United States Department of the Interior

NATIONAL PARK SERVICE
Southeast Regional Office
Atlanta Federal Center
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Atlanta, Georgia 30303

IN REPLY REFER TO:
1.A.2. (SERO-PC)

MAR 0 5 2019

Mr. Ben Beasley
Chief, Environmental Review and NEPA Branch
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Mail Stop OWFN-11-F-1
Rockville MD, 20852

Dear Mr. Beasley:

The National Park Service (NPS) appreciates the opportunity to be a cooperating agency with the U.S. Nuclear Regulatory Commission (NRC) in the review and development of the Supplemental Environmental Impact Statement (SEIS) for the 20-year Subsequent License Renewal for Turkey Point Nuclear Plant Units 3 and 4 proposed by Florida Power and Light (FPL). FPL has requested an extension of the operating license for the two units, with Unit 3 being extended from 2032 to 2052 and Unit 4 from 2033 to 2053. We offer the following general comments on the preliminary draft SEIS and specific comments (Enclosure 1), which are limited to Chapter 3: Affected Environment, Chapter 4: Environmental Impacts, and Section 4.116: Cumulative Impacts. The NPS may have additional comments once the remaining sections of the SEIS are developed and the entire document is assembled.

The NPS remains concerned about how operations at Turkey Point Nuclear Plant affects the quantity, quality, and availability of water for the Biscayne National Park (Park), Biscayne Bay, area restoration projects, and the resources and activities dependent upon suitable water. Current operation of Units 3 and 4 continues to impact the Park and Biscayne Bay, and an extension of the current operating license without changes in the way the plant is operated will continue to stress an already strained system.

Turkey Point Nuclear Plant is the only nuclear power plant adjacent to a national park and is located two miles south of the Park's visitor center and headquarters. The Park is a significant resource for southern Florida and was established "to preserve and protect for the education, inspiration, recreation, and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty." The Park encompasses a large segment of the Florida reef tract (the only living coral reef tract in the continental United States), includes the longest protected stretch of mangrove shoreline along the eastern coast of the United States, contains the majority of Biscayne Bay, and is designated an Outstanding Florida Water. The Park also supports an incredible array of wildlife, including

more than 600 species of fishes, many of which are commercially and recreationally utilized; over 200 species of birds; and 21 federally threatened or endangered species.

Biscayne Bay, much of which the Park encompasses, is considered one of the premier recreation areas of the world for boating and fishing and therefore serves as a major draw for tourism. Marine recreation also supports manufacturers, suppliers, and service industries. For example, boat sales and service centers, charter/party operations, marinas, dive-shops, bait/tackle sales are all primary beneficiaries of visitor and resident recreation expenditures. Marine recreation is also an integral part of the lives of local residents. Importantly, by conserving water quality, fisheries, coral, and other important marine resources, the Park provides the outstanding natural setting that supports nearly 500,000 visitors annually and provides an estimated economic benefit of nearly $39 million annually (2017).

The Park is an important component of the broader Comprehensive Everglades Restoration Plan (CERP), which is a major restoration initiative, intended to restore the quantity, quality, timing, and distribution of freshwater to South Florida. CERP is vital to restoring habitat within the Park and the Department of Interior is a major Federal partner in all CERP projects and system-wide assessments. At a cost of more than $10.5 billion and over a 35-year timeline, this is the largest ecosystem restoration project ever undertaken in the United States. The Biscayne Bay Coastal Wetlands (BBCW) project, which is currently under construction on lands adjacent to the Park and provides primary benefits to the Park, is an effort under CERP that rehydrates wetlands and reduces point source stormwater discharge to Biscayne Bay (Enclosure 2). The project area does not currently have adequate freshwater input and any reductions in freshwater will not allow intended benefits and potentially be harmful to the area.

The NPS understands that the purpose of the SEIS is to determine whether or not to grant a 20-year extension for Units 3 and 4 and that this determination is not dependent upon changes to the way Units 3 and 4 are operated. However, the NPS remains highly concerned with how these units are cooled and the potential impacts from this aspect of plant operations during the term of the 20-year extension. Unlike other nuclear power plants, which use enclosed cooling towers to cool the reactors, Units 3 and 4 use a 5,900-acre, unlined earthen cooling canal system. This system, constructed roughly fifty years ago, also serves as an Industrial Wastewater Facility (IWF). The canal system is necessary to serve as the heat sink (e.g. cooling function), as well as a containment system preventing the exchange of constituents used or created through the generation of power with the surrounding environment.

The system does not currently function properly nor as originally intended, which is to serve as the ultimate heat sink for Units 3 and 4. Following the implementation of the previous license extension and uprate in 2012, the canal has been significantly compromised resulting in an excessive algal and nutrient build up in the canals that persists today. Because it is not a closed system, the IWF requires significant additions of freshwater from an area with limited availability. In addition, the interceptor ditch system has not prevented the continual seepage from the canals to the surrounding environment of nutrients, high saline waters (well above seawater levels), and other constituents from the IWF.

We are concerned that the SEIS considers the cooling canal system as a Category 1 (Generic) issue with respect to environmental impacts. In the United States, there is no other cooling canal

system similar to what is utilized at Turkey Point Nuclear Plant. The IWF is hydrologically connected to the surrounding ecosystem with water from the cooling canal system leaking into the groundwater and the neighboring freshwater marsh. There has been detection of IWF contaminants in Biscayne Bay, specifically tritium and nutrients. The myriad of issues associated with the IWF should warrant reconsideration of how the cooling canal system is analyzed in the SEIS. With no barrier to prevent seepage into the porous limestone and into the Park, the NPS requests that the cooling canal system/IWF be considered as a Category 2 (Site Specific) issue, wherein the specific impacts of operation and remediation of the IWF should be analyzed accordingly in the SEIS.

Water quality issues relating to the operation of the IWF should be more carefully analyzed in the SEIS. Analysis of groundwater tritium data and subsurface conductivity confirms that the IWF, while designed as a recirculating system, is not a closed system and has: 1) connectivity with Biscayne Bay and nearby wetlands, and 2) a subterranean hypersaline plume that underlies both the Turkey Point facility and the Park. Therefore, IWF wastewater, which is composed of hypersaline water and the nutrients nitrogen and phosphorus, poses a risk to Biscayne Bay water quality and NPS resources. As such, the NPS has concerns relating to the continued environmental impacts to water quality in the Park from the long-term operation of the IWF.

The operation of the IWF is highly impacted by local climatic conditions including changing rainfall and droughts that alter the thermal efficiency, salinity conditions, and impact the quantity of freshwater needed for operation. South Florida in general is experiencing increased rates of sea level rise along with greater severity of natural disasters including hurricanes and flooding. Consideration of these risks to the Turkey Point vicinity and the structural integrity of the IWF should be carefully analyzed in the SEIS.

The NPS has consistently worked with stakeholders to increase the amount of clean, fresh water that is being delivered to Biscayne Bay, particularly in the dry season when water resources are scarce, in order to maintain and improve the health of the ecosystem, recreational opportunities and safeguard the public purpose of the Park. The IWF requires a significant amount of freshwater from the regional water system, which competes with county, state, and federal efforts under CERP and the BBCW project to provide clean freshwater to the coastal ecosystem to restore habitat and improve water quality in Biscayne NP. Any additional freshwater use in the region, including water necessary for the currently proposed operating extension and water withdrawn as part of the ongoing remediation efforts for the subsurface saltwater plume at Turkey Point, results in an additional loss of freshwater availability for other projects. The NPS is concerned that an extension of Units 3 and 4 based on the continued use of the IWF is in direct conflict with the Water Resource Development Act (WRDA), specifically the 10.5 billion dollar CERP.

FPL could greatly reduce risks to the local environment by retiring the IWF. The NPS requests that the cooling canal system be replaced with a closed system, such as cooling towers, and the IWF be removed to prevent waters or contaminants from traveling outside of the facility and into the surface and subsurface waters of Biscayne Bay. It is our understanding that a cooling tower system is a viable alternative that would mitigate this concern and request that the SEIS consider this alternative as a condition of any operating license extension.

We appreciate the efforts made by FPL and the NRC to describe the expected results of the current remediation efforts and the anticipation of more stable conditions within the IWF. Further, we appreciate the NRC including NPS as a cooperating agency in the development of this SEIS. The NPS recommends that the mitigation measures that have been imposed upon FPL, specifically addressing the issue of seepage from the IWF, be fully implemented before further consideration of this Supplemental License Renewal for Turkey Point Units 3 and 4.

Thank you for considering our comments and taking our views into careful consideration. We appreciate the long-term relationship we have built with the NRC and with our neighbors at FPL. We also look forward to continuing our efforts to protect and improve our shared environment. If you have any questions, or need additional information regarding our comments, please contact Margaret L. Goodro, Superintendent of Biscayne National Park, via email Margaret_Goodro@gmail.com or by phone (786) 843-8096.

Sincerely,

Robert A. Vogel
Regional Director

Enclosures (4)
Specific Comments – Preliminary Draft SEIS
Map titled "South Florida Ecosystem Restoration Program Project Locations"
Map titled "Hurricane/Storm Surge Risk to Biscayne National Park"
Map titled "Modeled Storm Surge from Category 3 and Category 5 Hurricanes"

cc: Andy Imboden, Special Assistant, Nuclear Regulatory Commission
Margaret Goodro, Superintendent, Biscayne National Park

ENCLOSURE 1
Specific Comments – Preliminary Draft SEIS

- The Park and the nuclear facilities at Turkey Point are both located in a tropical environment where hurricanes and related storm surge can allow the contents of the IWF to be mixed into Biscayne Bay. As mentioned in chapter 4 of the draft SEIS, under "Climate Change and Related Considerations," the baseline condition to be used in evaluating the SEIS recognizes that sea level is rising and yet the proposed project does not include mitigation measures to reduce the likelihood of further mixing between the IWF and the Park, Biscayne Bay, and Card Sound. When considering projected increases in sea level, the no-action alternative allows even greater risk of a direct connection between the IWF and the Park, which will likely increase over the lifespan of the project. The Environmental Impact Statement for Turkey Point Power Plant Units 6 and 7 included a safety evaluation report for storm impact and sea level rise. A catastrophic event of 24.8 feet was used for analyzing sea level rise and storm surge. For this SEIS, a lower level of 18 feet was used for a catastrophic event for access road, operating the facility, and the levee. The NPS suggests including an explanation of why two different levels were used to provide clarity of what is actually being considered and what mitigation can be implemented to minimize storm risk to the continued operation of Units 3 and 4. We have provided two maps produced by NPS provided to NRC during the planning process for Turkey Point Units 6 and 7 that may be helpful to NRC in the analysis of storm surge and storm events (Enclosures 3 and 4).

- The SEIS uses risk assessment categories and tolerance for impacts that are specific to NRC.
  - Statements of conclusions in the SEIS used by the NRC to determine "Risk to Environment" are general categories of LOW, MODERATE, or HIGH. The NPS has slightly different interpretation of these categories with respect to environmental impact statements and substantially lower tolerance to even LOW risk to the environment impacts. As a party to the SEIS, the NPS would prefer to see categories and conclusions used to be more in line with the NPS standards for non-degradation of the environment.
  - When determining the risk categories, the NPS suggests that the SEIS acknowledge that the data isn't entirely conclusive and that continued observations, monitoring, and modeling and long-term changes to the environment could alter our understanding of the system and change the degree of impact over time.

- Instances of vague terms for both groundwater and surface waters.
  - Descriptions of the category of groundwater the IWF is allowed to discharge is unclear. For example, on page 1 of the Environmental Impacts Section, the SEIS states "discharge to groundwaters of the state is permitted" without providing detail of the category of groundwater or the spatial limitations of that permit. The implication to an uninformed reader is that the IWF can freely discharge to any groundwater, which is not the case under their current permit. The SEIS does go into a discussion of groundwater classes later, but that discussion is separated from the initial statement and as such could lead to confusion. Further, that discussion never clarifies the limits of the discharge authorization.
  - Surface Water Resources in Chapter 4, Affected Environment, are not well defined and do not include significant surface water features such as canals and the bay itself. Further, there is little distinction between surface waters and groundwater in this area due

to the porous nature of the substrate. Water freely flows among the surface water components and between surface water and groundwater in this region, which is a key feature related to our long standing concern about the lack of isolation of the IWF from the surrounding system, including Biscayne Bay. By limiting the components specifically defined in the surface water section, the SEIS is limiting the discussion and consideration of this connectivity and potential impacts of the project.

- The State of Florida has imposed remedial measures to prevent the further westward migration of the saltwater plume beneath the IWF. This process is still underway and the outcome remains uncertain.
  - The SEIS does not acknowledge that while the westward extent of the saltwater plume beneath and beyond the IWF system is being addressed, the eastward extent of this same plume remains uncertain. This region is immediately beneath the Park. Given the porous nature of the substrate and evidence of connectivity between groundwater and surface water in this region, the SEIS should provide additional details about this region and evaluate potential impacts on waters of Biscayne Bay and the Park.

<u>Specific comments relative to reviewed subsections of the SEIS</u>

4.5 Water Resources

4.5.1.1 Paragraph 4: "*Turkey Point Units 3 and 4 do not consume surface water or discharge directly to natural surface water bodies.*" This statement is a fundamental misrepresentation of the cooling canal system as its connectivity to surface water and groundwater through the porous substrate has been well recognized. The cooling canal system is constantly evaporating, without additional water the system would go dry. The make-up water for this evaporation is surface water filtered through the porous substrate from the marsh and Biscayne Bay. The salt present in the system is evidence of bay water being in the cooling canal system. A more accurate description of the use of surface water by Turkey Point Units 3 and 4 is that the cooling canal system uses surface water delivered from a natural surface water body through a porous substrate.

Hypersaline cooling canal system water, with tritium levels above background concentrations, has been detected outside of the cooling canal system. The primary pathway of this transfer is through porous substrate but it remains surface water in the IWF and is found in surface water outside the IWF. Samples indicative of IWF water were collected in surface water bodies, including Biscayne Bay.

This mischaracterization could be avoided by clarifying the description of the connectivity between surface and groundwater in a porous environment. This connectivity is one of the reasons this is treated as a category 2 issue, unique to the Turkey Point system.

4.5.1.2 Page 5 - The NPS does not agree with the conclusion that the increase in salt content of the freshwater Biscayne Aquifer qualifies as a SMALL impact on groundwater quality. This is also inconsistent with recent findings by the State of Florida which has required FPL to engage in a remediation process for the impacts to this freshwater aquifer. We suggest that the SEIS

describe the increase in salt content of Biscayne Aquifer as greater that a small impact in this section as well as elsewhere in the document if needed.

4.16.2 Water Resources

The SEIS includes language borrowed from the previous proposed Turkey Point Power Plant Units 6 and 7 EIS, where the NRC conclusion was that groundwater use would have SMALL impact on groundwater volume and quality and therefore require no further mitigation. NPS continues to disagree with this assessment. The NRC conclusion of SMALL impact does not equate to no-impact, the non-degradation standard the NPS works under. NPS holds the position that any additional groundwater withdrawal that impacts the total water quantity demand on the Biscayne Aquifer should be avoided. Biscayne National Park has stated repeatedly that the key to protecting the current and future health of the Park is to provide additional clean fresh water along the coast, particularly in the dry season when freshwater availability is the primary limiting factor.

Additionally, both of these sections base their conclusions on the likely state of the system during or after the implementation of an ongoing mitigation effort for retraction of the hypersaline groundwater plume beyond the boundaries permitted under the FDEP permit. NPS holds that the assessments made in the preliminary draft SEIS should be for the conditions as they exist on site at the time of the writing. As an example, the statement "...that neither activity will contribute to cumulative impacts..." (Page 4, second paragraph) expresses a position that is dependent on the successful completion of the remediation effort. The alternate case, covering the possibility that these activities do not continue or are found to be ineffective, and the resultant impact in that scenario is not specifically addressed.

Climate change (page 4 - 5) is considered and it is clear from that analysis that there is an expectation of a decrease in freshwater availability and an increase in freshwater use and evaporative losses in the region. This increased demand on the Biscayne Aquifer from continued operation of units 3 & 4 is not discussed in this section. The section, used as a baseline for further comparison elsewhere, simply states the climate expectations without assessing the impact of this with respect to the unit 3 & 4 lifetime extension.

Enclosure 2

South Florida National Parks
Florida

National Park Service
U.S. Department of the Interior

South Florida Ecosystem Restoration Program Project Locations

Produced by SFNRC/SFEO

Enclosure 3

Hurricane/Storm Surge Risk to Biscayne National Park

Biscayne National Park, Florida

National Park Service
U.S. Department of the Interior

1. Placement of Units 6 and 7 would result in these Units being surrounded by the polluted canals of the Industrial Waste Facility (IWF). A portion of the IWF canals would be located between the outer walls of Units 6 and 7 and Biscayne National Park (NP) and Biscayne Bay (Bay).

2. It is reasonably foreseeable that a hurricane/storm surge event would wash over the IWF canal and its levee before contacting the outer eastern wall of Units 6 and 7. As the hurricane/storm surge event receded, it would draw polluted IWF water back into Biscayne NP and the Bay. This concern is not analyzed in either the FEIS or Safety Report.

3. There is also a high likelihood that such a storm surge event upon contact with the outer walls of Units 6 and 7 would be driven back toward the levee thereby causing a breach of the eastern levee and driving significant amounts of polluted IWF water into Biscayne NP and the Bay. Breaches of the levee further south would cause newly stored Units 6 and 7 dredge spoils to enter Biscayne NP and Bay. These concerns are not analyzed in either the FEIS or Safety Report.

4. The IWF is not a closed hydrologic system. It is connected to Biscayne NP and Bay, as documented by the presence of tritium (a tracer of IWF water) in Biscayne NP and Bay waters. Other IWF constituent pollutants concurrently enter Biscayne NP and Bay and pose significant ecological risk to the park and Bay.

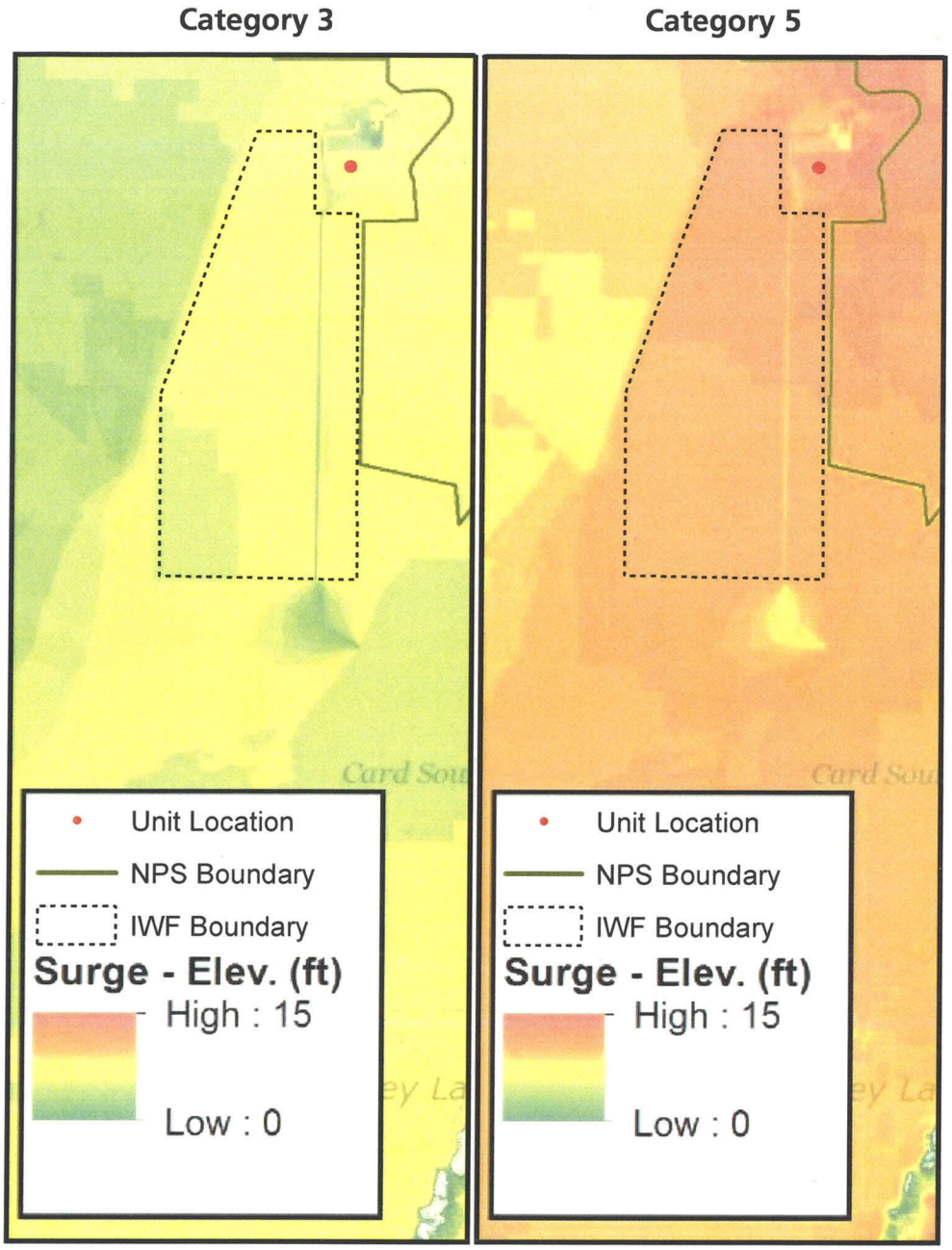
Created by: M. Avalos, National Park Service SERO GIS
Credits: NPS, ESRI

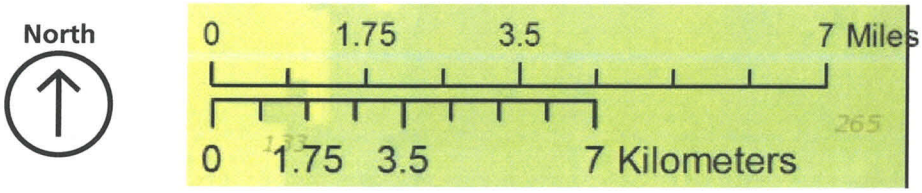
November 2016

Modeled Storm Surge from Category 3 and Category 5 Hurricanes

Biscayne National Park, Florida

National Park Service
U.S. Department of the Interior





The Industrial Wastewater Facility (IWF) is highly susceptible to hurricane driven storm surge events. These two maps show outcomes from NPS runs of the National Weather Service's Sea, Lake and Overland Surges from Hurricanes (SLOSH) model conducted earlier this year. Both the Category 3 (left) and Category 5 (right) hurricane maps show anticipated storm surge based on high tide. Results indicate that storm surge waters would flow over levees separating the IWF from Biscayne National Park (NP) and Biscayne Bay (Bay). Such events increase the likelihood that contaminants in the IWF waters, as well as newly stored dredge spoils from Units 6 & 7 excavation, would enter Biscayne NP and Bay via overwashing and/or breach of the eastern levee (as discussed in accompanying map) in the foreseeable future. This concern is not analyzed in either the FEIS or Safety Report.

Created by: B. Hardel, National Park Service SERO GIS
Credits: NPS, Esri, GEBCO, NOAA, National Geographic, DeLorme, NAVTEQ, Geonames.org

December 2016