Turkey Point

Units 6 & 7

Summary of Project Mitigation and Conservation Commitments

Rev. 1

093-876521

June 2016

FPL

Table of Contents

List of Tables

List of Figures

List of Attachments

1.0 INTRODUCTION

FPL proposes to construct and operate two new nuclear generating units (Units 6 & 7) and supporting facilities at a site within the existing Turkey Point plant property boundaries, as well as new transmission lines and other off-site associated linear and non-linear facilities. The Project has been described in the Site Certification Application (SCA) and Federal Dredge and Fill Application submitted to Florida Department of Environmental Protection (FDEP) and the U.S. Army Corps of Engineers (USACE), respectively, in June 2009 and amended in May 2010, as well as the SCA Completeness Responses submitted from 2009 through 2011 and the February 2015 Draft Environmental Impact Statement (DEIS) prepared by the Nuclear Regulatory Commission (NRC). The Project was approved by the State of Florida in May 2014; the associated Conditions of Certification (PA 03-45A3) are available from the Florida Department of Environmental Protection's Siting Coordination Office website: http://publicfiles.dep.state.fl.us/Siting/Outgoing/Web/Certification/pa03_45_2014_units6_7.pdf

Federal review of the Project by the NRC, USACE, and US Fish and Wildlife Service (USFWS) is ongoing. Approvals from the NRC (Combined Operating License), USACE (Section 404 permit), and the associated USFWS Section 7 consultation are pending issuance of the Final EIS in 2016.

At the request of the USFWS, FPL has prepared this summary of the Project's mitigation and conservation commitments with respect to wetlands and threatened and endangered species. The summary compiles and references information from the following sources; the original documents and materials are to be relied upon for specific commitments related to the Project:

- Turkey Point Units 6 & 7 Threatened and Endangered Species Evaluation and Management Plan, Rev. 1 (July 2011) http://pbadupws.nrc.gov/docs/ML1421/ML14217A138.pdf

- Turkey Point Units 6 & 7 Mitigation Plan, Rev. 2 (July 2011) http://pbadupws.nrc.gov/docs/ML1226/ML12269A222.pdf

- Turkey Point Units 6 & 7 Federal Biological Assessment for Six Listed Species (November 2012) http://pbadupws.nrc.gov/docs/ML1233/ML12339A334.pdf

- Turkey Point Plant Units 6 & 7 Conditions of Certification (May 2014)

- Turkey Point Units 6 & 7 Section 404(b)(1) Alternatives Analysis (October 2011) http://pbadupws.nrc.gov/docs/ML1131/ML11319A035.pdf

2.0 WETLAND IMPACTS AND MITIGATION

2.1 Avoidance and Minimization Efforts

Wetland avoidance and minimization efforts focused on minimizing impacts to high-quality wetlands in site selection, reduction in the acreage of impact with regard to the design of associated facilities, and utilization of previously impacted areas to the greatest extent practicable. The location for Units 6 & 7 (Site) lies within the existing Turkey Point permitted industrial wastewater facility. Utilization of this previously impacted area allows for avoidance of over 200 acres of impact to coastal mangrove and/or freshwater marsh wetlands. Parking and laydown areas were initially located adjacent to SW 359th Street and 117th Avenue, impacting approximately 159 acres of wetlands, including large areas of high-quality sawgrass-dominated freshwater marsh. Avoidance and minimization efforts associated with the relocation of the parking and laydown areas to locations within the existing Turkey Point Plant and industrial wastewater facility resulted in significant reduction in wetland impacts. The reconfigured and relocated parking and laydown areas, reduced in size and limited to previously-impacted, low-quality wetlands, reduced the wetland impact acreage by approximately 100 acres (66 percent) compared to the initial locations and designs. The restoration of the temporary construction access roads by returning existing public roads to their current lane configuration and restoring SW 359th Street to a transmission access road after construction of Units 6 & 7 provides further minimization of Project impacts.

Additional avoidance and minimization efforts focused on identification of an alternative location for the FPL reclaimed water treatment facility within an area of lower quality wetlands at the Turkey Point Plant. The alternative location is an area historically dredged for test cooling evaluations, which currently consists of upland spoil piles dominated by Australian pine, excavated open water canals, an upland access pathway, sawgrass marsh, dwarf mangroves, and exotic wetland hardwoods. Use of this significantly disturbed area reduces impacts to mangrove and sawgrass wetlands by approximately 10 acres and the associated functional loss by approximately 5 Uniform Mitigation Assessment Method (UMAM) units as compared to the location originally proposed. Use of the alternative location for the FPL reclaimed water treatment facility also allows installation of the treated reclaimed water delivery pipeline within construction access road areas, further reducing temporary wetland impacts by approximately 3.4 acres.

Avoidance and minimization efforts associated with the Project's linear facilities (i.e., reclaimed water pipelines, access roads, and transmission lines) include selection of corridors that maximize opportunities for co-location with disturbed linear facilities such as existing roadways, canals, and rights-of-way. Co-location with existing linear features minimizes the amount of additional clearing of rights-of-way required for construction and reduces wetland impacts associated with access roads and structure pads.

Additional avoidance and minimization efforts associated with the transmission line corridor include exchange of the existing FPL right-of-way through the Everglades National Park (ENP) for a replacement right-of-way located adjacent to the existing L-31N Canal. Exchange of the existing right-of-way provides the opportunity to minimize impacts to high quality wetlands within the ENP by co-locating the new transmission facilities with existing disturbed linear features.

In the continued effort to avoid and minimize environmental impacts, FPL proposed the West Consensus Corridor for construction of the transmission facilities between Turkey Point and the Pennsuco Substation, which includes portions of the southern and northern sections of FPL's West Preferred Corridor and the Miami Dade Limestone Products Association corridor segment located east of the ENP. The selection of the West Consensus Corridor as FPL's primary transmission corridor was introduced in FPL's September 11, 2013 response to the USACE's June 4, 2013 request for additional information. Construction within the West Consensus Corridor will reduce wetland impacts and potential adverse impact to threatened and endangered species through increased utilization of previously disturbed habitats when compared to the West Preferred Corridor. The West Consensus Corridor contains a greater acreage of disturbed, low quality wetland habitat dominated by exotic vegetation and is located further east from existing wood stork colonies when compared to the West Preferred Corridor (see Attachment A). Based on conceptual designs, construction of transmission facilities within the West Consensus Corridor reduces wetland impacts by approximately 14 acres and wetland functional loss by 21 UMAM units compared to the West Preferred Corridor. Until the right-of-way can be acquired in the new corridor, free of encumbrances, covenants, or other restrictions in a cost effective and timely manner, FPL will continue to simultaneously pursue the permitting of the West Preferred Corridor as the backup location for the Project's western transmission lines.

2.2 Wetland Impact Summary

The Project and associated non-linear facilities (i.e., nuclear administration building, training building, parking area, FPL reclaimed water treatment facility, radial collector wells and delivery pipelines, and equipment barge unloading area) will result in up to approximately 316 acres of permanent wetland impact and 3 acres of temporary wetland impact. The majority of this impact (approximately 250 acres) is associated with the Units 6 & 7 Site, which is wholly contained within the existing industrial wastewater treatment facility. The Project's associated linear facilities (i.e. transmission lines, construction access roadway improvements, reclaimed water pipeline), will result in up to approximately 390 acres of permanent wetland impact and 44 acres of temporary wetland impact. The final design of the transmission line structures has not been finalized. The impact estimate for transmission line construction is based upon conceptual structure pad dimensions, span lengths, and access road designs.

This estimate is expected to be conservative and the actual acreage of wetland impacts will likely be less due to the ability to adjust structure pad locations and span lengths during the final design process.

A summary of proposed unavoidable wetland impacts for each component of the Project is provided below (Table 1), including direct and temporary impacts and total functional loss in terms of the FDEP's UMAM. Areas of saline wetland impact proposed to be mitigated through purchase of credits from the Everglades Mitigation Bank (EMB) are also quantified in terms of the EMB's functional assessment methodology, Wetland Assessment Technique for Environmental Reviews (W.A.T.E.R.). Details of the proposed impacts for each Project feature are provided in the Turkey Point Units 6 & 7 Mitigation Plan, Rev. 2 (July 2011).

TABLE 1

TURKEY POINT UNITS 6 & 7 PROJECT WETLAND IMPACT SUMMARY

Area	Wetland Impacts (acres)		Functional Loss (UMAM Credits)
	Direct	Temporary	
Units 6 & 7 Site	250.2		128.3[a]
Associated Non-Linear Facilities	65.7	3[b]	47.8[a]
Access Roads	81.6		80.6
Reclaimed Water Pipelines		43.6[b]	3.4
Transmission Line Corridors	308[c]		241[c]
TOTAL	**706**	**47[b]**	**501**

[a] Functional loss calculated via W.A.T.E.R. functional assessment methodology for the Units 6 & 7 Site = 148.4 W.A.T.E.R. credits; nuclear administration/training building and parking area = 19.9 W.A.T.E.R. credits; FPL reclaimed water treatment facility = 33 W.A.T.E.R. credits

[b] Loss of functional value for temporary impacts associated with pipeline installation will be replaced through in-situ restoration. Additional mitigation credits to offset functional loss associated with time lag of in-situ restoration are provided.

[c] Transmission line impacts were approximated utilizing conservative estimates regarding road and pad design layout within corridor and average functional assessment scores within the corridor segments, actual wetland impacts will be reduced upon completion of detailed engineering design.

2.3 Wetland Mitigation Summary

In accordance with regulatory guidelines of the FDEP, USACE, and Miami Dade County (MDC), and as documented in the Conditions of Certification (COCs), FPL proposes to mitigate the loss of wetland habitat associated with the Project through a combination of wetland restoration, enhancement, and preservation consistent with the regional restoration goals of the Comprehensive Everglades Restoration Plan (CERP) within the Biscayne Bay Coastal Wetlands (BBCW) study area and Model Lands Basin, as well as use of the EMB and Hole in the Donut (HID) mitigation banks.

The Project's Mitigation Plan was initially formulated in consultation with members of the Compatibility Working Group (CWG), which was formed by FPL in 2007 specifically to solicit input on the Project. The CWG was comprised of representatives of the South Florida Water Management District (SFWMD), FDEP, MDC, USACE, USFWS, Biscayne National Park (BNP), and ENP. In consultation with the CWG, the Mitigation Plan incorporates activities that cumulatively provide the necessary functional lift to offset the Project's wetland impacts. Detailed discussion of existing conditions, target communities, restoration methods, monitoring and success criteria, as well as the amount of functional lift generated for each mitigation activity is provided in the July 2011 Turkey Point Units 6 & 7 Mitigation Plan, Rev. 2. A summary of the various wetland mitigation activities included in the Plan is presented in Table 2.

TABLE 2

WETLAND MITIGATION SUMMARY

Mitigation Option	Activity	Acreage	Functional Lift (UMAM)
Northwest Restoration Site	Vegetative enhancement, hydrologic restoration, preservation, recreational facilities	238	37.6
SW 320th St. Restoration Site	Vegetative enhancement, preservation	574	60.4
Everglades Mitigation Bank	Mitigation Credits	1,409	175.8 (UMAM)/ 201.3 (W.A.T.E.R.)
Hole in the Donut Mitigation Bank	Mitigation Credits	308	241 (UMAM)/ 308 (Ratio)
Pipeline Restoration	Vegetative restoration	46.6	N/A[a]
Sea Dade Canal Crocodile Sanctuary	Creation of saline lagoon and crocodile nesting habitat	6.4	N/A[b]
Temporary Construction Access Roadway Restoration	Removal of temporary roadways, vegetative restoration	TBD[c]	N/A[b]
TOTAL		**2,582**	**515 (UMAM)**

[a]Temporary impacts associated with pipeline installation to be restored in-situ; additional mitigation to be provided to offset time lag factors as described in Section 3.4 of the Turkey Point Units 6 & 7 Mitigation Plan, Rev. 2.

[b]Additional mitigation activity conducted without credit for the generation of functional lift. Sea Dade Canal Crocodile Sanctuary and restoration of temporary construction access roads considered "additional mitigation activities".

[c] The restoration of temporary construction access roads is proposed as part of the Project's additional mitigation activities, conducted without the resulting functional lift included in the overall mitigation credit ledger. Temporary construction access road improvements are necessary to facilitate transportation of employees, construction workers, and materials and supplies to and from the Turkey Point Plant during the construction phase. The roadway improvements are uniquely required for safe and efficient construction of the facility, but not all are necessary post-construction. FPL is providing compensatory mitigation for all wetland impacts associated with the temporary construction access roads as if they are permanent. FPL proposes to remove lanes required for temporary construction access following construction and restore the temporarily-impacted wetlands (see Attachment B). Following removal of temporary lanes, the area will be topographically graded to pre-construction elevation and planted with native species of vegetation, principally sawgrass, similar to the surrounding landscape. Permanent access road facilities on SW 359th Street will be limited to a transmission access road, with a typical 18' wide

surface at a height of at least one foot above seasonal high water. The acreage of temporary construction access road restoration will be determined following detailed road design. It is anticipated that over 50% of the temporarily impacted area will be restored.

3.0 THREATENED AND ENDANGERED SPECIES

The Turkey Point Units 6 & 7 Threatened and Endangered Species Evaluation and Management Plan and the Turkey Point Units 6 & 7 Federal Biological Assessment for Six Listed Species address the status and habitat preferences of listed species in the area of the Units 6 & 7 Site and the associated facilities, and describes FPL's commitments regarding avoidance, minimization, and mitigation efforts to be conducted pre-construction, during construction, and during operation of the Project in consultation with the USFWS, Florida Fish and Wildlife Conservation Commission (FWC), and MDC.

Impacts to threatened and endangered species will be minimized through avoidance of habitats identified as critical to threatened and endangered species to the greatest extent practicable, commitment to conduct pre-clearing surveys prior to construction, incorporation of wildlife protection features in access roadway designs, wildlife training for all contractors, and adoption of mitigation measures to address any unavoidable impacts in consultation with the USFWS, FWC, and MDC. The Project's mitigation efforts have been designed to offset the potential impacts to listed species through habitat creation, restoration, enhancement, and preservation to fully replace the loss of potential listed species' foraging and nesting habitat associated with construction and operation of the Project.

The following sections provide a summary of threatened and endangered species conservation and mitigation commitments detailed within the Turkey Point Units 6 & 7 Threatened and Endangered Species Evaluation and Management Plan, the Turkey Point Units 6 & 7 Federal Biological Assessment for Six Listed Species, the COCs, and identified in coordination with the USFWS. Excerpts from the Units 6 & 7 COCs detailing FWC and MDC specific requirements regarding listed species are provided in Attachment C.

3.1 Pre-clearing Surveys

Before land clearing and construction activities occur, FPL will conduct an updated assessment for listed species, which shall note all habitat, occurrence, or evidence of listed species. FPL will coordinate with the FWC and USFWS to obtain and follow the current survey protocols for all listed species that may occur within the site and associated facilities prior to conducting detailed surveys, consistent with the approved COCs (see Attachment C). Listed species to be included in this survey will include those species listed as endangered, threatened, or of special concern by the FWC or those listed as endangered or threatened by the USFWS, as well as the bald eagle.

Wildlife surveys will be conducted in the reproductive or "active" season for each species that falls before the projected clearing activity schedule unless otherwise approved by the FWC or USFWS. For species that are difficult to detect, FPL may make the assumption that the species is present and plan appropriate avoidance/mitigation measures after consultation and approval from the FWC and USFWS.

Listed species of plants observed within the construction footprint during pre-clearing surveys may be relocated to undisturbed areas where feasible, as described in Condition of Certification B.VII.H.5:

> *Where protection of rare, endangered, threatened, or potentially endangered native plants is not possible, FPL shall relocate individual plants where rare, endangered, threatened, or potentially endangered native plants, are located within a construction zone, where practical.*

As described in FWC Condition of Certification B(III)(F)(1), FPL will conduct avian nesting surveys within the Units 6 & 7 Site prior to and during construction. Per consultation with USFWS in 2015, FPL will also conduct avian surveys within EMB Assessment Area 10, which is designated to provide shorebird habitat mitigation, as well as within portions of the 320th Street and Northwest Restoration Sites (see Section 3.5).

Per discussion with USFWS during 2015, USFWS-approved surveys will also be conducted within areas providing suitable habitat for the endangered Florida bonneted bat (*Eumops floridanus*), as well as for areas potentially supporting the host plant of the endangered Bartram's scrub-hairstreak and Florida leafwing (see Section 3.6).

3.2 Wildlife Protection Features

Wildlife protection features are proposed on SW 359th Street east of the L-31E Canal to reduce potential impacts of construction traffic upon crocodiles, while wildlife protection features proposed on SW 359th Street west of the L-31E Canal, SW 117th Avenue between SW 359th Street and 344th Street, and SW 137th Avenue between SW 359th Street and 344th Street are designed to discourage mammalian and herpetofauna access to the temporary construction access roadways. In accordance with USFWS recommendations received in 2015, additional fencing will be installed along the western edge of the construction laydown area adjacent to the Units 6 & 7 Site (Figure 1).

The proposed wildlife underpasses associated with SW 359th Street east of the L-31E Canal will ameliorate the potential impacts of construction traffic upon crocodiles between the cooling canal system and the test cooling canals. The proposed wildlife crossings will be bottomless culverts constructed of precast concrete with wing walls to guide the crocodiles through the openings. Fence barriers will be installed and trenched into the ground on either side of the access road from the L-31E Canal east along

the length of the test cooling canal area to promote utilization of the wildlife underpasses, and continue along the western edge of the construction laydown area adjacent to the Units 6 & 7 Site.

In addition to the crocodile underpasses discussed above, FPL is also proposing to install wildlife protection fencing, enlarged culverts, and a 6-foot box culvert wildlife underpass in association with the temporary construction access roadway improvements along SW 359th Street from the L31 Canal to SW 137th Avenue in order to further reduce the probability of impacts to listed as well as non-listed species of wildlife. Fencing 8 feet in height will be installed on either side of the temporary construction access roadway improvements on SW 359th Street to reduce and/or eliminate the potential for wildlife vehicular collisions. Geotextile fabric or similar fine-mesh material will be installed along the base of the fencing to prevent small herpetofauna from passing through the fence. Enlarged arch culverts (20 inch by 28 inch) will be installed along SW 359th Street from the L31E Canal to SW 137th Avenue to allow for passage of smaller herpetofauna, mammals, or fish. Protective fencing will also be installed on SW 137th Avenue and SW 117th Avenue between SW 359th Street and SW 344th Street.

FPL will construct a 6-foot box culvert wildlife underpass suitable for larger fauna in an area of mixed wetland hardwoods that extend across both sides of SW 359th Street. Compared to the adjacent relatively open sawgrass marsh landscape, the mixed wetland hardwood tree canopy provides increased cover, and is located near a north-south upland limerock roadway that leads to a relatively large excavated ditch. The presence of upland limerock roadways and ditches provide linear features which may be utilized as preferred wildlife travel paths, while areas of forested wetlands may provide additional cover for wildlife movements. Similar habitats occur both north and south of the existing transmission line access road on SW 359th Street, although the prevalence of exotic vegetation increases northward towards SW 344th Street.

3.3 Wood Stork Conservation Measures

FPL has committed to incorporating avian protection measures into the transmission facility design. Flight diverters and perch discouragers will be installed on the transmission line facilities consistent with the requirements of USFWS and the approved conditions of certification (see Attachment C – FWC Condition C.III.F.). Avoidance and minimization of potential impacts to migratory birds will be achieved through adherence to FPL's Avian Protection Plan during construction and operation of the transmission facilities, included as Appendix E in the Turkey Point Units 6 & 7 Threatened and Endangered Species Evaluation and Management Plan, Rev 1. FPL has committed to extensive pre- and post-construction monitoring studies, and to compensate for wetland impacts within wood stork core foraging areas (CFAs)

through mitigation that provides for equal or greater wood stork foraging habitat value, in accordance with USFWS guidance.

An assessment of wood stork foraging habitat loss and compensatory mitigation was conducted in accordance with USFWS guidelines and was included as Appendix A of the Turkey Point Units 6 & 7 Federal Biological Assessment for Six Listed Species prepared by FPL and submitted to the NRC and USACE on November 30, 2012 (ADAMS Accession No. ML123390437). The assessment report quantifies the loss of foraging habitat in terms of prey biomass utilizing the worst-case estimate of wetland impacts within the West Preferred Corridor and the increase in wood stork foraging habitat generated through wetland restoration within the HID mitigation bank. Details of the assessment methodology are presented in Section 4.0 of the report; Tables 4-1 through 4-10 summarize the calculations. Results are presented in Section 5.0 of the report and summarized in Table 5-3. The assessment will be revised upon detailed transmission line design to incorporate the specific location, extent, and type of wetland impacts and the corresponding amount of mitigation required to compensate for the loss of wood stork foraging habitat in terms of prey biomass.

Use of the West Consensus Corridor reduces the probability of potential impacts to the wood stork. The wood stork is known to nest in four colonies both south and north of Tamiami Trail and west of the West Preferred Corridor. These colonies have been well documented for years and are known as the Tamiami East 1 and 2, Tamiami West, and 3B Mud East colonies. The West Consensus Corridor is located east of all these known colonies, and the closest colony (Tamiami East 1) is 0.86 mile away. This distance falls outside the recommended primary (500-1500') and secondary (2500') management zones published by the U.S. Fish & Wildlife Service (USFWS) (Ogden, 1990). The West Preferred Corridor is located within the secondary protection zone (2,500 ft) of the 3B-Mud East colony, located north of U.S. 41 (Tamiami Trail), and the Tamiami East 1 colony, located south of U.S. 41

3.4 Shorebird Habitat Mitigation

Per discussion with the USFWS, FPL will monitor the Unit 6 & 7 Site for shorebird usage during fall and winter seasons prior to construction, as well as conduct fall and winter monitoring within the proposed shorebird habitat mitigation sites. To compensate for the loss of potential habitat for shorebirds within the Units 6 & 7 Plant Area, FPL has committed to creating or enhancing areas of suitable habitat within the EMB, the Northwest Restoration Site, and the SW 320th Street Restoration Site, as described below:

3.4.1 Everglades Mitigation Bank Assessment Area 10

In consultation with the FWC and MDC, FPL has committed to enhancement and preservation of an approximately 170-acre parcel (Assessment Area A) consisting of sparsely vegetated mud flat habitat located immediately to the southeast of the industrial wastewater treatment facility within the Everglades Mitigation Bank (see Attachment E), as described in the Conditions of Certification listed below:

Conditions of Certification B.IV.F.3.b:

> *Where practicable, the Licensee will mitigate for loss of shorebird habitat in consultation with FWC.*
>
> *b. For shorebirds utilizing mudflat habitat, the Licensee will consider mitigation through preservation, restoration, enhancement, or a combination thereof, of similar habitat within the Everglades Mitigation Bank or other location deemed as appropriate in consultation with the USFWS.*

Conditions of Certification B.VII.O.6:

> *FPL shall mitigate for loss of shorebird habitat through credits obtained for the restoration and preservation of approximately 170 acres of similar habitat within the Everglades Mitigation Bank. These mitigation credits shall be permanently deducted from the EMB ledger and dedicated to Turkey Point 6 & 7 Project. Five credits obtained from this area shall be used solely to offset the loss of shorebird habitat and shall not be included within the credits necessary to offset mangrove or wetland impacts.*

3.4.2 Northwest Restoration Site

Mitigation activities will restore the native vegetative community composition and enhance the hydrologic regime within the area, targeting conditions typical of a shallow sawgrass marsh/marl prairie community with mangroves and scattered tree islands. The majority of the Northwest Restoration Site will be restored to native sawgrass marsh, with areas of mangrove swamp, mixed wetland hardwood tree islands, and relatively open marl prairie areas supporting periphyton mat communities specifically beneficial for wading birds and shorebirds.

3.4.3 SW 320th Street Restoration Site

The target communities for the SW 320th Street Restoration Site are freshwater marsh and mixed wetland hardwood wetlands dominated by native species typical of the historical condition. Areas of exotic wetland hardwoods and palm tree nurseries will be restored to freshwater marsh, while the exotic wetland hardwood/mixed wetland hardwood forest along the eastern portion of the site will be restored to a native mixed wetland hardwood community. Control of exotic species of vegetation will facilitate regeneration

of desirable wetland vegetation from the seed bank, supplemented by planting as necessary to achieve the target communities. Within the restored freshwater marsh, sparsely-vegetated areas of exposed substrate will be created to provide potential shorebird foraging habitat.

3.5 Panther Habitat Mitigation

The temporary construction access road improvements include approximately 10.3 miles of roadway impacting a total of approximately 129.2 acres. However, not all of these road miles and impact acres are within the Florida panther Primary Zone. The footprint for proposed road improvements would affect approximately 69.08 acres of habitat within the Florida panther Primary Zone with an estimated panther habitat value of 297 PHUs. Although the temporary construction access road improvements will be removed upon completion of Units 6 & 7 construction (see Attachment B), FPL will provide mitigation as though the impacts were permanent. As detailed in the 2013 report, Estimated Impacts to Florida Panther Habitats Turkey Point Units 6 & 7 Project (Attachment D), a total of 743 PHUs (2.5:1 ratio) will be acquired from an agency-approved panther mitigation bank to offset impacts equivalent to 297 PHUs.

3.6 Pine Rockland Listed Species

A number of federally threatened or endangered plants are known to occur within pine rockland habitats of Miami-Dade County. In addition, two species of butterfly, the Bartrams' scrub-hairstreak (*Strymon acis bartrami*) and the Florida leafwing (*Anaea troglodyte floridalis*), rely upon the non-listed pineland croton (*Croton linearis*), which occurs within pine rockland habitats.

The proposed transmission facilities between the Clear Sky and Pennsuco substations traverse the King's Highway Pineland within an existing right-of-way. FPL has committed to construct the transmission line within the King's Highway Pineland in a manner that minimize ground disturbance to the greatest extent practicable (see Attachment F – Condition of Certification C.VII.F.). The proposed design limits impacts within the King's Highway Pineland to only 0.84 acres, utilizing areas that have been previously disturbed to the greatest extent practicable (see Attachment F). All areas of construction will be isolated from adjacent areas through installation of silt fencing to limit disturbance.

As above in Section 3.1 and detailed in Section 1.1.3 of FPL's Biological Assessment "*Pre-clearing plant surveys will be conducted to aid in location of access roads and transmission line structure pads to avoid impacts to (*listed*) plant species. Relocation of unavoidable individuals to undisturbed areas of the transmission line right-of-way may be conducted, if feasible. Due to the small area of suitable habitat,*

*pre-clearing plant surveys, and relocation of unavoidable individuals, the potential for adverse impacts to these (*listed*) plant species resulting from the Project is minimal*."

3.7 Sea Dade Canal Crocodile Sanctuary

The Sea Dade Canal Crocodile Sanctuary and the restoration of temporary construction access roads is proposed as part of the Project's additional mitigation activities, conducted without the resulting functional lift included in the overall wetland mitigation credit ledger. The Sea Dade Canal Crocodile Sanctuary involves restoration of wetlands historically impacted by dredging and filling, topographic grading and planting, creation of low-salinity ponds for juvenile crocodile refugia, and creation of habitat conditions with suitable nesting substrate specifically benefitting the federally threatened American crocodile (*Crocodylus acutus*). As described in Section 3.5 of the Turkey Point Units 6 & 7 Mitigation Plan, Rev. 2, the approximately 6.4-acre area is located southwest of the industrial wastewater treatment facility, adjacent to the Sea Dade Canal and an existing meteorological tower.

The target community is modeled after the successful crocodile sanctuary created upon previously filled land within the EMB in 2008. Areas of previously filled uplands within the Sea Dade Canal Crocodile Sanctuary will be graded and connected to existing borrow pond areas to create an open water lagoon habitat. A proven mixture of peat, marl, and sand will be used along the slopes and banks to create ideal crocodile nesting substrate. The lagoon will be connected to the Sea Dade Canal on the eastern edge near the existing access road. It will be connected to the western borrow pond and a second connection to the Sea Dade Canal will also be constructed within the western borrow pond to facilitate wildlife access to the sanctuary. Perched ponds designed to collect rainwater and provide low-salinity juvenile crocodile refugia will be created surrounding the primary lagoon. Nesting mounds of peat, marl, and sand will be constructed adjacent to and surrounding the low-salinity ponds. Areas of forested wetland surrounding the lagoon and ponds will be managed to limit exotic species of vegetation to ≤ 5% cover.

4.0 CONCLUSION

FPL has committed to a suite of mitigation activities to compensate for wetland impacts including over 800 acres of applicant-sponsored wetland restoration and preservation over wetlands located within the BBCW area contiguous to SFWMD-owned parcels and Biscayne Bay; in-situ restoration of temporarily impacted wetlands associated with pipeline installation; creation and preservation of wildlife habitat designed to benefit the American crocodile, wading birds, and shorebirds; and purchase of mitigation credits from the EMB and HID. The Project's commitments to threatened and endangered species conservation and mitigation for loss of habitat include pre-clearing surveys, wildlife fencing and underpasses, contractor training, enforced speed limits and signage, relocation of listed plants where

feasible, avian protection measures, wildlife habitat creation, and mitigation for the loss of foraging habitat through preservation and restoration of suitable habitat. The mitigation plans, additional commitments identified in the COCs, and USFWS-recommended conservation measures not only offset and minimize the Project's impacts to wetlands and potential impacts to threatened and endangered species, but also benefit BNP and CERP restoration projects and support regional conservation efforts through enhancement and preservation of significant acreage of wetland wildlife habitat.

LEGEND

- Wildlife Fencing
- Turkey Point Plant Property
- Western Laydown Area
- Turkey Point Units 6 & 7 Site
- Turkey Point Land U Building

0 400 800 1,600

Feet

REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
TURKEY POINT UNITS 6 & 7 PROJECT

TITLE
WILDLIFE FENCING WESTERN LAYDOWN AREA

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-01-12
DESIGNED	NRL
PREPARED	NRL
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
09387652	C155	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

1 in
0

G:\PROJECTS\FPL\Turkey_Point\09387652_FPL_TP_6and7_License\C_SCA_RAI\MapDocuments\09387652C155_WildlifeFencingLaydownArea.mxd

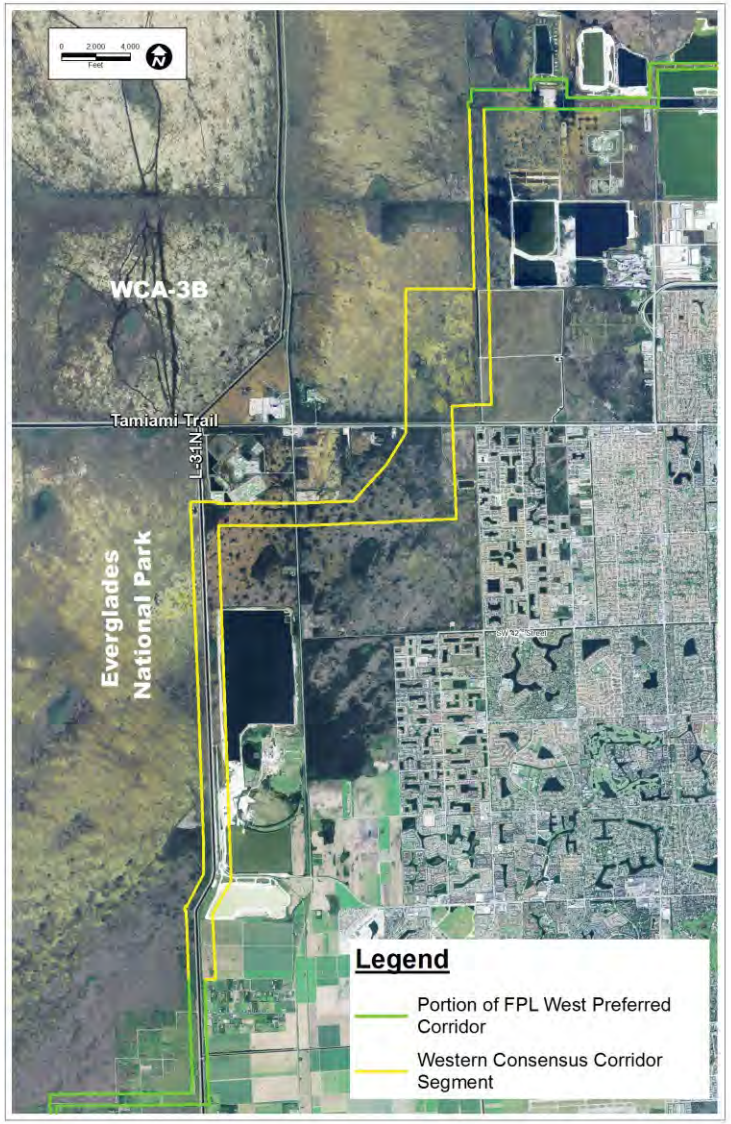
ATTACHMENT A

West Consensus and West Preferred Corridors Relative to Wood Stork Colonies

Through the State Site Certification, an alternative corridor was adopted as the primary corridor in the west

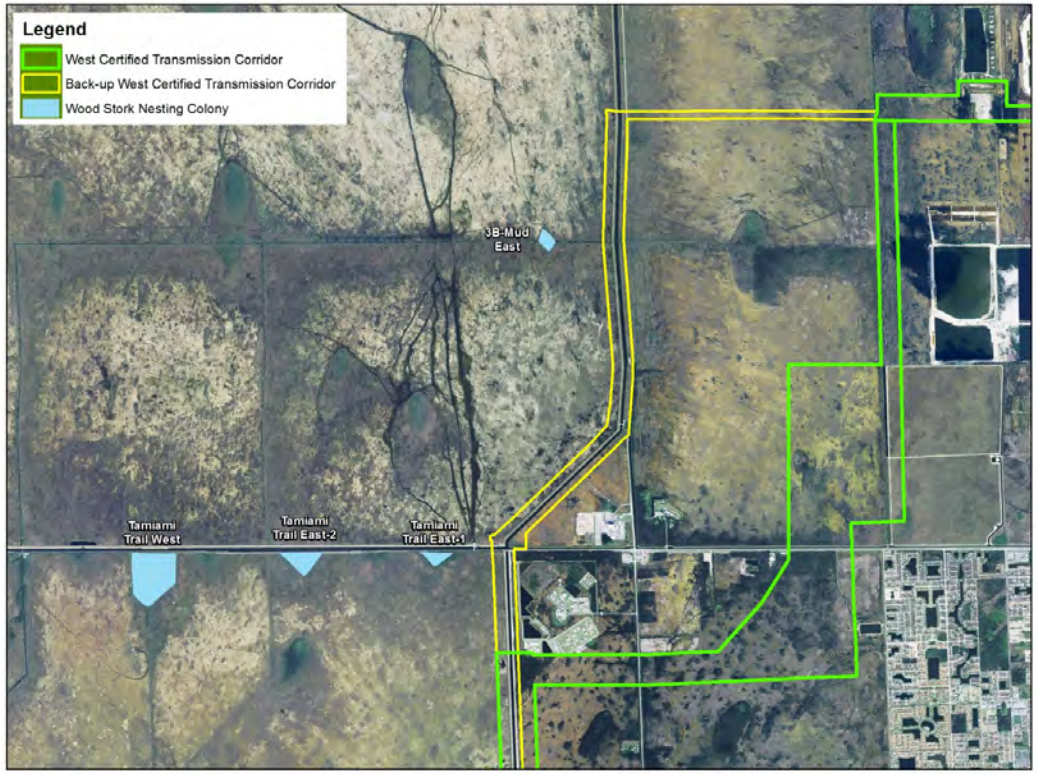
Western Consensus Corridor (WCC)

- **The WCC minimizes impacts to ENP and wetlands and increases buffer to rookeries**
- **The alternative will be dependent on MDLPA members, SFWMD and DOI for needed land rights**
- **The WCC provides land to the east of the L-31N sufficient for all structures**
  - A combination of SFWMD and MDLPA member property would be required to avoid ENP entirely
  - Conflicts with mining operations must be addressed



Wood Stork Colony Locations Relative to West Transmission Corridors

- Certified Corridors avoid all known wood stork colonies
- Four colonies exist in corridor vicinity: Tamiami East 1 and 2, Tamiami West, and 3B Mud East
- Certified Corridors cross portions of nine core foraging areas (CFAs); USFWS foraging habitat analysis based on worst-case wetland impacts will be revised upon final transmission line design



FPL

ATTACHMENT B

Conditions of Certification - Road Restoration

B. Plant Access Roads

1. Plant access roadway improvements west of the L-31E approved in the CDMP Amendment Ordinance 10-26 shall not go beyond those depicted on Figure 3.1 (Temporary Roadways and Roadway Improvements In connection with the Construction of Turkey Point Units 6 & 7) of the CDMP Transportation Element. All roadway improvements associated with the construction of Turkey Point Units 6 & 7 as shown in Figure 3.1 are to be temporary, per the CDMP, and shall satisfy the criteria outlined in the Future Traffic Circulation Map Series of the CDMP Transportation Element. (Future Traffic Circulation Map Series of the CDMP Transportation Element, Ordinance 10-26)

2. Within 2 years following the construction of Turkey Point Units 6 & 7, except as otherwise agreed to by FPL and MDC and in accordance with Ordinance No. 10-26:

a. All temporary roadway improvements on publicly owned rights-of-way shall be returned to the status of the roadway(s) prior to the commencement of construction of the temporary roadways and roadway improvements, and, (b) any privately owned roadway shall be returned to the minimum roadway width required to provide maintenance to FPL facilities and shall not be more than two lanes (18 foot drivable width). FPL shall restore the wetlands impacted by the roads in compliance with the Wetland Mitigation Plan Rev 2 (July 2011).

b. FPL shall install the proposed potable water line below wetland grade at an appropriate depth and alignment so that the installation of the pipeline complies with applicable construction standards, including minimum cover criteria in the Public Works Manual, and does not interfere with the wetland restoration where required in areas of pipeline construction.

3. The construction access roads shall not adversely impact the capacity of Miami Dade County's existing drainage network. FPL shall provide final construction plans to DEP and Miami-Dade County at least 90 days prior to commencement of access road construction. The plans shall demonstrate compliance with the requirements of Miami Dade County Code Section 24-48.3(1) (b), (d) & (e) and by reference with any applicable regulations cited within these sections. The plans shall address the drainage system associated with the roads to accommodate stormwater from the roads and maintain the capacity of any pre-existing County drainage features that are modified or removed by construction of the roads. The plans shall also describe how the County drainage system will be reconstructed when the roadway improvements are removed.

4. To the extent practicable, restoration of public and private roadways shall be in a manner complementary to planned and funded County wetlands restoration projects. MDC and FPL shall jointly determine if practicable opportunities exist at the time of roadway restoration to complement wetlands restoration projects.

5. Following completion of project construction for Units 6 &7, to the extent feasible, FPL shall reconstruct SW 117 Avenue between SW 344 Street and SW 328 Street as a 2-lane paved road with a continuous ditch or canal on the eastern side, unless MDC and FPL agree to a different configuration. On SW 117 Avenue south of SW 344 Street, FPL and MDC may agree that no road is necessary upon removal of the construction access roadways.

6. The construction access roadways associated with the non-transmission features of the Project area shall not be inconsistent with the Biscayne Bay Coastal Wetlands (BBCW) CERP project, pursuant to Policy CON-7J of the CDMP and shall be consistent with Condition 9 of Z-56-07.

7. FPL shall demonstrate through plans in a post certification submittal how the construction access roadway design will accommodate a planned conveyance feature to transfer water southward from the Florida City Canal, along the existing canal located on the west side of SW 137 Avenue, to rehydrate wetlands in the Model Lands Basin. Given the uncertainties associated with the Licensee's roadway improvements, including when the improvements would commence and when the deconstruction of the roadway would occur, the water conveyance feature must either be constructed as part of the roadway improvement project; or a portion of the ROW must be set aside in advance of FPL construction to ensure that neither project prevents, constrains, or delays the other. The water conveyance feature may include a lined canal, pressure culvert and/or control structures.

8. FPL shall demonstrate, prior to construction, that all access roads west of the L-31E canal comply with the requirements of the Fire Water &. Engineering Bureau and the Florida Fire Prevention Code (FFPC) and National Fire Protection Association (NFPA) standards.

9 All access roads associated with the operation of the nuclear power plant and ancillary structures and equipment shall conform to the minimum standard identified in the "Miami-Dade Fire Rescue Access Road Synopsis" along with all prevailing Miami Dade Fire Rescue access road standards at the time of certification.

10. FPL shall provide wayfinding signage, meeting the approval of the Parks, Recreation and Open Space Department (PROS), as part of the construction of roadway improvements to SW 328th Street (between SW 137th Ave and SW 117th Ave) and SW 117th Ave (south of SW 328th St) to direct travelers to Homestead Bayfront Park and Marina. Such signage shall comply with the PROS Sign Implementation Manual.

[FPL Stipulation – 8/1/13; CDMP Policy R05-3E]

C. Earthwork And Materials Disposal

1. For all approved work, fill material will be utilized as described in FPL's Conceptual Earthwork and Materials Disposal Plan (June 3, 2011).

2. To the greatest extent practicable FPL shall use proposed Spoil Areas A and C, located along the east and west berms of the Grand Canal. If spoils are placed on Area B, FPL shall implement Best Management Practices to limit to the extent practicable, runoff from the spoils entering the wetlands areas to the south of the Industrial Wastewater Facility

3. Within thirty (30) days of completion of excavated material disposal activities associated with the certified facilities, FPL shall provide to RER-DERM copies of all excavated material disposal receipts and/or disposal records for contaminated materials that were disposed of at an approved off-site facility. (MDC Code Section 24-44.)

4. Excavated material that meets the MDC Soil Reuse Guidance limits may be stockpiled for future use, reused or managed within the cooling canals system.

ATTACHMENT C

FWC and MDC Conditions of Certification - Threatened and Endangered Species

STATE OF FLORIDA

DEPARTMENT

OF

ENVIRONMENTAL PROTECTION

Proposed

Conditions of Certification

Florida Power & Light Company

Turkey Point Plant Units 6 & 7

PA 03-45A3

November 4, 2013

G. Traffic Control Plan:

A temporary traffic control plan for handling construction related traffic is needed subject to the requirements and standards prior to construction affecting state-owned transportation facilities. The plan will be submitted as a post-certification submittal under Condition of Certification XIX and will need to be approved by Florida Department of Transportation prior to construction affecting State-owned transportation facilities.

H. Best Management Practices

Traffic control during facility construction and maintenance State-owned transportation facilities will be subject to the standards contained in the US Federal Highway Administration's Manual on Uniform Traffic Control Devices; Rule Chapter 14-94, Statewide Minimum Level of Service Standards, F.A.C.; Florida Department of Transportation's Design Standards for Design, Construction, Maintenance and Utility Operation on the State Highway; Florida Department of Transportation's Standard Specifications for Road and Bridge Construction; and Florida Department of Transportation's Utility Accommodation Manual, whichever is more stringent. It is recommended that the Licensee encourage transportation demand management techniques by doing the following:

- Placing a bulletin board on site for car pooling advertisements.
- Requiring that heavy construction vehicles remain onsite for the duration of construction to the extent practicable.

[Chapter 334, F.S.; Rule 14-96, F.A.C.; FPL Stipulation -6/25/13]

IV. FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

A. Listed Species Conditions

The following table (Table 1) contains state and federally listed species that occur in the State of Florida and may occur within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way. The table contains species that are potentially impacted by the activities proposed on the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way. Therefore, these conditions of certification apply to the species listed in this table that are found within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way. Listed Species Occurring or Potentially Occurring in the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way as of October 2011[1]:

Table 1. State and Federally Listed Species for Florida

Common Name	Scientific Name	Status
American alligator	*Alligator mississippiensis*	FT*
American crocodile	*Crocodylus acutus*	FT
American oystercatcher	*Haematopus palliatus*	SSC
Bald eagle	*Haliaeetus leucocephalus*	**

Black skimmer	*Rhynchops niger*	SSC
Brown pelican	*Pelecanus occidentalis carolinensis*	SSC
Eastern indigo snake	*Drymarchon couperi*	FT
Everglades mink	*Mustela vison evergladensis*	ST
Florida manatee	*Trichechus manatus latirostris*	FE
Florida Panther	*Puma concolor coryi*	FE
Least tern	*Sterna antillarum*	ST
Little blue heron	*Egretta caerulea*	SSC
Limpkin	*Aramus guarauna*	SSC
Piping plover	*Charadrius melodus*	FT
Reddish egret	*Egretta rufescens*	SSC
Rivulus	*Rivulus marmoratus*	SSC
Roseate spoonbill	*Platalea ajaja*	SSC
Snowy egret	*Egretta thula*	SSC
Tricolored heron	*Egretta tricolor*	SSC
White-crowned pigeon	*Patagioenas leucocephala*	ST
White ibis	*Eudocimus albus*	SSC

[1]Species legal statuses are subject to change. Recent changes to 68A-27, Florida Administrative Code (F.A.C.) make it likely that statuses of species listed may change before the Licensee commences work. The licensee shall refer to the law in effect at the time it begins an activity subject to being affected by listed species regulations.

FE = Federally-designated Endangered; FT = Federally-designated Threatened; ST = State-designated Threatened; SSC = State Species of Special Concern

* Due to similarity to another federally threatened species

** While the bald eagle has been both state and federally delisted, it is still governed by the state bald eagle management plan and the federal Bald and Golden Eagle Protection Act.

Note: Florida's Endangered and Threatened species rule changed in November 2010. The list is now comprised of federally designated endangered and threatened species or state designated threatened species. Additionally, the Species of Special Concern (SSC) designation has been retained in the rule until those species designated as SSC are evaluated for listing as state designated threatened species.

[Chapters 68A-27 and 68A-16, Florida Administrative Code (F.A.C.); FPL Stipulation – 6/7/13]

B. General Listed Species Survey

1. Prior to conducting detailed surveys, the Licensee shall coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) to obtain and follow the current listed species (in accordance with Article IV, Section 9 of the Florida Constitution and Rule

68A-27, FAC) and follow the current survey protocols for these listed species that may occur within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way, as well as implement appropriate buffers within FPL property or rights of way as defined by the listed species' survey protocols.

2. Surveys shall be conducted prior to clearing and construction in accordance with the survey protocols. The results of those detailed surveys shall be provided to FWC in a report, and coordination shall occur with the FWC on appropriate impact avoidance, minimization, or mitigation methodologies.

[Article IV, Sec. 9, Fla. Const; Section 379.2291, and 403.5113(2), F.S.; and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

C. Specific Listed Species Surveys

Before land clearing and construction activities within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way occur, the Licensee shall conduct an assessment for listed species which shall note all habitat, occurrence or evidence of listed species. Listed species to be included in this survey shall include the bald eagle and those species listed as threatened, or species of special concern by the FWC or those listed as endangered or threatened by U.S. Fish and Wildlife Service (USFWS). Wildlife surveys shall be conducted during the reproductive or "active" season for each species that falls before the projected clearing activity schedule unless otherwise approved by the FWC or USFWS. For species that are difficult to detect, the Licensee may make the assumption that the species is present and plan appropriate avoidance/mitigation measures after consultation with FWC. The Licensee will submit avoidance/mitigation measures for FWC post-certification review and approval at least 60 days prior to commencing clearing or construction activities within the surveyed area.

1. This survey shall be conducted in accordance with USFWS/FWC guidelines and methodologies by a person or firm that is knowledgeable and experienced in conducting flora and fauna surveys for each potentially occurring listed species.

2. This survey shall identify any wading bird colonies within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way that may be affected.

3. This survey shall identify locations of breeding sites, nests, and burrows for listed wildlife species. Nests and burrows shall be recorded with GPS coordinates, identified on an aerial photograph, and submitted with the final listed species report. Although nests and burrows may be recorded individually with GPS, the FWC prefers that any applicable protection radii surrounding groups of nest sites and burrows be included on a site specific basis, rather than around individual nests and burrows, and be physically marked so that clearing and construction shall avoid impacting them.

4. This survey shall include an estimate of the acreage and percent cover of each existing vegetation community (Florida Land Use, Cover and Forms Classification System, or FLUCFCS, at the third degree of detail) of each community that is contained within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way prior to land clearing and construction activities using GIS. Examples of such wildlife-based habitat classification schemes include Florida's State Wildlife

Action Plan (FWC 2005), Descriptions of Vegetation and Land Cover Types (FWC 2004), or Natural Communities Guide (FNAI 1990).

[Article IV, Sec. 9, Fla. Const; Section 379.2291, F.S; and Chapters 68A-27, 68A-4, 68A-16, F.A.C.; FPL Stipulation – 6/7/13]

D. Listed Species Locations

Where any suitable habitat or evidence is found of the presence of listed species, including but not limited to those specified in E-J below, within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way, the Licensee shall report those locations to, and confer with, the FWC or FWS as appropriate to determine whether additional pre-clearing surveys are warranted, and to identify potential mitigation, or avoidance recommendations. If pre-clearing surveys are required by FWC and FWS as appropriate and as specified in these conditions of certification, they shall occur in the reproductive season prior to the anticipated date for the start of construction within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way. The Licensee shall not construct in areas where evidence of listed species was identified during the initial survey until the particular listed species issues have been resolved as follows:

1. Listed Wildlife Species:

If listed wildlife species are found, their presence shall be reported to the DEP SCO, the FWC, and the USFWS.

2. Species Management Plan:

If total avoidance of state-listed wildlife species is not feasible, the Licensee shall consult with the FWC to determine the steps appropriate for the species involved to avoid, minimize, mitigate, or otherwise appropriately address potential impacts. For wildlife species, these steps shall be memorialized in a Species Management Plan and submitted to the FWC for review and approval.

[Article IV, Sec. 9, Fla. Const; Sections 379.2291, 403.507 and 403.5113(2), F.S.; and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

E. Bald Eagle

1. The Licensee shall avoid impacts to bald eagle (*Haliaeetus leucocephalus*) nests where possible. If construction activities cannot be avoided within a 660-foot nest buffer zone, construction activities shall be conducted consistent with the FWC Eagle Management Guidelines as outlined in the FWC-approved Bald Eagle Management Plan dated April 9, 2008 (or any subsequent FWC-approved versions). In areas where bald eagle nests are present, all reasonable and practicable efforts shall be made to avoid construction activities during the nesting season (October 1 - May 15, or when eagles are present before October 1 or after May 15).

2. In accordance with the FWC Eagle Management Guidelines, for construction areas that fall within 330 feet of an active or alternate bald eagle nest, as defined in the Bald Eagle Monitoring Guidelines, construction activities shall be conducted only during the non-nesting season (May 16 - September 30). Any construction activities that fall within 660

feet of the nest during the nesting season shall be conducted following USFWS-approved Bald Eagle Monitoring Guidelines, dated 2007, or subsequent USFWS-approved versions.

3. In areas where adverse impacts to nests cannot be avoided, resulting in nest disturbance, the information required for an FWC Eagle Permit shall be obtained from the FWC, as authorized by Rule 68A-16.002, F.A.C., and minimization and conservation measures outlined in the FWC Bald Eagle Management Plan shall be followed, as applicable.

[Article IV, Sec. 9, Fla. Const.; Section 403.507, F.S.; Rule 62-17.191, F.A.C.; Chapter 68A-27, F.A.C., and Rule 68A-16.002, F.A.C.; FPL Stipulation – 6/7/13]

F. Shorebirds

1. Surveys shall be conducted in potential shorebird nesting habitat within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way to identify and document the presence of nesting seabirds and shorebirds (shorebird) included in the attached list. Nesting shorebird surveys shall be conducted by trained individuals (Shorebird Observer) with proven shorebird identification skills and avian survey experience. Credentials of the Shorebird Observer will be submitted to the FWC South Region Species Conservation Biologist (See Section A, Condition XVIII. Agency Addresses) for review and approval at least 2 weeks before commencing clearing or construction activities. Shorebird Observers will use the following survey protocols:

a. Shorebird Observers must review and become familiar with the general information and data collection protocol outlined on the FWC's Florida Shorebird Database website (www.FLShorebirdDatabase.org). An outline of data to be collected, including downloadable field data sheets, is available on the website.

b. The nesting season is April 1 – September 1 for seabirds, but flightless young may be present through September. The American oystercatcher may initiate nesting as early as March 15. Nesting season surveys must begin on the first day of nesting season (March 15 in areas where American oystercatchers have historically nested, or April 1 elsewhere) or 10 days prior to commencing clearing or construction activities (including surveying activities and other pre-construction presence), whichever is later. Surveys must be conducted through August or until all nesting activity has concluded, whichever is later. If the survey results determine that no listed species are found and no nesting is occurring, and clearing or construction commences prior to the next nesting season, then no additional surveys are required in the survey area, with the exception of ground nesting species, which must be surveyed for daily pursuant to the remainder of these conditions.

Nesting season surveys shall be conducted in all potential shorebird nesting habitat within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way boundaries that may be impacted by construction or pre-construction activities during the nesting season.

c. During the pre-construction and construction, surveys for detecting new nesting activity in shorebird nesting habitat will be completed on a daily basis prior to movement of equipment, operation of construction vehicles, or other activities that could potentially disrupt nesting behavior or cause harm to the birds or their eggs or young.

d. Surveys shall be conducted by walking the length of all nesting habitat within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated

linear non-transmission facilities rights of way and visually inspecting, using binoculars or spotting scope, for the presence of shorebirds exhibiting nesting behavior.

i. If an ATV or other vehicle is needed to cover large project areas, operators will adhere to the FWC's Best Management Practices for Operating Vehicles on the Beach (Attachment E). The vehicle must be operated at a speed <6 mph and be run at or below the high-tide line. The Shorebird Observer will stop at no greater than 200 meter intervals to visually inspect for nesting activity.

e. Once any nest is confirmed by the presence of a scrape, eggs, or young, the Shorebird Observer will notify the Regional Biologist (See Section A, Condition XVIII. Agency Addresses) within 24 hours. All breeding and nesting activity will be reported to the Florida Shorebird Database website within one week of data collection.

2. If nesting behavior is observed within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way, the Licensee shall establish a 300 ft-wide buffer zone around any location within FPL property or rights of way where shorebirds have been engaged in nesting behavior, including territory defense. All construction-related disturbances shall be prohibited in this buffer zone.

a. The width of the buffer zone shall be increased if birds appear agitated or disturbed by construction.

b. Any modifications to the 300 ft-wide buffer must be approved by the Regional Biologist (See Section A, Condition XVIII. Agency Addresses) before being implemented.

c. No construction activities, movement of construction vehicles, or stockpiling of equipment shall be allowed within a buffer zone.

d. Heavy equipment and other construction vehicles shall not be operated near nest locations when flightless chicks are present outside a buffer zone. If movement of construction vehicles or equipment is necessary, it must be accompanied by the shorebird observer who will insure no flightless birds are in the path of a moving construction vehicle and no tracks capable of trapping flightless young remain.

3. Where practicable, the Licensee will mitigate for loss of shorebird habitat in consultation with FWC.

a. For least terns, areas of gravel substrate throughout the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way, including significantly disturbed areas, may provide suitable nesting habitat. Least terns are known to use artificial nesting sites such as dredged material deposits. The existing cooling canals as part of the industrial wastewater system may contain such habitat. As mitigation for loss of least tern habitat, the Licensee will consider identifying and enhancing/creating least tern habitat in appropriate areas within the Turkey Point Site, such as, but not limited to, areas in the industrial wastewater facility. The Licensee may contact the appropriate FWC Regional Biologist when considering location and appropriate methods of enhancement or restoration as needed.

b. For shorebirds utilizing mudflat habitat, the Licensee will consider mitigation through preservation, restoration, enhancement, or a combination thereof, of similar

habitat within the Everglades Mitigation Bank or other location deemed as appropriate in consultation with the USFWS.

[Article IV, Sec. 9, Fla. Const.; Section 403.507, F.S.; Rule 62-17.191; Chapter 68A-27, and Rule 68A-16.001, F.A.C.; FPL Stipulation – 6/7/13]

G. Everglades Mink

1. A survey by an experienced biologist (individual or firm with documented experience with Everglades mink or other mustelids) shall be conducted in the reproductive season prior to the initiation of clearing activity in areas where suitable potential habitat exists within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, or associated linear non-transmission facilities rights of way, to determine whether any mink are present, and if any den areas are present. To the extent practicable, the survey shall be conducted during the mink mating season, which extends from September through November. Although chalkdusted trackboards and anal scent attractant has proven effective in detecting the Everglades mink (Humphrey and Zinn 1982), camera traps are another option.

References: Humphrey, S.R. and T.R. Zinno 1982. Seasonal habitat use by river otters and Everglades mink in Florida. Journal of Wildlife Management 46:375- 381.

2. In the event that surveys determine presence of Everglades Mink within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, or associated linear non-transmission facilities, the following measures shall be used to minimize and mitigate for potential impacts.

a. Licensee and FWC will meet to discuss the specific issues and mitigation alternatives.

b. Licensee will then provide a detailed mitigation plan to address the specific impacts, which must be reviewed and approved by FWC, and be consistent with all other COCs or federal permit conditions.

c. Licensee will provide a monitoring report after a designated period to document effectiveness of the mitigation plan.

d. Corrective action alternatives will be determined in consultation with FWC and implemented if necessary.

[Article IV, Sec. 9, Fla. Const.; Sections 379.2291, and 403.571, F.S.; Rule 62-17.660 and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

H. Florida Manatee

With respect to construction, maintenance and operation within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, or associated linear non-transmission facilities rights of way:

1. The Standard Manatee Conditions for In-Water Work (revision 2012) shall be followed for all in-water activity located where waters are accessible to manatees. These are listed in Attachment F. Blasting as a dredge method shall be prohibited in or adjacent to waters accessible to manatees, unless no other alternative exists, in which case the Licensee may request approval by FWC. An adequate Blast and Protected Species Watch Plan must be

submitted to the Imperiled Species Management Section of the FWC for post-certification review prior to these methodologies being used.

2. At least 60 days prior to the beginning of in-water construction located where waters are accessible to manatees, the Licensee shall contact the FWC to determine whether observers shall be required, how many observers will be needed and who those observers will be. If observers are recommended, manatee observers must be on site during all in-water construction activities and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. Any in-water work associated with construction or demolition activities shall not be performed after sunset. Movement of a work barge other associated vessels is permitted after sunset. Following project completion, a report summarizing manatee sightings, collisions or injuries shall be prepared by FPL. This report shall be submitted within 30 days following construction completion to the FWC's Imperiled Species Management Section atmailto:imperiledspecies@myfwc.com imperiledspecies@myfwc.com

3. If a cofferdam or sheet piling is used during in-water construction to minimize release of sediment, the area inside (behind) the cofferdam must be checked for the presence of manatees during and after installation of the barrier before further work occurs to determine that manatees have not been entrapped. Manatee observers are required during installation and removal of the barrier but are not required during landward construction.

4. To reduce the risk of a vessel or barge crushing a manatee, any areas within the barge turning basin at Turkey Point where mooring of vessels and barges larger than 100 ft. occurs along any solid face wharf or seawall, including the new equipment barge unloading area, the permittee shall install wharf fenders with appropriate materials to provide sufficient standoff space of at least four feet under maximum designed compression. Fenders or buoys providing a minimum standoff space of at least four feet under maximum designed compression shall also be utilized between two vessels or barges that are moored together.

[Article IV, Sec. 9, Fla. Const.; Sections 379.2291, 379.2431, and 403.507, F.S.; Rule 62-17.660 and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

I. Florida Panther

1. The Licensee shall take proper precautions during clearing and construction to protect panthers from accidental injury due to conditions within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, and associated linear non-transmission facilities rights of way during construction.

a. Construction policies and practices identified by the FWC to protect panthers shall be used by the Licensee whenever feasible. These include:

i. Limiting speeds on access roads to 45 mph or less and adjust trucking activities and material delivery schedule within the panther consultation area to reduce speeds at dawn and dusk.

ii. Conducting frequent and unannounced site inspections to monitor for compliance with the above.

b. Any panther observations (dead or alive) made by Licensee's employees or contractors shall be verified by a qualified expert agreed to by FWC and reported to FWC within 24 hours.

2. The Licensee shall take proper precautions during construction and plant operations to protect panthers from accidental injury due to vehicle collisions along access roadways in the panther consultation area as defined by the USFWS (Attachment G), including SW 359th Street, SW 137th Avenue, and SW 117th Avenue.

a. Speeds on access roads shall be limited to 45 mph or less. Passive measures shall be implemented to enforce slower speeds and shall include lighted speed signage, speed bumps, and slow speed zones at dawn and dusk, and panther crossing signage.

b. In lieu of the passive measures identified in this condition, the Licensee may choose to use exclusionary fencing along the length of SW 359th Street between SW 117th Avenue and SW 137th Avenue to prevent accidental injury and/or panther mortality due to vehicle collisions.

c. Any panther observations (dead or alive) made by Licensee's employees or contractors shall be verified by a qualified expert agreed to by FWC and reported to FWC within 24 hours.

3. The Licensee shall construct at least one (1) wildlife underpass and associated fencing to facilitate north-south movement across SW 359th Street.

a. The underpass shall be located between 117th Avenue and 137th Avenue in an appropriate location for use by panthers. The Licensee shall consult with FWC during placement of the underpass.

b. The underpass shall be of appropriate size and design to facilitate panther movement. The Licensee shall consult with FWC during design of the underpass.

[Article IV, Sec. 9, Fla. Const.; Section 379.2291 and 403.507, F.S.; Rule 62-17.660 and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

J. Rivulus

1. Prior to clearing, the Licensee shall conduct surveys for rivulus using modified bottomless lift nets (McIvor and Silverman 2010) or other approved methodology in potentially impacted mangrove habitats within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, or associated linear non-transmission facilities.

[Reference: McIvor, C. C. and N. L. Silverman 2010. Modifications to the bottomless lift net for sampling nekton in tidal mangrove forests. Wetlands Ecology and Management (published on-line)

2. If surveys determine the presence of Rivulus within the Turkey Point Units 6 & 7 Site, associated non-linear facilities, or associated linear non-transmission facilities, the following measures shall be used to minimize and mitigate for potential impacts.

a. Licensee and FWC will meet to discuss the specific issues and mitigation alternatives.

b. Licensee will then provide a detailed mitigation plan to address the specific impacts, which must be reviewed and approved by FWC, and be consistent with all other COCs or federal permit conditions.

c. Licensee will provide a monitoring report after a designated period to document effectiveness of the mitigation plan.

d. Corrective action alternatives will be determined in consultation with FWC and implemented if necessary.

[Article IV, Sec. 9, Fla. Const.; Section 379.2291 and 403.507, F.S.; Rule 62-17.660 and Chapter 68A-27, F.A.C.; FPL Stipulation – 6/7/13]

V. DEPARTMENT OF STATE – DIVISION OF HISTORICAL RESOURCES

A. Except to the extent already completed, the Licensee shall conduct a survey of sensitive cultural resource areas, as determined in consultation with DHR. A qualified cultural resources consultant will identify an appropriate work plan for this project based on a thorough review of the Certified Area. Prior to beginning any field work, the work plan will be reviewed in consultation with DHR. Upon completion of the survey, the results will be compiled into a report which shall be submitted to DHR. If practicable, sites considered to be eligible for the National Register shall be avoided during construction of the project and access roads, and subsequently during maintenance. If avoidance of any discovered sites is not practicable, impact shall be mitigated through archaeological salvage operations or other methods acceptable to DHR, as appropriate.

B. If historical or archaeological artifacts or features are discovered at any time within the Certified Area, the Licensee shall notify the SED and DHR, R.A. Gray Building, 500 S. Bronough Street, Rm 423, Tallahassee, Florida 32399-0250, telephone number (850) 487-6333, and the MDC Office of Historic Preservation at (305) 375-4958). The Licensee shall consult with DHR to determine appropriate action.

[Sections 267.061, 403.531, and 872.02, F.S.; FPL/MDC Stipulation – 6/19/13]

VI. SOUTH FLORIDA WATER MANAGEMENT DISTRICT

A. General

1. For the purposes of these conditions of certification:

a. "SFWMD real property interests" is defined as SFWMD rights-of-way, Works of the District, and any property interest evidenced by being recorded in the public records.

b. "Licensee" as used herein includes Licensee's employees, contractors, subcontractors, invitees, authorized representatives, affiliates, parent, subsidiaries, and/or anyone acting on Licensee's behalf.

2. If this Certification is transferred from the Licensee to another party, the Licensee from whom the Certification is transferred shall remain liable for corrective actions that may be required as a result of any violations that occurred prior to the transfer.

[FPL Stipulation – 5/14/13; Sections 373.044, 373.085, 373.223, 373.342, and 373.413, F.S.; Rules 40E-2.091, 40E-2.301, 40E-2.38l, 40E-3.101(1), and 40E-6.351, F.A.C.]

a. all information necessary for a complete "Airspace Letter of Determination" for all relevant structures; and

b. a copy of any approvals or determinations from the Federal Aviation Administration (FAA).

2. Prior to construction, FPL shall coordinate with Homestead Air Reserve Base regarding any proposed facilities to be located inside the impacted Height Zoning District (Inner Horizontal Surface) of HARB (Attachment Q).

[FPL Stipulation 7/16/13; MDC Resolution Z-56-07, MDC Code Sections 33-330 - 33-350, 33-388 - 33-403, 33-292 - 3-301, 33-372 - 33-387]

H. Rare, Threatened and Endangered Species

1. FPL will conduct listed species surveys for the species identified in the Miami-Dade County Comprehensive Development Master Plan Element 4, Appendices A and B of the plant and non-transmission linear facility work areas, report locations of evidence of presence of listed species and suitable habitat found to Miami-Dade County, and implement practicable wildlife and vegetation protection measures to avoid, minimize, mitigate, or otherwise address listed species issues. Listed plant surveys will be conducted by botanists experienced in the field identification and biology of rare, threatened, and endangered plants that occur in Miami-Dade County. Faunal surveys will be conducted in accordance with FWC conditions of certification Section B.IV.B and FWC regulations. All work, including preconstruction earthwork and clearing, is prohibited until FPL has demonstrated compliance with this condition prior to that portion of the work being initiated.

2. FPL will provide MDC with a copy of the results of the listed species survey conducted pursuant to Section B.IV.H.1. above within the plant and non-transmission linear facility work areas and identify any proposed wildlife protection measures that the Licensee will implement beyond those identified in these conditions of certification.

3. Pursuant to MDC Resolution No. Z-56-07, FPL shall incorporate wildlife protection features into the roadway design for all segments of the temporary access roads south of SW 344th Street. Along SW 359th Street and along the portions of SW 117th Avenue and SW 137th Avenue that are to be constructed south of SW 344th Street, wildlife exclusion fencing shall be installed and shall include small mesh material, such as silt fencing, of appropriate mesh size and height to provide an exclusion barrier for reptiles and other small animals. The SW 359th Street temporary roadway shall accommodate a minimum of two (2) wildlife underpasses west of the L-31E levee, one of which must be constructed between SW 137th Avenue and SW 117th Avenue and the other between SW 117th Avenue and the L-31E borrow canal. The bridge over the L-31E borrow canal may serve as one of the wildlife underpasses provided that the plans demonstrate it has been appropriately designed for this purpose. These underpasses shall be of adequate design and shall be constructed to facilitate the safe passage of all wildlife known to occur or to potentially occur in this area during all times of the year, including but not limited to deer, Florida panthers, bobcats, snakes, American crocodiles, and amphibians. A minimum of three (3) crocodile underpasses shall also be provided along the temporary access road immediately north of the cooling canal system. The required underpasses shall be positioned to provide safe access to the habitat.

4. FPL has documented the presence of an individual tree (*Bucida molinetii*, syn. *Bucida spinosa*, common name "spiny black olive") on an upland area within the Turkey

Point property. This exceedingly rare plant species potentially occurs in other areas where FPL has proposed impacts associated with the Units 6 & 7 project, and FPL shall make reasonable efforts to locate all individuals of this species in proposed project areas, preserve such individuals wherever possible, and relocate individuals and/or establish ex situ populations for reestablishment where preservation is not possible.

5. Where protection of rare, endangered, threatened, or potentially endangered native plants is not possible, FPL shall relocate individual plants where rare, endangered, threatened, or potentially endangered native plants, are located within a construction zone, where practical.

[FPL Stipulation – 6/20/13; Zoning Resolution No. Z-56-07, Chapter 24 of MDC Code, Comprehensive Development Master Plan Policies CON-9B and CON-9C, Comprehensive Development Master Plan Transportation Circulation Element text accompanying Figure 3.1]

I. Reclaimed Water Pipeline

a. Construction of the reclaimed water pipeline shall not adversely impact existing sheetflow and groundwater flow across the area where these features will be located. Culverts located along the alignment of the reclaimed water pipeline shall be replaced with a larger capacity culvert or conveyance as needed to accommodate increased water flows that could result from future wetland restoration projects. FPL shall provide construction plans to DEP and Miami Dade County at least 90 days prior to commencement of reclaimed water pipeline construction. The plans shall demonstrate compliance with the requirements of Miami-Dade County Code Section 24-48.3(1) (b), (d) & (e) and by reference with any applicable regulations cited within these sections.

b. Trimming or alteration of mangrove trees for the purpose of constructing or maintaining the reclaimed water pipeline is prohibited outside the reclaimed water pipeline ROW, unless exempt pursuant to Florida Statutes, and shall require a permit or written authorization and mitigation as well as restoration of the affected area.

c. Exotic vegetation in the reclaimed water pipeline ROW that occurs within wetland mitigation and restoration areas of the project shall be controlled in accordance with the Mitigation Plan Rev.2 (July 2011). Exotic vegetation in the reclaimed water pipeline ROW that occurs within the eastern transmission ROW shall be managed in accordance with the transmission exotic vegetation management conditions in Section C.VII.M. below.

d. All vegetative debris shall be removed and properly disposed of in accordance with all applicable local regulations.

e. Once the pipeline has been installed and the trench has been covered, FPL shall be responsible for restoring the pipeline corridor back to the pre-construction elevation.

f. Dewatering for construction of the reclaimed water pipeline in all areas in and adjacent to contaminated areas and in areas with chloride or nutrient concentrations exceeding county or state water quality standards shall be prohibited unless FPL demonstrates through a post certification submittal of a dewatering plan that dewatering effluent will be adequately treated prior to final discharge at the approved discharge point to ensure compliance with Section 24-42(4), Miami-Dade County Code, and other applicable water quality standards.

12. Pursuant to Section 337.402, Florida Statutes, when any public road or publicly owned rail corridor is damaged or impaired in any way because of the installation, inspection, or repair of a utility located on such road or publicly owned rail corridor, the owner of the utility shall, at his or her own expense, restore the road or publicly owned rail corridor to its original condition before such damage. If the owner fails to make such restoration, the authority is authorized to do so and charge the cost thereof against the owner under the provisions of Section 337.404, Florida Statutes.

[Section 337.402, F.S.; FPL Stipulation -6/25/13]

13. FPL shall comply with all provisions of Chapter 556, Florida Statutes, Underground Facilities Damage Prevention and Safety Act.

[Chapter 556, F.S.; FPL Stipulation -6/25/13]

14. The proposed FPL transmission line corridors will intersect and/or be co-located adjacent to facilities identified as part of the Florida Intrastate Highway System (FIHS), Strategic Intermodal System's (SIS), and State Highway System (SHS) facilities. The placement of the transmission line should take into consideration the planned widening of these facilities, including but not limited to US1, as outlined in the most recent versions of the FDOT Work Program and Miami-Dade MPO's Long Range Transportation Plan. The cost of removal, relocating, or reconstructing Project facilities within FDOT facilities will be borne by the Licensee to the extent required by Section 337.403, Florida Statutes, Rule Chapter 14-46, Florida Administrative Code and the UAM. The provisions of Section 337.403 and 337.404, Florida Statutes, apply to the transmission lines.

[Sections 337.403 and 337.404, F.S.; Rules 14-15 and 14-46, F.A.C.; FPL Stipulation – 6/25/13]

III. FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

A. Listed-Species Conditions

The following table (Table 2) contains state and federally listed species that occur in the State of Florida and are likely to occur within the transmission line corridor and associated facilities. The table contains species that are potentially impacted by the activities proposed within the corridor. Therefore, these conditions of certification apply to the species listed in this table that are found within the transmission line corridors and associated facilities. Listed Species Occurring or Potentially Occurring in the transmission line corridors and associated facilities as of June 2011[1]:

Table 2. State and Federally Listed Species in Florida

Common Name	Scientific Name	Fl status	Fed status
American alligator	*Alligator mississippiensis*	SSC	T*
American crocodile	*Crocodylus acutus*	E	T

[1] Species' legal statuses are subject to change. Recent changes to 68A-27, Florida Administrative Code (F.A.C.) make it likely that statuses of species listed may change before the Licensee commences work. The Licensee shall refer to the law in effect at the time it begins an activity subject to being affected by listed species regulations.

American oystercatcher	*Haematopus palliates*	SSC	
Bald eagle	*Haliaeetus leucocephalus*	***	***
Black skimmer	*Rhynchops niger*	SSC	
Brown pelican	*Pelecanus occidentalis carolinensis*	SSC	
Burrowing owl	*Athene cunicularia*	SSC	
Cape Sable seaside sparrow	*Ammodramus maritimus mirabilis*	E	E
Eastern indigo snake	*Drymarchon couperi*	T	T
Everglades mink	*Mustela vison evergladensis*	T	
Florida bonneted (mastiff) bat	*Eumops glaucinus floridanus*	E	
Florida black bear	*Ursus americanus floridanus*	T**	
Florida mouse	*Podomys floridanus*		
Florida Panther	*Puma concolor coryi*	E	E
Florida pine snake	*Pituophis melanoleucus mugitus*	SSC	
Florida sandhill crane	*Grus canadensis pratensis*	T	
Gopher frog	*Lithobates capito*	SSC	
Gopher tortoise	*Gopherus polyphemus*	T	
Least tern	*Sterna antillarum*	T	
Little blue heron	*Egretta caerulea*	SSC	
Limpkin	*Aramus guarauna*	SSC	
Piping plover	*Charadrius melodus*	T	T
Reddish egret	*Egretta rufescens*	SSC	
Rim rock crown snake	*Tantilla ooliticus*	T	
Roseate spoonbill	*Platalea ajaja*	SSC	
Everglades snail kite	*Rostrhamus sociabilis plumbeus*	E	E
Snowy egret	*Egretta thula*	SSC	
Southeastern American kestrel	*Falco sparverius paulus*	T	
Tricolored heron	*Egretta tricolor*	SSC	
West Indian manatee	*Trichechus manatus latirostris*	E	E
White-crowned pigeon	*Patagioenas leucocephala*	T	
White ibis	*Eudocimus albus*	SSC	
Wood stork	*Mycteria Americana*	E	E

SSC = Species of Special Concern; E = Endangered; T = Threatened
* Due to similarity to another federally threatened species
** Except in Baker and Columbia counties or in Apalachicola National Forest
*** While the bald eagle has been both state and federally delisted, it is still governed by the state bald eagle management plan and the federal Bald and Golden Eagle Protection Act.

[Chapter 68A-27, Florida Administrative Code (F.A.C.)]

B. General Listed Species Survey

1. Prior to conducting detailed surveys, the Licensee shall coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) to obtain the current listed species (in accordance with Article IV, Section 9 of the Florida Constitution and Rule 68A-27,

F.A.C.) and follow the current survey protocols for these listed species that may occur within the transmission line ROW, and implement appropriate buffers as defined by the listed species' survey protocols.

2. Surveys shall be conducted prior to clearing and construction in accordance with the survey protocols. The results of those detailed surveys shall be provided to FWC in a report, and coordination shall occur with the FWC on appropriate impact mitigation methodologies.

[Article IV, Sec. 9, Fla. Const; Section 379.2291, *F.S., Sections 403.507 and 403.5113(2), F.S., and Chapter 68A-27, Florida Administrative Code (F.A.C.).*

C. Specific Listed Species Surveys

Before land clearing and construction activities within a transmission line right-of-way occur, the Licensee shall conduct an assessment for listed species which shall note all habitat, occurrence or evidence of listed species. Listed species to be included in this survey shall include the bald eagle and those species listed as endangered, threatened, or of special concern by the FWC or those listed as endangered or threatened by U.S. Fish and Wildlife Service (USFWS). Wildlife surveys shall be conducted in the reproductive or "active" season for each species that falls before the projected clearing activity schedule unless otherwise approved by the FWC or USFWS. For species that are difficult to detect, the Licensee may make the assumption that the species is present and plan appropriate avoidance/mitigation measures after consultation and FWC post certification review.

1. This survey shall be conducted in accordance with USFWS/FWC guidelines and methodologies by a person or firm that is knowledgeable and experienced in conducting flora and fauna surveys for each potentially occurring listed species.

2. This survey shall identify any wading bird colonies within the project that may be affected.

3. This survey shall identify locations of breeding sites, nests, and burrows for listed wildlife species. Nests and burrows may be recorded with GPS coordinates, identified on an aerial photograph, and submitted with the final listed species report. Although nests and burrows may be recorded individually with GPS, the FWC prefers that any applicable protection radii surrounding groups of nest sites and burrows be included, rather than around individual nests and burrows, and be physically marked so that clearing and construction shall avoid impacting them.

4. This survey shall include an estimate of the acreage and percent cover of each existing vegetation community (Florida Land Use, Cover and Forms Classification System, or FLUCFCS, at the third degree of detail) including a wildlife-based habitat classification scheme such as the Comprehensive Wildlife Conservation Strategy (FWC 2005), Descriptions of Vegetation and Land Cover Types (FWC 2004), or Natural Communities Guide (FNAI 1990) of each community that is contained within the transmission line right-of-way prior to land clearing and construction activities using GIS.

[Article IV, Sec. 9, Fla. Const; Sections 379.2291, 403.526 and 403.5317, F.S); and Chapters 68A-27, 68A-4, 68A-16, F.A.C.]

D. Listed Species Locations

Where any suitable habitat or evidence is found of the presence of listed species within the right-of-way, the Licensee shall report those locations to, and confer with, the appropriate regulatory agencies for possible additional pre-clearing surveys, including those specified in E-N below, and to identify potential mitigation, or avoidance recommendations. If pre-clearing surveys are required, they shall be timed to be reasonably compatible with the construction schedule, considering the anticipated date for the start of construction within a certified transmission corridor. The Licensee shall not construct in areas where evidence of listed species was identified during the initial survey until the particular listed species issues have been resolved as follows:

1. Listed Wildlife Species:

If listed wildlife species are found, their presence shall be reported to the DEP Siting Coordination Office, the appropriate DEP District Office(s), the FWC, the appropriate WMD, the appropriate local government(s), the USFWS, and the National Park Service as appropriate.

2. Species Management Plan:

If avoidance of state-listed wildlife species is not feasible, the Licensee shall consult with the FWC to determine the steps appropriate for the species involved to avoid, minimize, mitigate, or otherwise appropriately address potential impacts. For wildlife species, these steps shall be memorialized in a Wildlife Management Plan and submitted to the FWC.

[Article IV, Sec. 9, Fla. Const; Sections 379.2291, 403.526 and 403.5113(2), F.S.; and Chapter 68A-27, F.A.C.]

E. Gopher Tortoise

1. The Licensee shall conduct surveys for gopher tortoises (*Gopherus polyphemus*), in accordance with the FWC-approved Gopher Tortoise Management Plan (revised April 2013) and the FWC-approved Gopher Tortoise Permitting Guidelines, or subsequent FWC-approved versions of the Plan or Guidelines. A burrow survey covering a minimum of 15% of the potential gopher tortoise habitat to be impacted by development is required in order to apply for a relocation permit. Immediately prior to capturing tortoises for relocation, a 100% survey is required to effectively locate and mark all potentially occupied tortoise burrows and to subsequently remove the tortoises. Burrow survey methods are outlined in Appendix 4 of the Gopher Tortoise Permitting Guidelines, "Methods for Locating Gopher Tortoise Burrows on Sites Slated for Development". Surveys must be conducted within 90 days prior to a post-certification submittal of the online gopher tortoise relocation permit application (Temporary Exclusion Permit) to the FWC, as described in E.3 below. Surveys shall not be conducted within 30 days of any ground disturbance or clearing activities on the donor site. All surveys completed by authorized agents or other licensees are subject to field verification by the FWC. The results of the gopher tortoise surveys shall be provided to the appropriate land management state agency for portions of the transmission lines that cross state-owned lands, for informational purposes.

2. FWC is not required to provide a monitoring compliance assessment for activities that occur more than 25 feet from a gopher tortoise burrow entrance, provided that such activities do not harm gopher tortoises or violate rules protecting gopher tortoises. Examples of

such violations noted in the past by the FWC include, but are not limited to, killing or injuring a tortoise more than 25 feet away from its burrow; harassing a tortoise by blocking access to its burrow, and altering gopher tortoise habitat to such an extent that resident tortoises are taken.

3. The Licensee shall coordinate with and provide the FWC detailed gopher tortoise relocation permit application (as required by a Temporary Exclusion Permit) in accordance with the FWC-approved Gopher Tortoise Management Plan and Gopher Tortoise Permitting Guidelines as a postcertification submittal. This permit application shall provide details on the location for on-site recipient areas and any off-site FWC-approved temporary contiguous habitat, as well as appropriate mitigation contributions per tortoise, as outlined in the Gopher Tortoise Permitting Guidelines.

4. Any commensal species observed during the burrow excavations that are listed by the FWC shall be relocated in accordance with the applicable guidelines for that species.

5. To the maximum extent practicable or feasible, all staging and storage areas shall be sited to avoid impacts to gopher tortoise burrows and habitat.

[Article IV, Sec. 9. Fla. Const.; Section 403.526. FS. and Rule 62-17.660. F.A.C.: Section 379.2291. F.S.; Chapter 68A-27. F.A.C.]

F. Wood Stork Wading Bird Colonies

In order to identify the baseline conditions which may indicate the potential for impacts to wood storks and other wading birds, and to help quantify potential mitigation for such impacts, FPL will perform the following pre- and post-construction studies:

1. Pre-construction follow flight surveys shall be conducted during nesting for the currently known wood stork colonies along Tamiami Trail (East 1, East 2, and West) and the 3B Mud East Colony using fixed wing aircraft. The follow flight surveys shall be conducted both prior to and during the fledging period. The surveys would ascertain flight line corridors for the wood storks in terms of direction, numbers of birds, and altitudes. These data would be compared to existing data for the Tamiami Trail and 3B-Mud East colonies collected to date. The survey design shall be submitted to FWC for review prior to implementation.

2. A post-certification, pre-clearing aerial survey shall be conducted via fixed wing or rotary wing aircraft, between the months of December and May, once it is confirmed by FWC, USFWS or SFWMD that wading birds are nesting in the area of the proposed transmission line right-of-way. The surveys shall employ a series of two transects, along each side of the right-of-way. To minimize disturbance to the colonies, the flight(s) shall be conducted at altitudes no less than 300 feet.

a. This survey shall identify any wood stork/wading bird colonies in addition to any found from agency records that may be affected within one-half mile of the project ROW.

b. Center locations of all wood stork and wading bird colonies shall be delineated with a Wide Area Augmentation System (WAAS) enabled Global Positioning System (GPS) unit.

c. All wood stork and wading bird colonies shall be ground inspected, as aerial identification of intermediate-sized and dark-plumaged wading birds (little blue heron, tricolored heron, glossy ibis) is difficult at best and because they tend to nest below the vegetation canopy, making species identification all but impossible. To avoid flushing birds from their nests, identification of species shall be made using binoculars and surveys shall follow the protocols in Rodgers and Smith (1995).

Reference: Rodgers, J.A., and H.T. Smith. 1995. Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology 9:89-99.*

3. For the currently known wood stork colonies along Tamiami Trail (East 1, East 2, and West) and the 3B Mud East Colony, and for any newly identified wood stork colonies within one-half mile from the corridor as a result of the above-referenced, post-certification pre-clearing survey, FPL shall implement the following measures:

a. Flight Diverters - FPL will install spiral corkscrew design bird flight diverters (or other mutually agreeable design flight diverters) on the Overhead Ground Wires (OGW) of each transmission line from a point one-half mile south of the Tamiami Trail colonies to a point one half mile north of the 3B Mud East Colony, and between points one half mile in either direction from any newly identified colonies. The point one-half mile shall be identified from the actual colony boundary to adhere to the USFWS Wood Stork Guidelines for activities within the primary boundary. Flight diverters have been shown to reduce mortality and will be installed according to the manufacturers' instructions.

b. FPL will also install perch discouragers at transmission structure pole tops and arms to address risks from nest building and streamers (defecation) and reduce the exposure and potential risk of electrocutions.

c. Mitigation Effectiveness Study - FPL will fund a monitoring study during the first wood stork nesting season after construction along the marked stretch of the transmission lines near the currently known wood stork colonies, similar to the study performed by Frederick and Deng (1997) on the FPL Levee-Midway Transmission Line. The results will be used to determine effectiveness of wood storks (and other wading birds) in avoiding the new transmission line facilities, and especially if effectiveness of marked sections of lines is significantly different from unmarked lines.

Reference: Frederick, P. and Deng, J. 1997. Bird-Strike Mortality on the Everglades Section of the Levee-Midway Powerline. Florida Power & Light Co. 27 pp.

The surveys shall generally be performed as follows:

(1) Specific study protocols including mortality monitoring and sampling biases protocols will be developed in conjunction with FWC, USFWS, and SFWMD biologists using Avian Power Line Interaction Committee (APLIC) guidelines for mitigating bird collisions with power lines.

(2) Surveys will be conducted on a regular frequency sufficient to detect mortality, such as every other day, in the mornings and in the evenings.

(3) Any dead or injured birds found will be identified, located with GPS, and collected for necropsy (if dead).

(4) Surveys will be conducted along the marked stretch of transmission line right-of-way in 100m transects, with each transect separated by 100m.

Transects shall be centered on any observed flight lines as identified in the pre-construction follow-flight surveys. Transect width shall include the right of- way width and any visible dimension on either side.

(5) Observations of flight behavior of any birds crossing the lines will also be recorded. A protocol for visual observations similar to the Frederick and Deng studies will be developed.

d. Post-survey Review - After the Mitigation Effectiveness Study has been conducted, the results will be presented to FWC. If mortality to wood storks reasonably related to collisions with the transmission lines is documented to impact the wood stork population and as determined by the USFWS Biological Opinion, FPL and the Study Investigator will meet with FWC to discuss the results of the Mitigation Effectiveness Study. The populations considered in determining impacts will be the four colonies (Tamiami East I, East 2, and West, and the 3B Mud East) and other colonies formed within one-half mile of the transmission right-of-way, based on the SFWMD's annual wading bird survey that year. If in the judgment of the FWC the wood stork population of the four colonies that year was not within "ten-year average" ranges, FPL may be required to resurvey the right-of-way in that vicinity during an additional nesting season. If the post-survey review shows that mortality to wood storks within the colonies due to collision with the transmission lines exceeds that portion of the colonies' population that is allowed by the USFWS Biological Opinion, additional mitigation measures such as, but not limited to, different configurations or greater density of flight diverters, or additional monitoring, or a combination may be required by FWC.

[Article IV, Sec. 9, Fla. Const.; Section 403.526 and F.S., Rule 62-17.660, F.A.C.; Section 379.2291, F.S.; Chapter 68A-27, F.A.C. and Rule 68A-16.001, F.A.C.]

G. Everglades Snail Kite

1. A survey (USFWS South Florida Ecological Services Office Draft Snail Kite Survey Protocol, May 18, 2004) is necessary when the project site is within the snail kite consultation area and suitable habitat is present. The following criteria can be used to judge the adequacy of the habitat for snail kites.

- Appropriate foraging habitat present [paspalidum (*Paspalidium geminatum*), spikerushes (*Eleocharis spp.*), panicum (*Panicum spp.*), or beakrushes (*Rhynchospora spp.*)].
- Perching and/or nesting substrate present, i.e., [willows (*Salix caroliniana*), melaleuca (*Melaleuca quinquenervia*), or pond cypress (*Taxodium ascendens*)]; or [sawgrass (*Cladium jamaicense*), cattail (*Typha spp.*), giant bullrush (*Scirpus validus*), or reed (*Phragmites australis*)], respectively.
- Appropriate water depth (0.2-1.3 m deep) under nesting substrate.
- Nesting substrate an adequate distance (>150 m) from upland.
- Proximity of nearest wading bird colony.

2. If suitable habitat is present or snail kites are reported on the transmission line right-of-way, the following survey procedures shall be used to document their occurrence. To maximize the chances of finding snail kites the survey shall be conducted in January to May during the breeding season. A visual survey of suitable habitat shall be made for birds and nests.

A boat may be needed for the survey as the best nesting habitat may be a considerable distance (> 150 m) from uplands. Check small trees, such as, willow, melaleuca, and pond cypress along the open water edge for nests or perching birds. If snail kites are observed, then nests can be located through the bird's behavior. When flushed from a nest the adult tends to circle upward, whereas non-nesting birds that are flushed fly more horizontally away from the disturbance (Bennetts et al. 1988). Nests also can be found by following kites carrying sticks, adults carrying apple snails, aerial courtship displays, vocalizations of adults or begging calls of the young, and through a thorough search of areas where adults are repeatedly observed (Bennetts et al. 1988).

3. In the event that surveys determine that a project transmission line has the potential to impact snail kites, the following measures shall be used to minimize and mitigate for these impacts.

- FPL and FWC will meet to discuss the specific issues and mitigation alternatives.
- FPL will then provide a detailed mitigation plan to address the specific impacts, which must be reviewed and approved by FWC, and be consistent with all other COCs or federal permit conditions.
- FPL will provide a monitoring report after a designated period to document effectiveness of the mitigation plan.
- Corrective action alternatives will be determined and implemented if necessary.

Reference: Bennetts, R.E., M.W. Collopy, and S.R. Beissinger. 1988. Nesting ecology of Snail Kites in Water Conservation Area 3A. Department of Wildlife and Range Science, University of Florida, Gainesville. Florida Cooperative Fish and Wildlife Research Unit, Technical Report No. 31, 174 p.

[Article IV, Sec. 9, Fla. Const., Section 403.526, F.S., Rule 62-17.660, F.A.C., Section 379.2291, F.S., and Chapter 68A-27 F.A.C.]

H. Bald Eagle

1. The Licensee shall avoid impacts to bald eagle (*Haliaeetus leucocephalus*) nests where possible. If construction activities cannot be avoided within a 660-foot nest buffer zone, construction activities shall be conducted consistent with the FWC Eagle Management Guidelines, outlined in the FWC-approved Bald Eagle Management Plan, dated April 9, 2008, or any subsequent FWC-approved versions. In areas where bald eagle nests are present, efforts shall be made to avoid construction activities during the nesting season (October 1 - May 15, or when eagles are present before October I or after May 15).

2. In accordance with the FWC Eagle Management Guidelines, for construction areas that fall within 330 feet of an active or alternate bald eagle nest, construction activities shall be conducted only during the non-nesting season (May 16 - September 30). Any construction activities that fall within 660 feet of the nest during the nesting season shall be conducted following USFWS-approved Bald Eagle Monitoring Guidelines, dated 2007, or subsequent USFWS-approved versions.

3. In areas where adverse impacts to nests cannot be avoided, resulting in nest disturbance, the information required for an FWC Eagle Permit shall be obtained from the

FWC, as authorized by Section 372.072, F.S., and Rule 68A-16.002, F.A.C, and minimization, and conservation measures outlined in the FWC Bald Eagle Management Plan shall be followed, as applicable.

[Article IV, Sec. 9, Fla. Const.; Section 403.526, F.S., and Rule 62-17.191, *F.A.C.; Chapter 68A-27, F.A.C., and Rule 68A-16.002, F.A.C.]*

I. Southeastern American Kestrels

The Licensee shall coordinate with the FWC prior to conducting surveys for Southeastern American kestrels *(Falco sparverius paulus)* to ensure that surveys are in accordance with the FWC-approved protocol.

1. The Licensee shall provide the FWC with the Southeastern American kestrel survey results and identify where impacts to kestrels cannot be avoided.

2. The Licensee shall mitigate loss of kestrel nest trees by placing approved nest boxes in appropriate habitat along the transmission line right-of-way where feasible, practical, and where landowner consent can be obtained, and shall follow the FWC-approved protocol for construction and installation of nest boxes.

3. The Licensee shall coordinate all nest box installation with the FWC.

[Article IV, Sec. 9, Fla. Const., Section 403.526, F.S. , Rule 62-17.660, F.A.C., Section 379.2291, F.s., and Chapter 68A-27 F.A.C.]

J. Florida Panther

The Licensee shall take proper precautions during clearing and construction to protect panthers from accidental injury due to conditions on the transmission right-of-way during construction.

1. Construction policies and practices identified by the FWC to protect panthers shall be used whenever feasible. These include:

- Limit speeds on transmission patrol roads to 45 mph or less and adjust transmission patrol road trucking activities and material delivery schedule within the panther consultation area to reduce speeds in wooded zones, at dawn and dusk.
- Conduct frequent and unannounced site inspections to monitor for compliance with the above.

2. FPL shall report any panther observations (dead or alive) by employees or contractors within 24 hours to the FWC after verification by a qualified expert.

[Article IV, Sec. 9, Fla. Const.; Section 403.526 and F.S., Rule 62-17.660, F.A.C.; Chapter 68A-27, F.A.C.]

K. Florida Black Bear

The Licensee shall take proper precautions during clearing and construction to protect black bears from accidental injury due to conditions on site during construction.

1. If there is any chance that food waste will be stored on or near the site at any time, bear-resistant garbage containers or dumpsters shall be used.

2. Additional construction policies and practices to protect bears shall be used whenever feasible. These include:

- Prohibit clearing, blasting and burning of forested habitat during the December-March denning season for bears while in a primary or secondary bear range.
- Require clean construction sites with wildlife-resistant containers for workers to use for food-related and other wildlife attractant refuse; require frequent trash removal and the use of proper food storage and removal on work sites.
- Adjust trucking activities and material delivery schedule to mandate slower speed in wooded zones, at dawn and dusk, and during the June and July breeding season for bears.
- Conduct frequent and unannounced site inspections to monitor for compliance with the above.
- FPL personnel or contractors will also report any black bear observations (dead or alive) within 24 hours to the FWC.

[Article IV, Sec. 9, Fla. Const.; Section 403.526, F.S., Section 403.5317, F.S., and Rule 62-17.660, F.A.C.; Section 379.2291, F.S.; Chapter 68A-27, F.A.C.]

L. Everglades Mink

1. A survey by an experienced biologist (individual or firm with documented experience with this species or with mustelids) shall be conducted in areas where suitable potential habitat exists in the transmission line right-of-way, prior to the initiation of construction activity, to help determine whether any mink are present in the right-of-way, and if any den areas may be present. To the extent practicable, the survey shall be done during the mink mating season, which extends from September through November. Although chalkdusted trackboards and anal scent attractant has proven effective in detecting the Everglades mink (Humphrey and Zinn 1982), camera traps are another option, and are current! y being tested as an alternate survey method in the Fakahatchee Strand (David Shindle, The Conservancy of Southwest Florida, pers. comm.)

References: Humphrey, S.R. and T.R. Zinno 1982. Seasonal habitat use by river otters and Everglades mink in Florida. Journal of Wildlife Management 46:375- 381.

2. In the event that surveys determine that a project transmission line has the potential to impact Everglades Mink on the transmission line right-of-way, the following measures shall be used to minimize and mitigate for these impacts.

- FPL and FWC will meet to discuss the specific issues and mitigation alternatives.
- FPL will then provide a detailed mitigation plan to address the specific impacts, which must be reviewed and approved by FWC, and be consistent with all other COCs or federal permit conditions.

- FPL will provide a monitoring report after a designated period to document effectiveness of the mitigation plan.
- Corrective action alternatives will be determined and implemented if necessary.

[Article IV, Sec. 9, Fla. Const.; Section 403.526, F.S., and Rule 62-17.660, F.A.C.; Section 379.2291, F.S.; Chapter 68A-27, F.A.C.]

M. Florida Manatee

With respect to construction, maintenance and operation of the project transmission lines:

1. The Standard Manatee Conditions for In-Water Work (revision 2012) shall be followed for all in-water activity located where waters are accessible to manatees. These are listed in Attachment F. Blasting as a dredge method shall be prohibited in or adjacent to waters accessible to manatees. If no other alternative exists, a modification of these conservation measures can be requested. An adequate Blast and Protected Species Watch Plan must be submitted to the Imperiled Species Management Section of the FWC for post-certification review prior to these methodologies being used.

2. At least 60 days prior to the beginning of in-water construction located where waters are accessible to manatees, the Licensee shall contact the FWC to determine whether observers shall be required, how many observers will be needed and who those observers will be. If observers are recommended, manatee observers must be on site during all in-water construction activities and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. Movement of a work barge, other associated vessels, or any in-water work associated with construction or demolition activities shall not be performed after sunset. Following project completion, a report summarizing manatee sightings, collisions or injuries shall be prepared by FPL and this report shall be submitted within 30 days following project completion to the FWC's Imperiled Species Management Section at imperiledspecies@myfwc.com

3. If a cofferdam is used during in-water construction to minimize release of sediment, the area inside (behind) the cofferdam must be checked for the presence of manatees during and after installation of the barrier before further work occurs to determine that manatees have not been entrapped.

[Article IV, Sec. 9, Fla. Const.; Section 403,526, F.S., Section 403.5317, F.S., and Rule 62-17.660, F.A.C.; Sections 379.2291 and 379.2431, F.S.; and Chapter 68A-27, F.A.C.]

N Avian Protection Plan

The Licensee shall coordinate with the FWC in the development of an Avian Protection Plan that delineates a program designed to reduce the operational and avian risks that result from avian interactions with transmission lines associated with the project with the goal of reducing avian mortality. Guidelines for the Avian Protection Plan can be found on the USFWS website. http://www.fws.gov/rnigratorybirdS/CurrentBirdlssuesIHazards/APP/ A VIAN%20PROTECTION%20PLAN%20FINAL %204%2019%2005 .pdf

[Article IV. Sec. 9. Fla. Const.; Section 403.526, F.S., Rule 62-17.660. F.A.C., Section 379.2291. F.S.; Chapter 68A-27. F.A.C. and Rule 68A-16.001, F.A.C.]

g. Permanent and temporary impacts to NFC and to Simpson Park outside FPL's transmission line ROW are prohibited unless the impacts are consistent with the requirements of the Section 24-49.

[FPL Stipulation –6/20/13; Resolution Z-56-07, Condition 20; Section 24-49, MDC Code; CDMP Policy CON-8C]

M. Homestead Bayfront Park

1. Within Homestead Bayfront Park, FPL will minimize impacts to the park facilities and uses to the extent practicable by:

a. Locating the new transmission line to be parallel and immediately adjacent to the existing transmission facilities within the existing easement located within the Park;

b. Maintaining, for the new transmission line, the similar span lengths and pole locations as the existing transmission facilities within the existing easement located within the Park; and

c. Using, for the new transmission lines, the same access facilities as the existing transmission facilities within the existing easement located within the Park.

2. FPL shall provide as a post-certification submittal to MDC drawings demonstrating compliance with this condition, including as-built conditions and easement boundaries.

[FPL Stipulation –6/20/13; CDMP Objective LU-3, Policy LU-3B]

N. Rare, Threatened, and Endangered Species

1. FPL shall conduct listed faunal species surveys of the transmission line rights-of-way, report locations of evidence of presence of listed species and suitable habitat found, and implement practicable protection measures to avoid, minimize, mitigate, or otherwise address listed species issues. Listed faunal species protection measures shall be in accordance with FWC regulations and FWC conditions of certification. FPL shall provide MDC with a copy of the listed faunal species survey results along the transmission line rights-of-way and confer with MDC on the proposed protection measures.

2. In areas within or immediately adjacent to natural areas including wetlands pinelands or hammocks that are anticipated to be impacted by transmission line construction, FPL shall conduct federal and state listed floral species surveys of the transmission line rights-of-way and report locations of evidence of presence of listed floral species to MDC. Where practicable FPL shall implement protection measures to avoid and minimize impacts to listed floral species. Where impacts cannot be avoided, FPL shall provide MDC notice and opportunity to salvage or remove any such listed floral species identified in the surveys prior to construction.

[FPL Stipulation –6/20/13; Zoning Resolution No. Z-56-07, Chapter 24 of MDC Code]

ATTACHMENT D

Estimated Impacts to Florida Panther Habitats

Turkey Point Units 6 & 7 Project

BDA
ENVIRONMENTAL CONSULTANTS

2009-019-30.1

ESTIMATED IMPACTS TO FLORIDA PANTHER HABITATS

TURKEY POINT 6 & 7 PROJECT

Submitted to:

Ms. Florette Braun
Florida Power & Light
700 Universe Boulevard
Juno Beach, Florida 33408
Phone: 561-691-7059

April 19, 2013

Submitted by:

Randy S. Kautz, B.S.
Senior Scientist

W. Michael Dennis, Ph.D.
President

Estimated Impacts to Florida Panther Habitats

Turkey Point 6 & 7 Project

Introduction

The Florida Power & Light Company (FPL) Turkey Point plant comprises approximately 11,000 acres in unincorporated southeast Miami-Dade County, Florida. The existing plant consists of two 400-megawatt (MW) natural gas/oil steam electric generating units (Units 1 and 2); two 700-MW nuclear units (Units 3 and 4); and a 1,150-MW natural gas-fired combined-cycle unit (Unit 5). FPL is proposing to construct two new 1,100-MW nuclear units (Units 6 & 7) and supporting buildings, facilities, and equipment south of Units 3 and 4 within the cooling canals of the industrial wastewater facility. Proposed associated facilities include a nuclear administration building, a training building and a parking area; an FPL reclaimed water treatment facility and reclaimed water pipelines; radial collector wells and delivery pipelines; an equipment barge unloading area; transmission lines and system improvements within eastern and western Miami-Dade County; access roads and bridges; and potable water pipelines.

Portions of the proposed project also are within the Florida Panther Focus Area (PFA) (USFWS 2007) (Figure 1), an area known to have been occupied by or having the potential to be occupied by the Florida panther (*Puma concolor coryi*), a wide-ranging predator listed as endangered by the U.S. Fish and Wildlife Service (USFWS) and listed as federally-designated endangered by the Florida Fish and Wildlife Conservation Commission (FWC). Because the project is expected to result in impacts to wetlands of the United States (U.S.) under the regulatory jurisdiction of the Department of the Army, Corps of Engineers (ACOE), the ACOE has agreed to seek formal consultation with USFWS under Section 7 of the Endangered Species Act, as amended in 1973, to evaluate potential impacts to Florida panthers and their habitats for projects that require federal wetlands permits and are within the PFA (USFWS 2007).

The Turkey Point Units 6 & 7 Site and the transmission line corridor connecting the Clear Sky substation on the Turkey Point Site to the Davis and Miami substations in urban areas of Miami-Dade County are outside of the PFA (Figure 1). Therefore, construction of new electric generating units at the Site and installation of the Clear Sky-Davis-Miami transmission lines would not be expected to affect Florida panthers or their habitats. However, the proposed Units 6 & 7 project includes two components (i.e., a transmission line corridor and improvements to roads that provide access to the Site) that occur within the PFA, and consultation with the USFWS will be necessary to address potential effects on Florida panthers for those project components.

FPL is proposing to construct one 230-kV and two 500-kV transmission lines within a 330-foot-wide right-of-way (ROW) from the Clear Sky substation to the Levee substation in northwest Miami-Dade County (Figure 1). The proposed transmission line corridor is approximately 43.6 miles in length, of which approximately 24.3 miles (56%) are in the PFA. The Clear Sky to Levee corridor includes two alternative alignments. The secondary alternative would follow an existing FPL-owned ROW that

includes a 7.42-mile segment through the Everglades National Park (ENP) expansion area and a 4.45-mile segment through the southeastern corner of Water Conservation Area 3B (WCA). However, activities are underway with federal and state agencies to obtain approval for a preferred corridor that would involve relocation of the ENP/WCA segments to an alignment immediately west of the South Florida Water Management District (SFWMD) L-30/31-N canal.

The project also includes a proposal to improve transportation access to the Site by upgrading approximately 10.30 miles of existing roads connecting to the plant, of which 5.75 miles of the proposed road improvements are within the PFA. The proposed road improvements include (1) widening approximately 3.30 miles of existing two-lane paved roads to four lanes, and (2) upgrading approximately 7.00 miles of existing unpaved roads to either three- or four-lane paved roads. The roadway improvements serve to accommodate traffic during the construction of the new electrical generating units. Roadway improvements on publicly owned rights-of-way will be returned to the status of the roadway prior to construction. Within two years following the construction of Turkey Point Units 6 & 7, any privately owned roadway will be returned to the minimum roadway width required to provide maintenance to FPL facilities, and will not be more than two lanes. The existing 14-foot transmission line access road along SW 359th Street will be restored as an 18-foot transmission line access road once construction is complete.

USFWS has designed a methodology for evaluating permanent impacts to Florida panther habitats within the PFA. The methodology provides a means for assessing impacts to panther habitat in terms of Panther Habitat Units (PHU), which are calculated as the sum of the products of land cover scores multiplied by acreages of land cover types that are impacted by a project. The USFWS recommends mitigation at a ratio of 2.5:1 for impacts that occur anywhere within the PFA south of the Caloosahatchee River. Therefore, the amount of mitigation recommended is calculated by multiplying the PHUs in the impact area by 2.5. The same methodology is used to calculate the PHU values of prospective mitigation sites to determine whether the quantity of PHUs available for mitigation is sufficient to offset project impacts. However, the final amount of mitigation required may increase or decrease based on whether impact and mitigation sites are located within the PFA Primary or Secondary Zones. For example, mitigation requirements for impacts occurring in the Secondary Zone may be reduced by a factor of 0.69 if the mitigation site is located within the Primary Zone.

The objectives of these analyses were to estimate the potential loss of Florida panther habitat that may occur within the PFA, estimate mitigation requirements for the proposed facilities that occur within the PFA, review available data representing panther occurrence in the project vicinity, and assess panther habitat values and use of existing power line ROWs and other linear landscape features. The plans for the proposed transmission line corridor and road improvements are conceptual at this point in time and have yet to be finalized. These analyses provide an assessment of the extent of potential loss of panther habitat based on the conceptual design for the project to inform further discussions and site planning. Updated land use/land cover data in GIS format were used to calculate the potential loss of panther habitat that may occur using the USFWS methodology for estimating PHUs. The number of PHUs of mitigation that may be required for the project was estimated by applying appropriate mitigation ratios. Florida panther occurrence in the vicinity of project components was reviewed using available Very High Frequency (VHF)- and Global Positioning System (GPS)-telemetry, mortality, and den records. Florida panther use of existing transmission line ROWs and other linear landscape features in south Florida was evaluated

using VHF-telemetry records from 1981 through June 2012 and telemetry results from animals outfitted with GPS collars. A literature review was conducted to assess the value of dirt roads, jeep trails, canal levees, old railroad grades, etc., as movement corridors and sources of prey.

Analyses of Florida panther occurrence and habitat use in the vicinity of existing transmission lines and other linear features led to the conclusion that construction of a new transmission line and associated structures, fill pads, and unimproved transmission line access roads within the PFA would not result in long-term effects on Florida panthers and their habitats. Available data indicate that Florida panthers do not avoid transmission line ROWs, but rather panthers do occur on linear features that include transmission line ROWs at a greater frequency than random and use them as movement pathways or to access prey. The benefits of transmission line ROWs to panther conservation cannot be quantified, and they are not quantified or represented by the USFWS methodology. Although we estimated the number of PHUs of mitigation that the USFWS may require if construction of the transmission line ROWs was viewed as a direct and permanent loss of panther habitat, we believe that no mitigation should be required since the project will not result in a loss of habitat, only a conversion from one type of habitat to another. Conversely, the proposed road improvements that are needed to enhance access to the Turkey Point plant site during construction are expected to result in direct and temporary losses of panther habitats. The number of PHUs that the USFWS may require for mitigation for the direct and temporary losses of panther habitat due to improvements to roads accessing the Site was estimated. FPL will work with the USFWS, ACOE, and other appropriate agencies to determine mitigation requirements for the loss of panther habitats after a final design for project features has been achieved consistent with the conditions of site certification.

Methods

Land Use/Land Cover Data

Updated land use/land cover data for the proposed preferred and secondary transmission line corridors and for a conceptual footprint of the proposed road improvements were obtained from Golder Associates Inc., an environmental consulting firm in Gainesville, Florida. The data were provided in GIS format as ArcView (ESRI Inc., Redlands, CA) shape files. Land use/land cover types had been classified according to the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (Florida Department of Transportation 1999, as modified by the SFWMD). A new field was added to the land use/land cover database to correlate FLUCFCS codes to the more general land cover types adopted by USFWS for panther habitat impact assessments. Another field was added to the database, and it was populated with the land cover scores used by USFWS to calculate assumed Florida panther habitat impacts in terms of PHUs. Land use/land cover polygons for the transmission line corridor were cut along the boundaries of corridor segments as determined by FPL engineering staff (Figure 2), and a new field was added to the database to indicate the corridor segment in which each land use/land cover type polygon occurred. The modified land use/land cover data for the proposed transmission line corridor and road improvements footprint were clipped along the boundaries of the PFA Primary and Secondary Zone (Figure 3), and the acreage of each polygon in the clipped data set was recalculated. These steps produced updated land use/land cover databases for the two alternative transmission line corridors and for the conceptual footprint of the proposed plant access roads. Each polygon in the databases contained information on

USFWS cover type, score, acreage, corridor segment label, and panther zone. All GIS analyses were performed using ArcMap 9.3 or ArcMap 10.0 (ESRI Inc., Redlands, CA).

Estimates of Acreages of Potential Habitat Loss within the Transmission Line Corridor

Precise calculations of impacts that may occur to panther habitats affected by the proposed transmission lines were not possible because the exact footprints for proposed fill pads for transmission line structures and associated access road improvements have not been finalized. However, the total acreage of each corridor segment can be determined from the modified land use/land cover database; and the numbers of transmission line structures, acreages of associated fill pads, lengths of transmission line access roads, and acreages of fill associated with access road improvements have been estimated by FPL engineering staff for each segment of the preferred transmission line corridor (Table 1). This information was used to estimate gross acreages of habitat that may be affected within the Primary and Secondary Zones by calculating the percentage of each segment occurring in each panther Zone, and then multiplying those percentages by the anticipated footprint acreage within each corridor segment as determined by FPL engineers (Table 2). Calculations of potential impact within segments of 1B and 1C of the transmission line corridor were based only on estimated acreages for structure fill pads. Access to structures within these corridor segments will be via the road improvements implemented in conjunction with improving transportation access to the Site, and these effects are accounted for in the section dealing specifically with road improvements.

Potential losses of panther habitats were evaluated within two alternative transmission line corridors. The preferred corridor includes segments 3A, 3B, and 3C located immediately west of the L-30/31-N canal (Figure 2). Alternatively, the secondary alternative corridor would follow the alignment of an existing FPL-owned ROW through ENP and WCA (Figure 2). Although land cover data are available for the ENP/WCA segments, precise calculation of impacts to panther habitats within the ENP/WCA corridor segments was not possible because FPL engineering staff has not estimated impacts likely to occur in this area. Therefore, gross acreages of potential effects associated with the ENP/WCA corridor alternative were estimated based on the lengths of the ENP and WCA alignments and based on the acreage of fill required for structures and roads in preferred transmission line corridor segments 3B and 3C, where habitat conditions appear similar to those in the ENP and WCA ROW.

Calculation of Panther Habitat Units

The percentage of each transmission line corridor segment potentially subject to filling was determined by dividing the estimated acreage of fill by the total area of each segment. The resulting percentage was multiplied by the acreage of each land cover type within each segment to obtain an estimate of acreage of impact by cover type within each segment. Potential losses of panther habitats were calculated in terms of PHUs by multiplying the acreage of each land cover type in each corridor or road segment by its corresponding USFWS land cover score, and then summing the products. Estimates of PHUs were calculated separately for the following: (1) the preferred transmission line corridor alternative that includes segments 3A, 3B, and 3C immediately west of the L-30/31-N canal, (2) the secondary transmission line corridor traversing the existing FPL-owned ENP/WCA ROW, and (3) Turkey Point plant access road improvements. The total number of PHUs of mitigation for each project component was calculated by multiplying the sum of all PHUs associated with the project footprint by 2.5, the

mitigation ratio prescribed by USFWS. However, some segments of the transmission line corridors will occur within the Secondary Zone (Figure 3), and USFWS allows for a reduction of mitigation requirements by a factor of 0.69 for Secondary Zone impacts that are mitigated in the Primary Zone. Therefore, a second estimate of mitigation requirements was calculated assuming that all mitigation would be provided in the Primary Zone. USFWS also allows mitigation credit for vegetation restoration and management within project boundaries in some cases, but credit is valued at half the score of the target land cover type due to the lag time involved in establishing restored vegetation communities. Mitigation credits associated with restoration and management of vegetation along the shoulders of access roads within the transmission line corridor were calculated.

Florida Panther Occurrence in the Vicinity of Project Components

Florida panther VHF-telemetry records collected between February 1981 and June 2012 were obtained from the FWC. Florida panther mortality records collected between February 13, 1972, and February 1, 2013, and location records of known panther dens between March 1992 and August 2012 were also obtained from FWC. These data were reviewed to document the history of panther use of habitats within 5.0 miles of the proposed roadway improvements and within 5.0 miles of the proposed transmission line corridor. A distance of 5.0 miles was selected for this analysis because average daily movements of male and female panthers are generally <5.0 miles (McBride et al. 2008; Darrell Land, unpublished data), and this distance was presumed to be indicative of those panthers that have had the potential to occur within areas of the PFA affected by the proposed project even though their presence in the immediate vicinity of project features may not have been formally documented by telemetry, mortality, or den records.

Florida Panther Use of Transmission Line ROWs and Linear Landscape Features

Florida panther movement patterns and habitat use in relation to existing transmission line ROWs and canal levees were assessed using available Florida panther telemetry records, GIS data depicting the locations of existing linear features, 2004 digital aerial photography, and a review of the scientific literature. GIS data for the locations of major power lines in Florida as of 2006 were downloaded from the University of Florida GeoPlan Center's Florida Geographic Data Library web site. GIS data for the alignments of existing levees in south Florida were downloaded from the SFWMD web site. VHF-telemetry records for Florida panthers were obtained from FWC based on the monitoring efforts of FWC, Big Cypress National Preserve, and Everglades National Park researchers for the period from February 1981 through June 2012. GPS-collar telemetry records for 33 Florida panthers subject to FWC research and monitoring studies between 2002 and 2009 were obtained from FWC. GPS collars for most of the animals monitored between 2002 and 2006 were programmed to collect records two to eight times daily, but the collar for FP139 was programmed to collect location records hourly (see Land et al. 2008 for detailed information on GPS-collar data collection parameters). GPS collars on panthers monitored between 2005 and 2009 were programmed to collect location records at intervals ranging from every 15 minutes, every 30 minutes, hourly, every 4 hours, or every 7 hours (Onorato et al. 2011).

Four of the 33 panthers fitted with GPS collars, males FP117, FP139, FP143, and FP167, maintained home ranges in the vicinity of an existing power line in Collier and Hendry County. The Convert Locations to Paths feature of Hawth's Analysis Tools (Version 3.27; Beyer 2004) was used to convert time-series GPS-collar telemetry records into linear paths followed by these males, and these paths were

overlaid on the locations of major power lines to assess panther use of existing power line ROWs. The Fixed Kernel Density Estimator feature of Hawth's Analysis Tools also was used to model fixed kernel home ranges using GPS-collar records for these males, and 95% contours for these animals were plotted in relation to telemetry records, movement patterns, and existing transmission lines. Florida panther radio-telemetry records for the period from February 23, 1981, through June 30, 2012, were obtained from FWC. Home ranges for females (n=93) and adult males (n=65) were modeled using the Animal Movement SA (version 2.4; Hooge and Eichenlaub 1997) extension for ArcView 3.3 (ESRI, Redlands, CA) to create fixed kernel home ranges as defined by 95% contours. Fixed kernel home range models were overlaid to rank the landscape according to panther use based on numbers of overlapping home ranges. Existing power lines were overlaid on the home range models and displayed in the context of VHF- and GPS-telemetry records.

GPS-collar telemetry records for 12 Florida panthers that occurred south of the Caloosahatchee River and were monitored between 2002 and 2006 were used to assess panther use of linear landscape features in south Florida (i.e., dirt roads, jeep trails, paved roads, farm field and drainage ditch berms, hedgerows, old railroad grades, trams, power line ROWs). GPS-telemetry data for FP139 were collected at hourly intervals, but only those records collected between 1800 and 0500 hours, at 0900 hours, and at 1300 hours were used in the analysis because these collection times matched those for the other 11 panthers subject to monitoring with GPS technology. The Fixed Kernel Density Estimator feature of Hawth's Analysis Tools was used to generate ArcView shape files depicting 95% home range contours using GPS-collar telemetry records for each animal. The Generate Random Points feature of Hawth's Analysis Tools was used to generate random point locations within each 95% home range contour in a number equal to the number of GPS-telemetry records available for each individual panther. GPS-collar and random locations were reviewed by zooming in on 2004 digital aerial photography, and records falling on a linear landscape feature were coded to feature type. Minitab 15 (2007) was used to assess data normality using the Kolmogorov-Smirnov test, and statistical differences between GPS-collar records and random locations were tested with a one-way analysis of variance (ANOVA).

Results

Calculations of Panther Habitat Units

Transmission Lines: Construction of a new transmission line along the FPL West Preferred Corridor would affect approximately 157.52 acres with a panther habitat value of 617 PHUs (Table 3). Construction along the FPL West Preferred Corridor would occur within an estimated 106.71 acres of Primary Zone habitat containing 449 PHUs (Table 4) and an estimated 50.81 acres of Secondary Zone habitat containing 168 PHUs (Table 5). The shoulders along an estimated 30.83 acres of unimproved transmission line access roads would be expected to quickly revegetate to shrub and brush cover types, which have a USFWS cover type score of 5.5 (Table 6). Therefore, calculated panther habitat value that may occur within the FPL West Preferred Corridor after project completion would be an estimated 170 PHUs. The result is an estimated net potential loss of 447 PHUs (i.e., 617 PHUs in areas affected by the project minus 170 PHUs of revegetated road shoulders = 447 PHUs). The loss of PHUs would likely result in a USFWS recommendation that 1,118 PHUs of mitigation be provided based on the mitigation ratio of 2.5:1. However, the USFWS methodology allows for use of a reduction factor of 0.69 for calculated losses that occur in the Secondary Zone but are mitigated in the Primary Zone. Therefore,

should all mitigation be provided within the Florida panther Primary Zone, the amount of mitigation the USFWS may recommend for the FPL West Preferred Corridor was estimated to be 1,028 PHUs.

Construction of a new transmission line along the FPL West Secondary Corridor that follows an existing FPL-owned ROW through ENP and WCA would affect approximately 219.96 acres with a panther habitat value of 1,047 PHUs (Table 3). This FPL West Secondary Corridor would occur within an estimated 157.11 acres of Primary Zone habitat containing 756 PHUs (Table 7) and an estimated 62.85 acres of Secondary Zone habitat containing 291 PHUs (Table 8). The shoulders along an estimated 46.04 acres of unimproved transmission line access roads would be expected to quickly revegetate to shrub and brush cover types, which have a USFWS cover type score of 5.5 (Table 6). Therefore, the calculated panther habitat value that may occur within this the FPL West Secondary Corridor after project completion would be an estimated 254 PHUs. The result is an estimated net loss of 793 PHUs (i.e., 1,047 PHUs in areas affected by the project minus 254 PHUs of revegetated road shoulders = 793 PHUs). This loss of PHUs would likely result in a USFWS recommendation that 1,983 PHUs of mitigation be provided based on the mitigation ratio of 2.5:1. However, the USFWS methodology allows for use of a reduction factor of 0.69 for calculated losses that occur in the Secondary Zone but are mitigated in the Primary Zone. Therefore, should all mitigation be provided within the Florida panther Primary Zone, the amount of mitigation the USFWS may recommend for the FPL West Secondary Corridor was estimated to be 1,798 PHUs.

This analysis indicates that construction of a new transmission line along the FPL West Preferred Corridor that includes segments 3A, 3B, and 3C immediately west of the L-30/31-N canal would potentially affect fewer acres of panther habitat and require less mitigation than the FPL-owned ENP/WCA ROW in the FPL West Secondary Corridor (Table 3). Construction within the ENP/WCA FPL West Secondary Corridor would affect approximately 62.44 more acres of panther habitat than construction within the FPL West Preferred Corridor west of the L-30/31-N canal, corresponding to approximately 770 additional PHUs of mitigation that the USFWS may recommend.

Turkey Point Plant Access Road Improvements: The proposal to improve road access to the Turkey Point plant includes 10.30 miles of roadway with a total footprint of approximately 129.20 acres. However, not all of these road miles and footprint acres are within the Florida panther Primary Zone (Figures 3 and 4). The conceptual footprint for proposed road improvements would affect approximately 69.08 acres of Primary Zone habitat with an estimated panther habitat value of 297 PHUs (Tables 3 and 9). This estimate assumes that a direct loss of panther habitats would occur within the roadway footprints and that the USFWS would not allow credit for revegetation of road shoulders. This potential loss of habitat may result in a USFWS recommendation that 743 PHUs of mitigation be provided based on the mitigation ratio of 2.5:1. No portion of the proposed road improvements occur in the Florida panther Secondary Zone; therefore, no reduction in mitigation requirements would be available for providing mitigation for Secondary Zone impacts within the Primary Zone.

Panther Occurrences near Project Components

The FWC panther VHF-telemetry database from February 1981 through June 2012 (*N*=97,471 records) contains 275 records of panther occurrence within 5.0 miles of the proposed improvements to roads accessing the Turkey Point plant. All of these records are from FP21, a female panther that was originally

captured for monitoring by ENP researchers in March 1987. FP21 was injured in a collision with a motor vehicle on July 23, 1988. The injury occurred approximately 1.0 mile east of US 1 on Palm Drive (SW 344th Street) approximately 2.7 miles west of the proposed road improvements. FP21 was removed from the wild for medical reasons and was relocated to White Oak Plantation in Nassau County, Florida. FP21 remained in captivity until she was euthanized in December 1997. The FWC panther mortality database through February 1, 2013, contains one record of panther mortality within 5.0 miles of the proposed road improvements. An uncollared three-year old female died in a collision with a motor vehicle on US 1 approximately 0.5 miles south of the intersection with Card Sound Road on May 9, 2007. The FWC panther den database contains no records of panther dens within 5.0 miles of the proposed road improvements. This information demonstrates that VHF-collared Florida panthers have not been recorded in the vicinity of the proposed road improvements since 1988, but at least one uncollared female panther has occurred in the vicinity as recently as May 2007 based on mortality records.

The FWC panther VHF-telemetry database through June 2012 (N=97,471 records) contains 1,770 telemetry records representing the occurrence of 12 Florida panthers and one Texas female within 5.0 miles of the proposed transmission line corridor. These records may be summarized as follows:

- 47 records for female FP14 between December 18, 1986, and July 24, 1990;
- 463 records for male FP16 between January 26, 1987, and January 7, 2000;
- 375 records for female FP21 between April 5, 1987, and July 23, 1988;
- 4 records for female FP22 between January 29, 1988, and January 12, 1989;
- 59 records for female FP23 between November 18, 1989, and February 27, 1990;
- 97 records for female FP27 between May 14, 1998, and July 26, 1989;
- 125 records for male FP42 between March 24, 1990, and April 29, 1991;
- 334 records for female FP61 between November 10, 1997, and June 4, 2003;
- 116 records for male FP85 between March 6, 2000, and February 17, 2004;
- 1 record for female FP94 on March 7, 2001;
- 117 records for female FP95 between March 2, 2001, and January 9, 2008;
- 24 records for male FP125 between July 27, 2004, and September 28, 2004; and
- 8 records for Texas female TX108 between May 1, 1996, and March 2, 2001.

The FWC panther mortality database through February 1, 2013, contains one record of vehicle-related injury and five records of mortality within 5.0 miles of the transmission line corridor. The vehicle-related injury occurred in 1988, and it involved female FP21, who was removed permanently from the wild. Two vehicle-related mortalities occurred in 2007, one vehicle-related mortality occurred in 2008, and one record of panther mortality due to unknown causes occurred in 1989 and in 2000. The FWC database of panther dens contains one record of a panther den within 5.0 miles of the transmission line corridor. The den record was dated September 27, 2002. The GPS-telemetry database obtained from FWC for 33 Florida panthers contains 2 records of a panther within 5.0 miles of the transmission line corridor. Both of these records were for female FP142 and were dated May 25, 2006. The GPS-telemetry database contains 9,816 records for this individual, all located on or in close proximity to Long Pine Key in ENP with dates ranging from December 12, 2005, through February 12, 2007.

Panther Use of Transmission Line ROWs and Linear Landscape Features

Adult male FP139 maintained a 42,776-acre home range east of Immokalee between March 31 and August 30, 2005, based on the 95% contour of the kernel home range model for this animal (Figure 5). This panther's GPS collar was programmed to collect location records hourly, and his home range included a 5.2-mile segment of an existing electric transmission line ROW. The ROW is approximately 150 feet wide; structures are spaced at intervals of approximately 1,300 feet; and an unimproved one-lane transmission line access road is present within the ROW. Vegetation within the ROW is maintained in an early successional stage with species of ground cover and shrubs typical of upland and wetland plant communities in south Florida. The segment of the ROW that traverses FP139's home range is in an area of relatively undisturbed natural habitats in private ownership. FP139 moved north and south across the existing power line ROW through this area on multiple occasions. Hourly GPS-collar records show no evidence that FP139 traveled along the access road or lingered in the ROW, but there is no evidence that the transmission line ROW interfered with this panther's movements perpendicular to the ROW.

Sub-adult male FP117 was outfitted with a GPS collar programmed to collect telemetry locations at intervals of 8, 16, and 24 hours between December 3, 2003, and July 28, 2004. FP117 maintained a series of temporary home ranges of varying size based on the 95% contour of the kernel home range model for this animal (Figure 6). Temporary home ranges extended along an arc of approximately 48 miles from the northeast corner of Big Cypress National Preserve to an area of private lands east of Okaloacoochee Slough State Forest, and the total area within all home range patches was 80,605 acres. A 12.9-mile segment of the same power line ROW described above bisected the largest of FP117's temporary home ranges (Figure 7). FP117 crossed the power line ROW on at least 39 occasions. One GPS telemetry record was located within the ROW, and two records were along the edge of the ROW. The telemetry data for this animal show no evidence that FP117 traveled along the unimproved access road within the ROW, but there is no indication that the transmission line ROW or facilities interfered with this panther's movements nor did it form a boundary to FP117's home range.

Sub-adult male FP167 was outfitted with a GPS collar programmed to collect telemetry locations hourly or every 4 hours from February 6 through October 25, 2009. This animal occurred within a 73,230-acre home range in southeastern Hendry County and northeastern Collier County (Figure 8). Although FP167 made several movements to the south and east, the core of his home range was on privately-owned lands between Dinner Island Wildlife Management Area and SFWMD's River of Grass parcel. The transmission line ROW described above traversed through approximately 9.0 miles of the core habitat area of FP167 (Figure 9). FP167 crossed the transmission line ROW at least 78 times, and six telemetry records were within the ROW and nine records were along the edge of the ROW. The telemetry data for FP167 show no indication that he traveled along the unimproved access road within the ROW or used the ROW as a travel corridor, but there is no evidence that the transmission line ROW, access road, or structures interfered with this animal's movements.

Sub-adult male FP143 was outfitted with a GPS collar programmed to collect telemetry locations at seven-hour intervals from January 9 through December 16, 2006. Shortly after capture and release, this animal moved within a 67,625-acre home range in the same general area used by FP167 and described above (Figure 10). FP143 crossed a 3.9-mile segment of the existing transmission line ROW in this area on at least 12 occasions. FP143 subsequently moved to the west and occupied a 49,321-acre home range

on privately-owned lands on either side of CR858. While occurring in the western home range, FP143 twice crossed an existing transmission line ROW located immediately along the west side of SR29. The telemetry data for this animal show no clear evidence that FP143 used existing transmission line ROWs as movement corridors, but there is no evidence that the presence of transmission line ROWs in his home range had any effect on movement patterns or behavior.

The transmission line ROW described above traverses approximately 23.9 miles of a landscape of occupied panther habitats based on 31 years of radio-telemetry records (Figure 11). The number of overlapping female and adult male panther home ranges transected by the power line ranges between one and nine, with the highest number of overlapping home ranges affected by the power line occurring on private lands between Florida Panther Conservation Bank and Dinner Island Ranch Wildlife Management Area (Figure 11). This information indicates that the transmission line ROW has been integrated into the home ranges of several Florida panthers over the last 31 years. Home range and telemetry data appear to indicate that the transmission line ROW does not impede panther movements, nor does it form any type of boundary to areas used by panthers.

One adult male Florida panther (FP26) and three sub-adult males (FP29, FP43, and FP90) have used habitats along and adjacent to existing levees and transmission line ROWs that traverse the northern Everglades (Figure 12). Actual movements of these animals are difficult to pinpoint because VHF-telemetry records were generally collected at intervals of every two to three days. However, despite the long intervals between data collection, many of these telemetry locations were recorded on existing levees or in herbaceous wetlands habitats immediately adjacent to the levees. These data appear to indicate that Florida panthers select elevated levees, which also serve as access roads for existing transmission lines and structures in this area, to access habitat and prey in extensive regions of herbaceous wetlands habitats, such as the Everglades.

Linear landscape features within the home ranges of 12 Florida panthers outfitted with GPS collars in south Florida included jeep trails, dirt roads, paved roads, farm field berms, drainage ditch berms, hedgerows, power line ROWs, old railroad grades, and trams. A total of 14.0% of GPS-collar telemetry locations for these 12 animals occurred on one or more of these linear features compared to the 6.3% of randomly distributed points that occurred on these features (Table 10). There was a significant difference ($P<0.001$) between the occurrence of Florida panthers on linear landscape features compared to the random occurrence of these features in the landscape. These results indicate that Florida panthers occurred on linear landscape features approximately 14.0% of the time, and Florida panthers occur on these features 2.22 times more frequently than their random distributions within panther home ranges would indicate.

Discussion

Applicability of the USFWS Methodology

The USFWS methodology is the standard tool used in south and south-central Florida for calculating impacts to Florida panther habitats and for developing recommendations for mitigation, and it serves as a starting point for evaluating the potential impacts of the proposed project on panther habitats. However, the data analyses completed for this project suggest that the USFWS methodology should be applied only

to the roadway improvements designed to improve transportation access to the Turkey Point plant but not to construction of a new transmission line. The proposed roadway improvements will result in both direct and temporary losses of Florida panther habitat, and the amount of mitigation that may be required will be resolved in discussions with USFWS, ACOE, and other agencies once a final project design has been determined.

Conversely, the proposed transmission line fill pads, structures, and unimproved transmission line access roads will result only in a temporary disruption of panther use of the area during construction. Although construction of a new transmission line will alter habitat conditions along the corridor, the new transmission line is not expected to have long-term adverse effects on the functionality of panther habitats within or in the vicinity of the corridor regardless of which corridor alternative is ultimately permitted for this project. The USFWS methodology for calculating impacts to panther habitats in terms of PHUs provides a means for comparing pre- and post-project effects on cover types that are assumed to reflect the direct loss of habitat. However, no direct loss of panther habitat is expected to occur as a result of construction of new transmission lines. Available data indicate that panthers do not avoid transmission line ROWs; rather, conservation benefits may result from the presence of transmission line ROWs within panther home ranges. The USFWS methodology produces PHU values that do not measure or reflect the positive habitat benefits that transmission line ROWs and other similar created landscape features (e.g., woods roads, trams, berms, etc.) may provide that accommodate panther movements and provide habitat for and access to prey. These habitat benefits appear to be especially important in areas of predominantly herbaceous wetlands habitats where white-tailed deer benefit from elevated embankments during periods of high water.

Turkey Point Plant Access Road Improvements

Proposed road improvements in the Primary Zone include (1) widening 1.57 miles of existing two-lane paved roads to four lanes, (2) upgrading 2.93 miles of existing unpaved roads to three-lane paved roads, and (3) upgrading 1.25 miles of existing unpaved roads to four-lane paved roads. These improvements may result in the temporary avoidance of the area by panthers during construction and in the direct loss of 69.08 acres of Primary Zone habitat with an estimated value of 297 PHUs (Table 9). Application of the USFWS 2.5:1 mitigation ratio to the loss of these PHUs results in a recommendation for 743 PHUs of mitigation (Table 3). These impacts ideally would be mitigated within the panther Primary Zone to achieve maximum conservation benefit to panthers.

The proposed roadway improvements are intended to accommodate traffic during the construction of Turkey Point Units 6 & 7. Roadway improvements on publicly owned rights-of-way will be returned to the status of the roadway prior to construction. Within two years following the construction of Turkey Point Units 6 & 7, any privately owned roadway will be returned to the minimum roadway width required to provide maintenance to FPL facilities, and will not be more than two lanes. The existing 14-foot transmission line access road along SW 359th Street will be restored as an 18-foot transmission line access road once construction is complete. The roadways are not intended to be used as or to become major public thoroughfares comparable to heavily traveled highways passing through occupied panther habitats, such as I-75 in Collier County. Instead, the roadway improvements would occur in an area that is at the urban fringe of the panther Primary Zone, and there are very few acres of habitat that could be accessed in the future by panthers moving north or east of the proposed roadways. Moreover, panthers outfitted with

VHF collars have not been observed within 5.0 miles of the project site in over 20 years, and the only other documented record of panthers within 5.0 miles of the proposed road improvements was that of a female that died in a collision with a motor vehicle in May, 2007, on US 1 approximately 4 miles west of the site. This information suggests that there is low likelihood that panthers will occur in the area in the future. Therefore, wildlife crossings designed to accommodate future movements of panthers are not warranted. Rather, the roadways should be designed with wide shoulders that are mowed on a regular basis, thus eliminating vegetative cover adjacent to the road that could be used for concealment by panthers and other species of wildlife. Wide shoulders with improved visibility for panthers, other wildlife, and motorists will reduce the likelihood of vehicle mortality for those animals that do attempt to cross the road and will also improve motorist safety. Panther crossing signs should be installed and reduced speed limits should be established to minimize the likelihood of future panther collisions with motor vehicles in the event that panthers do occasionally occur in this area at some time in the future. Florida panthers are capable of crossing multi-lane roadways without the need for underpasses as long as visibility and speed limits are satisfactory and traffic volume is low. Moreover, FPL should train project personnel to be aware of and avoid Florida panthers as well as other listed species of wildlife.

Transmission Line Corridor Structures, Fill Pads, and Access Roads

Florida panthers have used habitats in the vicinity of the proposed transmission line corridor for many years. FWC telemetry records indicate that 12 VHF-collared Florida panthers, one GPS-collared panther, and one Texas female occurred within 5.0 miles of the 43.6-mile long transmission line corridor between December 1986, and January 2008, and three vehicle mortalities were recorded within 5.0 miles of the corridor in 2007 and 2008. Activities associated with construction of a new transmission line and associated structure pads and access roads may be expected to cause panthers to temporarily avoid using habitats in the vicinity of the corridor. However, panthers should also be expected to adjust to the presence of the new ROW and maintenance activities, and they are likely to reoccupy areas affected by the power line once construction is complete. Existing transmission lines, structure pads, and unimproved transmission line access roads within occupied panther habitats on privately owned lands between Panther Island Conservation Bank and Dinner Island Ranch Wildlife Management Area appear to have had no discernable effects on panther habitat use or movement patterns based on 31 years of population monitoring.

Telemetry records also indicate that four males appear to have used levees as corridors for movement and to access prey in the herbaceous wetlands of the northern Everglades in areas that have been impacted by construction of canals, levees, unimproved roads, and power lines. The unimproved roads proposed to provide access to the structures within the portions of the transmission line corridor planned for lands within the PFA may also provide new travel corridors for Florida panthers in affected areas, and they are likely to facilitate panther access to prey in the herbaceous wetlands habitats adjacent to the roads. Florida panthers have been documented to travel and disperse along trails, trams and abandoned railroad grades (Maehr et al. 2002), and woods roads, especially where cover is dense. Dickson et al. (2005) concluded that dirt roads do not inhibit, and may even promote, movements of pumas in California. Population counts of Florida panthers are based in part on documentation of Florida panthers crossing dirt roads and jeep trails in south Florida (McBride et al. 2008). An analysis performed for this project demonstrated that 14.0% of GPS-collar telemetry records for 12 Florida panthers occurred on linear landscape features, including dirt roads, jeep trails, canal levees, and power line corridors, and panther

occurrence on these features was significantly greater ($P<0.001$) than the random occurrence of these features in panther home ranges.

The higher elevations and shrubby vegetation along the shoulders of new roads and structure pads within ENP may improve foraging opportunities for panthers due to increased use of these areas by white-tailed deer (*Odocoileus virginianus*), the principal prey species of the panther in ENP (Dalrymple and Bass 1996). Highest densities of white-tailed deer in the Florida Everglades occur during periods of high water when deer concentrate in areas of higher elevation, including tree islands (Fleming et al. 1994, Labisky 1994, Labisky et al. 1995). Management techniques suggested for white-tailed deer in the Florida Everglades include maintaining water levels at depths less than 2 feet and creation or maintenance of elevated sites (e.g., tree islands, canal banks) to allow deer to survive periods of excessively deep water (Loveless 1959).

This information leads to the conclusion that the effects on panther habitat resulting from construction of access road improvements, fill pads, and structures associated with the proposed transmission line will be temporary and occur only during the period of construction. These new landscape features will likely have no long-term adverse effects on panthers within the area based on observations of panther activities within similar habitats in other areas of south Florida where panthers and existing transmission line ROWs co-exist. Moreover, these new features have the potential to benefit panther conservation by providing new movement corridors; by providing elevated habitat features likely to provide refuges during periods of high water; and by enhancing white-tailed deer populations, the principal prey species of panthers, in the herbaceous wetland habitats adjacent to the transmission line access roads. Public access to the new transmission line access roads should be minimized or prohibited to limit the potential for panther-human interaction.

Summary and Conclusions

The Turkey Point plant site and the Clear Sky-Davis-Miami transmission line corridor are outside of the PFA. Therefore, construction activities occurring on the plant site and along the eastern transmission line corridor are not expected to affect Florida panthers or their habitats, and no mitigation for impacts to panthers should be required for these project components.

The conceptual footprint for the proposed roadway improvements would result in the direct loss of panther habitat with a value of 297 PHUs, requiring an estimated 743 PHUs of mitigation. However, loss of panther habitat is expected to be minimized in some areas and temporary in others. Roadway improvements on publicly owned rights-of-way will be returned to the status of the roadway prior to construction. Within two years following the construction of Turkey Point Units 6 & 7, any privately owned roadway will be returned to the minimum roadway width required to provide maintenance to FPL facilities, and will not be more than two lanes. The existing 14-foot transmission line access road along SW 359th Street will be restored as an 18-foot transmission line access road once construction is complete. FPL will work with the USFWS, ACOE, and other appropriate agencies to determine actual mitigation requirements for the direct and temporary loss of panther habitats after a final design for project features has been achieved, consistent with the conditions of site certification. Mitigation for the loss of PHUs resulting from road improvements should be accomplished at an acceptable location within the Florida panther Primary Zone to achieve maximum conservation benefit. The roadway improvements

are proposed in an area at the urban fringe of the Primary Zone where telemetry and mortality records indicate that panthers have occurred infrequently within the area over the last 20 years. Installation of wildlife crossings to accommodate future movements of Florida panthers are not warranted in this area due to the small area of potentially suitable habitats north and east of the roadways. If panthers do eventually occur in the area, they are likely to safely cross the new roads at the anticipated traffic volumes if wide road shoulders are maintained to eliminate concealment cover and promote visibility, panther crossing signs are installed, and low speed limits are established. Moreover, training should be given to project personnel to be aware of and avoid Florida panthers and other listed species of wildlife.

The USFWS methodology was used initially for estimating potential effects of the proposed transmission line on Florida panthers and their habitats. However, the proposed transmission line, associated structures, fill pads, and unimproved access roads are expected to only temporarily affect Florida panther habitat during the construction phase. Available data demonstrate that Florida panthers co-exist with transmission line ROWs, jeep trails, dirt roads, and canal levees in other areas of their range, and panthers occur on these features at a frequency greater than their random occurrence within panther home ranges. Elevated fill areas may be expected to improve foraging and high-water refuge opportunities for white-tailed deer, the principal prey species of panthers. The long-term functionality of panther habitats within and adjacent to the new transmission line corridor will be maintained without adverse effect. The USFWS methodology for calculating potential loss of Florida panther habitats is not appropriate for application to the transmission line components of this project. The methodology only compares the relative values of land cover types under pre- and post-project conditions and assumes a direct loss of habitat. However, the methodology does not have the ability to reflect the habitat values and benefits provided by the features occurring within and likely to result from the proposed transmission line ROWs. Therefore, no mitigation should be required for construction of the proposed transmission lines regardless of whether the FPL West Preferred or FPL West Secondary Corridor is selected for this project.

Literature Cited

Beier, P. 1995. Dispersal of juvenile cougars in fragmented habitat. Journal of Wildlife Management 59:228-237.

Beyer, H. L. 2004. Hawth's analysis tools for ArcGIS. http://www.spatialecology.com/htools.

Dalrymple, G. H., and O. L. Bass, Jr. 1996. The diet of the Florida panther in Everglades National Park. Bulletin of the Florida Museum of Natural History 39(5):173-193.

Dickson, B. G., J. S. Jenness, and P. Beier. 2005. Influence of vegetation, topography, and roads on cougar movement in southern California. Journal of Wildlife Management 69(1):264-276.

Fleming, D. M., J. Schortemeyer, and J. Ault. 1994. Distribution and abundance of white-tailed deer in the Florida Everglades. Pages 247-274 *in* Jordan, D. B., editor. Proceedings of the Florida panther conference. U.S. Fish and Wildlife Service, Gainesville, FL.

Florida Department of Transportation. 1999. Florida land use, cover and forms classification system. Handbook. FDOT, Tallahassee, FL.

Hooge, P. N., and B. Eichenlaub. 1997. Animal movement extension to ArcView version 1.1. Alaska Science Center, Biological Science Office, U.S. Geological Survey, Anchorage, AK.

Labisky, R. F. 1994. Population ecology of white-tailed deer in the wet prairie of Big Cypress National Preserve and Everglades National Park. Pages 275-276 *in* Jordan, D. B., editor. Proceedings of the Florida panther conference. U.S. Fish and Wildlife Service, Gainesville, FL.

Labisky, R. F., M. C. Boulay, K. E. Miller, R. A. Sargent, Jr., and J. M. Zultowsky. 1995. Population ecology of white-tailed deer in Big Cypress National Preserve and Everglades National Park. Final report to USDI-National Park Service. Department of Wildlife Ecology and Conservation, University of Florida, Gainesville, FL.

Land, E. D., D. B. Shindle, R. J. Kawula, J. F. Benson, M. A. Lotz, and D. P. Onorato. 2008. Florida panther habitat selection analysis of concurrent GPS and VHF telemetry data. Journal of Wildlife Management 72(3):633-639.

Loveless, C. M. 1959. The Everglades deer herd, life history and management. Technical bulletin no. 6. Florida Game and Fresh Water Fish Commission, Tallahassee, FL.

Maehr, D. S., E. D. Land, D. B. Shindle, O. L. Bass, and T. S. Hoctor. 2002. Florida panther dispersal and conservation. Biological Conservation 106:182-197.

McBride, R. T., R. T McBride, R. M. McBride, and C. E. McBride. 2008. Counting pumas by categorizing physical evidence. Southeastern Naturalist 7(3):381-400.

Onorato, D. P., M. Criffield, M. Lotz, M. Cunningham, R. McBride, E. H. Leone, O. L. Bass, Jr., and E. C. Hellgren. 2011. Habitat selection by critically imperiled Florida panthers across the diel period: implications for land management and conservation. Animal Conservation 14:196-205.

U.S. Fish and Wildlife Service. 2007. Florida panther effect determination key. Letter dated February 19, 2007, from Paul Souza, U.S. Fish and Wildlife Service, Vero Beach, FL, to David S. Hobbie, U.S. Army Corps of Engineers, Jacksonville, FL.

TABLES

Table 1 **Data Provided by FPL for the Preferred Transmission Line Corridor - Road dimensions, number of structure pads, and estimated total acreage of dredge and fill impact for those segments of the preferred transmission line corridor that occur in whole or in part within the Florida Panther Focus Area.**

Segment	Road Depth of Fill (Feet)	Road Length (Feet)	Road Width (Feet)	Road Area (Acres)	Number of Pads	Total Pad Area (Acres)	Other Dredge & Fill (Acres)	Total Impact (Acres)
1B	5	9,741	48	15.21	22	8.44	0	23.65
1C	5	10,734	36	10.84	28	9.05	0	19.89
1D	5	21,854	18	19.07	59	25.69	0	44.76
2	1	0	0	0	5	2.70	0	2.70
3A	1-4	4,593	18	2.37	23	12.96	0	15.33
3B	1-6	39,840	18	35.88	108	66.75	0	102.63
3C	6	20,352	18	19.62	54	36.33	0	55.95
4	5	14,066	18	12.27	41	15.42	0	27.69
Access 1	0	0	0	0	0	0	1.63	1.63
Access 2	0	0	0	0	0	0	0.20	0.20

Table 2 **TRANSMISSION LINE CORRIDORS: Total acreage of each transmission line corridor segment; acreage and percent of each segment within the Florida panther Primary and Secondary Zones; acreage of impact due to dredging and filling for pads and access roads as estimated by FPL engineering staff for each corridor segment; and estimated acreage of potential dredge and fill impact within the Primary and Secondary Zones.**

Segment	Segment Total Acres	Area in Panther Zones		Percent by Zone		Segment Impact Acres*	Estimated Impact	
		Primary Acres	Secondary Acres	Primary Zone	Secondary Zone		Primary Acres	Secondary Acres
1B	112.14	20.16	0	18.0%	0.0%	8.44	1.52	0.00
1C	81.48	81.48	0	100.0%	0.0%	9.05	9.05	0.00
1D	219.73	191.14	0	87.0%	0.0%	44.76	38.94	0.00
2	706.54	0.55	0	0.1%	0.0%	2.70	0.002	0.00
3A	126.94	72.66	0	57.2%	0.0%	15.33	8.77	0.00
3B	858.44	405.08	9.53	47.2%	1.1%	102.63	48.43	1.14
3C	433.35	0	371.02	0.0%	85.6%	55.95	0.00	47.90
4	235.93	0	2.91	0.0%	1.2%	27.69	0.00	0.34
Access 1	364.74	0	274.66	0.0%	75.3%	1.63	0.00	1.23
Access 2	10.5	0	10.5	0.0%	100.0%	0.20	0.00	0.20
ENP/WCA	498.71	317.76	180.95	63.7%	36.3%	168.88	107.60	61.28
Total	**3,648.50**	**1,088.83**	**849.57**	—	—	—	—	—

* See Table 1.

Table 3 **Summary of potential pre- and post-project impacts to Florida panther habitats in terms of Panther Habitat Units (PHU) for the preferred transmission line corridor alternative involving relocation of segments to the west side of the L-30/31-N canal; the corridor alternative that utilizes the existing right-of-way through Everglades National Park (ENP) and Water Conservation Area 3B (WCA); and associated with road improvements to upgrade access to Turkey Point power plant. Post-project PHU calculations assume that the shoulders of unimproved transmission line access roads will revegetate to shrub and brush cover types in a short period of time.**

Project Feature	FWS Cover Type	FWS Score	Pre-Project		Post-Project	
			Acres	PHU	Acres	PHU
Preferred Transmission Line Corridor	Marsh/Wet Prairie	4.7	84.17	396	0	0
	Hardwood Swamp	9.2	9.84	91	0	0
	Improved Pasture	5.2	1.46	8	0	0
	Cropland	4.8	12.16	58	0	0
	Shrub and Brush	5.5	0.00	0	30.83	170
	Exotic Plants	3	21.48	64	0	0
	Urban and Barren	0	14.78	0	126.69	0
	Water	0	13.64	0	0	0
	Total		**157.52**	**617**	**157.52**	**170**
Secondary Alternative Transmission Line Corridor (including ENP/WCA ROW)	Marsh/Wet Prairie	4.7	182.45	858	0	0
	Hardwood Swamp	9.2	11.58	107	0	0
	Improved Pasture	5.2	0.08	0	0	0
	Shrub and Brush	5.5	0.00	0	46.04	254
	Cropland	4.8	7.89	38	0	0
	Exotic Plants	3	14.80	44	0	0
	Urban and Barren	0	2.22	0	173.92	0
	Water	0	0.95	0	0	0
	Total		**219.96**	**1,047**	**219.96**	**254**
Power Plant Access Roads	Marsh/Wet Prairie	4.7	28.43	134	0	0
	Hardwood Swamp	9.2	13.89	128	0	0
	Cropland	4.8	4.61	22	0	0
	Orchards/Groves	4.7	1.59	7	0	0
	Exotic Plants	3	2.1	6	0	0
	Urban and Barren	0	15.49	0	69.08	0
	Water	0	2.97	0	0	0
	Total		**69.08**	**297**	**69.08**	**0**

Table 4 **PREFERRED CORRIDOR – PANTHER PRIMARY ZONE: Acreages and Panther Habitat Units (PHU) for each cover type potentially affected by dredging and filling within each segment of the preferred transmission line corridor (i.e., includes segments along the L-30/31-N canal) that occurs within the Florida panther Primary Zone.**

Primary Zone - Transmission Line Corridor Segments Preferred Corridor (L-30/31-N)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
1B	Marsh/Wet Prairie	4.7	19.71	1.49	7
	Urban	0	0.45	0.03	0
Subtotal			20.16	1.52	7
1C	Marsh/Wet Prairie	4.7	58.71	6.52	31
	Hardwood Swamp	9.2	19.21	2.13	20
	Urban	0	3.39	0.38	0
	Water	0	0.17	0.02	0
Subtotal			81.48	9.05	50
1D	Marsh/Wet Prairie	4.7	56.35	11.48	54
	Hardwood Swamp	9.2	31.76	6.47	60
	Improved Pasture	5.2	0.38	0.08	0
	Cropland	4.8	38.71	7.89	38
	Exotic Plants	3	56.47	11.50	35
	Urban	0	6.15	1.25	0
	Water	0	1.32	0.27	0
Subtotal			191.14	38.94	186
2	Improved Pasture	5.2	2.70	0.002	0.01
Subtotal			2.70	0.002	0.01

Table 4 Continued.

Primary Zone - Transmission Line Corridor Segments Preferred Corridor (L-30/31-N)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
3A	Marsh/Wet Prairie	4.7	55.73	6.73	32
	Cropland	4.8	0.13	0.02	0
	Exotic Plants	3	9.98	1.20	4
	Urban	0	6.82	0.82	0
Subtotal			72.66	8.77	35
3B	Marsh/Wet Prairie	4.7	228.60	27.33	128
	Hardwood Swamp	9.2	0.21	0.03	0
	Improved Pasture	5.2	11.58	1.38	7
	Cropland	4.8	35.61	4.26	20
	Exotic Plants	3	37.83	4.52	14
	Urban	0	47.68	5.70	0
	Water	0	43.57	5.21	0
Subtotal			405.08	48.43	286
Summary	Marsh/Wet Prairie	4.7	419.10	53.54	252
	Hardwood Swamp	9.2	51.18	8.63	79
	Improved Pasture	5.2	11.96	1.46	8
	Cropland	4.8	74.45	12.16	58
	Exotic Plants	3	104.28	17.23	52
	Urban	0	64.49	8.19	0
	Water	0	45.06	5.50	0
Total			**770.52**	**106.71**	**449**

Table 5 **PREFERRED CORRIDOR – SECONDARY ZONE: Acreages and Panther Habitat Units (PHU) for each cover type potentially affected by dredging and filling within each segment of the preferred transmission line corridor (i.e., includes segments along the L-30/31-N canal) and that occurs within the Florida panther Secondary Zone.**

Secondary Zone - Transmission Line Corridor Segments Preferred Corridor (L-30/31-N)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
3B	Marsh/Wet Prairie	4.7	7.83	0.94	4
	Exotic Plants	3	0.05	0.01	0
	Urban	0	1.35	0.16	0
	Water	0	0.30	0.04	0
Subtotal			9.53	1.14	4
3C	Marsh/Wet Prairie	4.7	225.9	29.16	137
	Hardwood Swamp	9.2	9.36	1.21	11
	Exotic Plants	3	28.74	3.71	11
	Urban	0	47.21	6.09	0
	Water	0	59.81	7.72	0
Subtotal			371.02	47.90	159
4	Exotic Plants	3	2.91	0.34	1
Subtotal			2.91	0.34	1
Access 1	Marsh/Wet Prairie	4.7	103.88	0.47	2
	Exotic Plants	3	43.17	0.19	1
	Urban	0	54.06	0.24	0
	Water	0	73.55	0.33	0
Subtotal			274.66	1.23	3
Access 2	Marsh/Wet Prairie	4.7	3.06	0.06	0
	Urban	0	4.70	0.09	0
	Water	0	2.74	0.05	0
Subtotal			10.50	0.20	0

Table 5 Continued.

Secondary Zone - Transmission Line Corridor Segments Preferred Corridor (L-30/31-N)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
Summary	Marsh/Wet Prairie	4.7	340.67	30.62	144
	Hardwood Swamp	9.2	9.36	1.21	11
	Exotic Plants	3	74.87	4.25	13
	Urban	0	107.32	6.59	0
	Water	0	136.40	8.14	0
Total			**668.62**	**50.81**	**168**

Table 6 **Estimated acreages and associated Panther Habitat Units (PHU) along revegetated shoulders of transmission line access roads proposed for the preferred and secondary transmission line corridors. Shoulders would quickly revegetate to a shrub and brush successional stage with a USFWS land cover score of 5.5, and the PHU calculation assumes no reduction in credit would be required due to the short time lag involved in achieving restoration.**

Segment	Shoulder Fill (Acres)	Percent Impact	Total Impact (Acres)	Restoration Credit (PHU)
1B	4.48	18.0%	0.80	4
1C	1.97	100.0%	1.97	11
1D	10.04	87.0%	8.73	48
2	0.00	0.1%	0.00	0
3A	0.47	57.2%	0.27	1
3B	19.42	48.3%	9.38	52
3C	11.21	85.6%	9.60	53
4	6.46	1.2%	0.08	0
Access 1	0.00	75.3%	0.00	0
Access 2	0.00	100.0%	0.00	0
ENP/WCA	34.53	100.0%	34.53	190
ROW				
Preferred			30.83	170
Secondary			46.11	254

Table 7 **SECONDARY CORRIDOR – PANTHER PRIMARY ZONE: Acreages and Panther Habitat Units (PHU) for each cover type potentially affected by dredging and filling within each segment of the secondary transmission line corridor (i.e., includes segments along the existing FPL-owned right-of-way (ROW) in Everglades National Park and Water Conservation Area 3B [ENP/WCA]) and that occurs within the Florida panther Primary Zone.**

Primary Zone - Transmission Line Corridor Segments Secondary Corridor (ENP/WCA ROW)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
1B	Marsh/Wet Prairie	4.7	19.71	1.49	7
	Urban	0	0.45	0.03	0
Subtotal			20.16	1.52	7
1C	Marsh/Wet Prairie	4.7	58.71	6.52	31
	Hardwood Swamp	9.2	19.21	2.13	20
	Urban	0	3.39	0.38	0
	Water	0	0.17	0.02	0
Subtotal			81.48	9.05	50
1D	Marsh/Wet Prairie	4.7	56.35	11.48	54
	Hardwood Swamp	9.2	31.76	6.47	60
	Improved Pasture	5.2	0.38	0.08	0
	Cropland	4.8	38.71	7.89	38
	Exotic Plants	3	56.47	11.50	35
	Urban	0	6.15	1.25	0
	Water	0	1.32	0.27	0
Subtotal			191.14	38.94	186
2	Improved Pasture	5.2	2.70	0.002	0.01
Subtotal			2.70	0.002	0.01
ENP/WCA	Marsh/Wet Prairie	4.7	302.37	102.39	481
	Hardwood Swamp	9.2	7.23	2.45	23
	Exotic Plants	3	8.16	2.76	8
Subtotal			317.76	107.60	512

Table 7 Continued.

Primary Zone - Transmission Line Corridor Segments Secondary Corridor (ENP/WCA ROW)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
Summary	Marsh/Wet Prairie	4.7	437.14	121.88	573
	Hardwood Swamp	9.2	58.20	11.05	102
	Improved Pasture	5.2	0.38	0.08	0
	Cropland	4.8	38.71	7.89	38
	Exotic Plants	3	64.63	14.27	43
	Urban	0	9.99	1.66	0
	Water	0	1.49	0.29	0
Total			**610.54**	**157.11**	**756**

Table 8 **SECONDARY CORRIDOR – PANTHER SECONDARY ZONE: Acreages and Panther Habitat Units (PHU) for each cover type potentially affected by dredging and filling within each segment of the secondary transmission line corridor (i.e., includes segments along the existing FPL-owned right-of-way (ROW) in Everglades National Park and Water Conservation Area 3B [ENP/WCA]) and that occurs within the Florida panther Secondary Zone.**

Secondary Zone - Transmission Line Corridor Segments Secondary Corridor (ENP/WCA ROW)					
Segment	**FWS Cover Type**	**FWS Score**	**Corridor Segment Total Acres**	**Estimated Segment Impact Acres**	**PHU**
ENP/WCA	Marsh/Wet Prairie	4.7	177.48	60.10	282
	Hardwood Swamp	9.2	1.56	0.53	5
	Urban	0	0.92	0.31	0
	Water	0	0.99	0.34	0
Subtotal			180.95	61.28	287
4	Exotic Plants	3	2.91	0.34	1
Subtotal			2.91	0.34	1
Access 1	Marsh/Wet Prairie	4.7	103.88	0.47	2
	Exotic Plants	3	43.17	0.19	1
	Urban	0	54.06	0.24	0
	Water	0	73.55	0.33	0
Subtotal			274.66	1.23	3
Summary	Marsh/Wet Prairie	4.7	281.36	60.57	285
	Hardwood Swamp	9.2	1.56	0.53	5
	Exotic Plants	3	46.08	0.53	2
	Urban	0	54.98	0.55	0
	Water	0	74.54	0.66	0
Total			**458.52**	**62.85**	**291**

Table 9 **Summary of acreage and habitat impacts for those portions of the proposed access road improvements that occur within the Florida panther Primary Zone.**

Primary Zone –Road Improvements				
Road	**FWS Cover Type**	**FWS Score**	**Road Impact Acres**	**PHU**
SW 117th Ave (North)	Urban	0	0.28	0
	Water	0	0.03	0
Subtotal			0.31	0
SW 117th Ave (South)	Marsh/Wet Prairie	4.7	2.62	12
	Hardwood Swamp	9.2	3.89	36
	Urban	0	1.16	0
Subtotal			7.67	48
SW 137th Ave	Hardwood Swamp	9.2	3.53	32
	Urban	0	2.18	0
	Water	0	1.67	0
Subtotal			7.38	32
SW 328th St	Cropland	4.8	4.61	22
	Orchards/Groves	4.7	1.59	7
	Exotic Plants	3	2.1	6
	Urban	0	6.7	0
	Water	0	1.2	0
Subtotal			16.20	36
SW 344th St	Urban	0	1.66	0
Subtotal			1.66	0
SW 359th St (East)	Marsh/Wet Prairie	4.7	4.46	21
	Urban	0	0.42	0
Subtotal			4.88	21

Table 9 Continued.

Primary Zone –Road Improvements				
Road	**FWS Cover Type**	**FWS Score**	**Road Impact Acres**	**PHU**
SW 359th St (West)	Marsh/Wet Prairie	4.7	21.35	100
	Hardwood Swamp	9.2	6.47	60
	Urban	0	3.09	0
	Water	0	0.07	0
Subtotal			30.98	160
All Roads Summary	Marsh/Wet Prairie	4.7	28.43	134
	Hardwood Swamp	9.2	13.89	128
	Cropland	4.8	4.61	22
	Orchards/Groves	4.7	1.59	7
	Exotic Plants	3	2.1	6
	Urban	0	15.49	0
	Water	0	2.97	0
Total			**69.08**	**297**

Table 10 **Numbers and percentages of GPS-collar and random location records occurring on linear landscape features within the home ranges of 12 Florida panthers. Features include dirt roads, jeep trails, paved roads, farm field berms, drainage ditch berms, hedgerows, power line corridors, old railroad grades, and tramways.**

Panther	Sex	Total GPS and Random Points (Number)	GPS Records on Linear Features (Number)	Random Points on Linear Features (Number)	GPS Records on Linear Features (Percent)	Random Points on Linear Features (Percent)
FP059	M	121	21	5	17.4%	4.1%
FP083	F	423	61	26	14.4%	6.1%
FP100	M	528	128	46	24.2%	8.7%
FP109	M	530	90	32	17.0%	6.0%
FP110	F	827	77	60	9.3%	7.3%
FP111	M	1,174	134	85	11.4%	7.2%
FP112	F	1,078	45	32	4.2%	3.0%
FP117	M	350	44	29	12.6%	8.3%
FP121	F	1,080	55	50	5.1%	4.6%
FP128	F	367	88	22	24.0%	6.0%
FP131	M	813	157	63	19.3%	7.7%
FP139	M	1,481	133	95	9.0%	6.4%
Mean		**731**	**86**	**45**	**14.0%**	**6.3%**
Range		**121 - 1,481**	**21 - 157**	**5 - 95**	**4.2 - 24.2%**	**3.0 - 8.7%**
SD		**409.34**	**43.35**	**26.56**	**6.6%**	**1.7%**

FPL-201

FIGURES

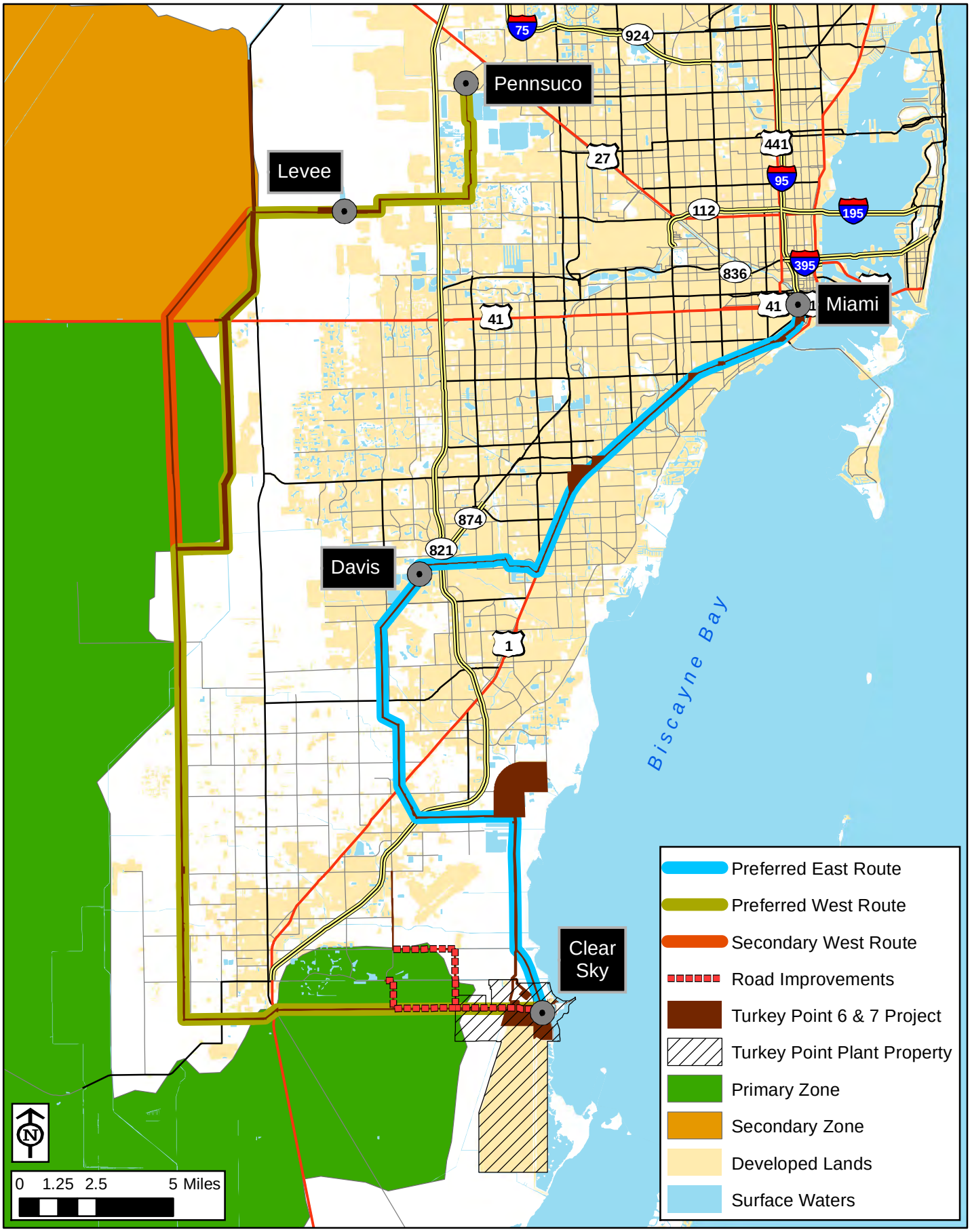


Figure 1. Turkey Point Units 6 & 7 project, including preferred and secondary routes for transmission line corridors and proposed access road improvements, in relation to Florida Panther Focus Area Primary and Secondary Zones.

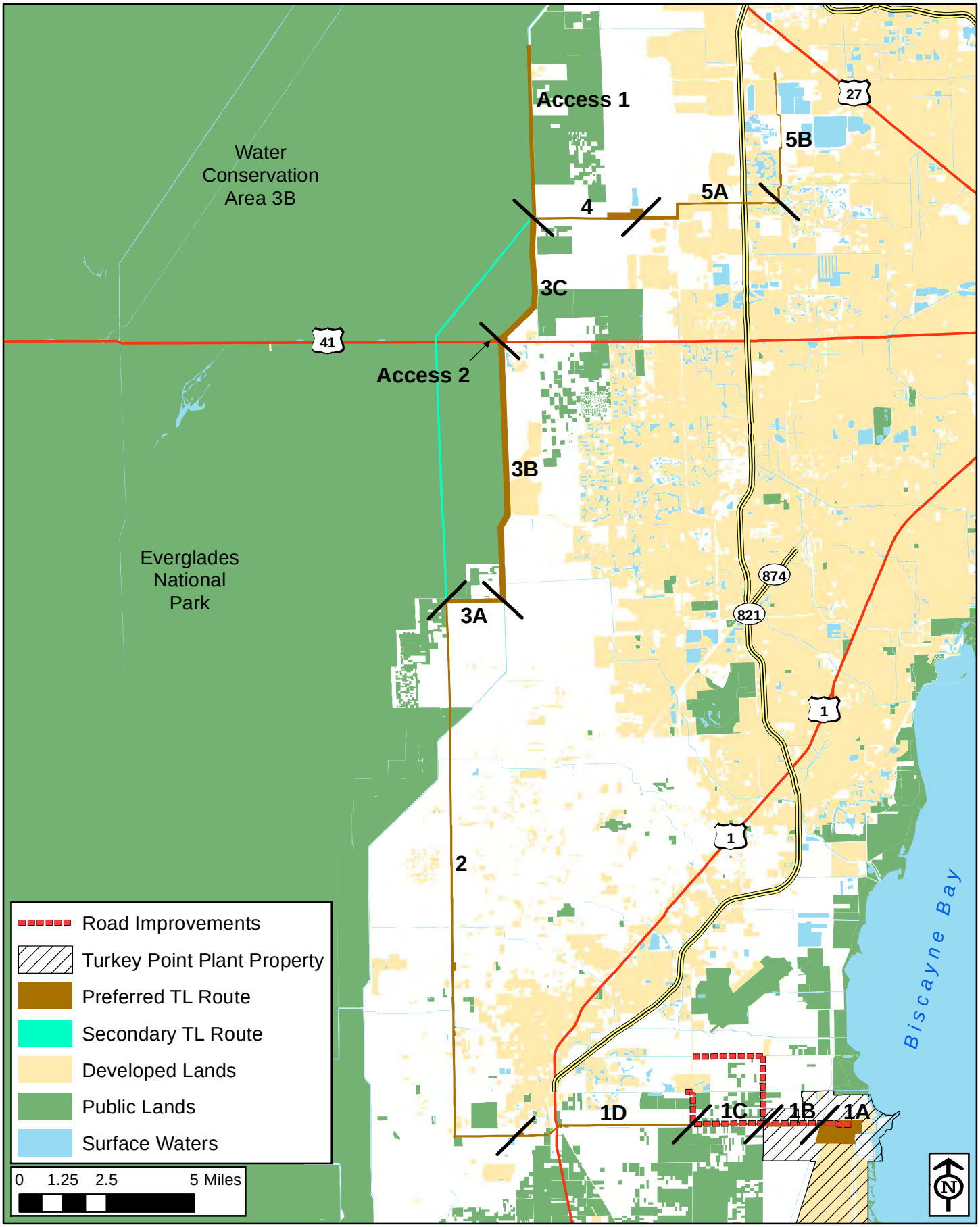


Figure 2. Designated segments of the preferred and secondary west transmission line (TL) corridors and locations of proposed road improvements in relation to public lands and developed areas in Miami-Dade County, Florida.

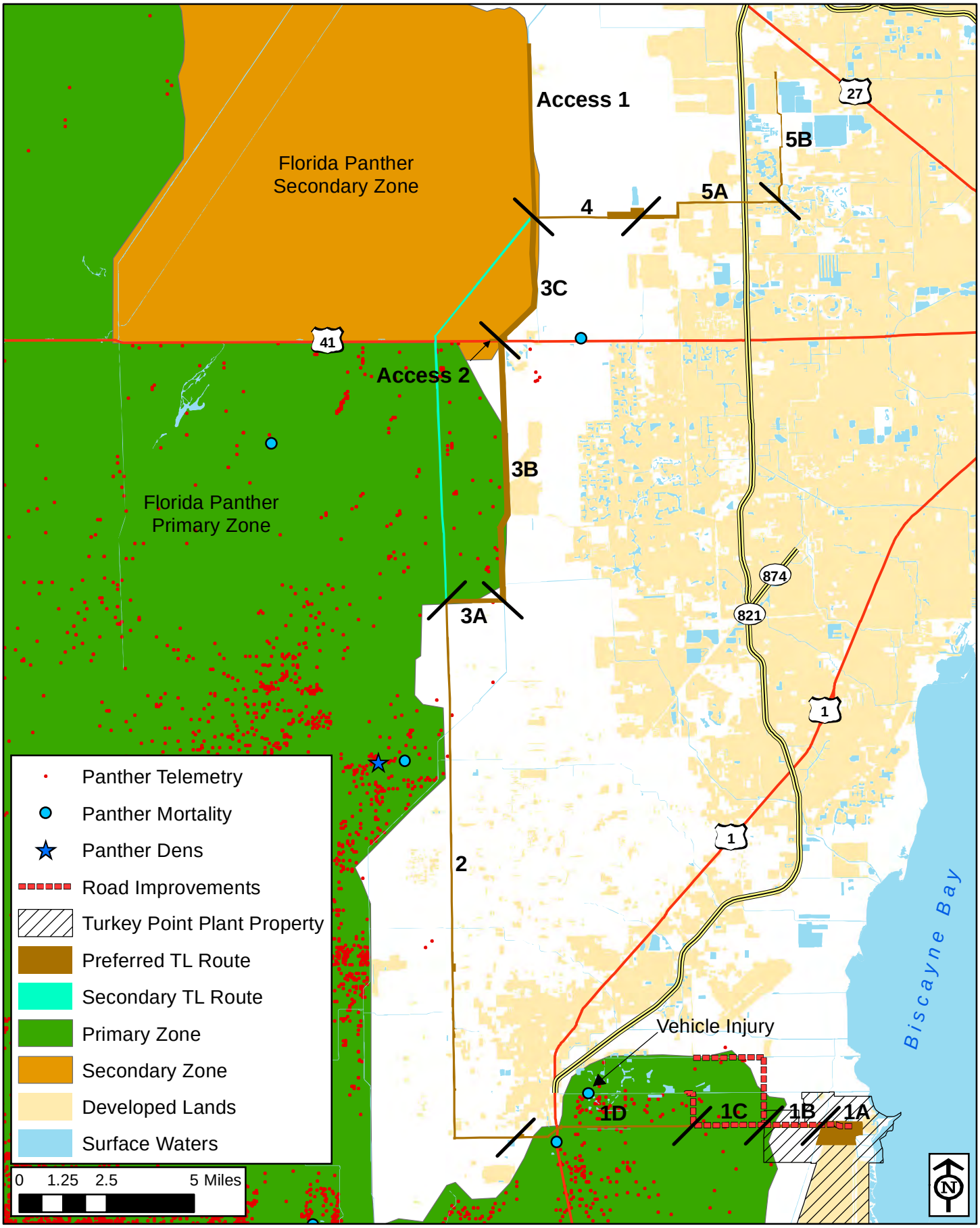


Figure 3. Segments of the preferred and secondary west transmission line (TL) corridors and proposed road improvements in relation to the Panther Focus Area Primary and Secondary Zones, and panther telemetry, mortality, and den records.

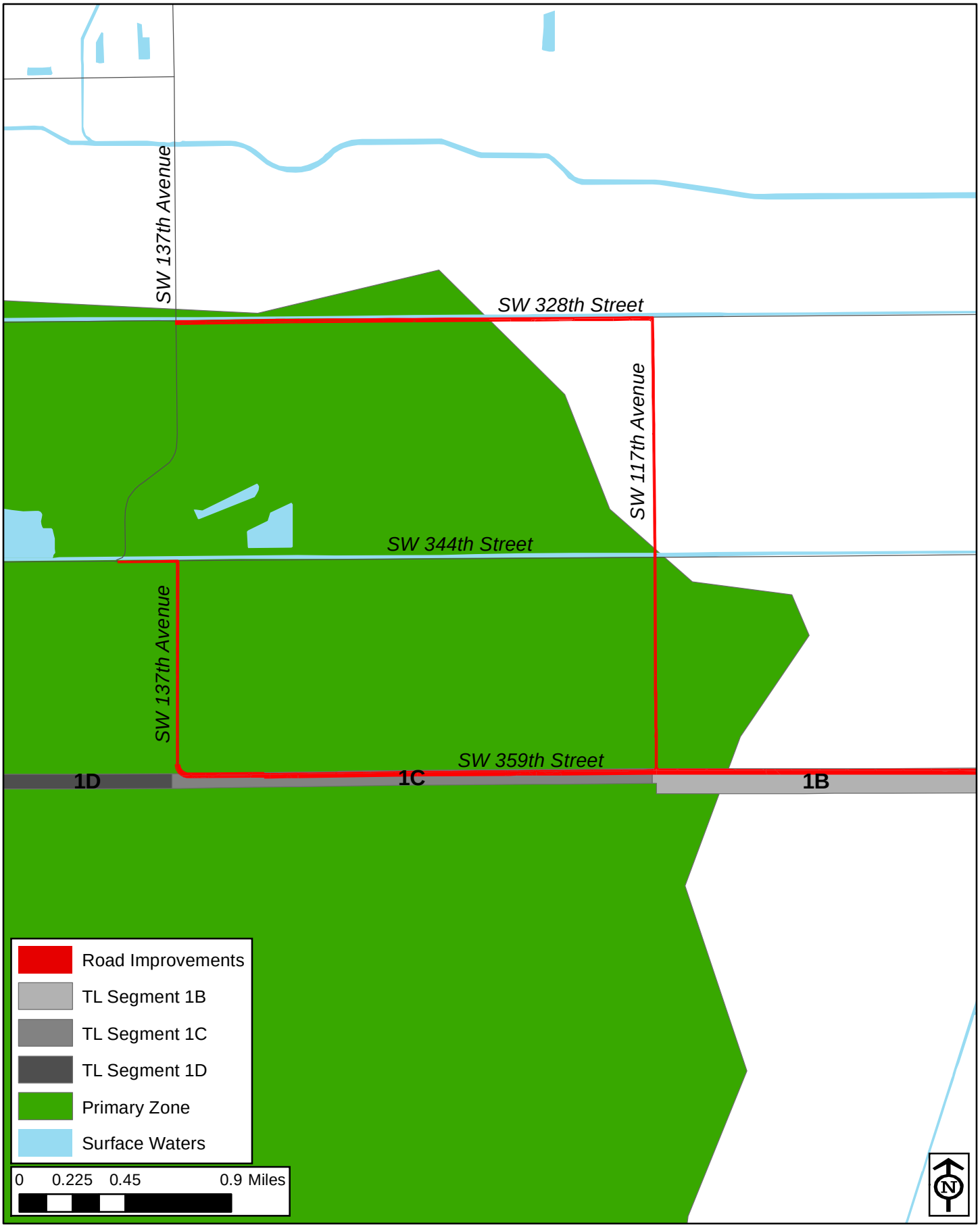


Figure 4. Footprint of proposed road improvements west of the Turkey Point power plant in relation to proposed transmission line corridor segments and the Florida panther Primary Zone.

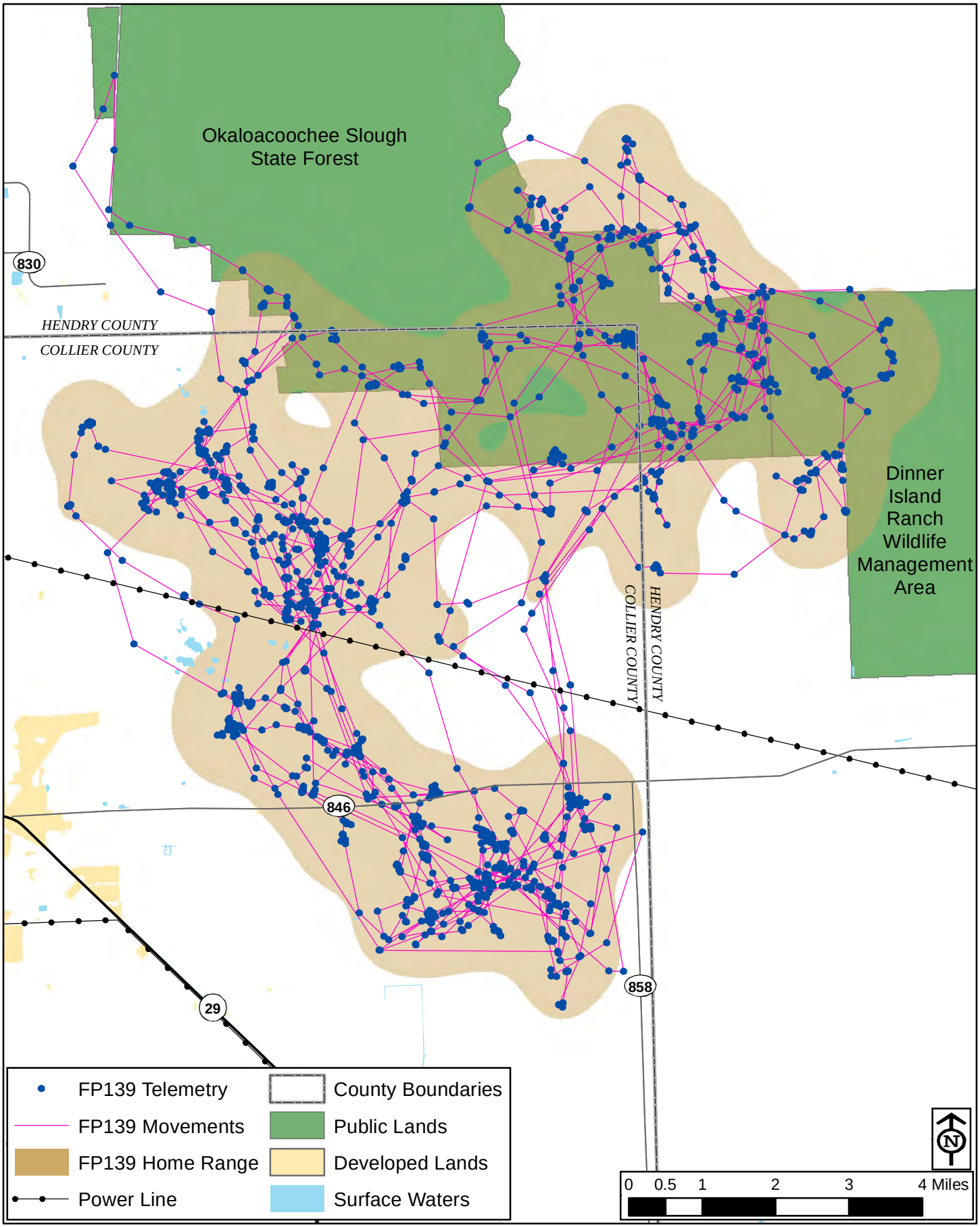


Figure 5. Hourly GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP139 (Mar 31 - Aug 30, 2005) in relation to existing electrical transmission lines east of Immokalee, Florida.

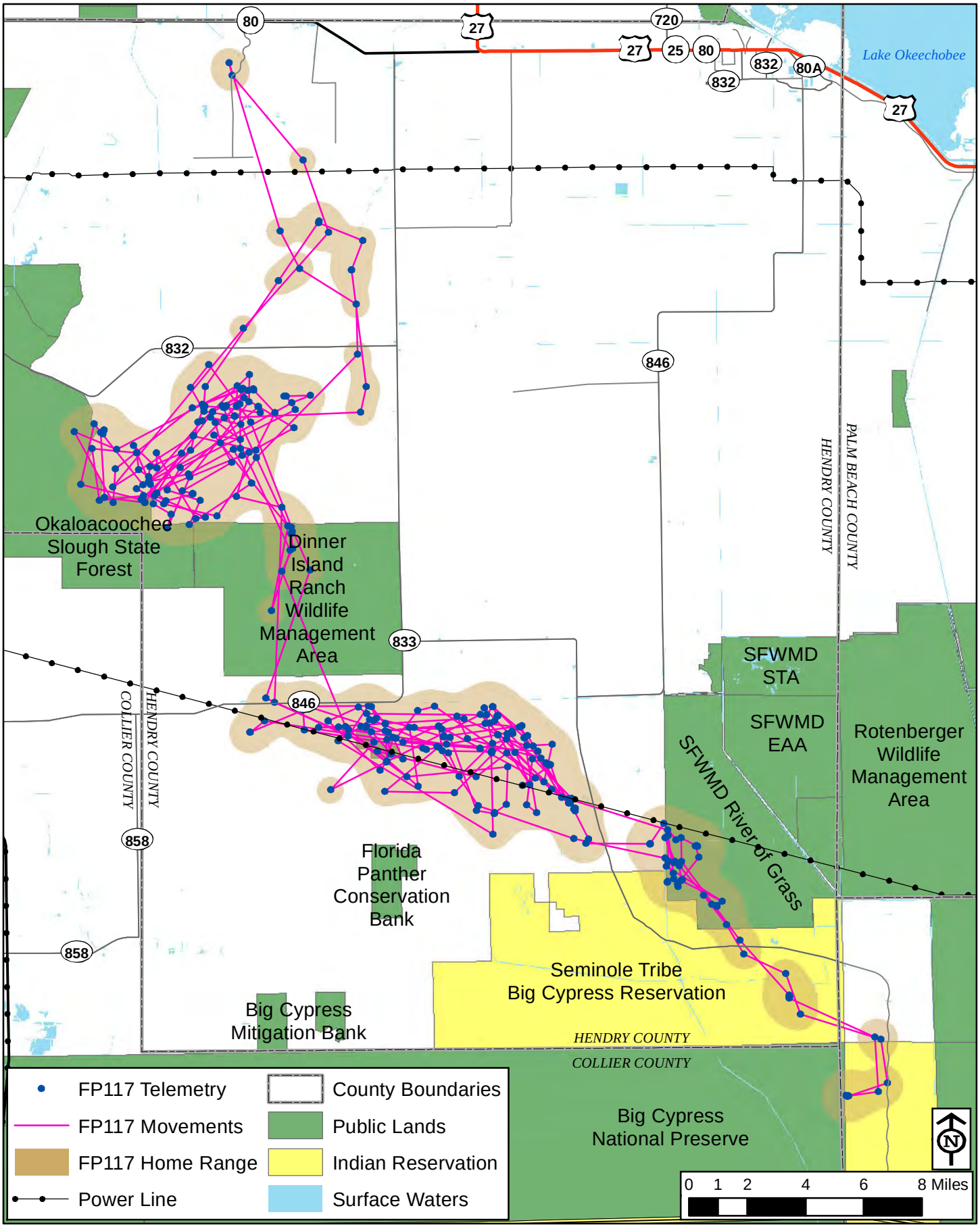


Figure 6. GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP117 (Dec 3, 2003 - Jul 28, 2004) in relation to existing electrical transmission line east of Immokalee, Florida.

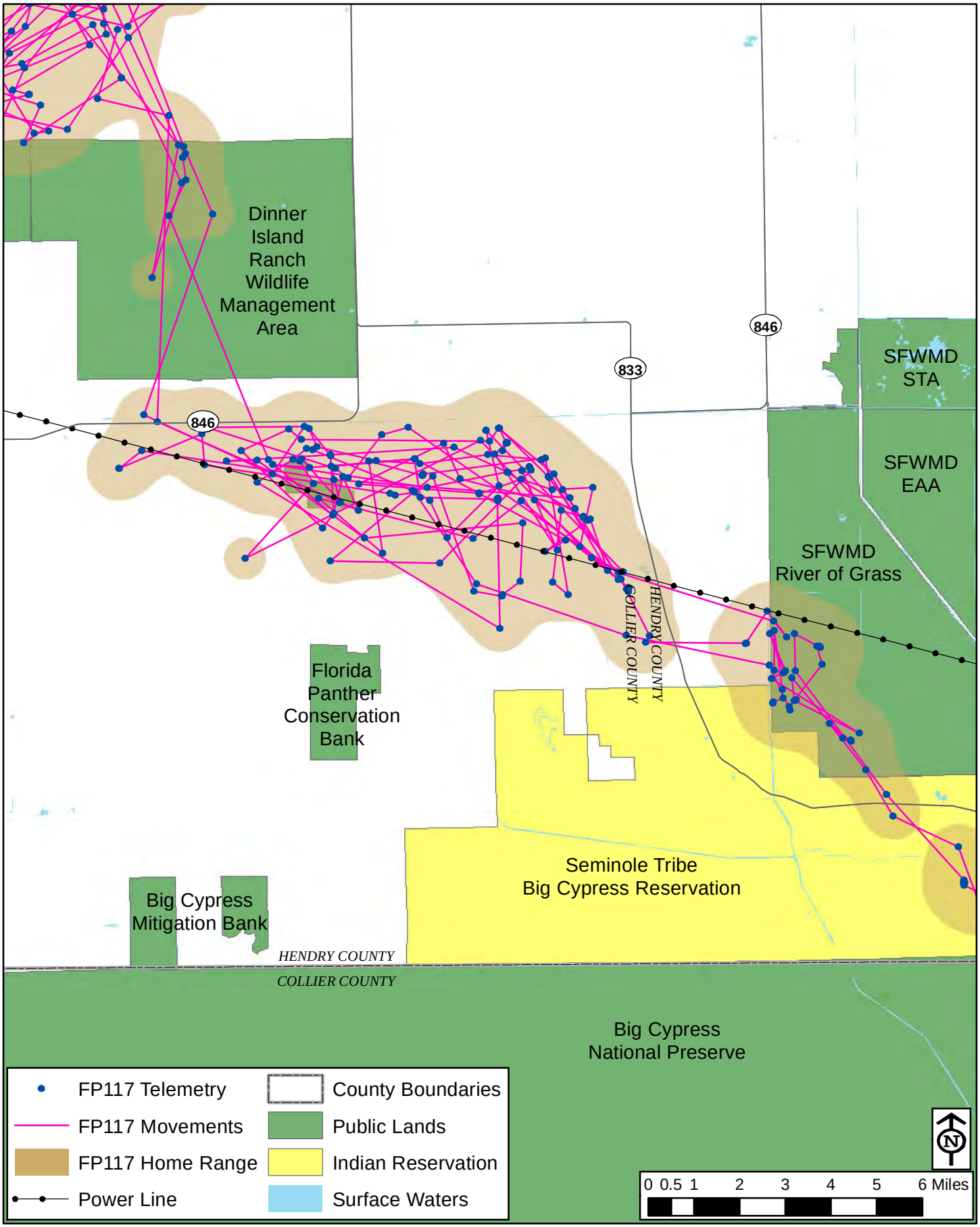


Figure 7. GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP117 (Dec 3, 2003 - Jul 28, 2004) in relation to existing electrical transmission line east of Immokalee, Florida.

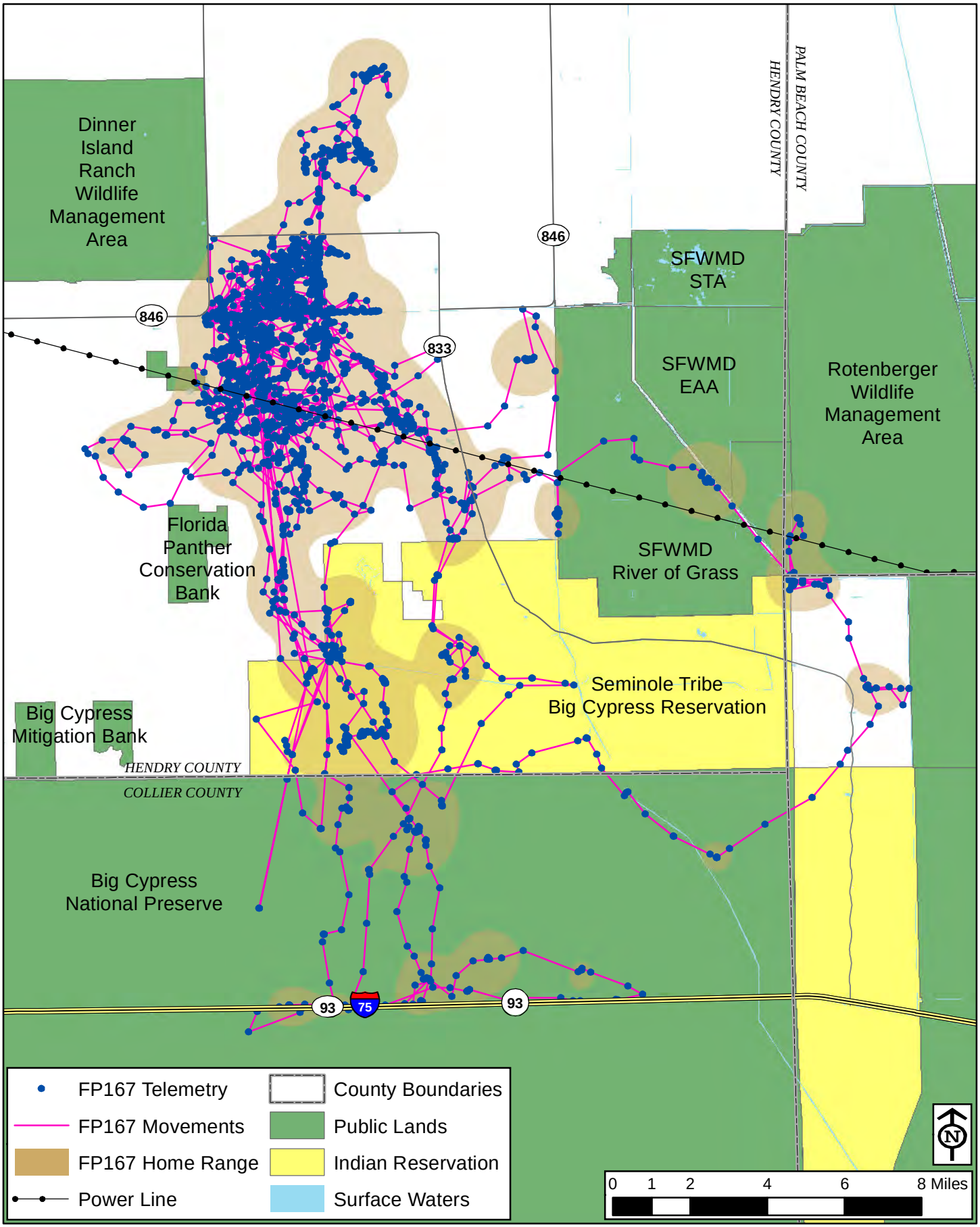


Figure 8. GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP167 (Feb 6 - Oct 25, 2009) in relation to existing electrical transmission line in southeastern Hendry County, Florida.

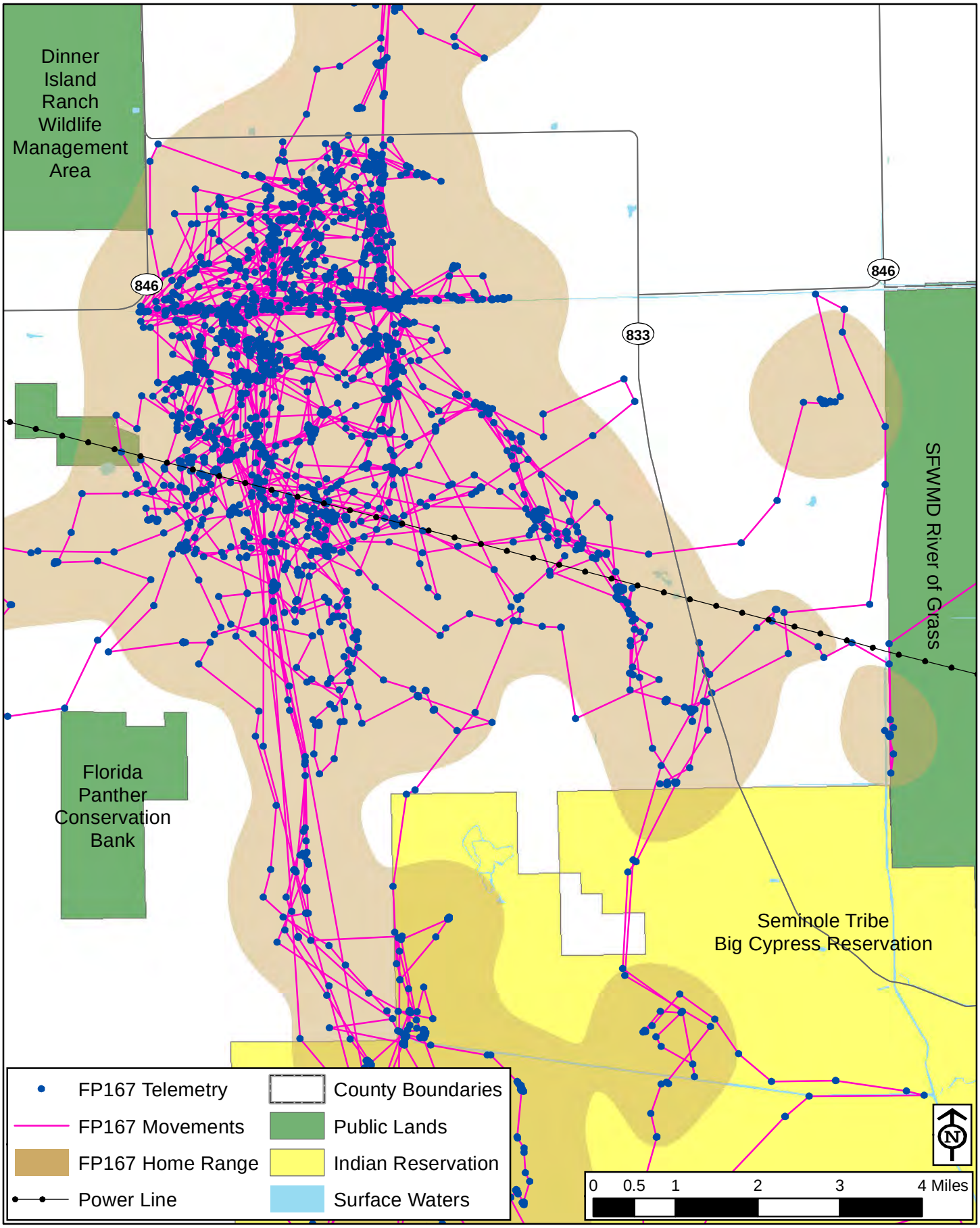


Figure 9. GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP167 (Feb 6 - Oct 25, 2009) in relation to existing electrical transmission line in southeastern Hendry County, Florida.

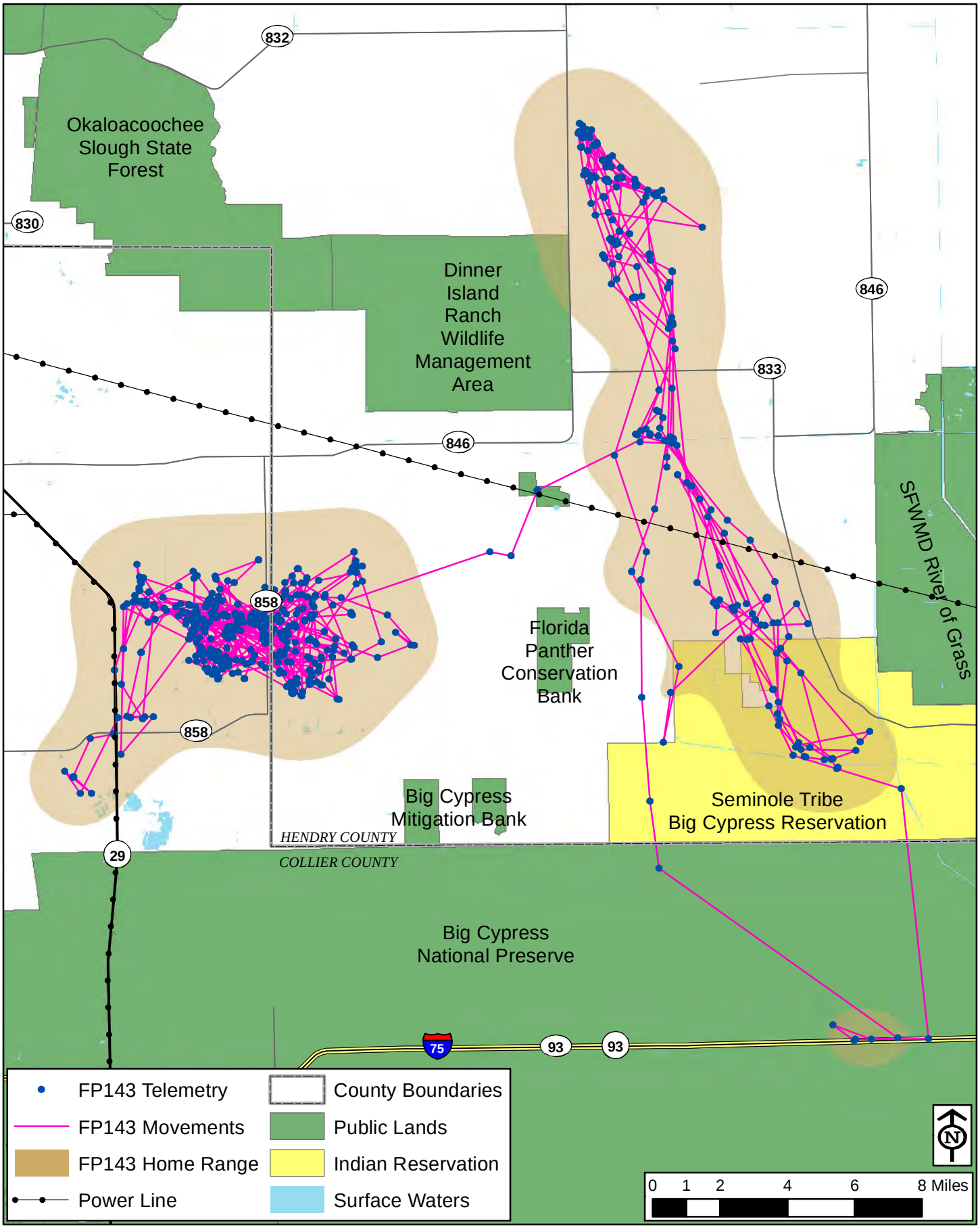


Figure 10. GPS-collar telemetry locations, movements, and 95% contour of fixed kernel home range of male panther FP143 (Jan 9 - Dec 16, 2006) in relation to existing electrical transmission line in Hendry and Collier County, Florida.

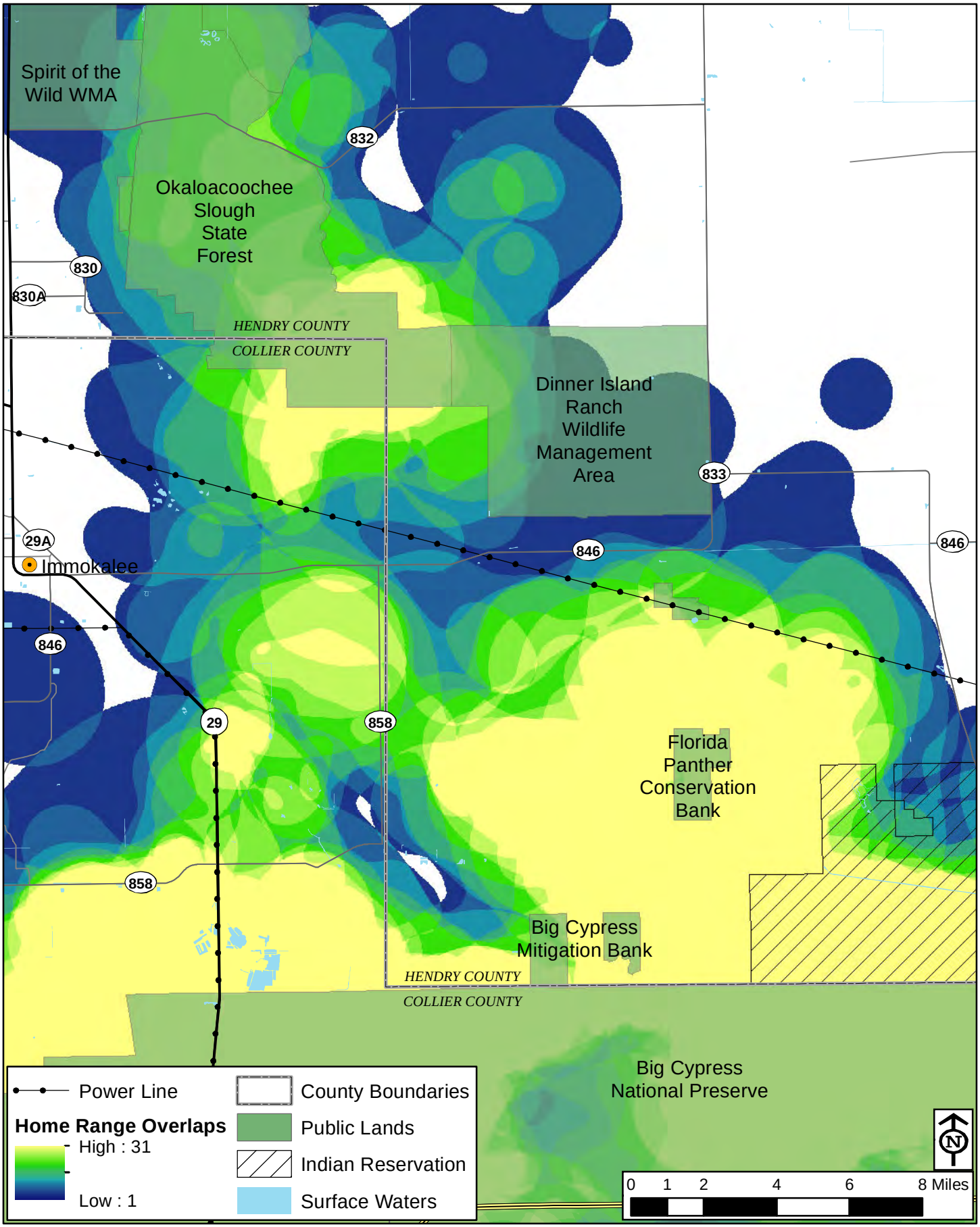


Figure 11. Overlapping 95% contours of fixed kernel home ranges for 93 female and 65 adult male Florida panthers based on VHF-collar telemetry data collected between February 1981 and June 2012 in relation to existing electrical transmission lines.

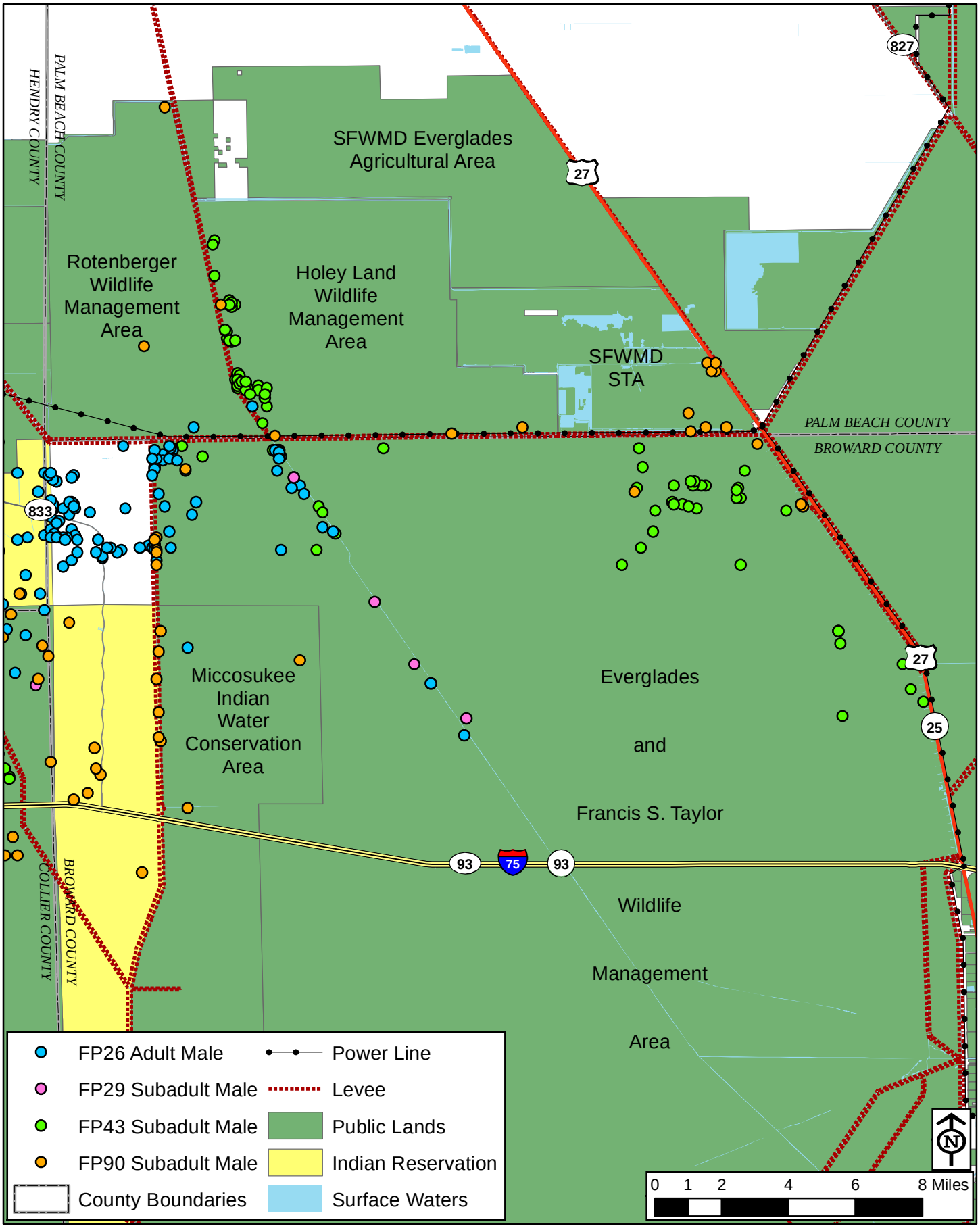
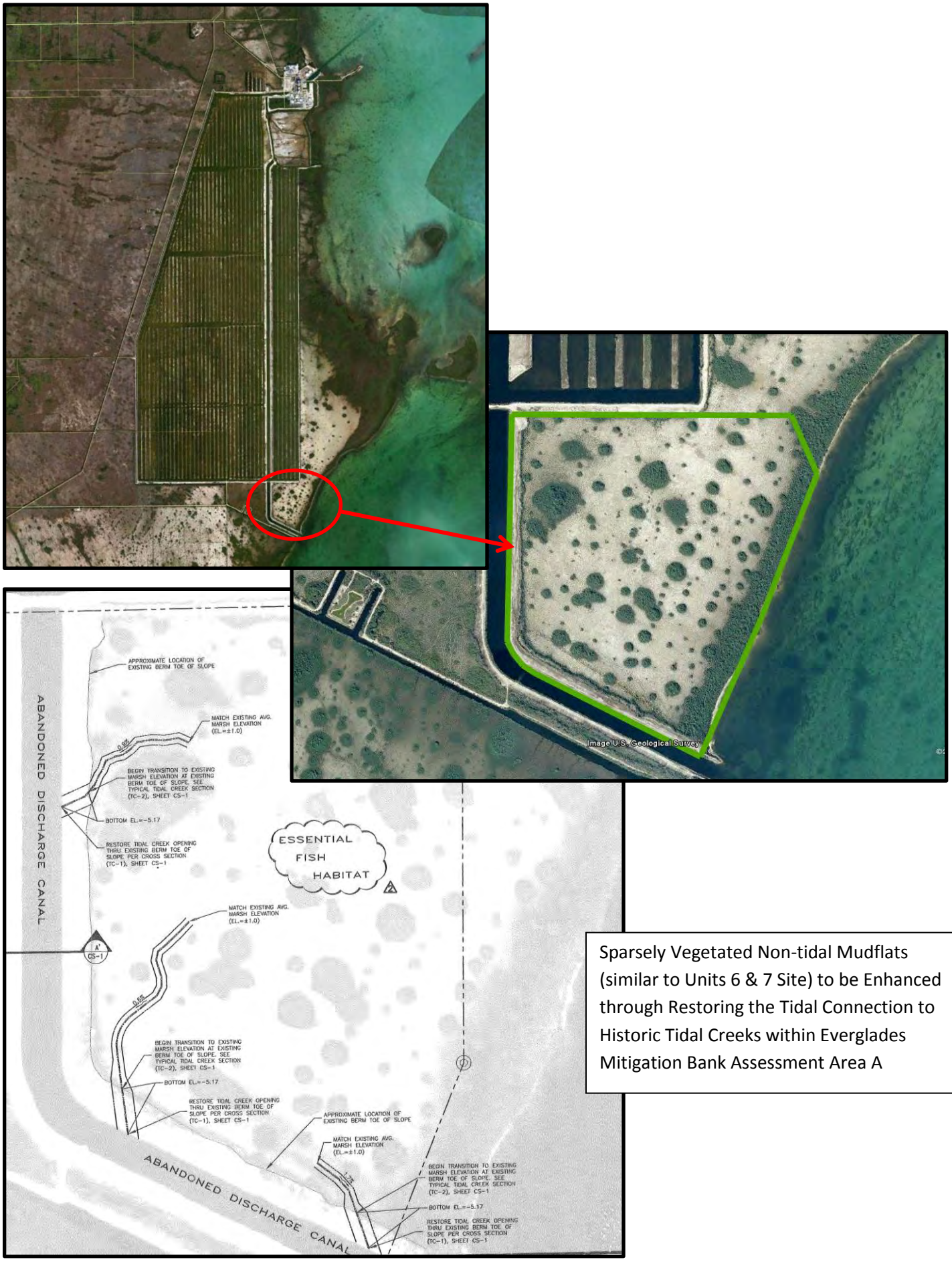


Figure 12. Radio-telemetry records of four male Florida panthers that used habitats along and adjacent to existing electrical transmission lines, canals, and levees in the Florida Everglades between May 1988 and April 2001.

ATTACHMENT E

Shorebird Habitat Mitigation - Location of EMB Assessment Area 10

Shorebird Habitat Mitigation at EMB Assessment Area 10



Sparsely Vegetated Non-tidal Mudflats (similar to Units 6 & 7 Site) to be Enhanced through Restoring the Tidal Connection to Historic Tidal Creeks within Everglades Mitigation Bank Assessment Area A

ATTACHMENT F

King's Highway Pine Rockland Transmission Line Design

Conditions of Certification

Effects Analysis, and consult with DHR and MDC to identify appropriate action and mitigation, if necessary; and

b. For the Clear Sky-Levee and Clear Sky-Pennsuco transmission lines, FPL shall avoid or minimize impacts to County-designated and known historic and archaeological sites, and cultural resources that are identified by completion of a cultural resources survey. If any impact to a historic or archaeological site cannot be avoided completely, the Licensee shall conduct an Effects Analysis, and consult with DHR and MDC to identify appropriate action and mitigation, if necessary.

2. FPL shall provide as a post-certification submittal final design drawings demonstrating compliance with these requirements.

3. FPL shall provide copies to MDC of any surveys or reports made to the Division of Historical Resources (DHR).

[FPL Stipulation – 6/19/13; MDC Code, Chapter 16A]

F. Kings Highway Natural Forest Community (Parcel Folio Number 30-7810-000-0140)

1. Within the Kings Highway Pineland Natural Forest Community (NFC), as defined in Section 24-5 of MDC Code, FPL shall minimize the permanent impacts (defined as the location of pole pads and anchors and other infrastructure that remains post-construction) of the proposed transmission lines to no more than ten percent of the total NFC acreage, without providing appropriate mitigation. To the extent practicable and unless an engineering or safety concern arises, FPL will use best efforts to accommodate the County's preference for the alignment shown on Attachment P (drawing: Figure 2 from FPL's completeness response no. MD(3)-04) regarding the NFC.

2. Within the Kings Highway Pineland NFC, FPL shall avoid and/or minimize the temporary impacts of the proposed transmission lines, including the following measures, to the extent practicable:

a. FPL shall place any new access road outside the designated NFC boundary.

b. FPL shall maintain the substrate and understory within the NFC, utilizing best management practices such as mats and rubber tired vehicles for construction access.

c. FPL shall minimize clearing, grubbing and substrate disturbance within the NFC.

d. FPL shall not stage any equipment, materials, mulch, or debris within the NFC.

e. FPL shall only conduct minimum trimming, pruning or topping of native trees as necessary to maintain the minimum safety and electrical clearances in accordance with the most recent ANSI A-300 Standard Practices of Tree Care Operations.

f. All vegetative debris that is cut, trimmed, topped, or otherwise removed shall be removed by FPL from the NFC for proper disposal.

g. FPL shall install high-visibility barriers during construction to mark for protection any trees and vegetation within the NFC that are outside of the work areas within the ROW during construction. These barriers shall be sufficient to prevent construction impacts, including but not limited to, encroachment of fill, sediment, or debris that may result in adverse impacts to NFC, and shall be maintained in good condition and remain in place for the duration of the construction project.

h. FPL shall not construct roads or install fill for roads and pads within the Kings Highway Pineland Natural Forest Community, although FPL shall be allowed to place the back-fill needed for the installation of the poles required within that parcel.

i. FPL shall utilize low-impact methods for conductor stringing within the Kings Highway Pineland Natural Forest Community.

3. FPL shall eradicate or remove prohibited and controlled plant species and shall manage the transmission line ROW within the NFC to facilitate the regeneration of pine rockland plant species and discourage the growth and introduction of non-pine rockland plant species including hardwood hammock species and exotic species to the extent practicable, as specified in the Miami-Dade County Natural Areas Management Plan for Pine Rocklands.

4. Permanent and temporary impacts to the NFC outside FPL's transmission line ROW are prohibited.

[FPL Stipulation –6/19/13; Section 24-49, MDC Code.]

G. Flowage Easement

Prior to the construction of the TP 6 & 7 Project. FPL shall execute the Flowage Easement, attached hereto as Attachment J (May 2013).

[FPL – Stipulation 6/20/13]

H. Placement of Transmission Facilities within Transit Right-of-Way

1. FPL shall attach no facilities associated with the Davis-Miami transmission line to the Metrorail structure or guideway.

2. FPL shall place the Davis-Miami transmission line at a minimum of 30 ft from the Metrorail dripline or at the maximum practicable distance from the Metrorail structures, and shall in all instances place the transmission line to ensure the minimum clearances required by the National Electrical Safety Code (NESC) or Occupational Safety and Health Administration (OSHA). FPL poles must meet all federal, State and County requirements, including the MDT design criteria and roadway clear zones.

3. Within the East Preferred Corridor, to the extent practicable, FPL shall place transmission line facilities to maintain a minimum two-foot (2') clear zone from the M-Path edge. FPL shall relocate the M-Path if necessary, at FPL's expense, to facilitate this placement.

4. To the extent that FPL proposes to place or replace vegetation or trees within Miami-Dade Transit (MDT) right-of-way (ROW) associated with the Davis-Miami transmission line, FPL shall coordinate with MDT regarding the selection and placement of the vegetation or trees within MDT ROW. Such placement of vegetation or trees within MDT ROW shall be designed to be compatible with MDTs' operational and maintenance needs and as

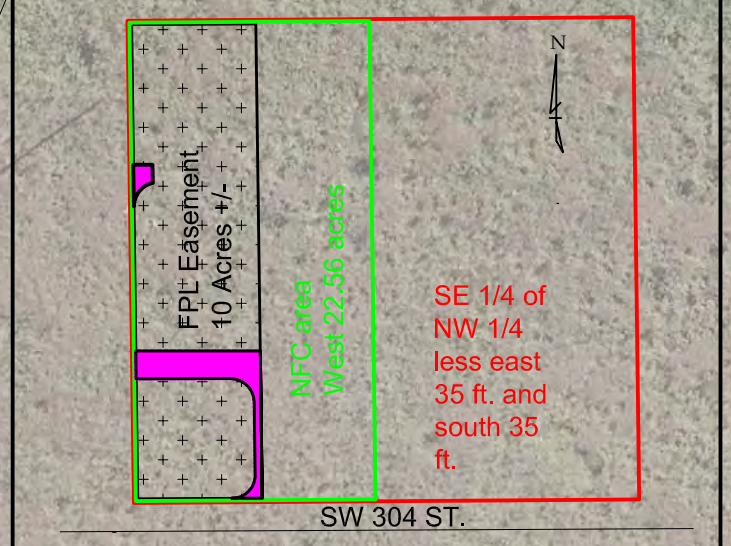
MD(3)-04 Figure 2.

Existing
138 kV pole

FPL
R/W line

PROPERTY BOUNDARY

New midspan
unguyed 230 kV pole
if required



Location Sketch - N.T.S.

Corridor Boundary
(Approximate)

.08 acres
3,557 sq ft

52'

50'

N FPL
R/W line

975'

Kings
Highway
Pineland

Proposed access for midspan pole, if required.

487'

New single pole
guyed ,500 kV
& 230 kV poles

FPL R/W line

0 100' 200'

Existing
138 kV pole

Indicates areas where construction, maintenance and repair work will be focused

76'

.76 acres
33,118 sq ft

Note: Clearing and grubbing will occur in the pole and anchor areas and along the access route.Trees with mature height above 14' will be removed throughout the right-of-way.
One time access longitudinaly along the entire easement will be required for a vehicle to pull in conductor lines for each circuit.

This is a conceptual design for discussion purposes only, Dimensions may vary

R65'

18'

18' wide Access Area
located where
disturbances have
previously occurred

50'

R65'

18'

R65'

	Acres	Square Footage
	0.08	3,557
	0.76	33,118
Totals	0.84	36,675

PROPERTY BOUNDARY

SW 304 ST.

Clear Sky-Levee #1 & #2 500 kV lines
Clear Sky-Pennsuco 230 kV line
Option to construct with guyed structures in Kings Highway Pineland Natural Forest Community (NFC).

RSH 11/19/2009