in long-term major adverse impacts on wilderness values by precluding the corridor from being designated as wilderness and by creating visual and noise impacts. The severity of these impacts would decrease with increasing distance from the corridor.

The FPL West Secondary Corridor is in the area of the EEEA that is being considered for possible wilderness designation under the Wilderness Act in the draft Everglades GMP / East Everglades Wilderness Study / EIS (see "Figure 35: Land Use within the Area of analysis and Surrounding Vicinity" in chapter 3). If transmission lines were constructed in the FPL West Secondary Corridor, they would preclude the corridor from being designated as wilderness due to Section 4(c) of the Wilderness Act, which prohibits certain uses:

> (c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

The likely future construction of the transmission lines, towers, and structure pads in the FPL West Secondary Corridor could affect the eligibility of other lands in the EEEA to achieve wilderness designation, especially those lands in which transmission lines and structures would be prominently visible. Disturbances to native Everglades communities resulting from wetland fill—such as displacement, potential injury or mortality of bird species, and other associated effects of transmission line construction—would adversely impact wilderness values and the protection and management of natural conditions. The presence of the transmission facilities, the noise from construction, operation and maintenance of the transmission facilities, and the potential limitations on the use of and access to the EEEA as a result of FPL transmission lines would impact the "undeveloped" and "solitude or primitive and unconfined recreation" criteria in the Wilderness Act. The visual qualities and soundscapes of the park would be altered with the addition of the transmission lines, as fully described in the "Viewshed (Visual Resources)" and "Soundscapes" sections of this EIS. Visitor use and experience and recreation resources would also be altered with the addition of the transmission lines, as described in the "Visitor Use and Experience / Recreation Resources" section of this EIS.

During the construction period, short-term moderate adverse construction-related impacts would occur related to temporary disturbances from construction and earth-moving activities, resulting in measurable adverse impacts on wilderness values of the corridor and surrounding lands.

Overall, the construction, maintenance, vegetation management, and operation of FPL transmission lines in the FPL West Secondary Corridor could result in short and long-term moderate to major adverse impacts on desired wilderness character conditions in the EEEA.

Cumulative Impacts – Alternative 1b

The cumulative impacts on wilderness from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 1b would contribute short-term moderate adverse construction-related impacts and long-term major adverse effects from construction of the transmission line without a flowage easement in the FPL corridor; these impacts would contribute appreciable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion – Alternative 1b

Under alternative 1b, there would be no direct impacts on the wilderness character of the EEEA from the FPL retention of property in the EEEA but there would be indirect long-term major adverse impacts because the FPL corridor would remain under FPL ownership, which precludes the area from being managed as part of a designated wilderness area and allows the introduction of disturbances to wilderness quality. Indirect impacts would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short- term moderate adverse impacts during construction and long term major adverse impacts on wilderness characteristics from the presence and operation of the lines. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative impacts on wilderness.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, there would be no direct impacts on the wilderness character of the EEEA from the exchange of FPL and NPS lands in the EEEA. However, indirect benefits would occur from the land acquisition. Following acquisition, NPS would be able to manage the acquired area consistent with park goals for improved ecosystem conditions and wilderness character on lands previously not subject to NPS authority. The defragmentation of the EEEA ownership and placement of ownership of this area solely with the NPS will enhance the ability to provide more natural water flows to Everglades National Park. In turn, this would enhance the conservation of the resources and values of the park, including its wilderness character, resulting in a substantial long-term beneficial impact.

Impacts of Transmission Line Construction

Under alternative 2, construction of the transmission lines in the area of the West Consensus Corridor would result in indirect impacts on the wilderness characteristics of the EEEA, because the lines may pass near to the park and could be visible from areas of wilderness in the park. The operation and maintenance of the transmission lines east of the park would result in long-term negligible to moderate adverse impacts, with the intensity dependent on the precise location of the lines within the West Consensus Corridor. Transmission lines located in the northern portion of the corridor would be routed to the east and away from the park boundary, and impacts on wilderness values within the park (resulting from noise and visual effects of the transmission lines) would be negligible compared to baseline conditions.

However, where the transmission lines would be routed along the east side of the L-31 canal, adverse impacts on wilderness values would be minor to moderate in severity due to the proximity of activities that would result in measurable impacts upon wilderness. The wilderness character of the EEEA would be affected over the operational lifetime of the transmission lines if the lines were visible in the park or if periodic maintenance activities resulted in temporary noise impacts within the park. Recreational users along the L-31N canal would experience the ongoing noise emitted by 500-kV transmission lines (for specific impacts, please see the “Soundscapes” section). Observers at points within the eastern portion of the park would note the presence of human-made structures in the relatively undeveloped landscape. The impact on those at observation points at the extreme eastern portion of the park would be slight because the transmission lines and structures would be situated against a backdrop of preexisting development in the form of radio towers, commercial and industrial facilities, and power transmission structures (for specific impacts, see the “Viewshed (Visual Resources)” section).

During the construction period, short-term negligible to moderate adverse construction-related impacts would occur related to temporary disturbances from earth-moving activities during the period of construction. If disturbances from transmission line construction were located in the eastern or central portions of the West Consensus Corridor, where urbanized and agricultural land use elements already exist, impacts on wilderness values within the park (resulting from noise and visual effects of the construction activities) would be negligible compared to baseline conditions. However, if the aforementioned impacts were concentrated along the western portion of the West Consensus Corridor, adverse impacts on wilderness values would be minor to moderate in severity due to the proximity of these activities and the increased potential for them to result in measurable noise-related and visual impacts upon wilderness. Adverse impacts on wilderness resulting from noise and visual effects of the transmission line would diminish as the distance westward into the interior of the park increases.

No permanent impacts upon wilderness designation would result from the short-term impacts on wilderness values occurring during construction activities.

Cumulative Impacts

The cumulative impacts on wilderness from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would allow flowage/implementation of the ecosystem restoration projects and benefit wilderness, and would remove any direct impacts on wilderness in the park. There would be short- and long-term negligible to moderate adverse impacts from construction of the transmission line in areas outside the park that can be seen and/or heard from wilderness inside the park. These impacts would contribute appreciable beneficial and imperceptible to noticeable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion

Under alternative 2, there would be no direct impacts from the acquisition of FPL property in the EEEA, but there would be indirect benefits from the acquisition itself which gives the NPS the ability to manage the acquired area consistent with wilderness goals. Indirect impacts on the wilderness characteristics of the EEEA would result from the construction of the transmission lines in the West Consensus Corridor to the east of the park. Alternative 2 would have short-term negligible to moderate adverse impacts and long-term negligible to moderate adverse impacts, depending on the location of the lines in the area and the proximity to the park. Alternative 2 would contribute appreciable beneficial impacts and imperceptible to noticeable adverse impacts (depending on the proximity of the lines to the park) to overall cumulative effects on wilderness in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, there would be no direct adverse impacts on the wilderness character of the EEEA from the exchange of FPL and NPS lands in the EEEA. Similar to alternative 2, there would be indirect benefits from the land acquisition, because the exchange would remove a large area of non-NPS ownership of land in the interior of the park, ensuring that no other development could be proposed in the FPL corridor and that the NPS could manage the corridor as wilderness. The exchange corridor that would be removed from the park's boundary has been determined as ineligible for wilderness in the draft GMP/East Everglades Wilderness Study, so there is no adverse effect associated with the exchange itself. The defragmentation of the EEEA ownership and placing the ownership of the FPL corridor solely with the NPS will enhance the ability to provide more natural water flows to Everglades National Park, which in turn will enhance the conservation of the resources and values of the park, including its wilderness character, a substantial long-term beneficial impact.

Impacts of Transmission Line Construction

Under alternative 3, indirect short-term moderate adverse construction-related impacts would result from the construction of transmission lines in the FPL West Preferred Corridor, directly adjacent to park lands, as described earlier in this chapter and appendix F. These impacts on wilderness values within the park (resulting from noise and visual effects of the construction activities) would occur during the period of construction. Effects would be concentrated along the eastern edge of park. Although the exchange corridor is not itself eligible to be designated as wilderness, adverse impacts on wilderness values would be moderate in severity due to the proximity of these activities and the increased potential for them to result in measurable impacts upon wilderness. No permanent impacts upon wilderness eligibility would result from the short-term effects to wilderness values that would occur during construction activities.

The future construction of the transmission lines, towers, and structure pads in the FPL West Preferred Corridor could affect the eligibility of adjacent lands in the EEEA to achieve wilderness designation, especially those lands in which transmission lines and structures would be prominently visible, resulting in long-term moderate adverse impacts. Although the exchange corridor is not itself eligible to be designated as wilderness, the proximity of those effects would have moderate adverse impacts on wilderness values within the park (resulting from audible noise at close distances and visual effects where the transmission lines would be visible). This could affect wilderness designation of adjacent lands in the park. The noise from operation and maintenance of the transmission facilities, and the potential limitations on the use of and access to the EEEA as a result of FPL transmission lines would impact the "undeveloped" and "solitude or primitive and unconfined recreation" criteria in the Wilderness Act. The visual qualities and soundscapes of the area of the park located adjacent to the FPL West Preferred Corridor would be altered with the addition of the transmission lines, as fully described in the "Viewshed (Visual Resources)" and "Soundscapes" sections of the EIS. Visitor use and experience and recreational resources would also be altered with the addition of the transmission lines, as described in the "Visitor Use and Experience / Recreation Resources" sections of the EIS. Ongoing maintenance, vegetation management, and operation of FPL transmission lines in the FPL West Preferred Corridor could result in long-term moderate adverse impacts on desired wilderness character conditions in the EEEA.

Cumulative Impacts

The cumulative impacts on wilderness from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 3 would allow flowage/implementation of the ecosystem restoration projects and benefit wilderness, but the land

exchange and construction of the transmission line in the exchange corridor would result in short and long term moderate adverse impacts; these impacts would contribute both appreciable beneficial impacts and noticeable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion

Under alternative 3, there would be no direct impacts on wilderness characteristics from the exchange of NPS and FPL lands in the EEEA. Indirect benefits would occur from the exchange itself, resulting in flow restoration that would benefit wilderness character and the ownership of this area being placed solely with the NPS, who could then manage the corridor as wilderness. Indirect short-term moderate adverse impacts on the wilderness character of the EEEA would result from the construction of the lines. The continued presence of the transmission lines in the FPL West Preferred Corridor would result in long-term moderate adverse impacts on the wilderness character of the EEEA, This could affect the wilderness designation of adjacent lands in the park. Alternative 3 would contribute appreciable beneficial impacts and noticeable adverse impacts to the overall cumulative effects on wilderness in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Direct and indirect impacts on the wilderness character of the EEEA as a result of the land exchange under alternative 4 would be the same as those described under alternative 3. Additional beneficial impacts would result from terms and conditions (appendix H) that would reduce the risk of having additional utility facilities developed within the exchange corridor that could detract from the wilderness values of the neighboring park land. There would be no direct impacts on the wilderness character of the EEEA from the exchange of FPL and NPS lands in the EEEA; however, indirect benefits would occur from restoring flows to benefit wilderness character and from placing the ownership of this area solely with the NPS so that the NPS could manage the corridor as wilderness. The exchange corridor that would be removed from the park’s boundary has been determined as ineligible for wilderness in the draft GMP/East Everglades Wilderness Study, so there would be no adverse effect associated with the exchange itself.

Impacts of Transmission Line Construction

Under alternative 4, indirect impacts of the transmission line construction and operation would be the same as described under alternative 3 and would include short- and long-term moderate adverse impacts on the wilderness character of the EEEA.

Cumulative Impacts

Cumulative impacts would be the same as those described under alternative 3. The past, present, and reasonably foreseeable future actions described under alternative 1a would also occur under alternative 4. Alternative 4 would allow flowage/implementation of the ecosystem restoration projects and benefit wilderness, but the land exchange and construction of the transmission line in the exchange corridor would result in short and long term moderate adverse impacts; these impacts would contribute both appreciable beneficial impacts and noticeable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion

Under alternative 4, impacts would be essentially the same as described under alternative 3, with benefits occurring from the land exchange itself, except that no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on wilderness in this area. Indirect adverse impacts would include short- and long-term moderate adverse impacts on the wilderness character of the EEEA. Alternative 4 would contribute appreciable beneficial impacts and noticeable adverse impacts to the overall cumulative effects on wilderness in this area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Alternative 5 would provide for a long-term flowage easement over the FPL West Secondary Corridor, but no acquisition of the corridor. There would be no direct impact on the wilderness because there would be no direct change to the land as a result of this alternative. There would be indirect benefits to having a flowage easement on the FPL parcel in the EEEA that would improve resource conditions and wilderness character. However, continued FPL ownership and control of the corridor would continue and would preclude the area from being managed as wilderness.

Impacts of Transmission Line Construction

Under alternative 5, indirect impacts of the transmission line construction and operation would be the same as described under alternative 1b and would include long-term major adverse impacts on the wilderness character of the park from the transmission line construction in the FPL West Secondary Corridor.

Cumulative Impacts

The cumulative impacts on wilderness from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 5 would result in mainly adverse impacts with long-term major adverse impacts from transmission-line construction and limited benefits since the corridor remains in FPL ownership and cannot be managed as wilderness. These impacts would contribute appreciable adverse impacts to the overall cumulative effects on wilderness in this area.

Conclusion

Under alternative 5, there would be no direct impacts from the FPL retention of property in the EEEA, and beneficial impacts would result from having a long-term flowage easement agreement. Long-term indirect moderate adverse impacts would occur as a result of the corridor remaining under FPL ownership, which would preclude the area from being managed as wilderness. Indirect adverse impacts would also result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short-term moderate and long-term major adverse impacts on wilderness characteristics. Alternative 5 would contribute appreciable adverse impacts to the overall cumulative effects on wilderness in this area.

VISITOR USE AND EXPERIENCE / RECREATION RESOURCES

GUIDING REGULATIONS AND POLICIES

Enjoyment of park resources and values by the people of the United States is fundamental to the purpose of all national parks. The NPS is committed to providing appropriate, high-quality opportunities for the public to enjoy the parks. Because not all recreational activities are appropriate for each park, the NPS will encourage activities that are appropriate to the purposes for which the park was established, are appropriate to the unique park environment, will promote enjoyment through direct association with park resources, and can be sustained without causing unacceptable impacts on park resources or values (NPS 2006a, Section 8.2).

Visitors use a variety of park resources based on personal goals and interests, and the feeling they experience during their visit is the result of multiple actions and encounters. This analysis considers how the proposed alternatives would affect how people use park lands, as well as how the alternatives would alter visitors' experiences. Although several factors contribute to the quality of experience, the proposed actions would affect visitor use and experience primarily through visual and noise disruptions, as well as access limitations. Therefore, this analysis incorporates the findings from the "Soundscapes" and "Viewshed (Visual Resources)" sections of this chapter to help determine how impacts on those park resources would affect visitor use and experience. Aesthetic value is an important consideration in the management of recreation settings, especially where most people expect a natural-appearing landscape with limited evidence of "unnatural" disturbance of landscape features (USFS 1995, F-1). Scenic qualities can affect park visitors, residents of the local area or nearby communities, and a broader constituency who may either occasionally visit the parks or simply have an interest in their scenic qualities (USFS 1995, 3-3). Additional factors affecting visitor use include the impact on visitor experience from the quality of the overall ecosystem, including any improved visitor experience opportunities from restored hydrologic flow.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

General information on visitors to southern Florida and the park was collected from NPS visitor statistics and previous studies at the park. Information about use of the recreational areas outside the park but in the project area was collected based on park input and data gathering done to assess the area of possible relocated corridor east of the park. This information was used to make a qualitative evaluation of the potential impacts on visitor use and experience based on professional judgment.

The following definitions were used to assess impacts on visitor use and experience and recreation resources:

- **Negligible**: Visitors and recreational users would not be affected and/or changes in the experience would be below levels of detection, and visitors and recreational users would likely be unaware of any effects associated with implementation of the alternative. There would be no noticeable change in visitor use and experience or in any defined indicators of visitor satisfaction or behavior.
- **Minor**: Changes in visitor/recreational use and/or experience would be slight but detectable. The changes would not appreciably limit critical characteristics of the desired experience. Visitors or recreational users would be aware of the effects associated with the alternative, but the effects would be slight.

- **Moderate**: Some characteristics of the desired experience would change and/or the number of participants engaging in an activity would be altered. The visitor or recreational user would be aware of the effects associated with the implementation of the alternative and would likely be able to express an opinion about the changes. Visitor/user satisfaction would begin to decline as a direct result of the effect.
- **Major**: Multiple critical characteristics of the desired visitor/user experience would change and/or the number of participants engaging in an activity would be greatly reduced. The visitor/user would be aware of the effects associated with the implementation of the alternative and would likely express a strong opinion about the change. Visitor/user satisfaction would markedly decline.

ANALYSIS AREA

The area of analysis for visitor use and experience and recreation resources includes the areas of visibility, audibility, recreational use, and recreational access that are used by park visitors in the EEEA. It also includes the visitor use corridor along the L-31N canal, visitor use areas in the WCAs north of Tamiami Trail, fishers on canals, and any recreation areas outside the park within the West Consensus Corridor.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, FPL retention of ownership of land in the EEEA would not have any direct impacts on visitor use and experience and recreation resources. However, flowage restrictions would result in long-term indirect major adverse impacts on visitor use and experience. The lack of a perpetual easement to flow higher water levels across the FPL property would prevent the implementation of ecosystem restoration activities that rely on additional flow in the EEEA. The continued degradation of hydrology, water quality, soils, vegetation and wetlands, floodplains, and special-status species would prevent visitors from experiencing a healthy ecosystem and enhanced wildlife viewing opportunities in the EEEA and the WCAs north of Tamiami Trail. These impacts would have a long-term major adverse effect on the visitor experience.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts visitor use and experience or recreation resources.

Cumulative Impacts – Alternative 1a

Past projects impacting visitor use and experience and recreation resources include the acquisition of lands in the EEEA under the Expansion Act. The acquisition of these properties has expanded the protected areas within Everglades National Park and has protected the backcountry experience for visitors in this area, resulting in long-term beneficial impacts. Present and future actions that impact visitor use and experience and recreation resources include all projects intended to restore habitat and deliver additional freshwater to the park. As a result of these actions, there would be additional wildlife in the park, improving the visitor experience, as well as providing additional areas for airboats to access, expanding the area available for visitor use. The draft GMP calls for an increased prominence for the EEEA for visitors and area residents to experience and understand the Everglades ecosystem. These

projects would result in long-term beneficial impacts on visitor use and experience. Fire management actions (prescribed burns, wildland fire control actions) can adversely affect visitor use in the park by restricting access to the areas being treated and from smoke. Impacts would be short term, minor, and adverse.

The past, present, and reasonably foreseeable future actions described above would result in long-term beneficial impacts, with some short-term minor adverse effects. Alternative 1a would contribute long-term major adverse indirect impacts from the prevention of the beneficial impacts from the ecosystem restoration projects and the ability for visitors to experience a restored ecosystem; these impacts would contribute appreciable adverse impacts to the overall cumulative impacts on visitor use and experience and recreational resources in the project area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no land acquisition and no transmission line construction within or adjacent to the EEEA. The lack of a flowage easement on the FPL property would prevent the implementation of ecosystem restoration activities that rely on additional flow in the EEEA. The resulting degradation of natural resources would prevent visitors from experiencing a healthy ecosystem and enhanced wildlife viewing opportunities in the EEEA and the WCAs north of Tamiami Trail. These impacts would have a long-term indirect major adverse effect on the visitor experience. Alternative 1a would contribute appreciable adverse impacts to overall cumulative impacts on visitor use and experience.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Under alternative 1b, the retention of ownership of land in the EEEA by FPL would result in no direct impacts on visitor use and experience or recreational users in adjacent areas. Similar to alternative 1a, the continued degradation of hydrology, water quality, soils, vegetation and wetlands, floodplains, and special-status species from the lack of a perpetual flowage easement would prevent visitors from experiencing a healthy ecosystem and enhanced wildlife viewing opportunities in the EEEA and the WCAs north of Tamiami Trail and would have a long-term indirect major adverse effect on the visitor experience.

Impacts of Transmission Line Construction

Indirect impacts would result from the construction of the transmission lines in the park, as described earlier in this chapter and appendix F. During construction, visitors and recreational users would notice an increase in construction equipment and associated noise in the vicinity of the construction area. If helicopters were needed during construction, they would introduce additional noise and disruption to the park's backcountry experience in this area. Overall, impacts on visitor use and experience and recreation resources during construction would be short term, moderate to major, and adverse.

The visual qualities of the park would be altered with the addition of the transmission lines, as fully described in the viewshed analysis (see the "Viewshed (Visual Resources)" section of the EIS). For visitors in both Shark Valley and Chekika, the views would primarily include natural scenes; very few, if any, human-made structures would be visible from viewing platforms and hiking trails. Visitors on airboat tours would be able to see several human-made structures, including radio towers, a cement plant, the Miccosukee Resort Hotel, the Krome Detention Center water storage tower, and existing power transmission structures, as well as the proposed new transmission line structures in the park. The existing

structures would remain in the background of the existing viewing opportunities, while the transmission lines would be expected to be more prominent, due to their height, and would be located in the middleground of existing views. While visitor use in the direct vicinity of the FPL West Secondary Corridor is limited, canoeists may choose not to continue to recreate in this location. The experience of canoeists would be reduced by the introduction of transmission lines within a primitive setting. This area is seen by many visitors approaching the park. Impacts on visitor use and experience within the park would be long-term, moderate, and adverse.

Outside the park, anglers along the L-29 canal would be impacted by the construction of the transmission lines. The lines would cross the L-29, introducing a new built element to the landscape. Additionally, the operation of large transmission lines in this area would introduce noise in the area of the canal that would likely be a disturbance to the anglers. This disturbance would only be in the direct vicinity of the transmission lines, however, and anglers could move along the canal to a new location to avoid this impact. Recreational users along the L-31N canal may notice the new visual element, but it likely would not impact their recreational experience. Airboaters and those visitors recreating in the WCA would notice the new visual element and would experience long-term moderate adverse impacts from the new structures in a currently undeveloped location. Overall, impacts on recreation resources outside of the park would be long-term, moderate, and adverse.

Overall, impacts on visitor use and experience and recreation resources both in and around the park would be short-term moderate to major adverse and long-term moderate adverse.

Cumulative Impacts – Alternative 1b

The impacts on visitor use and experience from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Alternative 1b would contribute short-term moderate to major adverse and long-term moderate to major adverse indirect impacts of transmission line construction along the FPL West Secondary Corridor within the EEEA and would prevent the beneficial impacts from the ecosystem restoration projects and the ability for visitors to experience a restored ecosystem; these impacts would contribute appreciable adverse impacts to the overall cumulative impacts on visitor use and experience and recreational resources in the project area.

Conclusion – Alternative 1b

Under alternative 1b, there would be no direct impacts on visitor use and experience or recreation resources from the FPL retention of property in the EEEA. Impacts on visitor use and experience and recreation resources would result from the inability to flow higher water levels across the FPL property and construction of the transmission lines in the FPL West Secondary Corridor. Effects would include short-term moderate to major adverse impacts during construction and long-term moderate to major adverse impacts from the introduction of transmission lines into a backcountry setting as well as from noise and visual impacts along the L-29 canal and the lack of a restored ecosystem. Alternative 1b would contribute appreciable adverse impacts to overall cumulative impacts.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, the NPS would acquire the FPL property in the EEEA. No direct impacts would be expected from the acquisition of FPL land in the EEEA, however there would be long-term beneficial impacts from the ability of ecosystem restoration projects to be able to flow water in the EEEA, allowing visitors to experience an improved ecosystem.

Impacts of Transmission Line Construction

Impacts under alternative 2 would result from the possible construction of the transmission lines to the east of the park in the West Consensus Corridor. Impacts on park visitors and recreational users along the L-31N canal would be greatest where the transmission line is constructed along the L-31N canal, which is adjacent to the park. During construction, there would be short-term minor to moderate adverse impacts from the increase in construction equipment in the vicinity, most notably along the L-31N canal. Following completion of transmission line construction, recreational users along the L-31N canal would experience a noticeable difference in their recreational experience, with a newly introduced element to the relatively undeveloped landscape, including additional impacts from the ongoing noise emitted by 500-kV transmission lines (for specific impacts, please see the "Soundscapes" section of this chapter). Anglers, bicyclists, runners, and other recreational users may choose to recreate in other areas and not use this canal as frequently, resulting in a long-term minor to moderate adverse impact on recreational use. As the West Consensus Corridor turns east and is located further from the park boundary, there would be no impact on recreational use because no formal recreation area exists.

Within the park, visitors would likely be unable to see the transmission line structures while in the Shark Valley or Chekika areas of the park and would experience no adverse impacts. Visitors experiencing the park by airboat would be most likely to see the transmission lines where the West Consensus Corridor parallels the L-31N canal, and these visitors would experience a long-term minor adverse impact on their use or experience. After the point where the West Consensus Corridor turns east away from the canal, and heads northeast toward the Pennsuco wetlands, there would be negligible adverse impacts on park visitors' use or experience.

Overall, impacts on visitor use and experience and recreation resources under alternative 2 would range from no impacts to long-term moderate adverse impacts, depending on the location along the length of the West Consensus Corridor. Short-term impacts during construction would be minor to moderate and adverse. Generally speaking, adverse impacts on visitor use and experience and recreational users would be greater along the southernmost portion of the West Consensus Corridor, which is adjacent to the L-31N canal and the EEEA boundary, and more diminished along the northeastern portion after the route turns east away from the park.

Cumulative Impacts

The impacts on visitor use and experience from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Unlike alternative 1a, ecosystem restoration projects would not be prevented and there would be beneficial impacts to visitor experience. The implementation of the restoration projects would result in the experience of a healthy ecosystem with the potential for more wildlife viewing opportunities. Alternative 2 would contribute short-term minor to moderate adverse impacts and no impact to moderate long-term adverse impacts, as well as long-term beneficial impacts; these impacts would contribute imperceptible to noticeable adverse cumulative impacts to visitor use and experience.

Conclusion

Under alternative 2, there would be long-term beneficial indirect impacts from the acquisition of FPL property in the EEEA, allowing ecosystem restoration projects to proceed and visitors to experience an improved ecosystem. Indirect impacts on visitor use and experience and recreation resources would result from the construction of the transmission lines in the West Consensus Corridor to the east of the park and would include short-term minor to moderate adverse impacts during construction and no impact to long-term moderate long-term adverse impacts from the introduction of transmission lines in an area that is

highly used by recreational users along the L-31N canal. Alternative 2 would contribute appreciable beneficial effects and imperceptible to noticeable adverse impacts to overall cumulative effects on visitor use and experience and recreational resources in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, there would be no direct impacts on visitor use and experience or recreational users in adjacent areas from the exchange of FPL and NPS lands in the EEEA, however there would be long-term beneficial impacts from the ability of ecosystem restoration projects to be able to flow water in the EEEA, allowing visitors to experience an improved ecosystem.

Impacts of Transmission Line Construction

Indirect impacts would result from the construction of transmission lines in the exchange corridor, directly adjacent to park lands, as described earlier in this chapter and appendix F. Any construction would need to adhere to all terms and conditions of the land exchange (appendix G).

During construction, visitors and recreational users would notice an increase in construction equipment and associated noise in the vicinity of the construction area. Visitors on airboat tours, individual airboaters and primitive recreationalists, such as canoeists would experience the largest impact with the biggest visual intrusion into the backcountry setting, as described under alternative 1b. Impacts during construction would be most noticeable in the vicinity of the L-31N canal. During construction, there would be short-term minor to moderate adverse impacts from the increase in construction equipment in the vicinity, as described under alternative 1b. Construction equipment would cause noise and air quality impacts and some portions along the L-31N canal may be closed during construction to protect the safety of recreational users. Construction activities could be longer in duration due to the potential for additional utility infrastructure that may be constructed under the fee for fee land exchange terms and conditions.

Once the construction of the transmission lines was completed, recreational users along the L-31N canal would experience a noticeable difference in their recreational experience, with a new introduced element to the relatively undeveloped landscape, including additional impacts from the ongoing noise emitted by 500-kV transmission lines (for specific impacts, please see the “Soundscapes” section of this chapter). Anglers, bicyclists, runners, and other recreational users may choose to recreate in other areas and not use this canal as frequently, resulting in a long-term moderate adverse impact on recreational use.

Within the park, visitors would likely be unable to see the transmission line structures while in the Shark Valley or Chekika areas of the park and would experience no adverse impacts. Visitors on airboat tours, individual airboaters, wildlife viewers and canoeists would experience minor to moderate adverse impacts from the visual intrusion of the transmission lines in the wilderness setting.

Overall, long-term indirect impacts on visitor use and experience and recreation resources under alternative 3 would be minor to moderate adverse impacts, with the largest impact on recreational users in lands adjacent to the FPL West Preferred Corridor. Short-term impacts during construction would be minor to moderate and adverse.

Cumulative Impacts

The impacts on visitor use and experience from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 2, with ecosystem restoration projects

providing for an improved visitor experience and improved ecosystem. Alternative 3 would contribute short-term minor to moderate adverse impacts and long-term beneficial and minor to moderate adverse impacts; these impacts would contribute noticeable adverse impacts to the overall cumulative impacts on visitor use and experience.

Conclusion

Under alternative 3, there would be long-term beneficial impacts from the exchange of property in the EEEA. Indirect impacts would result from the construction of the transmission lines in the FPL West Preferred Corridor and would include short-term minor to moderate adverse impacts during construction and long-term minor to moderate adverse impacts on visitor use and experience and recreation resources from the introduction of transmission lines along the L-31N canal (moderate adverse impacts on users and visitors along the L-31N canal; minor adverse impacts on visitors located in the park's interior). Alternative 3 would contribute noticeable adverse impacts to overall cumulative effects on visitor use and experience and recreational resources in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, there would be no direct impacts on visitor use and experience and recreation resources from the easement for fee land exchange, however there would be long-term beneficial impacts from the ability of ecosystem restoration projects to be able to flow water in the EEEA, allowing visitors to experience an improved ecosystem. Also, no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on visitor use and experience in this area.

Impacts of Transmission Line Construction

Although FPL would not own the property, impacts on visitor use and experience and recreation resources would be the same as described under alternative 3. Indirect impacts on visitor use and experience and recreation resources would result in long-term minor to moderate adverse effects, with the largest impact occurring on recreational users in lands adjacent to the exchange corridor. Short-term impacts during construction would be minor to moderate and adverse.

Cumulative Impacts

The impacts on visitor use and experience from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 2, with ecosystem restoration projects providing for an improved visitor experience and improved ecosystem. Similar to alternative 3, alternative 4 would contribute short-term and long-term beneficial and minor to moderate adverse impacts; these impacts would contribute noticeable adverse to the overall cumulative impacts on visitor use and experience and recreation resources.

Conclusion

Under alternative 4, there would be beneficial impacts from the fee for easement exchange of property in the EEEA. Impacts on visitor use and experience and recreation resources would result from the construction of the transmission lines in the FPL West Preferred Corridor and would include short-term minor to moderate adverse impacts during construction and long-term moderate adverse impacts from the introduction of transmission lines along the L-31N canal. Also, no other utilities could be built in the

corridor, which would lessen the risk of additional impacts of these facilities on visitor use and experience in this area.

Alternative 4 would contribute noticeable adverse impacts to overall cumulative effects on visitor use and experience and recreational resources in this area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, the NPS would acquire a flowage easement on the FPL property in the EEEA. No direct impacts would be expected. However there would be long-term beneficial impacts from the ability of ecosystem restoration projects to flow higher water levels in the EEEA, allowing visitors to experience an improved ecosystem.

Impacts of Transmission Line Construction

Adverse impacts on visitor use and experience and recreation resources from transmission line construction and presence under alternative 5 would be the same as described under alternative 1b. Overall, indirect impacts on visitor use and experience and recreation resources both in and around the park would be long term, minor to moderate and adverse. Short-term impacts during construction would be moderate to major and adverse. Alternative 5 would slightly decrease adverse impacts due to the ability of the NPS to flow additional water in the EEEA. This flowage would provide the NPS staff with interpretive opportunities to show visitors the connected ecosystem and improved wetland function in the EEEA. These slight benefits, however, would not reduce the overall adverse impacts to visitor use and experience to less than minor to moderate.

Cumulative Impacts

The impacts on visitor use and experience from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a, but with the ability for ecosystem restoration projects to be completed and improving visitor experience with a restored ecosystem. Alternative 5 would contribute short-term moderate to major adverse impacts and long-term beneficial and minor to moderate adverse impacts; these impacts would contribute noticeable adverse impacts to the overall cumulative impacts on visitor use and experience and recreation resources.

Conclusion

Under alternative 5, there would be long-term beneficial impacts from the acquisition of a flowage easement on the FPL property in the EEEA, allowing ecosystem restoration projects to proceed and visitors to experience an improved ecosystem. Indirect adverse impacts on visitor use and experience and recreation resources would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short-term moderate to major adverse impacts during construction and long-term minor to moderate adverse impacts from the introduction of transmission lines into a wilderness-like setting as well as from noise and visual impacts along the L-29 canal. Alternative 5 would contribute noticeable adverse impacts to overall cumulative effects on visitor use and experience and recreational resources in this area.

ADJACENT LAND USES AND POLICIES

GUIDING REGULATIONS AND POLICIES

NPS *Management Policies 2006* do not directly address effects on adjacent land uses or conflicts with local or tribal plans and policies, but do mention cooperation and coordination with park neighbors and tribal interests in several areas (e.g., public participation, public involvement, and consultation). Also, Section 3, Land Protection, states that "the National Park Service would use all available authorities to protect lands and resources within units of the national park system, and the Park Service would seek to acquire non-federal lands and interests in lands that have been identified for acquisition as promptly as possible. For lands not in federal ownership, both those that have been identified for acquisition and other non-federally owned lands within a park unit's authorized boundaries, the Service would cooperate with federal agencies; tribal, state, and local governments; nonprofit organizations; and property owners to provide appropriate protection measures. Cooperation with these entities would also be pursued, and other available land protection tools would be employed when threats to resources originate outside boundaries."

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

This topic was included to identify impacts that could occur from conflicts with land use or land use policies of the park or its adjacent lands from any of the actions for acquisition, or from the construction of the transmission lines. Maps showing land use in the project area, county sources, and communications with NPS staff were used to identify land uses and land ownership in the project area. Available information was also taken from other NPS and non-NPS resources to describe these resources and associated land use policies in more detail. The following definitions were used to determine the magnitude of adverse impacts on adjacent land uses and policies:

- **Negligible**: Implementation of the alternative is compatible with existing area land uses and policies, existing municipal zoning, municipal and county policies, and existing easements, licenses, rights-of-way, and leases on adjacent properties. Adjacent property owners would not be impacted or changes would be considered slight and local.
- **Minor**: Implementation of the alternative is generally compatible with existing area land uses and policies, existing municipal zoning, municipal and county policies, and generally honors existing easements, licenses, rights-of-way, and leases on adjacent properties. Adjacent property owners would experience measurable effects although changes would be small and localized. Mitigation measures, if needed to offset impacts or conflicts, would be simple and successful.
- **Moderate**: Implementation of the alternative is generally compatible with existing area land uses and policies, existing municipal zoning, municipal and county policies, and generally honors existing easements, licenses, rights-of-way, and leases on adjacent properties. Adjacent property owners would experience measurable effects and changes would be of consequence, but would be relatively localized. Mitigation measures to offset impacts or conflicts would likely succeed.
- **Major**: Implementation of the alternative does not conform to the existing area land uses or policies, existing municipal zoning, and/or does not honor all existing easements, licenses, rights-of-way, and leases on adjacent properties, and constitutes a conflicting use. Adjacent property owners would experience readily measurable effects and changes would be of substantial consequence that would be noticed on a regional scale. Mitigation measures to offset impacts or conflicts would be necessary and their success could not be guaranteed succeed.

ANALYSIS AREA

The area of analysis for adjacent land uses and policies includes the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1). The analysis is focused on the transmission line corridors in and around the park in the general study area, and areas within about 1/2 mile on either side of the proposed corridors where indirect impacts related to the construction or presence of the transmission lines could adversely affect adjacent land uses or policies of the landowners.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no legal changes to the property's status or ownership, and FPL would not grant NPS a flowage easement. Therefore, there would be no physical change to the land, so there would be no direct impacts on adjacent land uses and no direct impacts on land use policies. However, retention of existing FPL land ownership would preclude the NPS from maintaining adequate flowage, thereby representing an incompatible land use by preventing the NPS from fulfilling its policy obligations and presenting a conflict with the LPP, an approved NPS decision document which enshrines the management direction to adhere to proper flowage within Everglades National Park. Further, the retention by FPL of the land within the park would conflict with NPS management direction pursued for all properties within the EEEA, which focuses on NPS seeking to acquire lands that have been identified for acquisition as promptly as possible to meet the purposes of the 1989 Expansion Act, and to encourage compatible adjacent land uses. Consequently, alternative 1a would result in major adverse indirect impacts on land use policies at Everglades National Park.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on adjacent land uses or policies.

Cumulative Impacts – Alternative 1a

Other plans and actions that are part of the cumulative impact scenario would result in both adverse and beneficial long-term cumulative impacts to surrounding land use and policies. In particular, land uses in the area outside the park are affected by land development decisions and actions, including urban development, road construction and expansion (e.g., Krome Avenue expansion), and commercial and industrial uses such as mining. Cumulative impacts of these actions would be long-term and both adverse and beneficial, depending on the location of the action and the surrounding land use and if the use creates any conflicts with use or local policies. County planning requirements and zoning should prevent major adverse effects on local land use policies. Alternative 1a would result in major adverse impacts because of the conflict with existing NPS policies and would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policies in this area.

Conclusion – Alternative 1a

Under alternative 1a, there would be no direct impacts on land uses adjacent to the park and no direct impacts on land use in the park. However, alternative 1a would result in major adverse indirect impacts

on land use policy at Everglades National Park through the retention of FPL lands within the park. Alternative 1a would result in major adverse impacts because of the conflict with existing NPS policies relating to acquisition of the FPL corridor. There would be no impacts related to transmission line construction under this alternative. Alternative 1a would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policies.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Impacts of retaining FPL land within the park under alternative 1b would be the same as those described under alternative 1a. Alternative 1b would result in major adverse indirect impacts on land use policies at Everglades National Park.

Impacts of Transmission Line Construction

Under alternative 1b, construction of the transmission line would occur within the park. Although land ownership would not be affected by the proposed action, long –term major indirect adverse impacts would occur as a consequence of a conflicting land use that would occur in Everglades National Park following the subsequent construction of transmission lines in the park in the FPL West Secondary Corridor. The presence of a transmission line within the legislative boundary of the park unit would represent an incompatible land use and could affect use of the surrounding property for resource management and visitor use purposes. These conditions would be in conflict with established NPS policies, the Everglades ecosystem restoration projects and the East Everglades LPP. Transmission lines within the park unit are also inconsistent with the Miami-Dade County Comprehensive Development Master Plan given its designation of the East Everglades Area of Critical Environmental Concern. Parts of this route fall outside the park and agreements are in place with SFWMD for use of right-of-way in portions of the transmission line route occurring in WCA 3B, which limits the severity of adverse effects to land use. However, the introduction of man-made artificial structures in lands formerly characterized by natural landscape conditions would result in adverse impacts on these surrounding land uses and contribute to the overall major adverse impacts of this alternative.

Cumulative Impacts – Alternative 1b

The cumulative impacts on surrounding land use and policies from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 2 would contribute long-term major adverse construction-related impacts and long-term major adverse effects from policy conflicts; these impacts would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

Conclusion – Alternative 1b

Under alternative 1b, there would be no direct impacts from the retention of FPL property in the EEEA, however, indirect adverse impacts on land use at Everglades National Park from transmission line construction through the park would be major. Alternative 1b would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, no direct impacts would be expected from the acquisition of FPL land in the EEEA. NPS acquisition of lands within the park would have no effect on surrounding land uses. However, indirect beneficial impacts would occur as a result of fulfillment of the park's long standing management direction to acquire private properties in the Expansion Area to meet the purposes of the 1989 Expansion Act and eliminate incompatible uses from the area. By changing ownership from FPL to NPS, any potential incompatible land use within park's authorized boundary would be eliminated.

Impacts of Transmission Line Construction

Under alternative 2, long term minor to major adverse impacts would occur as a result of construction of the transmission line in the West Consensus Corridor. Impacts on adjacent land uses would result from the possible construction of transmission lines to the east of the park. This area is currently a mix of industrial, commercial, utility, and residential uses. Impacts could occur as a result of conflicts with these existing land uses. Easements would be acquired for construction of the necessary support structures, and no wholesale change in existing land uses would be required for the construction of the transmission lines in West Consensus Corridor east of the park. Construction of transmission lines in this area would preclude future non-transmission line related land uses and development on certain land parcels. On private parcels, in particular, which are located south of SW 112 Street, small areas of productive agricultural lands may be lost or structures and guy wires could make it difficult to farm. This would result in moderate adverse impacts on land use if those lands are especially productive. The West Consensus Corridor also contains lands held under state and local government ownership.

Preliminary siting indicates that careful placement of the utility lines and structures conducted through a coordinated planning effort among the different landowning entities could avoid major conflicts and would effectively lower impacts to minor adverse levels. Given the collaborative work completed to develop the West Consensus Corridor with various landowning entities through the SCA process, major conflicts would likely be avoided and impacts could be mostly minor adverse. The eastern edge of the West Consensus Corridor is approximately 1/4 mile from the Urban Development Boundary, which would result in no land use impacts on the residential areas to the east (visual and noise impacts on these residences are addressed in the "Visual Resources" and "Soundscapes" sections).

Because any transmission line constructed under this alternative would be outside the park, this alternative would avoid impacts on the County-designated East Everglades Area of Critical Environmental Concern which is located within the park. The Miami Dade County Comprehensive Development Master Plan, which describes future land use scenarios for the area, states that electric transmission line corridors are permitted in every land use category when located in established right-of-ways or certified. Thus, once a route is certified no conflicts would occur with the county development plan. Although conflicts may occur in areas where SWFMD lands are located if the proposed use of those properties is for water protection or recharge, such impacts could be avoided through consultation and appropriate mitigation.

Presence of transmission lines along the L-31N canal levee would parallel an existing industrial use; however the West Consensus Corridor would not interfere with mining operations. Adverse effects would be most notable along the eastern edge of the park where current land use consists of undeveloped wetlands owned by SWFMD and other state and private entities. Effects of land use change would present less of a conflict in areas where there is existing disturbance, such as in Bird Drive basin.

Overall, adverse impacts on land use under alternative 2 would range from minor to moderate in severity depending on the location along the West Consensus Corridor. Siting of transmission lines would require agency coordination to minimize impacts to less than significant levels.

Cumulative Impacts

The cumulative impacts on surrounding land use and policies from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Under alternative 2, acquisition of the FPL land by NPS would result in long-term beneficial impacts but also long-term minor to moderate adverse cumulative impacts to surrounding land use including potential adverse effects on uses and policies outside the park. These impacts would contribute appreciable benefits and noticeable to appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

Conclusion

Under alternative 2, there would be no direct impacts from the exchange of FPL and NPS lands in the EEEA. Indirect impacts on land use would result from the construction of the transmission lines in the West Consensus Corridor to the east of the park and would include long-term minor to moderate adverse impacts on uses in that area. Alternative 2 would contribute appreciable benefits and noticeable to appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3, indirect beneficial impacts to land use would occur following the acquisition by eliminating a conflicting land use that currently occurs within the legislative boundary of the park. However, major adverse indirect impacts would also occur as the result of removing 260 acres of land on the eastern edge of the park that was deemed critical to the park, based on its inclusion on the 1989 Everglades Expansion Area.

Impacts of Transmission Line Construction

Under alternative 3, long-term major adverse indirect impacts on land use would occur as a result of the subsequent construction of transmission lines along the FPL West Preferred Corridor. Land uses within the park, adjacent to the park boundary and agricultural lands in the southern portion of the alignment could be adversely affected.

As stated by Miami-Dade County in the Site Certification Process, transmission lines in the park are inconsistent with the County Comprehensive Development Master Plan and its designation within the East Everglades Area of Critical Environmental Concern. Land use conflicts would also occur as a result of the close proximity of NPS lands to the transmission line, which would be immediately adjacent to the edge of the park and would affect NPS lands through possible access issues and differences in vegetation management approaches.

Other land use conflicts under alternative 3 would result from incompatibility with land uses in the agricultural areas south of the park. Several agreements exist between different land owning entities in the 8.5-square-mile area to the east of the park (USACE) and the WCA 3B to the north of the park (SFWMD / Trustees of the Internal Improvement Trust Fund). These agreements serve to moderate the potential for

impacts resulting from implementation of the transmission line constriction. This coordinated planning effort among the different owning entities effectively lowers adverse impacts to minor levels. However, while adverse effects would be minimized in lands administered by USACE and SFWMD south and north of the park where FPL has already obtained approval from for transmission line routes, the placement of man-made structures in lands that were formerly characterized by natural landscape conditions would present issues of land use incompatibility.

Moreover, fee for fee terms and conditions under this alternative would allow for future utility uses in the right-of-way, which may result in greater intensification of development along the corridor and create higher concentrations of conflicting land uses adjacent to the eastern boundary of the park.

Cumulative Impacts

The cumulative impacts on surrounding land use and policies from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 3 would have long-term benefits from the acquisition of the FPL land by NPS but also long-term major adverse impacts from the loss of the exchange corridor and the impacts on surrounding land use including potential adverse effects on uses and policies outside the park. These impacts would contribute appreciable benefits and appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

Conclusion

Under alternative 3, indirect beneficial impacts would accrue to land use from the change in land ownership from FPL to NPS; however, major adverse indirect impacts would also occur from removing 260 acres of land deemed critical to the park per the 1989 Expansion Act. Indirect major adverse impacts on land use would occur as a result of the subsequent construction of transmission lines along the FPL West Preferred Corridor under alternative 3; there are conflicts with County Comprehensive Plan language regarding transmission lines in the East Everglades Area of Critical Environmental Concern and the lines would be immediately adjacent to the park. Alternative 3 would contribute appreciable benefits and appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 4, effects of the land acquisition action would be the same as described under alternative 3 and would include indirect beneficial impacts occurring as the result of fulfillment of the park’s long standing management direction to acquire private properties in the Expansion Area to meet the purposes of the 1989 Expansion Act and eliminate incompatible uses from the area. By changing ownership from FPL to NPS, any potential incompatible land use within park’s authorized boundary would be eliminated. There would be no loss of park ownership of the 260-acre corridor and the intent of having this in the park per the 1989 Expansion Act would still be met.

Impacts of Transmission Line Construction

Under alternative 4, as described for alternative 3, long–term major adverse impacts would occur as a result of land use incompatibility issues following construction of transmission lines along the FPL West Preferred Corridor. As stated by Miami-Dade County in the Site Certification Process, transmission lines in the park are inconsistent with the County Comprehensive Development Master Plan and its designation

within the East Everglades Area of Critical Environmental Concern. Although additional approval authority whereby NPS must approve any FPL construction in the easement would be granted by way of the easement for fee exchange, land uses within the park in areas adjacent to the proposed corridor and agricultural lands in the southern portion of the alignment would remain adversely affected by the development of transmission lines and associated structures.

Cumulative Impacts

The cumulative impacts on surrounding land use and policies from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1a. Alternative 4 would have long-term benefits from the acquisition of the FPL land by NPS and long-term major adverse impacts from the impacts on surrounding land use including potential adverse effects on uses and policies outside the park). These impacts would contribute appreciable benefits and appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area, although impacts would be less than under alternative 4 since the exchange corridor remains under park ownership.

Conclusion

Under alternative 4, there would be no direct impacts from the easement for fee land exchange. There would be indirect beneficial impacts occurring as the result of fulfillment of the park's long standing management direction to acquire private properties in the Expansion Area to meet the purposes of the 1989 Expansion Act and eliminate incompatible uses from the area. Long–term major adverse impacts would occur as a result of land use incompatibility issues following construction of transmission lines along the FPL West Preferred Corridor, although there would be some additional control by way of easement, as the park must approve any FPL construction in the easement. Alternative 4 would contribute appreciable benefits and appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Under alternative 5, the retention of existing FPL land ownership within the park would have no effect on land uses adjacent to the park and no direct impacts on land use in the park. Beneficial effects would occur as a result of the easements to maintain adequate flowage, thereby allowing NPS to fulfill its policy obligations under the LPP, an approved NPS decision document which enshrines the management direction to adhere to proper flowage within Everglades National Park. The retention by FPL of the land within the park, however, would conflict with NPS management direction pursued for all properties within the EEEA. The NPS management direction focuses on NPS seeking to acquire lands that have been identified for acquisition as promptly as possible to meet the purposes of the 1989 Expansion Act, and to encourage compatible adjacent land uses. Consequently, alternative 5 would result in major adverse indirect impacts on land use at Everglades National Park.

Impacts of Transmission Line Construction

Direct and indirect adverse impacts on land use under alternative 5 would be the same as described under alternative 1b. Although land ownership would not be affected by the proposed action, indirect impacts would occur as a consequence of a conflicting land use that would occur in Everglades National Park following the subsequent construction of transmission lines in the park in the FPL West Secondary Corridor. The presence of a transmission line within the legislative boundary of the park unit would represent an incompatible land use and could affect use of the surrounding property for resource

management and visitor use purposes. These conditions would be in conflict with established NPS policies, the CERP and the East Everglades LPP. Overall, alternative 5 would result in long-term major indirect adverse impacts on surrounding land uses.

Cumulative Impacts

The cumulative impacts on surrounding land use and policies from other past, present, and reasonably foreseeable future projects would be the same as those discussed under alternative 1b. Alternative 5 would contribute long-term major adverse construction-related impacts and long-term major adverse effects from policy conflicts; these impacts would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

Conclusion

Under alternative 5, there would be no direct impacts from the retention of FPL property in the EEEA. Beneficial effects would occur as a result of the easements to maintain adequate flowage, thereby allowing NPS to fulfill its policy obligations under the LPP. Indirect impacts would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include long-term major adverse impacts on land use from the introduction of transmission lines into a park-like setting and the presence of an incompatible land use within the park and in conflict with the county comprehensive development master plan designation of the area as an area of critical environmental concern. Alternative 5 would contribute appreciable adverse impacts to the overall cumulative effects on surrounding land use and policy in this area.

TRIBAL LANDS INCLUDING INDIAN TRUST RESOURCES

GUIDING REGULATIONS AND POLICIES

NPS *Management Policies 2006* do not directly address conflicts with tribal plans and policies, but do mention cooperation and coordination with tribal interests in several areas (e.g., public participation, public involvement, and consultation). Also, Section 3, Land Protection, states that “the National Park Service would use all available authorities to protect lands and resources within units of the national park system, and the Park Service would seek to acquire non-federal lands and interests in land that have been identified for acquisition as promptly as possible. For lands not in federal ownership, both those that have been identified for acquisition and other non-federally owned lands within a park unit’s authorized boundaries, the Service would cooperate with federal agencies; tribal, state, and local governments; nonprofit organizations; and property owners to provide appropriate protection measures. Cooperation with these entities would also be pursued, and other available land protection tools would be employed when threats to resources originate outside boundaries.”

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Maps showing land use in the project area and communications with NPS staff and the Bureau of Indian Affairs were used to identify tribal lands, including Indian trust resources in the project area. Available information was also taken from other NPS and non-NPS resources to describe these resources in more detail. The following definitions were used to determine the magnitude of adverse impacts on tribal lands:

- **Negligible**: Implementation of the alternative is compatible with existing tribal uses. Adjacent tribal lands would not be impacted or changes would be considered slight and local.

- **Minor**: Implementation of the alternative is generally compatible with existing tribal uses. Adjacent tribal lands would experience measurable effects although changes would be small and localized. Mitigation measures, if needed to offset impacts or conflicts, would be simple and successful.
- **Moderate**: Implementation of the alternative is generally compatible with existing tribal uses. Adjacent tribal lands would experience measurable effects and changes would be of consequence, but would be relatively localized. Mitigation measures to offset impacts or conflicts would likely succeed.
- **Major**: Implementation of the alternative does not conform to the existing tribal uses and/or constitutes a conflicting use. Indian trust resource properties would experience readily measurable effects and changes would be of substantial consequence that would be noticed on a regional scale. Mitigation measures to offset impacts or conflicts would be necessary and their success could not be guaranteed succeed.

ANALYSIS AREA

The area of analysis for tribal lands and Indian trust resources includes the EEEA, the 8.5-square-mile area east of the park, WCA 3B and the Pennsuco wetlands north of the park, and extending to the urban development boundary to the east of the park (see "Figure 4: General Project Area," in chapter 1).The analysis is focused on the transmission line corridors in and around the park in the general study area, and areas within about 1/2 mile on either side of the proposed corridors where indirect impacts related to the construction or presence of the transmission lines could adversely affect tribal lands. The Tamiami Trail Reservation Area, as described under chapter 3, is 15 miles from the FPL West Secondary Corridor and therefore would not be impacted by any of the proposed alternatives.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, FPL retention of ownership of land in the EEEA would not have any impacts on Tribal Lands. There are no Indian Trust resources in the EEEA.

Impacts of Transmission Line Construction

Under alternative 1a, no transmission lines would be constructed. Therefore, there would be no construction-related impacts on tribal lands or Indian Trust resources.

Cumulative Impacts – Alternative 1a

Because there would be no impacts on tribal lands, including Indian Trust resources under alternative 1a, there would be no cumulative impacts.

Conclusion – Alternative 1a

There would be no impacts on tribal lands, including Indian Trust resources from the land acquisition action or from transmission line construction under alternative 1a. Because there would be no impacts, there would be no cumulative impacts.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

There would be no impacts on tribal lands including Indian Trust resources from the continuation of FPL land ownership within the EEEA. There are no Indian Trust resources located within the EEEA.

Impacts of Transmission Line Construction

Under alternative 1b, the transmission line would be constructed through the EEEA and up into the WCA 3B management area. In both the EEEA and WCA 3B, the transmission lines would be visible from the Indian Gaming and Resort Facility property located along Krome Avenue at the Tamiami Trail, which is an Indian Trust parcel. This visual intrusion on the existing landscape would result in long-term minor adverse impacts on tribal lands. In consultation with the Miccosukee Tribe, the tribe noted that the gaming and hotel industry is very competitive in Florida and the location of the Miccosukee Resort is one of the key attractions that distinguishes the Miccosukee Resort from other gaming venues in Florida. Under alternative 1b, the construction of transmission lines would reduce the "returning to nature" appeal that the Miccosukee Resort provides, which could result in a loss of business. The Tribe noted that the Miccosukee Resort is the main source of revenue for the health, education, safety, and welfare programs for the Miccosukee Tribe. Overall impacts to tribal lands under alternative 1b would be long-term, adverse, and moderate. The additional Indian Trust properties (Lambik, SEMA, and Coral Way) as well as the fee tribal land would not be impacted by construction under alternative 1b.

Cumulative Impacts – Alternative 1b

No past, present or reasonably foreseeable projects have been identified that would impact tribal lands, including Indian Trust resources; therefore there are no cumulative impacts.

Conclusion – Alternative 1b

Alternative 1b would result in no impacts from the continuation of FPL land ownership in the EEEA and long-term minor to moderate adverse impacts from the construction of transmission lines through the EEEA and WCA 3B management areas. There would be no cumulative impacts on tribal lands because no other projects were identified for this cumulative impact scenario.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

There would be no impacts on tribal lands from the acquisition of FPL land in the EEEA. There are no Indian Trust resources in the EEEA.

Impacts of Transmission Line Construction

Under alternative 2, there are Indian Trust parcels and tribal land located immediately adjacent to the FPL West Preferred Corridor. The Coral Way Indian Trust property is located in the vicinity of the West Consensus Corridor and both the SEMA and Lambik Indian Trust parcels are located directly adjacent or in the immediate vicinity of the corridor. The additional fee tribal property is also located adjacent to the corridor. All of these parcels, however, are not in active use by the Miccosukee, with the exception of overflow parking at the SEMA property. Based on the alignment agreed to for the West Consensus

Corridor, FPL has committed to avoid crossing tribal lands. Any construction adjacent to tribal lands would likely have minor adverse effects. Regarding the Indian Resort and Gaming Facility parcels, instead of passing to the west of this property (as would occur under alternative 1b), the transmission line would cross the Tamiami Trail and casino property to the east. There would still be a new visual intrusion; however, this change in viewshed from the casino would occur within a backdrop of an already developed area as opposed to the wilderness-like setting of the EEEA and WCA 3B. Therefore, adverse impacts on the tribal lands would be long-term and minor.

Cumulative Impacts

No past, present or reasonably foreseeable projects have been identified that would impact tribal lands; therefore there are no cumulative impacts.

Conclusion

There would be no impacts on tribal lands from the acquisition action. There would be long-term minor adverse impacts on tribal lands, including Indian trust resources from the implementation of alternative 2 due to the proximity to tribal lands and the change in viewshed from the casino property. There would be no cumulative impacts because no other projects were identified for this cumulative impact scenario.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

There would be no impacts on tribal lands or Indian Trust resources from the fee for fee land exchange under alternative 3 because there are no Indian Trust resources within the EEEA.

Impacts of Transmission Line Construction

Under alternative 3, the transmission lines would be constructed closer to the Indian Gaming and Resort Facility property, along the edge of the EEEA and through the WCA 3B, adjacent to Indian Trust lands. Similar to alternative 1b, construction of transmission lines in this location would alter the existing viewshed from the Indian Gaming and Resort Facility property and the lines could be seen to the west from other tribal and Indian Trust lands located along Tamiami Trail (the SEMA, Coral Way, and unnamed fee properties). Since the transmission line would be located closer to the Indian Gaming and Resort Facility property, there would be a long-term moderate to major adverse impact on Indian Trust resources and tribal lands. Similar to the impacts described under alternative, transmission line construction under alternative 3 would result in a more noticeable impact to the viewshed from the Indian Gaming and Resort Facility and could further impact the Miccosukee's ability to provide the "returning to nature" experience.

Cumulative Impacts

No past, present or reasonably foreseeable projects have been identified that would impact tribal lands; therefore there would be no cumulative impacts.

Conclusion

There would be no impacts on tribal lands from the acquisition action. There would be long-term moderate to major adverse impacts on tribal lands, including Indian Trust resources, from the implementation of alternative 3 due to the change in viewshed to the west from the Indian Gaming and

Resort Facility property and other Indian Trust and tribal lands in that area. There would be no cumulative impact because no other projects were identified for this cumulative impact scenario.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Impacts under alternative 4 would be similar to those under alternative 3. There would be no impacts on Indian Trust resources from the easement for fee land exchange under alternative 4 because there are no Indian Trust resources within the EEEA. According to the terms and conditions (appendix H), no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on other properties in this area.

Impacts of Transmission Line Construction

Impacts on tribal lands, including Indian Trust resources from transmission line construction under alternative 4 would be the same as described under alternative 3. There would be long-term moderate to major adverse impacts from construction of transmission lines in the WCA 3B adjacent to the Indian Gaming and Resort Facility and to the west of other Indian Trust and tribal lands in the vicinity.

Cumulative Impacts

No past, present or reasonably foreseeable projects have been identified that would impact tribal lands; therefore there would be no cumulative impacts.

Conclusion

There would be no impacts on tribal lands from the acquisition action. There would be long-term moderate to major adverse impacts on tribal lands, including Indian Trust resources from the implementation of alternative 4 due to the change in viewshed to the west from the Indian Gaming and Resort Facility property and other Indian Trust and tribal lands in that area. Also, no other utilities could be built in the corridor, which would lessen the risk of additional impacts of these facilities on views in this area. There would be no cumulative impacts because no other projects were identified for this cumulative impact scenario.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

Similar to alternative 1b, there would be no impact on tribal lands from the continuation of FPL property ownership within the EEEA. There are no Indian Trust resources within the EEEA.

Impacts of Transmission Line Construction

Impacts on tribal lands, including Indian Trust resources under alternative 5 would be the same as described under alternative 1b. There would be long-term minor to moderate adverse impacts from the visual intrusion into the landscape facing west from the Indian Gaming and Resort Facility property. Other tribal lands and Indian trust resources would not be impacted.

Cumulative Impacts

No past, present or reasonably foreseeable projects have been identified that would impact tribal lands; therefore there would be no cumulative impacts.

Conclusion

There would be no impacts on tribal lands from the flowage easement. There would be long-term minor to moderate adverse impacts on tribal lands, including Indian Trust resources, from the implementation of alternative 5 due to the change in viewshed to the west from the Indian Gaming and Resort Facility property. There would be no cumulative impacts because no other projects were identified for this cumulative impact scenario.

SOCIOECONOMICS

GUIDING REGULATIONS AND POLICIES

The CEQ requires the NPS to consider the effects of actions on the quality, growth, expansion, and use of outlying and gateway communities (40 CFR 1502.16). Although the NEPA process is undertaken only when there is a physical impact on the environment, CEQ regulations require analysis of social and economic effects in an environmental assessment (EA) and an EIS. Social and economic impacts should be analyzed in any NEPA document where they are potentially affected (NPS Director's Order 12). Because the local economy could be impacted through the adoption of one or more of the alternatives proposed in this EIS, socioeconomics is considered as an impact topic.

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

The analysis assumes that economic impacts are those that individuals, groups, properties, businesses or institutions would experience from a change—beneficial or adverse—in business and economic activity from each of the alternatives under consideration. Social impacts are those that may be borne by individuals or groups who could experience a change in their social structure and context under the proposed alternatives.

The intensity or magnitude of impacts on the local and regional economy and the social environment are described below. The extent of potential adverse social and economic impacts was assessed using the following definitions:

- **Negligible**: The effects on socioeconomic conditions are below or at the level of detection and localized.
- **Minor**: A few individuals, groups, businesses, properties or institutions would be impacted. Impacts would be slight but detectible, and limited to a small geographic area. These impacts are not expected to substantively alter social and/or economic conditions. The impact would not be detectable outside the affected area.
- **Moderate**: Many individuals, groups, businesses, properties or institutions would be impacted. Impacts would be readily apparent and detectable in the local area and may have a noticeable effect on social and/or economic conditions.
- **Major**: A large number of individuals, groups, businesses, properties or institutions would be impacted. Impacts would be readily detectable and observed, extend to a wider geographic area,

possibly regionally, and would have a substantial influence on social and/or economic conditions at the county-level of analysis. The impact is severely adverse in the affected area.

ANALYSIS AREA

The area of analysis for socioeconomics is defined mostly by the indirect impacts of transmission line development that would result from implementation of the land exchange alternatives and includes the following:

- For impacts relating to property values, the area of analysis is the area (and structures) close to the alternative transmission line corridors, within 1/4 mile from the alternative corridors in and around the park (between points where alternative routes diverge and then merge again).
- For impacts relating to the regional economic effects of transmission line development on the local economy, the area of analysis is Miami-Dade County.
- For impacts relating to the cost of line development and easements on FPL rates, the area of analysis includes all FPL customers in Florida.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, FPL retention of ownership of land in the EEEA would not have any impacts on socioeconomic resources.

Impacts of the Transmission Line Construction

There would be no change in socioeconomic conditions associated with regional economic effects since there would be no project construction employment and spending.

There would be no change in socioeconomic conditions for private properties and property values due to the project since no transmission line would be built.

There would be no change in socioeconomic conditions associated with development costs and electricity rates as the project would not be built.

Cumulative Impacts – Alternative 1a

Because there would be no impacts on socioeconomic resources under alternative 1a, there would be no cumulative impacts. See the cumulative impact discussion under alternative 1b for a description of the impacts of actions by others on socioeconomic resources.

Conclusion – Alternative 1a

There would be no impacts on socioeconomic resources associated under alternative 1a. Alternative 1a would contribute no adverse or beneficial cumulative impacts on socioeconomic resources.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

There would be no impacts on those socioeconomic resources being analyzed from the land acquisition action.

Impacts of the Transmission Line Construction

Indirect impacts under alternative 1b would result from the possible construction of transmission lines in the park. Impacts on socioeconomic resources would include potential effects on jobs and income associated with the construction activity; adjacent properties owners and property values; and FPL development costs and potentially electricity rates.

The bulk of the impacts on social and economic conditions would occur during the construction stage of the project, and therefore they would generally be beneficial and temporary, supporting jobs and income in the regional economy. Approximately 1/2 of the FPL West Secondary Corridor would be located in the park. Construction would occur on the transmission lines in several places simultaneously with average crews of 10 to 15 workers. There would be no more than 30 workers at any one location (appendix F). Construction along the FPL West Secondary Corridor would occur through an access road, which would be located along the entire corridor.

There would be construction employment supported by this alternative through the duration of the construction activity. It is likely that the majority of transmission line construction contractors and workers would reside in the broader region, primarily Miami-Dade County, and commute to the corridor. Transmission line electricians and other specially skilled workers may relocate to the area temporarily during the construction period. Therefore, the population may slightly increase in the short term, but this increase would be negligible adverse in the Miami metropolitan area.

Transmission line construction workers would spend their money in the region, beneficially affecting the region's economy. However, the majority of these workers live in the area, so the locally residing workers' income would not add economic stimulus to the region. The skilled transmission line workers who are expected to relocate temporarily would provide revenues for some local businesses, such as hotels, restaurants, gas stations, and grocery stores, supporting jobs and incomes for these businesses and their employees. Overall, the spending would be short term and would likely have beneficial socioeconomic impacts on the overall region. Relative to the economy of Miami-Dade County, this economic contribution would be very small.

During the construction period, there would be a temporary negligible population increase in the region, with negligible adverse impacts on housing resources.

There would be negligible adverse impacts on nearby residents as a result of alternative 1b since the construction would occur in the park boundary and on vacant state and private lands to the north of the park. There are no residences within 1/4 mile of the FPL West Secondary Corridor.

Whenever land uses change, the concern is often raised about the effect the change may have on property values nearby. The question of whether nearby transmission lines can affect residential property values has been studied extensively in the United States and Canada over the last 20 years or so, with mixed results. In general, the impacts are difficult to measure, vary among individual properties, and are influenced by a number of interplaying factors, including the following (Jackson and Pitts 2010):

- Proximity of residential properties to transmission line structures
- Type and size of high-voltage transmission line structures
- Appearance of easement landscaping
- Surrounding topography.

Pitts and Jackson (2007) summarize the following conclusions on the impacts of high-voltage transmission lines.

- When negative impacts are present, studies report an average decline of prices from 2 to 9 percent.
- Value diminution is attributable to the visual unattractiveness of the lines, potential health hazards, disturbing sounds, and safety concerns.
- Impacts diminish as the distance between the high-voltage transmission lines and the affected properties increase, and disappear completely at a distance of 200 feet from the lines.
- Where views of transmission lines and towers are completely unobstructed, negative impacts can extend up to 1/4 mile.
- If high-voltage transmission-line structures are at least partially screened from view by trees, landscaping, or topography, any negative effects are reduced considerably.
- Value diminution attributed to high-voltage transmission-line proximity is temporary and usually decreases over time, disappearing completely in 4 to 10 years.

Studies of impacts during periods of physical change, such as new transmission line construction or structural rebuilds, generally reveal greater short-term impacts than long-term effects. However, most studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand factors in a specific market area) are far more important criteria than the presence or absence of transmission lines in determining the value of residential real estate.

Some impacts on property values (and salability) might occur on an individual basis as a result of the new transmission lines. Although there is some private property located in the northern part of the FPL West Secondary Corridor, there are no residences (structures) located within 1/4 mile of the corridor. Therefore, there would be short-term, negligible, and adverse effects expected to property values associated with alternative 1b.

Right-of-way easements as well as USACE and other federal and state permits for the construction and operations of the new transmission lines are required for the project. FPL has established the right-of-way to the north and south of the park by easements with underlying ownerships and its own fee title lands. FPL would still need to obtain siting and construction permits from federal and state agencies.

Capital expenditures for improvements to electric-utility infrastructure, and to acquire right-of-ways and siting permits are investments made to serve electricity customers in Florida. The expenditures can be

passed on to the customers served in the form of increased rates. However, as a regulated utility, FPL can increase rates only on approval by Florida Public Service Commission. Such rate-increase requests are subject to rigorous analysis by regulators and others, and to public process. FPL has secured the right-of-way north and south of the park with its fee title lands and easements with underlying federal, state, and private landowners. At this time, not all costs for transmission line development are known (FPL 2009a; Louis Berger Group, Inc. 2013), but it is expected that under alternative 1b there would be additional permitting costs that would affect FPL development costs. However, it is likely these incremental FPL permitting costs would not contribute to any electricity rate increases.

Overall, indirect impacts on socioeconomic conditions in the region would be both beneficial and short-term, negligible, and adverse. In the long-term, there would be no impacts on socioeconomic resources associated with alternative 1b.

Cumulative Impacts – Alternative 1b

Past, present, and future projects that could occur and are listed on table 18 have construction components, beneficially affecting jobs and income in the region. Mining and commercial development in this area has provided economic benefits through jobs, income, and taxes. These projects would result in short-term beneficial impacts on socioeconomic resources. Additionally, future transmission projects could adversely affect adjacent property values in the short- and long-term, depending on the specific siting of the transmission lines. The FPL electrical generation and transmission projects could also adversely affect the capital costs incurred by FPL and potentially ratepayers.

Alternative 1b would contribute short-term negligible adverse impacts on property values and beneficial impacts of transmission line construction along the FPL West Secondary Corridor; these impacts would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

Conclusion – Alternative 1b

There would be no impacts on socioeconomic resources associated with land acquisition under alternative 1b. Indirect impacts would result from the construction of the transmission lines in the FPL West Secondary Corridor and would include short-term beneficial impacts during construction on jobs and income in the region and short-term negligible adverse impacts on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 1b. Alternative 1b would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

There would be no impacts on those socioeconomic resources being analyzed from the land acquisition action.

Impacts of the Transmission Line Construction

Indirect impacts under alternative 2 would result from the possible construction of transmission lines to the east of the park in the West Consensus Corridor. Alternative 2 is expected to have the same impacts as those under alternative 1b with regard to regional effects on jobs and income associated with the construction activity, with short-term beneficial impacts on jobs and income within the region. Over the construction period, there would be a temporarily negligible population increase in the region, with negligible adverse impacts on housing resources.

Under alternative 2, there would be short-term minor adverse impacts on private properties and property values on an individual basis as a result of the transmission line development. Impacts would depend on the siting of the route within the corridor, with a greater likelihood of effects if the lines were routed closer to homes in the eastern portion of the corridor. With adequate setbacks from homes, there would be expected short-term minor adverse effects on these adjacent residences, with some potentially longer-term effects, although the property values effects associated with the transmission lines are expected to diminish with time. The residences likely to be affected are located in the southern part of the West Consensus Corridor, west of the Hammocks subdivision, north of 112th Street, between 187th Ave and Krome Avenue, as well in the northern part of the West Consensus Corridor, east of 157th Avenue.

Under alternative 2, there would be adverse impacts on nearby residents as a result of the construction in the area of the West Consensus Corridor, associated with increased noise from construction activities and equipment, the visual presence of construction equipment, and potential traffic and congestion resulting from construction trucks and equipment accessing the right-of-way, using local roads, and from potential short-term road closures during conductor stringing. These effects are anticipated to be short-term, adverse, and minor. However, most of the area of the West Consensus Corridor is more than 1/2 mile from the urban development boundary, which would minimize these effects. Operation of the proposed project would include infrequent disturbance during any maintenance or repair activities, resulting in long-term negligible adverse impacts on nearby residents.

Since most property value effects occur within 1/4 mile of transmission lines when views of the lines are unobscured (within 200 feet if there is landscaping or other visual diversions), it is possible that there would be some adverse effects on property values, especially in the neighborhood west of the Hammocks, as well as the neighborhood east of 157th Avenue, although the impacts are anticipated to be primarily short-term. Since most of the West Consensus Corridor is more than 1/2 mile from the urban development boundary, these adverse effects would be lessened. It is possible that there would be more residences located closer to transmission lines under this alternative when compared to alternatives 1b and 3.

Easements and land acquisition as well as siting permits and certification would be required for the construction and operations of the transmission lines in the West Consensus Corridor. FPL would pay market value to private landowners, as established through the appraisal process, for any new land rights required for the project. To facilitate a transmission siting alternative to minimize or avoid adverse impacts on park resources, public agencies would enter into agreements and contracts with FPL to provide easements across their respective government agency lands to the east of the park.

Much of the private property west of the urban boundary is in undeveloped or in agricultural use. It is possible that utility permanent easements could be obtained on these lands (and land acquisition would not be required), which would allow current agricultural production to continue. Easements on government-owned lands and agricultural lands would affect (likely reduce) the overall cost of the right-of way land right costs expected to be incurred by FPL under this alternative.

Capital expenditures for improvements to electric-utility infrastructure and to acquire right-of-ways are investments made to serve electricity customers in Florida. The expenditures can be passed on to the customers served in the form of increased rates. However, as a regulated utility, FPL can increase rates only on approval by Florida Public Service Commission. Such rate-increase requests are subject to rigorous analysis by regulators and others, and to public process. At this time, not all costs for transmission line development and obtaining right-of-ways are known. Additionally, there are uncertainties regarding FPL obtaining approvals and permits to construct the transmission lines. The extent to which the FPL transmission line development incrementally contributes to capital costs across FPL electrical generation and transmission infrastructure, a factor on which the Florida Public Service Commission would evaluate approvals for rate increases, is highly uncertain at this time.

Overall, indirect impacts on socioeconomic conditions in the region would be both beneficial and short-term negligible to minor adverse. The effect of the additional right-of-way costs on electricity rates is uncertain.

Cumulative Impacts

The impacts on socioeconomics from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1b. Alternative 2 would contribute short-term and long-term minor adverse and beneficial impacts; these impacts would contribute imperceptible to noticeable impacts to overall cumulative impacts on socioeconomic resources.

The future FPL electrical generation and transmission development costs combined with the additional right-of-way costs under this alternative could have a cumulative adverse impact on electrical generation infrastructure development costs, although the extent of this effect is highly uncertain at this time.

Conclusion

There would be no impacts on socioeconomics associated with land acquisition under alternative 2. Indirect impacts would result from the construction of the transmission lines in the West Consensus Corridor to the east of the park and would include short-term beneficial impacts on jobs and income during construction, and possible short-term minor adverse impacts on adjacent residents and property values. The future FPL electrical generation and transmission development costs combined with the additional right-of-way costs under this alternative could have a cumulative adverse impact on electrical infrastructure development costs, although the extent of this effect is uncertain at this time. The impact of these costs on electricity rates is also uncertain. Alternative 2 would contribute imperceptible to noticeable impacts to overall cumulative impacts on socioeconomic resources.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

There would be no impacts on those socioeconomic resources being analyzed from the land acquisition action.

Impacts of the Transmission Line Construction

Socioeconomic resources would indirectly be affected by construction activity and siting of the transmission lines, very similar impacts as those experienced under alternative 1b. The terms and conditions associated with alternative 3 (appendix G) could affect the costs to develop the transmission lines, which could beneficially affect the regional economy, although they could adversely affect FPL development costs. These construction beneficial impacts in the context of the regional economy are very small.

The terms and conditions (appendix G) associated with transmission line construction in the FPL West Preferred Corridor would potentially affect socioeconomic resources in two ways: (1) the additional costs to develop the transmission lines adhering to the terms and conditions could beneficially affect the regional economy, although they could adversely affect FPL development costs; (2) the terms and conditions include protection for wetlands and wildlife, which could prevent adverse effects on the resources and limit the adverse impacts on recreation, such as bird watching, and associated visitor spending. These effects are expected to be negligible adverse on socioeconomic resources.

Over the construction period, there would be a temporarily and negligible increase population in the region, with negligible adverse impacts on housing resources.

There are 12 residences within 1/4 mile or in the FPL West Preferred Corridor while no residences are located within 500 feet. These residences are primarily located on the southern part of the corridor, west of the Hammocks subdivision, north of 112th Street, between 187th Ave and Krome Avenue. Under alternative 3, there would be adverse impacts on nearby residents as a result of the construction associated with increased noise from construction activities and equipment, the visual presence of construction equipment, and potential traffic and congestion resulting from construction trucks and equipment accessing the right-of-way, using local roads, and from potential short-term road closures during conductor stringing. These effects are anticipated to be short-term, adverse, and minor.

Since most property value effects occur within 1/4 mile of transmission lines when views of the lines are unobscured (within 200 feet if there is landscaping or other visual diversions), it is expected that there would be some adverse effects on property values, primarily in the neighborhood west of the Hammocks, although the effects are anticipated to be short-term. Since only 12 structures are located within 1/4 mile and none are located within 500 feet of the corridor, there would be short-term minor adverse effects on these adjacent residences, with some potentially longer-term effects, although the property values effects associated with the transmission lines are expected to diminish with time.

Similar to alternative 1b, right-of-way easements as well as USACE and other federal and state permits for the construction and operations of the new transmission lines are required for the project. FPL has secured contracts and agreements with USACE, SFWMD, Florida Department of Transportation Board of Trustees of the Internal Improvement Trust Fund to obtain easements and land rights for the right-of-way to the north and south of the park contingent on the land exchange with the park. FPL would still need to obtain siting and construction permits from federal and state agencies.

Capital expenditures for improvements to electric-utility infrastructure, and to acquire right-of-ways and siting permits are investments made to serve electricity customers in Florida. The expenditures can be passed on to the customers served in the form of increased rates. However, as a regulated utility, FPL can increase rates only on approval by Florida Public Service Commission. Such rate-increase requests are subject to rigorous analysis by regulators and others, and to public process. FPL has negotiated the right-of-way north and south of the park with various landowners, provided the land exchange is approved. At this time, not all costs for transmission line development are known, but it is expected that under alternative 3 there would be additional permitting costs which would affect FPL development costs. However, it is likely these incremental FPL permitting costs would not contribute to any electricity rate increases.

Overall, indirect impacts on socioeconomic conditions in the region would be both beneficial and short-term negligible to minor adverse. There are no adverse impacts expected to electricity rates associated with the right-of-way expenditures under alternative 3.

Cumulative Impacts

The impacts on socioeconomics from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1b. Alternative 3 would contribute the short-term minor adverse impacts on property values and beneficial impacts of transmission line construction in the exchange corridor in the park; these impacts would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

Conclusion

Under alternative 3, there would be no impacts from the exchange of FPL and NPS lands in the EEEA. Indirect impacts would result from the construction of the transmission lines within the FPL West Preferred Corridor and, during construction, would include short-term beneficial impacts on jobs and income in the region and short-term minor adverse impacts on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 3. Alternative 3 would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

There would be no impacts on those socioeconomic resources being analyzed from the land acquisition action.

Impacts of the Transmission Line Construction

The indirect impacts on socioeconomic resources would be the same as those described under alternative 3. These would include short-term beneficial impacts on jobs and income in the region and short-term minor adverse impacts on adjacent residents and property values.

Cumulative Impacts

Cumulative impacts under this alternative would be the same as those described for alternative 3. Alternative 4 would contribute the short-term minor adverse impacts on property values and beneficial impacts of transmission line construction in the exchange corridor in the park; these impacts would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources

Conclusion

There would be no impacts from land exchange associated with alternative 4. Indirect impacts would be the same as described for alternative 3, and include short-term beneficial impacts on jobs and income in the region and short-term minor adverse impacts on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 4. Alternative 4 would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

There would be no impacts on those socioeconomic resources being analyzed from the land acquisition action/flowage easement.

Impacts of the Transmission Line Construction

The indirect impacts on socioeconomic resources would be the same as those described under alternative 1b and would include short-term beneficial impacts on jobs and income in the region and short-term and possibly long-term negligible adverse impacts on adjacent residents and property values.

Cumulative Impacts

Cumulative impacts under this alternative are the same as those described for alternative 1b. Alternative 5 would have short- and long-term negligible adverse (property values) and short-term beneficial (jobs and income) impacts on socioeconomic resources and contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources

Conclusion

There would be no direct impacts on socioeconomic resources associated with alternative 5. Indirect impacts would result from the construction of the transmission lines within the FPL West Secondary Corridor and, during construction, would include short-term beneficial impacts on jobs and income in the region and short-term and possibly long-term negligible adverse impacts on adjacent residents and property values. There are no expected impacts on electricity rates under alternative 5. Alternative 5 would contribute imperceptible adverse and beneficial cumulative impacts on socioeconomic resources.

PARK OPERATIONS AND MANAGEMENT

GUIDING REGULATIONS AND POLICIES

Direction for management and operations at Everglades National Park is set forth in the park's enabling legislation, the NPS Strategic Plan, NPS *Management Policies 2006*, Superintendent's Compendium (NPS 2000b, 2006a, 2009c), and the Everglades National Park General Management Plan / East Everglades Wilderness Study / Environmental Impact Statement (in development).

ASSUMPTIONS, METHODOLOGY, AND IMPACT INTENSITY DEFINITIONS

Park operations and management, for the purpose of this analysis, refers to the quality and effectiveness of park staff to maintain and administer park resources and provide for an effective visitor experience. This includes an analysis of the projected need for any additional NPS staff time or budget to implement each of the alternatives. The analysis considers possible staff changes necessary to address the actions proposed under the alternatives and details the adverse or beneficial effects that may occur. As noted in chapter 3, the main areas of park operations that could be affected by the alternatives include Fire Management, the South Florida Natural Resources Center (SFNRC), Exotic Vegetation Management, and Visitor and Resource Protection, and the analysis focuses on effects on these divisions.

The following definitions were used to determine the magnitude of adverse impacts on park operations and management:

- **Negligible**: Park operations would not be affected, or an action would have no measurable impact on operations in the park unit.
- **Minor**: Effects on park operations would not be readily apparent, and would be difficult to measure. The impacts on park operations and/or budget would have little material effect on other ongoing park operations.
- **Moderate**: Effects on park operations would be readily apparent, and would measurably affect park operations. The changes would be noticeable to park staff. Mitigation measures would probably be necessary to compensate for adverse effects and would likely be successful.
- **Major**: Effects on park operations would be readily apparent, and would result in a substantial change in park operations. The changes would be noticeable to park staff and would be markedly

different from existing operations. Mitigation measures would be necessary to compensate for adverse effects, and their success would not be guaranteed.

ANALYSIS AREA

The area of analysis for park operations and management includes Everglades National Park (geophysical boundary, administrative structure, and all employees), recognizing that park operations and management activities often involve projects that extend beyond the park boundary. The analysis is focused on the EEEA, because this is the area that will be most directly affected by the alternatives.

IMPACTS OF ALTERNATIVE 1A: NO NPS ACTION – NO FPL CONSTRUCTION (ENVIRONMENTAL BASELINE)

Impacts of the Land Acquisition Action

Under alternative 1a, there would be no acquisition of FPL property within the EEEA. Currently NPS and NPS contractors traverse the FPL corridor, but do not actively manage the corridor for fire management or invasive species. The NPS would continue existing management practices in the EEEA as described in chapter 3.

Alternative 1a would directly affect Exotic Vegetation Management operations in the EEEA because of the differences in management practices between FPL and the NPS. The park currently manages nonnative plants in the EEEA according to NPS *Management Policies 2006* (NPS 2006a). FPL would manage nonnative plants in the FPL West Secondary Corridor according to its own standards, which may not be as rigorous or as comprehensive as those set forth in NPS *Management Policies 2006*. This creates the potential for the FPL West Secondary Corridor to act as a breeding ground for nonnative plants which could then spread into the EEEA and increase the effort needed for successful nonnative vegetation control (Taylor pers. comm. 2012a).

There would continue to be long-term minor to moderate adverse impacts on park operations and management from the inability to manage the EEEA as one combined parcel. Management limitations include no invasive species management in this location as well as the inability to implement flowage or water restoration programs without a flowage easement from FPL.

Impacts of Transmission Line Construction

Under alternative 1b, there would be no transmission line construction anywhere within or adjacent to the park. As a result, park operations and management would continue to operate as-is and there would be no impact on park operations and management from transmission line construction.

Cumulative Impacts – Alternative 1a

Ongoing projects affecting park operations and management include the Everglades restoration projects listed in table 18 and the acquisition of lands in the expansion areas under the Expansion Act. These ongoing projects involve staff time and oversight in addition to the hours spent on regular duties described above. These projects increase the total area of the park and create the need to monitor the status of the projects' outcomes, necessitating additional monitoring from the SFNRC. The increase in total land area necessitates additional security and natural resources management oversight from the Fire Management and Visitor and Resource Protection divisions. The past, present, and reasonably foreseeable future actions described above would result in minor adverse impacts on park operations and management

resulting from the increased oversight required. Alternative 1a would contribute long-term minor to moderate adverse impacts; these impacts would contribute noticeable adverse impacts to the overall cumulative impacts on park operations and management.

Conclusion – Alternative 1a

Under alternative 1a, there would no land acquisition and no transmission line construction within or adjacent to the EEEA. There would continue to be long-term minor to moderate adverse impacts on park operations and management from the inability to manage the EEEA as one contiguous parcel. There would be no impacts related to transmission line construction under this alternative. Alternative 1a would contribute noticeable adverse impacts to overall cumulative effects on park operations and management in this area.

IMPACTS OF ALTERNATIVE 1B: NO NPS ACTION – FPL CONSTRUCTION IN THE PARK

Impacts of the Land Acquisition Action

Impacts on park operations and management from alternative 1b would be the same as described under alternative 1a. There would be continued long-term minor to moderate adverse impacts from the inability to manage the EEEA as one contiguous parcel.

Impacts of Transmission Line Construction

Impacts related to transmission line construction are described below by area of park operations that would be affected.

Construction and presence of transmission lines in the EEEA would increase the hazards to, and obstruct freedom of movement of, aircraft. Many of the routine park operations that take place in EEEA rely on aviation, and some parts of the EEEA are accessible only by aircraft during the dry season. Transmission lines would make aviation more difficult and increase the level of effort needed to conduct park operations and management. The presence of transmission lines in the FPL West Secondary Corridor would eliminate certain areas as potential landing and/or staging sites, which could increase the distance between landing/staging sites and the sites at which park operations are conducted. This would result in a loss of efficiency and a corresponding increase in cost, resulting in a long-term minor adverse impact on park operations and management.

NPS contractors must have an insurance policy that covers them while they are on NPS land. This insurance policy would not cover contractors while they are on FPL-owned land, and contractors would therefore not be allowed to traverse the developed corridor. This could bring about a loss of efficiency, because contractors would have to either fly over the corridor or go around it. Alternatively, the NPS could require contractors to acquire more expensive insurance policies that would cover them while on the developed corridor parcel. In either case, the cost of contractors would increase. This would have the greatest impact on the SFNRC, which makes regular use of contractors to conduct the routine operations related to its mission (Mitchell pers. comm. 2012).

During the construction phase, the NPS would monitor the transmission line construction to ensure that the construction remains within the appropriate area and that environmental protection measures are in place. This would necessitate one staff member at a time, rotated between the SFNRC and the Visitor and Resource Protection divisions, traveling to the construction site via whatever methods of transportation would be suitable. It is possible that this would require helicopter transportation, which would impose costs of $1,000/day or more for the duration of construction (Whisenant pers. comm. 2012b). This would

impose short-term minor to moderate adverse impacts on park operations and management due to the staff time and money required.

Fire Management

The presence of transmission lines could create problems during fire events if the optimal point for stopping the fire was obstructed by the lines. Creating barriers to fire spread often involves wetting or burning a line of vegetation between two points. If the optimal barrier line were interrupted by transmission lines in the FPL West Secondary Corridor, then this would impede fire management efforts that rely on these techniques. If a fire were moving and the transmission lines occupied a point where the Fire Management Division would normally wet the area to stop the fire, then the division would have to develop some other strategy to stop the fire. They would not be able to work in the transmission line area. If a fire came from the eastern boundary of the park, the Fire Management Division would not be able to use the transmission line space for fire suppression. This would be a problem not only for fire response activities, but also for prescribed burns (Anderson pers. comm. 2012).

The presence of transmission lines would also create problems for EEEA aviation activities associated with fire management. While it is possible for aviators to go around the transmission lines, it is not possible to get close to them or to land near them. In order to fly safely above the lines, it would be necessary for aircraft to fly above the usual altitude of 200–300 feet to go over them. Aviators would therefore practice avoidance measures, decreasing the efficiency of conducting aviation activities necessary for fire management and increasing the field time required. Additionally, the Fire Management Division would not be able to deliver air support or bucket support to points underneath the transmission lines. This would reduce efficiency and could also create safety concerns for Fire Management Division personnel (Anderson pers. comm. 2012).

For these reasons, impacts from alternative 1b associated with the construction of transmission lines in the FPL West Secondary Corridor would have long-term minor to moderate adverse impacts on Fire Management Division operations.

South Florida Natural Resources Center

Transmission line construction in the FPL West Secondary Corridor would impact all SFNRC projects that involve aviation. The efficiency of aviation would decrease due to avoidance and safety measures and due to the loss of potential landing and staging sites. This would affect SFNRC's ability to accomplish its mission of ecological monitoring, because aviation is extremely important to SFNRC's work. During the dry season, helicopters are the only way to access the EEEA (Mitchell pers. comm. 2012).

The transmission lines could also affect any of the research projects conducted through SFNRC by external contractors. The insurance policy currently used by contractors does not protect them unless they are on NPS land. Therefore, should contractor operations require them to traverse the developed FPL West Secondary Corridor, they would have to either pay for a more expensive insurance policy or take the time to go around or fly over the corridor. In either case, this would increase the cost of hiring contractors. This would ultimately affect the ways in which SFNRC can issue research permits and funding for these projects (Mitchell pers. comm. 2012).

The presence of transmission lines along the FPL West Secondary Corridor would affect nearly all SFNRC operations. For this reason, the impacts on SFNRC operations from alternative 1b would be long term, minor to moderate, and adverse.

Exotic Vegetation Management

Exotic Vegetation Management operations in the EEEA rely on aviation, and are subject to the same aviation-related impacts as described for the Fire Management Division and the SFNRC. Given that approximately 70 percent of Exotic Vegetation Management operations in the EEEA are carried out by helicopter, this would impose difficulties on the subdivision and its work (Taylor pers. comm. 2012b). It is difficult to provide a quantitative estimate of the impacts on the Exotic Vegetation Management subdivision in terms of additional cost or additional staff needed, but the loss of potential staging/landing sites due to the presence of transmission lines in the FPL West Secondary Corridor could decrease the efficiency of nonnative plant management operations (Taylor pers. comm. 2012b). Also, the Exotic Vegetation Management subdivision uses fire as a tool in its operations, and any impacts on the Fire Management Division would therefore affect Exotic Vegetation Management operations as well (Taylor pers. comm. 2012a).

Transmission line structures can act as especially suitable habitat for nonnative plants, adding to the potential for the FPL West Secondary Corridor to act as a breeding ground for nonnative plant populations (Taylor pers. comm. 2012a) and increasing the burden on the Exotic Vegetation Management subdivision. The Exotic Vegetation Management subdivision is currently understaffed (Taylor pers. comm. 2012a, 2012b). The additional issues that are expected to arise as a result of alternative 1b would add to the current demands on staff and result in long-term minor to moderate adverse impacts.

Visitor and Resource Protection

Alternative 1b would affect the Visitor and Resource Protection division to the degree that illegal activities took place on transmission structure pads. These pads and the FPL West Secondary Corridor could foreseeably become an attractant for illegal activities, especially illegal camping (Whisenant pers. comm. 2012a; Foist pers. comm. 2012). However, NPS would not own the corridor and therefore would have no jurisdiction over any illegal activities. Any enforcement actions would come from Florida Wildlife Commission officers or Miami-Dade Police Department. Given the small parcel of land and lack of highly desirable camping opportunities, there would likely be a negligible adverse impact on the Visitor and Resource Protection division.

Cumulative Impacts – Alternative 1b

The impacts on park operations and management from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Alternative 1b would contribute short and long-term minor to moderate adverse impacts; these impacts would contribute noticeable adverse impacts to the overall cumulative impacts on park operations and management.

Conclusion – Alternative 1b

Under alternative 1b, there would be long-term minor to moderate adverse impacts from the FPL retention of property in the EEEA and the construction of transmission lines in the FPL West Secondary Corridor and would include short- and long-term minor to moderate adverse impacts both during the construction phase and following the completion of the lines. Alternative 1b would contribute noticeable adverse impacts to overall cumulative effects on park operations and management in this area.

IMPACTS OF ALTERNATIVE 2: NPS ACQUISITION OF FPL LAND

Impacts of the Land Acquisition Action

Under alternative 2, there would be a gain of 320 acres in the park, resulting in long-term benefits from having this area consolidated under NPS ownership, which would allow the park to proceed with its operations without having to account for the FPL West Secondary Corridor. Short-term negligible to minor adverse impacts would also occur from the administrative requirements associated with the land purchase, requiring additional staff time.

Impacts of Transmission Line Construction

Alternative 2 would not result in any impacts associated with the construction of transmission lines because no lines would be constructed on NPS land. It is expected that FPL would construct the transmission lines in the West Consensus Corridor east of the park boundary, resulting in no impacts on park operations and management because park operations and management activities do not extend past the boundary of the park's property, and no activities involving park staff occur in that area.

Cumulative Impacts

The impacts on park operations and management from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1b. Alternative 2 would contribute short-negligible to minor adverse impacts and long-term beneficial impacts from the ability to manage the EEEA as one contiguous parcel; these impacts would contribute appreciable beneficial impacts to the overall cumulative impacts to park operations.

Conclusion

Under alternative 2, direct impacts would result from the acquisition of FPL land and would include long-term beneficial impacts from the consolidation of ownership in the EEEA as well as short-term negligible to minor adverse impacts. There would be no impacts from transmission line construction because no lines would be constructed on NPS land. Alternative 2 would contribute appreciable beneficial impacts to cumulative effects on park operations and management in this area.

IMPACTS OF ALTERNATIVE 3: FEE FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Under alternative 3 there would be a net gain of 60 acres (a gain of 320 acres of the former FPL corridor, and a loss of 260 acres of the exchange corridor). This would result in long-term benefits from having the area of the former FPL corridor consolidated under NPS ownership, which would allow the park to manage the EEEA as one contiguous parcel without requiring FPL consent for management projects. There would be negligible to minor long term adverse impacts from the loss of area within the park and from access restrictions from the FPL ownership of the corridor along the canal, which is used by park staff to access the EEEA There would be short-term minor to moderate adverse impacts on park operations and management for the increase in administrative requirements during the land exchange process.

Impacts of Transmission Line Construction

Impacts related to transmission line construction are described below by area of park operations that would be affected.

Indirect impacts would result from the construction of transmission lines in the exchange corridor, directly adjacent to park lands, as described earlier in this chapter and appendix F. As one of the terms and conditions associated with alternative 3, the NPS would have to request permission from FPL every time it wished to access the FPL West Preferred Corridor, except for emergencies or visitor and resource protection, and those accessing the route would need to have appropriate safety training. This would impose a long-term negligible to minor adverse impact on park operations and management.

During the construction phase, the NPS would monitor the transmission line construction to ensure that the construction remains within the appropriate area and that environmental protection measures are in place. This would necessitate one staff member at a time, rotated between the SFNRC and the Visitor and Resource Protection divisions, traveling along the L-31N canal at a cost of approximately $1,000/day (Whisenant pers. comm. 2012b). This would impose short-term minor to moderate adverse impacts on park operations and management due to the staff time and money required.

Fire Management

There would be no direct impacts on the Fire Management Division from the fee for fee land exchange associated with alternative 3 other than those already discussed. Should FPL construct the transmission lines in the FPL West Preferred Corridor, there would be indirect impacts on fire management operations, because the lines would impose difficulties on aviation activities and on fire response operations and would also act as an electrical hazard (Anderson pers. comm. 2012). However, these impacts would not be as severe as those described for alternative 1b due to the location of the FPL West Preferred Corridor. The location of the FPL West Preferred Corridor on the eastern boundary of the EEEA would reduce some of the indirect impacts that would accrue to the Fire Management Division if the lines were constructed. For this reason, impacts on the Fire Management Division would be long term, minor, and adverse.

South Florida Natural Resources Center

Indirect impacts would result from the presence of transmission lines in the FPL West Preferred Corridor. This would limit the use of the L-31N canal levee by airboats and would eliminate this levee as a helicopter staging/landing area. This reduction in accessibility by vehicles would lead to a reduction in efficiency for SFNRC operations (Mitchell pers. comm. 2012). Impacts on the SFNRC would be long term, minor, and adverse.

Exotic Vegetation Management

Impacts following line construction would result from the loss of the eastern levee along the L-31N canal as a staging site for helicopters and for airboats. This levee is used as a staging site for at least one major nonnative plant management project per year, and it would be impossible to use as a helicopter staging site and difficult to impossible to use as a staging site for airboats if transmission lines were constructed in the FPL West Preferred Corridor (Taylor pers. comm. 2012). The use of alternate staging sites could potentially decrease the efficiency with which nonnative plant management activities are conducted. Additionally, alternative 3 would require monitoring of the 90-foot exotic species vegetation easement on the NPS property adjacent to the transmission line corridor. Overall, alternative 3 would result in long-term minor adverse impacts on the Exotic Vegetation Management subdivision.

Visitor and Resource Protection

Impacts would be the same as those listed under alternative 1b, but would be relatively reduced due to the location of the FPL West Preferred Corridor. The FPL West Preferred Corridor does not enjoy the same amount of vegetation cover, and the area experiences much higher visitor traffic, which would make it less attractive as a site for illegal activities such as illegal camping or firearm use. Indirect impacts on the Visitor and Resource Protection division resulting from the construction of transmission lines in the FPL West Preferred Corridor would therefore be long term, negligible to minor, and adverse.

Cumulative Impacts

The impacts on park operations and management from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Alternative 3 would contribute long-term beneficial as well as short-term negligible to moderate adverse impacts and long-term negligible to minor adverse impacts from the land exchange, construction, and operation of transmission lines in the exchange corridor; these impacts would contribute noticeable adverse and beneficial cumulative impacts to park operations and management.

Conclusion

Under alternative 3, impacts would result from the fee for fee land exchange and would include long-term negligible to minor adverse impacts and beneficial impacts. Impacts would result from the construction of the transmission lines in the FPL West Preferred Corridor, and would include short-term minor to moderate adverse impacts during the construction phase and long-term negligible to minor adverse impacts following the completion of the lines. Alternative 3 would contribute noticeable adverse and beneficial impacts to overall cumulative effects on park operations and management in this area.

IMPACTS OF ALTERNATIVE 4: EASEMENT FOR FEE LAND EXCHANGE

Impacts of the Land Acquisition Action

Impacts under this alternative would be essentially identical to those discussed under alternative 3. However, the NPS would still own the property under this alternative and would be responsible for ensuring that the terms of the easement are met.

The NPS could have more control over the management of the land in an easement situation as opposed to an outright fee exchange. The easement would have little effect on park operations and management because the terms and conditions of use (appendix H) are the same for this alternative as for alternative 3, although this is an easement agreement that may require more staff involvement to monitor use of park property. Impacts of the land acquisition action would include long-term beneficial impacts from the ability to manage the EEEA as one contiguous parcel without requiring FPL consent for management projects, and short and long term negligible to minor adverse impacts from the administrative requirements of managing the easement property.

Impacts of Transmission Line Construction

Indirect impacts would result from the construction of the transmission lines in the FPL West Preferred Corridor, and would include short-term minor to moderate adverse impacts during the construction phase and long-term negligible to minor adverse impacts following the completion of the lines, as described under alternative 3. Under alternative 4, there would be more responsibilities for NPS staff for continued

management of the parcel as well as coordination with FPL for approval of FPL actions and requests than would occur under alternative 3.

Cumulative Impacts

The impacts on park operations and management from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Alternative 4 would contribute short-term negligible to moderate adverse impacts and long-term negligible to minor adverse impacts and long-term benefits; these impacts would contribute noticeable adverse and beneficial cumulative impacts to park operations.

Conclusion

Under alternative 4, impacts would be the same as under alternative 3, with long-term minor adverse impacts and beneficial impacts from the land exchange except that this is an easement agreement that may require more staff involvement to monitor use of park property. Impacts would result from the construction of the transmission lines in the FPL West Preferred Corridor, and would include short-term minor to moderate adverse impacts during the construction phase and long-term negligible to mostly minor adverse impacts following the completion of the lines. Alternative 4 would contribute noticeable adverse and beneficial impacts to overall cumulative effects on park operations and management in this area.

IMPACTS OF ALTERNATIVE 5: PERPETUAL FLOWAGE EASEMENT ON FPL PROPERTY

Impacts of the Land Acquisition Action

All of the direct and indirect impacts described under alternative 1b would occur under alternative 5. However, there would be an additional impact associated with the additional staff and resources required to conduct oversight and monitoring and to coordinate with FPL for park programs in this area. For this reason, impacts on park operations and management under alternative 5 would be long term, minor to moderate, and adverse.

Impacts of Transmission Line Construction

Impacts associated with the construction and placement of the transmission lines would be short and long term, minor to moderate, and adverse for the reasons discussed under alternative 1b.

Cumulative Impacts

The impacts on park operations and management from other past, present, and reasonably foreseeable future projects would be the same as described under alternative 1a. Impacts from alternative 5 would be the same as described under alternative 1b, with long-term minor to moderate adverse impacts; these impacts would contribute noticeable adverse impacts to the overall cumulative impacts on park operations and management.

Conclusion

Under alternative 5, there would be long-term minor adverse impacts from the FPL retention of property in the EEEA. Indirect impacts resulting from the construction of the transmission lines in the FPL West Secondary Corridor would include short- and long-term minor to moderate adverse impacts both during

the construction phase and following the completion of the lines. Alternative 5 would contribute noticeable adverse impacts to overall cumulative effects on park operations and management in this area.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA regulations (40 CFR 1502.16) require an EIS to consider the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. Special attention should be given to impacts that narrow the range of beneficial uses of the environment or pose a long-term risk to human health or safety.

Common to All Alternatives with Transmission Line Construction. The activities associated with the construction and maintenance of the right-of-way for any alternative would result in a number of impacts that would alter long-term uses of park resources despite mitigation measures and BMPs that would offset the level of the impacts. The drilling into soils and bedrock; the possible alteration of hydrology; the filling of wetland communities; long-term alterations of visual aesthetics and changes to visitor experience from the presence of a transmission line and permanent access roads; and the vegetation maintenance of a right-of-way are all long-term impacts that would affect resources and the uses of those resources by wildlife, visitors, and park personnel as well as influencing park operations in the long term.

Alternative 1a: No NPS Action – No FPL Construction (Environmental Baseline). NPS would not acquire the FPL land within the park or a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park, and would be unable to implement regional restoration activities that rely on additional flow. Since this is the environmental baseline and includes no transmission line construction, no short-term impacts are expected. The long-term productivity of the park's resources is expected to decline because the inability to flow additional water across the FPL property would prevent restoration on a regional scale. Habitat degradation would continue due to altered hydrology and would adversely impact management efforts for exotic species, wildlife, and special-status species.

Alternative 1b: No NPS Action – FPL Construction in the Park. The impacts on productivity from the not acquiring a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park would be the same as described for alternative 1a. Short-term productivity of park resources such as vegetation, wetlands, wildlife, and special-status species is expected to decline due to disturbance while the transmission line and access roads are being constructed. Long-term productivity of park resources is also expected to decline due to construction inside the park, which would result in changes to hydrological patterns, changes in water quality, soil disturbance and a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), permanent loss of habitat for wildlife and special-status species, and avian collisions with the transmission line and electrocutions.

Alternative 2: NPS Acquisition of FPL Land. Acquiring FPL lands within the park is expected to result in long-term increases in the productivity of park resources since ownership would not be bisected. Ownership of this land would allow the park to better manage for exotic species, wildlife, and special-status species. NPS ownership of this land would also facilitate regional restoration goals, which would, in turn, increase the productivity of park resources.

Alternative 3: Fee for Fee Land Exchange. There would be a long-term adverse impact on the productivity of park resources from the land exchange due to the removal of 260 acres of soils, wetlands, and wildlife habitat from the park and park management. Long-term adverse impacts on productivity would also result from construction in the exchange corridor due to changes to hydrological patterns, changes in water quality (including possible increases in heavy metal concentrations or other constituents from the L-31N canal area), soil disturbance and a permanent loss of an estimated 181 acres of soil surface (including 80 acres in the exchange corridor), permanent loss of 180.8 acres of wetlands (including 80.1 acres within the park), permanent loss of habitat for wildlife and special-status species, and avian collisions with the transmission line and electrocutions. Some long-term benefits to productivity would accrue from the land exchange because NPS ownership of the FPL land in the interior of the park would allow the park to better manage for exotic species, wildlife, and special-status species, and facilitate regional restoration goals, which would increase the productivity of park resources.

Alternative 4: Easement for Fee Land Exchange. The impacts on the productivity of park resources associated with alternative 4 would be the same as described for alternative 3.

Alternative 5: Perpetual Flowage Easement on FPL Property. Long-term adverse impacts on the productivity of park resources would occur from the NPS decision not to acquire the FPL property since NPS would not have management control over this land that is in the interior of the park and this could hinder park management efforts on adjacent lands. However, the perpetual flowage easement would facilitate regional restoration goals, which would, in turn, increase the productivity of park resources. Long-term productivity would also be impacted by construction inside the park due to changes in hydrological patterns and water quality, soil disturbance and a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), permanent loss of habitat for wildlife and special-status species, and avian collisions with the transmission line and electrocutions.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

NEPA regulations (40 CFR 1502.16) require an EIS to address the irreversible and irretrievable commitment of resources caused by the alternatives. An *irreversible* commitment of resources is defined as the loss of future options. The term applies primarily to the effects of using nonrenewable resources (such as minerals or cultural resources) or resources that are renewable only over long periods (such as soil productivity). It could also apply to the loss of an experience as an indirect effect of a “permanent” change in the nature or character of the land. An *irretrievable* commitment of resources is defined as the loss of production, harvest, or use of natural resources; irretrievable resource commitments may or may not be irreversible. The following identifies commitments of resources that are either irreversible or irretrievable.

Because the land used for construction of the transmission lines could be converted to another use at a future date if the transmission lines were removed (although that is not likely), these effects could be characterized as irretrievable. However, the level of restoration effort needed would be intensive and costly, and would span the course of several years to decades. Therefore, some of the impacts described below are likely irreversible. For example, wetland impacts resulting from removal of soils and replacement with fill in the project area are likely not reversible even if the fill is removed. Restored wetland habitats would have different plant species composition, hydrology, and/or different soil characteristics depending on how restoration of the resulting holes was attempted.

For all alternatives, the loss of geologic resources, special-status species (individuals), wetlands (through changes to hydrology, soils, vegetation), or wildlife habitat would be considered an irretrievable or irreversible resource commitment. Mitigation would be required for the loss of some resources, but would not fully offset impacts. Drilling or excavation could have an irreversible impact on subsurface geology if resources are lost or destroyed. Changes to rare and unique communities and important foraging and nesting habitat could be considered an irreversible resource commitment if construction activities permanently alter the resource such that it can no longer support special-status species or function as a rare and unique community. In addition to natural resources, impacts on historic resources such as archeological sites and cultural landscapes could be considered an irretrievable resource commitment if construction activities permanently alter or destroy the resource, or the resource is completely lost. Impacts on these resources would be mitigated through various mitigation measures required by the park or by permitting requirements, but the impact would be irretrievable unless the known resources are completely recovered prior to construction activities. The use of land for permanent access roads and the right-of-way for the transmission line would be an irreversible commitment of resources during the period that the land is used for transportation infrastructure or energy requirements. The following highlights irreversible/irretrievable impacts by alternative.

Alternative 1a: No NPS Action – No FPL Construction (Environmental Baseline). NPS would not acquire the FPL land within the park or a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park, and would be unable to implement regional restoration activities that rely on additional flow. Continued habitat degradation due to altered hydrology is expected to result in irretrievable or irreversible losses of wetland soils, wetland habitat, and wildlife and special-status species in the park. Prolonged continuation of altered hydrology in this area could preclude restoration of wetland soil and habitat types.

Alternative 1b: No NPS Action – FPL Construction in the Park. The irretrievable or irreversible commitment of resources from not acquiring a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park would be the same as described for alternative 1a. Irretrievable or irreversible commitments of resources due to construction within the park include a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), permanent loss of habitat for wildlife and special-status species including protected native plant populations, loss of foraging and nesting habitat, and avian collisions with the transmission line and electrocutions. Prolonged continuation of altered hydrology in this area could preclude restoration of wetland soil and habitat types.

Alternative 2: NPS Acquisition of FPL Land. Acquiring FPL lands within the park is not expected to result in any irretrievable or irreversible commitments of resources within the park. Ownership of this land would allow the park to better manage for exotic species, wildlife, and special-status species and facilitate regional restoration goals. Construction would take place outside the park thereby minimizing impacts on park resources, but construction of the transmission lines would have similar irretrievable or irreversible impacts on resources located outside the park in the West Consensus Corridor. The type and extent of those impacts would depend on the location within the corridor.

Alternative 3: Fee for Fee Land Exchange. The removal of 260 acres of soils, wetlands, and wildlife habitat from the park and park management, resulting in an adjustment of the park boundary is an irretrievable or irreversible commitment of resources. There would be a permanent loss of 180.8 acres of wetlands (including 80.1 acres within the park), permanent loss of habitat for wildlife and special-status species including protected native plant populations, loss of foraging and nesting habitat, and avian collisions with the transmission line and electrocutions.

Alternative 4: Easement for Fee Land Exchange. The irretrievable or irreversible impacts on park resources associated with alternative 4 would be the same as described for alternative 3 except that 260 acres would not be lost and would remain in the park. Under the easement agreement, the park would have a reduced ability to control all actions in the corridor as opposed to owning the land outright with no encumbrance, which would result in irretrievable commitment of those lands.

Alternative 5: Perpetual Flowage Easement on FPL Property. Irretrievable or irreversible commitments of resources due to construction within the park include a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), permanent loss of habitat for wildlife and special-status species including protected native plant populations, loss of foraging and nesting habitat, and avian collisions with the transmission line and electrocutions.

UNAVOIDABLE ADVERSE IMPACTS

Implementation of any of the alternatives would lead to unavoidable adverse environmental impacts. These are described below by alternative.

Alternative 1a: No NPS Action – No FPL Construction (Environmental Baseline). NPS would not acquire the FPL land within the park or a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park, and would be unable to implement regional restoration activities that rely on additional flow. Inability to allow increased water levels across the FPL property would result in preventing restoration on a regional scale, an indirect adverse impact. Habitat degradation would continue due to altered hydrology and would adversely impact management efforts for exotic species, wildlife, and special-status species. Since construction is not included in this alternative, there would be no construction-related impacts.

Alternative 1b: No NPS Action – FPL Construction in Park. The direct adverse impacts from not acquiring a flowage easement or sufficient rights to flow additional water over the FPL right-of-way within the park would be the same as described for alternative 1a. Indirect adverse impacts would result from construction inside the park and would include changes to hydrological patterns, changes in water quality, soil disturbance and a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), changes to soundscapes due to construction and corona noise, permanent loss of habitat for wildlife and special-status species, avian collisions with the transmission line and electrocutions, permanent changes to the visual landscape, and changes in visitor use.

Alternative 2: NPS Acquisition of FPL Land. There would be no direct adverse impacts from acquiring FPL lands within the park. Indirect adverse impacts would result from construction outside the park and include changes to hydrological patterns, changes in water quality, soil disturbance (including long-term impacts on designated “unique” farmlands soils outside of the park, disturbance of wetlands and a permanent loss of approximately 149.3 wetland acres, changes to soundscapes due to construction and corona noise, permanent loss of habitat for wildlife and special-status species, avian collisions with the transmission line and electrocutions, and permanent changes to the visual landscape).

Alternative 3: Fee for Fee Land Exchange. Direct adverse impacts from the land exchange include removal of 260 acres of soils, wetlands, and wildlife habitat from the park and park management, resulting in an adjustment of the park boundary. Indirect adverse impacts would result from construction in the exchange corridor and include changes to hydrological patterns, changes in water quality (including possible increases in heavy metal concentrations or other constituents from the L-31N canal area), soil disturbance and a permanent loss of an estimated 181 acres of soil surface (including 80 acres in the

exchange corridor), disturbance to unique farmland soils outside of the park, permanent loss of 180.8 acres of wetlands (including 80.1 acres within the park), permanent loss of habitat for wildlife and special-status species, avian collisions with the transmission line and electrocutions, permanent changes to the visual landscape, and changes in visitor use.

Alternative 4: Easement for Fee Land Exchange. The adverse impacts associated with alternative 4 would be the same as described for alternative 3, but 260 acres would not be removed from the park.

Alternative 5: Perpetual Flowage Easement on FPL Property. Adverse impacts would accrue from not acquiring the FPL property since NPS would not have management control over this land that is in the interior of the park. Indirect adverse impacts would result from construction inside the park and would include changes to hydrological patterns, changes in water quality, soil disturbance and a permanent loss of 182 acres of soils (including 89 acres in the park), disturbance of wetlands and a permanent loss of approximately 179.7 wetland acres (89.1 acres of which are within the park boundary), changes to soundscapes due to construction and corona noise, permanent loss of habitat for wildlife and special-status species, avian collisions with the transmission line and electrocutions, permanent changes to the visual landscape, and changes in visitor use.

CHAPTER 5
Consultation and Coordination

CHAPTER 5: CONSULTATION AND COORDINATION

The intent of the National Environmental Policy Act (NEPA) is to encourage the participation of federal and state involved agencies and affected citizens in the assessment procedure, as appropriate. This chapter describes the consultation that occurred during development of this Acquisition of Florida Power & Light Company Land in the East Everglades Expansion Area Environmental Impact Statement (EIS), including consultation with stakeholders and other agencies. This chapter also includes a description of the public involvement process and a list of the recipients of the draft document.

HISTORY OF PUBLIC INVOLVEMENT

The public involvement activities for this EIS fulfill the requirements of NEPA and National Park Service (NPS) Director's Order 12 (NPS 2011).

THE SCOPING PROCESS

The NPS divides the scoping process into two parts: internal scoping and external or public scoping. Internal scoping involved discussions among NPS personnel regarding the purpose of and need for management actions, issues, management alternatives, mitigation measures, appropriate level of documentation, available references and guidance, and other related topics.

Public scoping is the early involvement of the interested and affected public in the environmental analysis process. The public scoping process helps ensure people have an opportunity to comment and contribute early in the decision-making process. For this EIS, project information was distributed to individuals, agencies, and organizations early in the scoping process, and each was given the opportunity to express concerns or views and to identify important issues or other alternatives.

Taken together, internal and public scoping are essential elements of the NEPA planning process. The following sections describe the various ways scoping was conducted for this impact statement.

As described in chapter 1, the NPS initially began the land transfer NEPA process as an environmental assessment (EA). The public scoping process began in July 2008, with two notices in the Miami Herald announcing an open house meeting in Homestead, Florida.

A newsletter was also distributed by electronic and conventional mail in July 2009 to the project mailing list of government agencies, organizations, businesses, and individuals. On July 9, 2008, a public scoping open house was held at the John D. Campbell Agricultural Center, in Homestead, Florida. The first hour of the meeting was an open house in which the NPS gave a brief slideshow presentation discussing the project and the EA. Both NPS and Florida Power & Light Company (FPL) staff were available at the public meeting to answer questions. Topics raised by the public and agencies during the presentation included management options or alternatives, environmental resource impacts and protection, consistency with laws and regulations, relationship of the project to energy production and transmission, and other concerns about the project. After careful consideration of the issues and analysis developed during the EA process, the NPS has determined that implementation of a land exchange with FPL could result in potential significant impacts to the human environment. Given this decision, the NPS published a Notice of Intent to proceed with the plan in the Federal Register on May 26, 2011, pursuant to the NEPA and associated implementing regulations, and NPS guidance on meeting NPS NEPA obligations.

INTERNAL SCOPING

The NPS held an internal scoping meeting for this project from April 26 to 28, 2011. This meeting was attended by representatives from the NPS, including Everglades National Park and Biscayne National Park, the United States Department of the Interior (DOI), and the NPS contractor. Internal scoping involves discussions among participants to decide what is necessary to analyze in the EIS. Meeting attendees defined the purpose, need, and objectives of the plan; identified potential issues; discussed preliminary alternatives; and defined data needs. Attendees also discussed potential adaptive management strategies, indicators for such strategies, and issues and impact topics. Various roles and responsibilities for developing the EIS were also clarified.

PUBLIC SCOPING

The public scoping process began on June 7, 2011, and the public comment period was opened with the posting of a public scoping newsletter on the NPS Planning, Environment, and Public Comment (PEPC) website. The NPS provided several methods for the community to provide input on the proposed project, including directing comments to the NPS PEPC website at http://parkplanning.nps.gov/ever. The public was encouraged to submit comments regarding the public scoping newsletter through the PEPC website, by emailing park staff, or by mailing a letter to the NPS Service Center located in Denver, Colorado. The public comment period was closed on July 25, 2011.

In support of the public scoping effort, the NPS hosted one public scoping meeting intended to initiate public involvement early in the planning stages of the EIS and to obtain community feedback on the initial purpose, need, and objective statements for the acquisition of FPL land in the East Everglades Expansion Area (EEEA). This meeting was held at the Florida International University Stadium Club in Miami, Florida, from 5:30 p.m. to 8:30 p.m. on June 22, 2011. A total of 108 people attended. Meeting attendees were given information on the issues related to the EIS and a brief presentation was provided to explain the project. Attendees provided comments on this presentation by submitting completed comment forms at the meeting, mailing them in during the comment period, or submitting their comments directly to the meeting's court reporter.

During the public scoping period, the park received 10,120 correspondences containing 39,739 individual comments. There were 9,714 form letters received. The comments received were reflective of a public that is passionate about the future of the park's resources, their uses and management. The most common comment received expressed opposition to installation of any transmission lines in or adjacent to the park, representing 74 percent of all comments. The second most prevalent comment expressed opposition to "Alternative 2: Land Exchange with Conditional Requirements," representing 25 percent of all comments. Approximately 99 percent of all comments expressed opposition to all transmission lines construction or completion of the land exchange for the purposes of constructing transmission lines.

PUBLIC REVIEW OF THE DRAFT EIS

On January 17, 2014, the NPS published a Notice of Availability in the Federal Register for the draft EIS. The 60-day public comment period was open through March 18, 2014. The public comment period was on the park's website, posted at the Everglades visitor centers, and announced through a press release. The draft EIS was available on the PEPC website and via hard copy upon request from the park.

Hard copies of the draft EIS were mailed to the U.S. Environmental Protection Agency (EPA), interested parties, elected officials, and other appropriate local and state agencies. Members of the public were able to submit their comments on the project through the PEPC website and by mailing comments to the park.

During the comment period, one public meeting was held on February 19, 2014, from 5:30 to 8:30 p.m. at the Florida International University-Stadium Club at 11310 Southwest 17th Street, Miami Florida, 33199. A total of 84 community members signed in at the meeting.

Posters and handouts were provided to inform the public about the purpose and need of the project, the plan objectives, the history of the expansion area, and the possible alternatives. NPS staff members were available to answer questions, provide additional information about the plan, and describe how to submit comments. During the meeting, members of the public provided formal oral comments. Attendees also had the option of either completing a comment form and submitting it at the meeting or mailing it to the park at any time during the public comment period, or submitting comments directly to the meeting's court reporter. The proceedings of the full public meeting were documented by a court reporter and a transcript was provided to the NPS. The meeting agenda, Superintendent's power point presentation, and meeting transcript can be found at the park website: http://parkplanning.nps.gov/ever.

During the prescribed comment period, 275 correspondences were received. Two of the correspondences were petitions or letters containing 14,075 total signatures; a third form letter contained 178 signatures and 70 individual correspondences, which are included in the 275 total correspondences received. All letters that were submitted outside of the PEPC system were entered into PEPC. Letters received by email or through the U.S. mail and comments received at the public meetings were entered into the PEPC system for analysis. Each of these letters or submissions is referred to as a piece of correspondence. Once all correspondences were entered into PEPC, each was read, and specific comments within each piece of correspondence were identified. A total of 707 comments were derived from the correspondences received.

A coding structure was developed to help sort comments into logical groups by topics and issues. During coding, comments were classified as substantive or non-substantive. A substantive comment is defined in the NPS Director's Order 12 Handbook as one that does one or more of the following (Director's Order 12 Handbook, Section 4.6A):

- Questions, with reasonable basis, the accuracy of information presented in the EIS;
- Questions, with reasonable basis, the adequacy of the environmental analysis;
- Presents reasonable alternatives other than those presented in the EIS; and/or
- Causes changes or revisions in the proposal.

As further stated in the Director's Order 12 Handbook, substantive comments "raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy are not considered substantive." Although all comments were read and considered and will be used to help create the final EIS, only those determined to be substantive were analyzed for creation of concern statements for response from the NPS, as described below.

Sixty-five codes were used to categorize all the comments received on the draft EIS. In some cases, the same comment may be categorized under more than one code because the comment may contain more than one issue or idea. Under each code, all substantive comments were grouped by similar themes, and those groups were summarized with a concern statement. For example, under the code "AL1600 – Alternatives: Alternative 2" one concern statement was "Multiple commenters requested that the EIS include a full analysis of the cost of each alternative, specifically the cost of acquiring the FPL property in the EEEA (alternative 2). To properly analyze alternative 2, commenters requested inclusion of previous land appraisals, acceptable compensation, the cost of condemnation, and the cost for FPL to purchase a new corridor." This one concern statement captured several comments. Following each concern statement

are one or more "representative quotes," which are comments taken from the correspondences to illustrate the issue, concern, or idea expressed by the comments grouped under that concern statement. The Public Comment Report containing all concern statements and NPS responses to substantive comments is provided in appendix L.

AGENCY CONSULTATION

ENVIRONMENTAL ASSESSMENT CONSULTATION

Agency consultation with state agencies began during the initial EA process in 2008. All correspondence sent and received regarding the land exchange EA or EIS is available in appendix E.

In 2008, the park provided the Florida State Clearinghouse with the scoping notice for processing through the appropriate state agencies. Representatives from the State of Florida agencies that have been actively involved include the Florida Department of Environmental Protection (FDEP), the Florida Department of State and the South Florida Water Management District (SFWMD).

These state agencies actively commented on the proposed project during the EA process. The FDEP fully supported the NPS in the acquisition of FPL lands in the EEEA. The FDEP requested continued coordination with the appropriate agencies to ensure that adjacent areas or restoration projects would not be impacted.

The Florida Department of State conducted a review of the project for possible impacts to historic properties listed, or eligible for listing, in the National Register of Historic Places. The review was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA).

The SFWMD also reviewed the scoping notice and noted that the SFWMD's Governing Board had previously approved the proposed land swap in August 2008 (Resolution # 2008-640).

ENVIRONMENTAL IMPACT STATEMENT CONSULTATION

Between June 10 and 13, 2011, the NPS sent scoping coordination and consultation letters to various federal agencies, state agencies, elected officials, and tribes. The NPS sent five letters to federal government agencies, including the, EPA, U.S. Fish and Wildlife Service (USFWS), the Advisory Council on Historic Preservation (ACHP), and the United States Army Corps of Engineers (USACE); ten letters to elected officials; three letters to state and local agencies, including the Florida State Clearinghouse, SFWMD and the State Historic Preservation Office (SHPO); and nine letters to various tribal officials with the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, and the Seminole Nation of Oklahoma. The NPS also published a Notice of Intent to complete an EIS in the Federal Register.

On June 21, 2011, NPS staff held an agency scoping meeting attended by a variety of federal, state, and local agencies to present the preliminary alternatives for the EIS, discuss the scope of the EIS analysis, and listen to the concerns of these other agencies related to the proposed land acquisition. The meeting was held in Miami, Florida at the Miami-Dade County Department of Resource Management offices, from 1:00 p.m. to 4:30 p.m. Participants at the meeting included:

- Everglades National Park
- NPS Southeast Regional Office
- Biscayne National Park

- USFWS
- USACE
- Nuclear Regulatory Commission (NRC)
- Miami-Dade County Department of Environmental Resources Management
- Miami-Dade County Department of Planning and Zoning
- Florida Fish and Wildlife Conservation Commission (FFWCC)
- Members of the EIS contractor team.

Topics discussed at the meeting included:

- The need to consider additional alternatives or components of alternatives in order to accurately describe the likely outcomes and impacts of NPS decisions regarding the land exchange.
- How to determine the scope of analysis for the EIS. This included:
  - Determining how the NPS decision will ultimately affect overall routing and development of the power transmission corridor from the Turkey Point Power Plant to a point north of metropolitan Miami
  - Defining the geographic extent of impacts for each resource topic analyzed, and
  - Determining the projects, plans, and geographic boundaries for the cumulative impacts analyses.
- Additional information from FPL that is needed in order to accurately assess impacts and facilitate informed decision making regarding:
  - Facility design and construction methods (related to wetland impacts and interaction of the proposed transmission corridor with hydrologic and ecosystem restoration activities, including seepage management)
  - Electromagnetic field (EMF) and noise calculations for the proposed 500-kilovolt (kV) and 230-kV lines for the EIS analysis.

A second meeting was held on June 26, 2012, at the SFWMD's Fort Lauderdale Field Station Conference Room in Davie, Florida. This meeting was focused on the potential for construction of the FPL transmission lines outside the park. Participants in this meeting discussed transmission siting issues, gave an overview and held an interactive group mapping exercise, discussed the next steps and path forward.

This meeting was attended by representatives from:

- Everglades National Park
- DOI
- FPL
- Miami-Dade Limestone Products Association
- National Parks Conservation Association
- Miami-Dade Department of Environmental Resources
- SFWMD

- Miccosukee Tribe of Indians of Florida
- FDEP.

ENDANGERED SPECIES ACT CONSULTATION

In accordance with the Endangered Species Act of 1973 (ESA), Section 7 consultation with the USFWS concerning impacts to threatened and endangered species has been initiated by the NPS, as needed. USFWS responded to the park's EA scoping notice in a July 29, 2009 letter to the NPS. Issues and concerns raised in the letter from the USFWS include potential impacts on wetland habitats, hydrology, fire ecology, plants and wildlife, particularly threatened and endangered species such as the eastern indigo snake, Everglade snail kite, Florida panther, and wood stork in accordance with Section 7 of the ESA, as amended. The USFWS also recommended the evaluation of potential impacts to migratory birds in accordance with the Migratory Bird Treaty Act (40 Stat. 755; 16 USC 701 et seq.).

In March 2010, the NPS requested technical assistance from the USFWS regarding potential effects of transmission lines on wood storks, snail kites, migratory birds, and their habitats in the vicinity of the exchange corridor. By memorandum dated August 12, 2010 the USFWS submitted a preliminary assessment of potential effects to threatened and endangered species and Everglades wetlands resulting from FPL's proposed construction of transmission lines in the exchange corridor along the eastern boundary of the park. Based on this preliminary assessment, the USFWS concluded that the proposed transmission lines, if constructed, are likely to (1) adversely affect the Everglades snail kite by eliminating or altering existing nesting habitat; (2) adversely affect the Everglade snail kite and wood stork by eliminating or reducing foraging habitat; and (3) may increase the risk of injury or death of wood storks and migratory birds from collision impacts. The USFWS stated that if they were reviewing a proposed federal action for the transmission corridor, they would consult on potential effects from the proposed action to wood storks and snail kites under Section 7 of the ESA and provide technical assistance to avoid and minimize impacts to migratory birds. A copy of this memorandum is included in appendix E.

In addition, a letter was sent inviting the USFWS to participate in the agency scoping meeting held on June 21, 2011, and notifying them in the letter that impacts to endangered species were possible. A copy of this letter is included in appendix E. The USFWS also participated in the two inter agency meetings described above.

Following further communication with the chief biologist from Everglades, the USFWS informed the NPS that a stand-alone biological assessment was not required for the project, and that the project could self-generate an endangered species list using the USFWS automated system (Wrublik pers. comm. 2012). This automated system, known as the Information, Planning, and Conservation System, is available online and was used to generate an initial species list for the project area. The Special-status Species sections in "Chapter 3: Affected Environment" and "Chapter 4: Environmental Consequences" of this EIS contain information on those federally listed species and the potential impacts of the project on those species and serves as the biological assessment for the project. The NPS is not seeking Section 7 consultation, informal or formal, for any alternative in which future transmission lines could be built on lands where the NPS lacks a property interest. For example, if FPL chooses to build its transmission lines east of the park boundary, the NPS would lack any authority to require ESA-based mitigation or conservation measures. However, the NPS has included information for such lines in a zone outside the park in order to complete a full and equitable comparison of alternatives and indirect effects of those alternatives. In the draft EIS, the NPS indicated it would seek consultation with the USFWS for alternatives 3 or 4, because the NPS would be providing land use with the expectation of transmission line development. In these cases, the construction of transmission lines would be considered an

interrelated and interdependent action, and expectations of adverse effects to listed species would be analyzed to ensure that there is no jeopardy to these species. Under the revised alternative 3, which includes the expectation that FPL would endeavor to locate transmission lines outside the current park boundary, the proposed NPS exchange lands may not be used and would be reconveyed to the NPS if not needed for proposed transmission line construction. Based on this change, the NPS action under alternative 3 no longer results in a clear expectation that transmission lines would be constructed on exchanged lands and, consequently, the construction of transmission lines no longer meets the definition of an interrelated and interdependent action for Section 7 consultation. As a result, the scope of effects to listed species is limited to those effects resulting from the land exchange itself. Under the preferred alternative, alternative 3, these effects would be insignificant and discountable, and formal consultation with USFWS would not be required. However, additional consultation between the USACE and the USFWS would be required in the future to address the impacts specific to the route and design of the transmission lines once they are finalized. This final EIS still includes the description of the expected effects of transmission line construction since the NPS continues to believe that construction is reasonably foreseeable. This final EIS provides the NPS' expectation of the effect determinations that the USACE would make if construction occurred within the FPL West Preferred Corridor when conducting Section 7 consultation on the issuance of USACE permits under the Clean Water Act (CWA).

The USFWS has been included on the mailing list for the distribution of information about this project. Copies of this draft EIS have been sent to the agency for review and comment.

NATIONAL HISTORIC PRESERVATION ACT CONSULTATION

The NPS has initiated consultation with several groups under Section 106 of the NHPA. Representatives from the Florida Division of Historical Resources have been involved in consultations throughout the process. An archeological survey was conducted in July and August of 2009 in which no supporting evidence of archeological resources were found in the land under consideration for the land exchange. As part of the Section 106 process, the NPS also provided the Phase I Archeological Survey Report to the Florida Division of Historical Resources on August 27, 2009. In response to the results in the archeological survey report, the Florida SHPO concurred with the finding of New South Associates, Inc. that the proposed project would have no effect on cultural resources listed or eligible for listing.

On June 8, 2011, the NPS submitted a letter to the Florida Division of Historical Resources, State Historic Preservation Officer and the ACHP at the Office of Federal Agency Programs containing information about the EIS and a scoping newsletter. Copies of these letters and the responses received from the agencies are in appendix E. Possible impacts and mitigation relating to the protection of cultural resources are addressed in the EIS in chapter 1 under "Impact Topics Dismissed from Further Analysis." The discussion provides information about cultural resources in the area of analysis and the results of surveys conducted to date. The dismissal is based on the absence of cultural resources in the project area and the assumption that surveys would be required for cultural resources along any transmission route selected. A USACE 404 permit with Section 106 consultation and avoidance/mitigation measures would be needed prior to any construction of transmission lines in any corridor selected and the agencies will have an opportunity to review and comment on this draft EIS.

TRIBAL CONSULTATION

A letter to initiate government-to-government consultations and provide information about the project was sent to the following tribes in July 2009: Miccosukee Tribe of Florida, Seminole Nation of Oklahoma, and Seminole Tribe of Florida. Representatives of the Miccosukee Tribe of Florida did not participate in the public meeting or the formal consultations.

On June 10, 2011, the Superintendent of Everglades National Park sent nine letters to representatives from three tribes: the Miccosukee Tribe of Indians of Florida, the Seminole Nation of Florida, and the Seminole Nation of Oklahoma, as follows:

Official's Name and Title	Tribe
Colley Billie, Chairman	Miccosukee Tribe of Indians of Florida
Bernie Roman, Tribal Attorney	Miccosukee Tribe of Indians of Florida
Fred Dayhoff, Tribal Representative	Miccosukee Tribe of Indians of Florida
Terry L. Rice, Tribe Consultant	Miccosukee Tribe of Indians of Florida
Curtis Osceola, Tribe Consultant	Miccosukee Tribe of Indians of Florida
Betty Osceola, Tribe Administrator	Miccosukee Tribe of Indians of Florida
James E. Billie	Seminole Nation of Florida
Willard S. Steele, Tribal Historic Preservation Officer	Seminole Nation of Florida
Leonard Harjo, Principal Chief	Seminole Nation of Oklahoma

These letters updated all recipients that the EA had become an EIS and that a Notice of Intent had been published. The letters invited tribal representatives to both the agency scoping meeting on June 21, 2011 and the public scoping meeting on June 22, 2011. Copies of these letters are included in appendix E. The Miccosukee Tribe was consulted during the EIS on possible impacts to its property located to the north of Tamiami Trail and provided its input at several meetings (including the June 26, 2012 meeting) to discuss possible routes outside the park. In general, the tribe expressed concern about visual impact to the visitors to its casino along Tamiami Trail and requested that any transmission lines sited outside the park avoid Bureau of Indian Affairs properties. In addition, contact was made with the Bureau of Indian Affairs (Chet McGhee, Regional Environmental Scientist, Bureau of Indian Affairs Nashville office) regarding potential impacts on tribal lands and Indian trust resources. As a result of that discussion, tribal lands was included as an impact topic in the EIS. All tribes contacted had the opportunity to review and comment on the draft EIS. The Miccosukee Tribe provided comments on the draft EIS that disagreed with the analysis. As a result of their comments, the tribal analysis was revised for this final EIS.

FUTURE COMPLIANCE REQUIREMENTS

COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The table below identifies regulatory authorities, federal and state permits, approvals, and consultations necessary to ensure regulatory compliance with the project including those associated with the future construction and operation of FPLs proposed transmission lines that would occur as a result of the NPS decision. Most of the permit requirements will be required of FPL if and when they move forward with the construction of the proposed transmission lines. Additional compliance may be required by other state and federal agencies in order to issue permits to FPL.

Responsible Agency/Department	Permit/Approval/Consultation	Agency Responsibility
EPA Region 4	Section 404 Clean Water Act (CWA) Permit	EPA is responsible for overseeing compliance with Section 404(b)(1) guidelines, which provide criteria which must be met to receive a Section 404 permit. EPA also reviews CWA, Section 404 applications for the USACE. The final authority regarding CWA wetland jurisdiction remains with EPA.
	Section 402 CWA, National Pollutant Discharge Elimination System (NPDES)	Although the State of Florida, (through the Florida Dept. of Environmental Protection) is authorized to issue NPDES permits, EPA reviews applications to ensure that permits have been developed in accordance with state and federal laws. A NPDES permit will be necessary to address stormwater issues resulting from the increase of impervious surfaces and dewatering activities.
USACE (Jacksonville District)	Wetland/Waters of the United States Jurisdiction and Section 404 Permit	Responsible for the determination of boundaries of waters of the U.S. within the project area and issuance of dredge and fill permits to address impacts to wetlands and other waters of the U.S. (joint permitting process with FDEP)
USFWS, Region 4	ESA Section 7 Consultation	Provides affect determination (Biological Opinion) documenting the project's likelihood to impact federally listed species. Responsible for overseeing proposed mitigation measures.
	Migratory Bird Treaty Act	Ensures protection of migratory species.
	Bald and Golden Eagle Protection Act	Ensures protection of eagles.
ACHP	Consultation involving the NHPA	The ACHP has a significant role under Section 106 of the NHPA which requires federal agencies to take into account the effects of their undertakings on properties listed, or eligible for listing, on the National Register of Historic Places, and give the ACHP an opportunity to comment on projects.
U.S. Department of Transportation, Federal Highway Administration	Encroachment Permit	Responsible for issuing permits for transmission lines crossing of federally funded roads.
Seminole and Miccosukee Indian Tribes (or Tribal Historic Preservation Office)	Consultation	Responsible for preserving historic sites and Indian culture.
Florida State Clearinghouse	Section 403.061(42), F.S.	The Florida State Clearinghouse administers the intergovernmental coordination and review process of activities within the state of Florida which involve federal financial assistance and/or direct federal activity. (These agencies are listed below separately).
FDEP	Wetland Delineation	Responsible for the determination of boundaries of waters of the state (which can differ from Waters of the United States that are under the jurisdiction of the USACE.

Responsible Agency/Department	Permit/Approval/Consultation	Agency Responsibility
	Environmental Resource Permit under Part IV of Chapter 373, F.S.	Florida's water resources are regulated by the Environmental Resource Permit program. The program covers virtually all alterations to the landscape. The Environmental Resource Permit program regulates dredging and filling in wetlands and other surface waters, stormwater runoff quality and quantity, including runoff resulting from alterations of uplands, and direct, secondary and cumulative impacts.
	Section 401 Permit	FDEP issuance of an Environmental Resource Permit also constitutes a water quality certification under Section 401 of the CWA.
	Transmission Line Siting Act 403.52 - 403.539, F.S	Process for licensing electrical transmission lines. Requires Siting Board (Governor & Cabinet) certification.
FFWCC	Title XXVIII, Chapters 369-380, F.S.	Coordination with USFWS; protection of state listed species. Also reviews and comments on Environmental Resource Permit applications.
SHPO	Title XVIII, Chapter 267, F.S.	Reviews development project and provides technical assistance on preservation laws to ensure compliance with state and federal laws mandating consideration of a project's impact on historic and archeological properties.

LIST OF RECIPIENTS OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

The following federal, state, local, and tribal government agencies and organizations and businesses that participated in scoping were sent a copy of the draft EIS. In addition, elected officials, libraries, individuals, other businesses and organizations, media outlets, and other groups that have expressed interest in Everglades National Park in the past were sent letters stating that the draft EIS was available for review and comment.

FEDERAL AGENCIES

- United States Fish and Wildlife Service
- United States Army Corps of Engineers
- United States Bureau of Indian Affairs
- National Park Service, Southeast Regional Office
- National Park Service, Denver Service Center
- National Park Service, Biscayne National Park
- National Park Service, Environmental Quality Division
- United States Geological Survey
- Nuclear Regulatory Commission
- Advisory Council on Historic Preservation

STATE AND LOCAL GOVERNMENTS

- Florida Department of Transportation
- Florida Department of State
- Florida Department of Environmental Protection
- South Florida Water Management District
- Florida Fish and Wildlife Conservation Commission
- Miami-Dade County Department of Environmental Resources Management
- Miami-Dade County Department of Planning and Zoning
- Florida Department of State - Division of Historical Resources

AFFILIATED NATIVE AMERICAN GROUPS

- Miccosukee Tribe
- Seminole Tribe
- Seminole Nation of Oklahoma

OTHER ORGANIZATIONS AND BUSINESSES

- Audubon
- Audubon - Native Plant Society
- Audubon Society - Everglades Chapter
- Broward Sierra Club
- Calusa Group Sierra Club
- Clean Water Action
- Coalition of NPS Retirees
- Connecticut Sierra Club
- Dade County Public Schools
- Desert Protective Council
- Environmental Defense
- Environmental Services
- Everglades Committee for the Sierra Club
- Everglades Forever
- Fairchild Junior Naturalists
- Florida Biodiversity Project
- Florida Native Plant Society
- Florida Power and Light
- Florida Trail Association
- Florida Wildlife Federation
- Florida Yes
- Floridan Aquifer Legal Defense Organization
- Friends of Fakahatchee
- Green League
- Heifer International
- International Society for the Preservation of the Tropical Rainforest
- Isaak Walton League
- K&K Development, Inc.
- Miami-Dade NAACP
- National Parks Conservation Association
- National Wildlife Foundation
- Nature Coast Coalition
- Nature Conservancy
- Palm Beach County Environmental Coalition

- Parkland News & Commentary
- Palm Beach County Environmental Coalition
- Progressive Democrats of America
- Responsible Growth Management Coalition
- Save it Now Glades
- Sierra Club
- Sierra Club Miami Group
- South Florida Audubon Society
- South Florida Wildlands Association
- Tropical Audubon
- Under Sea Adventures, Inc.
- Western Lands Project
- Wildlands Network

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Name	Title	Experience	Responsibilities
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GLOSSARY

Action Alternative—An alternative that proposes a different management action or actions to address the purpose, need, and objectives of the plan; one that proposes changes to the current management.

Affected Environment—A description of the existing environment that may be affected by the proposed action (40 CFR 1502.15).

Alternative—Combination of actions to achieve the project's purpose and need and meet objectives.

Ambient—Existing as background in the surrounding area or environment, particularly with regard to air quality or noise conditions.

Amphibian—Any of a class (Amphibia) of cold-blooded vertebrates intermediate between fishes and reptiles and having gilled aquatic young and air-breathing adults.

Anaerobic—Not containing oxygen or not requiring oxygen.

Aquatic environment—Marine, estuarine, or freshwater resources that support animal and plant species.

Aquatic resources—Water bodies and the flora and fauna within them.

Archeological resources—Any material remnants or physical evidence of past human life or activities of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research. Any material remnants of human life or activities at least 100 years of age, and of archeological interest (32 CFR 229.3(a)).

Area of possible relocated corridor—An area located east of the park in which possible future construction of transmission lines may occur pending specific project-level decisions related to the land exchange.

Avian—Pertaining to birds

Best management practices (BMPs)—BMPs are state-of-the-art mitigation measures to help ensure that operations are conducted in an environmentally responsible manner. BMPs can be simple, such as use of hay bales for erosion control, while others involve cutting-edge monitoring and production technologies.

Bioaccumulation—The accumulation of a substance, such as a toxic chemical, in various tissues of a living organism. Bioaccumulation takes place within an organism when the rate of intake of a substance is greater than the rate of excretion or metabolic transformation of that substance.

Bird Drive Basin—An area of vacant land south of Tamiami Trail and east of Krome Avenue managed for the purpose of recharging groundwater and restoring wetland hydropatterns in the Everglades National Park.

Candidate species (federal definition)—A species for which the U.S. Fish and Wildlife Service has on file sufficient information to support a proposal to list the species as endangered or threatened, but for which proposed rules have not yet been issued.

Code of Federal Regulations—The codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

Council on Environmental Quality (CEQ)—Established by Congress within the Executive Office of the President with passage of the National Environmental Policy Act of 1969. CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

Consultation—The inclusion of public agencies and stakeholders in the planning process for the purpose of providing adequate attention to stated concerns and ensuring project conformity with existing protections.

Corona noise—Noise produced by high-voltage power lines caused by the electric field the power line generates by carrying electricity. The sound may be louder if there is increased moisture or pollutants in the air.

Corridor—A linear tract of land affording passage through which transmission lines can be installed and operated; contains the transmission line right-of-way.

Crepuscular—A term referring to species, especially certain bats and insects, that are active at dawn and dusk.

Critical habitat—The specific areas within the geographical area occupied by the species at the time it is listed in accordance with the provisions of Section 4 of the Endangered Species Act, on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection; and specific areas outside the geographical area occupied by the species at the time it is listed; this is based upon a determination by the Secretary that such areas are essential for the conservation of the species.

Cultural landscapes—Combinations of elements including vegetation, earthworks, roads, paths, buildings, views, and other man-made and natural features that truly represent or suggest a particular event or time period.

Cultural resources—Archeological, traditional, and built environment resources, including cultural landscapes.

Culvert—A water conduit comprised of a corrugated metal tube crossing under a road, sidewalk, or earthen embankment.

Decibel— A unit used to express the intensity of a sound wave.

8.5 square mile area—A sparsely populated agricultural community located on the eastern fringe of the Everglades, in the general area where the FPL West Secondary and West Preferred routes diverge south of the park.

Easement—A portion of land held by one property owner but with covenants in place to allow another entity to make use of the land for a limited purpose, as right of passage.

Ecology—The pattern of relations between organisms and their environment.

Ecosystem—The complex of a community of organisms and its environment functioning as an ecological unit.

Ecotone—A transition zone between two ecosystems.

Electric fields—The spaces surrounding charged particles which exert a force on other charged objects.

Eutrophication—Having waters rich in mineral and organic nutrients that promote a proliferation of plant life, especially algae, which often reduces the dissolved oxygen content.

Exotics—Non-native and/or invasive plant animal species.

Fauna—Animals of a given region taken as a whole.

Federal Register—Published by the Office of the Federal Register, National Archives and Records Administration (NARA), the Federal Register is the official daily publication for rules, proposed rules, and notices of federal agencies and organizations, as well as executive orders and other presidential documents (http://www.gpoaccess.gov/fr/).

Floodplain—A nearly flat plain along the course of a stream or river that is naturally subject to flooding.

Flora—Plant life characteristic of a region.

Flowage easement—An easement that allows another entity to make use of the land for the conveyance of water.

Forage—*verb* To search (as animal) for food; browse.

Geographic information system (GIS)—Any system that captures, stores, analyzes, manages, and presents data that are linked to location.

Graminoid—Grass-like or composed of grasses.

Guy wire—A tensioned cable designed to add stability to a free-standing structure.

Habitat—The place or environment where a plant or animal naturally lives. Can be classified as nesting habitat, foraging habitat, wintering habitat, and other life-cycle divisions.

Historic structures—Buildings or other man-made structures representative of a particular period in history.

Hydric soil—A soil formed under conditions of flooding, saturation, or ponding long enough to develop anaerobic conditions.

Hydrology—The scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Impacts—The likely effects of an action upon specific natural, cultural, or socioeconomic resources. Impacts may be beneficial, or adverse and direct, indirect, and / or cumulative.

Impairment—As defined in NPS Management Policies, “impairment” means an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or

values including the opportunities that otherwise would be present for the enjoyment of those park resources and values.

Indian Trust Resources—Indian trust assets are owned by Native Americans but held in trust by the United States.

Invasive species—Usually nonnative species, which can outcompete native species for habitat and resources.

Jurisdictional wetlands—Wetlands which meet the criteria of "waters of the United States" and are thereby under the jurisdiction of the Corps and the USEPA. The definition developed by the Corps considers as wetlands those areas which "…are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Under this definition, all three of the following conditions must be present: a) a dominance of wetland plants; b) hydric soils (soils with low oxygen concentrations in the upper layers during the growing season); and c) wetlands hydrology.

Key observation point (KOP)—One or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing. KOPs are typically used as viewpoints for assessing potential visual impacts resulting from a proposed management activity.

Logarithmic scale—A scale a scale of measurement which uses the logarithm of a physical quantity instead of the quantity itself and which can be displayed using intervals corresponding to orders of magnitude, rather than a standard linear scale.

Macrophyte—An aquatic plant that grows in or near water and is emergent, submergent, or floating.

Magnetic field— A condition found in the region around a magnet or an electric current, characterized by the existence of a detectable magnetic force at every point in the region and by the existence of magnetic poles.

Mammal—Any of various warm-blooded vertebrate animals of the class Mammalia, including humans, characterized by a covering of hair on the skin and, in the female, milk-producing mammary glands for nourishing the young.

Marl—mud high in calcium.

Marsh—A common term applied to describe treeless wetlands characterized by shallow water and abundant emergent, floating, and submerged wetland flora. Typically found in shallow basins, on lake margins, along low gradient rivers, and in calm tidal areas. Marshes may be fresh, brackish or saline, depending on their water source(s).

Melaleuca—A genus of plants in the myrtle family Myrtaceae that is known to be a non native invasive species in southern Florida.

Methylation—This process converts inorganic mercury to methylmercury in the natural environment; mercury is transformed into a form that can be accumulated in the muscle and fatty tissue of fish.

Migratory birds—Birds that move periodically from one region to another for feeding, breeding, or wintering.

Mitigation—"Mitigation" as defined in the National Environmental Policy Act (40 CFR § 1508.20), includes: avoiding the impact altogether by not taking a certain action or parts of an action; minimizing impacts by limiting the degree or magnitude of the action and its Implementation; rectifying the impact of repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; compensating for the impact by replacing or providing substitute resources or environments.

National Environmental Policy Act (NEPA)—An environmental law enacted in 1969 that established a national policy promoting the enhancement of the environment and also established the President's Council on Environmental Quality (CEQ). The most significant effect of NEPA was to set up procedural requirements for all federal government agencies to prepare environmental impact statements.

Native American—Any of the indigenous peoples living within the United States.

Native plant communities—Interdependent complexes of naturally occurring vegetation, which nourish native wildlife and which require specific soil conditions and other habitat characteristics to survive.

No-action alternative—An alternative that maintains established actions or management direction.

North American Vertical Datum (NAVD)—All elevations presented in this EIS/EIR are based on the NAVD88. NAVD88 replaced National Geodetic Vertical Datum of 1929 (NGVD 29) as a result of greater accuracy and the ability to account for differences in gravitational forces in different areas based on satellite systems. NAVD88 is 0.86 feet lower in elevation than NGVD 29.

Oligotrophic—Lacking in plant nutrients.

Organisms—Plants and animals, bacteria, and other living things.

Palustrine wetlands—All nontidal wetlands dominated by trees, shrubs, persistent emergent plants, or emergent mosses or lichens, as well as small, shallow open-water ponds or potholes. Often called swamps, marshes, potholes, bogs, or fens.

Peat—Organic deposit formed from decaying plant matter under anaerobic conditions.

Pennsuco wetlands—The Pennsuco wetlands are located north and east of the park, generally bordered on the west and north by Krome Avenue, to the south by Tamiami Trail (US 41) and to the east by the Dade-Broward Levee.

Perennial—Persisting for several years, usually with new herbaceous growth.

Periphyton—A complex matrix of algae and heterotrophic microbes attached to submerged substrata in almost all aquatic ecosystems.

pH—Measure of the acidity or alkalinity (basicity) of water (pH 7 is neutral, increasing values indicate alkalinity and decreasing value indicate acidity).

Prescribed burns (fires)—The controlled application of fire to the land to accomplish specific land management goals.

Raptors—Birds of prey; any bird that hunts other animals.

Revegetation—Reestablishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance, such as seedbed preparation, reseeding, and mulching.

Right-of-Way—A property right that allows its owner to make some specified use of land that is otherwise owned by another, such as a right of passage.

Scoping—Scoping is a process during the initial phase of project planning to seek input from a variety of sources. This input is used to identify issues, areas requiring additional study, alternative methods and locations, and topics to be analyzed in the National Environmental Policy Act document. Scoping is done internally with National Park Service staff and externally with the interested public, other agencies, and stakeholders.

Silt fence—a temporary sediment control device used on construction sites to protect water quality in nearby streams, rivers, lakes and seas from sediment (loose soil) in stormwater runoff.

Slough—A low-lying area of land that channels water through the Everglades; essentially a marshy river. Though they are the main avenue of waterflow, the current remains leisurely, moving about 100 feet (30 meters) per day.

Socioeconomics—Relating to a combination of social and economic factors.

Soundscapes—The overall auditory character of an area.

Special-status species—Plant and animal species federally or state listed as endangered or threatened, or otherwise judged to be in need of protection.

Species of concern (federal definition)—An informal term that refers to those species which USFWS believes might be in need of concentrated conservation actions. (Formerly known as Category 1 or 2 Candidate).

Taking (per Endangered Species Act)—Section 9 of the Endangered Species Act prohibits the “taking” of an endangered or threatened species, where “taking” means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct.”

Transmission line—Structure that is used to move large quantities of power at high voltage between generating or receiving point and major substations.

Turbidity—The relative clarity of water, which depends in part on the material in suspension in the water.

Untrammeled—In the Wilderness Act, "not being subject to human controls and manipulations that hamper the free play of natural forces.”

Water conservation area—Sections of Everglades habitat designated primarily to receive flood waters from adjacent areas and store them for beneficial municipal, urban, and agricultural uses. WCAs are managed for multiple uses. Aside from providing wildlife habitat, water from the Everglades water conservation areas is used to restock water supplies for South Florida communities.

Wetlands—Lands transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. The U.S. Army Corps of Engineers (Federal Register, 1982) and the Environmental Protection Agency (Federal Register, 1980) jointly define

wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wilderness—An area of undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions. Such areas are designated under the National Wilderness Preservation System.

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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 wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic 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. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting 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.

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