



January 31, 2017

U.S. Fish & Wildlife Service
Attn: Permit Coordinator
1875 Century Blvd., Suite 200
Atlanta, GA 30345-3301

Dear Permit Coordinator:

Florida Power & Light Company (FPL) is pleased to submit the 2016 Annual Report for the Federal Fish & Wildlife Endangered Species Permit. This report fulfills General Conditions K., L., and M., of permit number TE092945-3. The activities conducted under this permit are summarized below:

1. There were 82 crocodiles spotted during the ID surveys conducted from January through December.
2. June through August there were 8 successful nests found during day and night time nesting surveys.
3. There were 127 hatchlings released.

The detailed activities conducted under this permit are summarized in the attached report.

If you need any additional information, please call me at 561-691-7032 or Kristin Eaton (Kristin.Eaton@FPL.com) at 561-691-7132.

Sincerely,

A handwritten signature in blue ink that reads 'James Lindsay'.

James Lindsay
FPL Principal Biologist

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT PLANT
ANNUAL AMERICAN CROCODILE (*Crocodylus acutus*) REPORT
FEDERAL PERMIT TE092945-3
January 2017



FLORIDA POWER & LIGHT COMPANY
JUNO BEACH, FLORIDA

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1.0 INTRODUCTION

The Turkey Point Power Plant is located on an approximately 11,000-acre coastal site in South Florida. The facility consists of two fossil fuel-powered single cycle generating units (Units 1 and 2), two nuclear powered generating units (Units 3 and 4), and one natural gas-fired combined cycle generating unit (Unit 5). The Turkey Point Power Plant is bordered by FPL's 13,000-acre Everglades Mitigation Bank to the south and west, Biscayne National Park to the north, Biscayne Bay to the east and the Everglades to the west. It is located within Sections 27, 28, 29, 31, 32, 33 and 34, Township 57 South, Range 40 East in Miami-Dade County, Florida.

In the early 1970s, FPL was required under a settlement with the Department of Justice to engineer and construct a closed loop cooling canal system and to discontinue the use of Biscayne Bay for condenser cooling. FPL began operating this 5,900-acre system in 1972. The American crocodile was first discovered on site in 1976 and the first nest was observed in 1978. Thus, FPL has monitored crocodile nesting and the overall population at the Turkey Point site since the 1970s. In 1979, the majority of the Turkey Point Power Plant site was designated as critical habitat for the American crocodile by the U.S. Fish and Wildlife Service (FWS). The cooling canal system offers optimum nesting, foraging, breeding and basking habitat for the crocodile. The cooling canal system has constant water levels, appropriate nesting substrate, security from human disturbance, isolation from nest and hatchling predation, and access to lower salinity refugia. The crocodiles nesting in the cooling canals represent one of the three nesting populations in the United States.

In the 1980s, FPL initiated a management program at the Turkey Point Power Plant site to benefit the American crocodile. The management program includes: 1) preserving and creating habitat suitable for crocodile nesting and basking; 2) establishment of exclusion zones during the nesting season; 3) monitoring surveys to document population size, activity, growth and survival; 4) relocation of hatchlings to lower salinity areas to increase survival; 5) the construction of ponds for use as hatchling refugia; and 6) prohibiting automobile use, road maintenance and other construction activities within the cooling canal system at night and during critical periods of the nesting season. The management activities conducted by FPL have resulted in an increase in the crocodile population. Because of the conservation effort given to this species, the American crocodile was down listed from an endangered species to a threatened species in 2007.

This annual report gives a detailed summary of the crocodile monitoring activities conducted in 2016. FPL's monitoring plan consists of night nesting/hatchling surveys, day nesting surveys, interceptor ditch surveys, spatial distribution

surveys, and capture surveys. Qualitative and quantitative data are included in the report for all surveys except for the spatial distribution survey and the capture survey. Since this work was conducted under other state and federal permits, the data will be submitted in the first half of 2017 in another report compiled by the University of Florida.

2.0 PROCEDURES AND INSTRUCTIONS

***The permittee must carry a copy of the FWS Endangered Species permit at all times when conducting authorized surveillance activities.**

	Type/Requirement	Periodicity
2.1	Night time surveys	Conducted from April through mid-August.
2.2	Day time surveys. Potential nest survey.	Conducted to locate all possible nest sites. April through mid-August.
2.3	Interceptor Ditch survey (ID canal)	~ Once per week, year round.
2.4	Turkey Point Units 3 & 4 Conditions of Certification licensee. Activity monitoring of entire Cooling Canal System.	2.4.1 Spatial distribution survey. Consist of 3 to 4 nights per event
		2.4.2 Capture survey. Three yearly events. ~3 nights per event.

2.1 Night Surveys

2.1.1 Type of survey: An airboat survey of the nesting hot spots of the year. Conducted at night, starting at sundown.

2.1.2 Objective: To locate any hatched nests and capture the hatchlings in the surrounding areas. Observations of possible new nests, female activity, and potential hatching activity are documented. Night surveys are also used as a time to release marked hatchlings back into ponds within the cooling canal system.

2.1.3 Equipment: Airboat, 200,000 candle power spot/flood beam, low-powered head beams (to spot hatchling eye shine), handheld flashlights, canvas hatchling bags, thermometer, salinity refractometer, GPS, and field notebook.

2.1.4 Specific Instructions:

- Review the night's survey plan: areas that will be surveyed, recent nest activity, and any other objectives.
- Contact security at phone extension 6074 and inform them about the survey activities and how long the survey is expected to last.
- Gather equipment and inspect the airboat.
- At the start of the survey (when in airboat), document weather conditions, time, and persons conducting the survey in field notebook.
- Salinity, air temperature, and water temperature are taken at the location of the captures.
- Proper field book documentation of activities throughout the survey is required. Examples include location(s) of hatchlings captured, nest locations, areas surveyed. See Appendix 1.
- Once the survey is completed and specialists have returned to the dock, document the time and add any last comments.
- Place all hatchlings in the proper aquariums in the garage; make sure all documentation for hatchling aquariums are complete.
- Place all equipment in proper storage areas.

2.2 Potential Nest Survey

2.2.1 Type of Survey: Daytime airboat survey in the cooling canals to locate potential nests and monitor adult female visitation of nest sites, usually conducted during early morning hours.

2.2.2 Objective: To locate potential nest sites for the year, locate hatched nests, and document activity that will indicate a nest is about to hatch. The nest surveys gather the information needed to indicate where the night surveys need to focus.

2.2.3 Equipment: Airboat, GPS, thermometer, salinity refractometer, canvas hatchling bags, plenty of drinking water, flagging tape, and field notebook.

2.2.4 Specific Instructions

- Gather equipment and inspect the airboat.
- Document start time of survey and weather conditions and persons conducting the survey in field notebook.
- Survey crocodile hot spots for potential nests. Look for drags and slides on the side of berms.
- Upon finding a potential nest site, document location in the field notebook and flag the area.
- Upon finding areas of activity, such as tail drags, slides, digging, and test holes, document activity in the field notebook.
- Upon finding a hatched nest, document locations, GPS coordinates, and assign a nest number. Dig out the nest and document the number of

hatched eggs, number of infertile eggs, and number of crocodiles to match up with total number of eggs.

- Survey surrounding area for hatchlings, if possible make captures. Document exact location of hatchlings to allow for ease of capture during the night survey.
- Throughout nest surveys, document any crocodiles 2.0 m and over found around any potential nest site.
- Once various nests have hatched, place proper FPL nest signs in area.
- Document time back to lab. Document any recent hatched nests on a cooling canal map.

2.3 Interceptor Ditch Survey (ID canal)

2.3.1 Type of Survey: Truck survey is usually conducted during morning hours. Specialist surveys the entire Interceptor Ditch Canal.

2.3.2 Objective: To document any crocodile observed while driving from the south end to the north end of the ID. Write down a size estimate in meters, position in canal, and location in miles (either calculated by the vehicle's odometer, or by using a GPS). During non-nesting/hatchling season, the survey is conducted approximately once per week. Due to the heavy workload experienced during the nesting and hatchling seasons, the ID surveys are conducted when personnel are available.

2.3.3 Equipment: Truck, field notebook, GPS, binoculars, and if at night, a spotlight.

2.3.4 Specific Instructions

- Drive to the southwest end of the cooling canals.
- Begin survey at the south end of the ID canal. Write down starting time and weather conditions. Set odometer to zero on the vehicle or record the GPS location.
- Begin survey by driving north and observing the center and east bank of the ID canal. For approximately the first mile, observe crocodile activity in the C-107 canal, which is adjacent to the ID canal.
- Once an animal is observed, document the size, position in canal, and the location in miles or GPS coordinates.
- Continue survey until the north end of the canal is reached at about 5 miles.
- Throughout the survey, document any interesting observations or other animals seen.

2.4 Survey Conditions of Certification. Turkey Point Units 3 & 4 Conditions of Certification licensee. Activity monitoring of entire Cooling Canal System.

“Data collected shall include animal size, GPS location, salinity, and air/water temperatures (XVI.B.)”

Surveys shall be conducted both pre and post Unit 3 & 4 Uprate Project to determine any effects of temperature and salinity changes on crocodiles in the cooling canal system.

2.4.1 Spatial distribution survey

2.4.1.1 Type of Survey: Airboat survey of the entire cooling canal system, conducted by an FPL crocodile specialist and two University of Florida (UF) biologists. The entire cooling canal system is covered in a 3 night period. A truck survey of the ID canal is conducted as part of the requirements, as well.

Throughout the cooling canals, data loggers have been set at specific locations to gather temperature. During the survey, periodic stops at the data loggers allow the UF biologists to download the data.

2.4.1.2 Objective: To thoroughly survey the entire cooling canal system documenting the size and location of any crocodile found. The three (3) to four (4) night surveying event is conducted by an FPL qualified person (crocodile specialist) and two biologists from UF.

2.4.1.3 Equipment: Airboat, 200,000 candle power Q-beam, GPS.

2.4.1.4 Specific Instructions

- Specialist will contact security at 6074 and inform them about the activities of the night.
- Specialist will meet with UF biologists at a designated time (usually before sundown).
- The survey is broken into 3 parts. Cooling Canal Sections 1, 2, and 3 on the west side are surveyed on the first night, sections 4 and 5 on the west side are surveyed on night two, and the entire east side along with the ID truck survey are conducted on the third night.
- Document start of survey and names of the biologist doing the survey.
- Go to designated starting area for that night's section.
- Specialist will drive the boat while one person spots the animals and the other writes down the data.
- When an animal is spotted, the driver will approach the animal at a reasonable speed, ease off the accelerator, and allow for the spotter to get a look at the animal. The biologist will then estimate the size, a way point is taken, and the information is documented. This will occur throughout the survey.
- Data loggers are positioned at certain locations. Once a data logger is located, the driver will approach slowly. The data logger's information is downloaded and the data logger is returned to the water.

- Salinities are also taken at specific locations.
- Proper general housekeeping is performed after each survey.
- Information gathered by the specialists is kept in the FPL crocodile database.

2.4.2 Capture Survey

Permit Requirement: Additional data shall be collected to determine changes to growth and survival of crocodiles within the Cooling Canal System. The entire cooling canal system shall be monitored at least three times a year for three days and three nights per event. Data collected shall include biometric data for each crocodile that is hand captured or trapped.

2.4.2.1 Type of Survey: This survey utilizes a truck and airboats during both the day and night. It covers the cooling canals, ID canal, C-107, and Sea Dade canals. The survey is conducted with FPL crocodile program staff and the UF biologists.

2.4.2.2 Objective: Over the designated time period for the survey, biologists attempt to capture any crocodile encountered. The biologists will gather various measurements and biometric data. Once the data are collected, the crocodile is then released.

2.4.2.3 Specific Instructions:

- Teams of at least 3 specialists per airboat, and a total of 3 airboats will be assigned specific sections of the Cooling Canal System.
- In addition, a team of 2 specialists will conduct a truck survey of the Interceptor Ditch Canal.
- Each team and airboat will conduct surveys for animals within the pre-determined sections.
- Once an animal is spotted, the attempt for capture begins utilizing the snare technique. For animals less than one (1) meter in length, hand capture is preferred.
- Biometric data are recorded and later analyzed for growth and population status.
- All animals are micro-chipped and scutes are clipped for ID purposes and DNA testing.
- Proper general housekeeping is performed after each survey.
- Information gathered by the specialists is kept in the FPL crocodile database.

3.0 RESULTS

In 2016, all of the surveys included in the monitoring plan were conducted and data were collected. The data from the spatial distribution and capture surveys will be submitted in another report compiled by the University of Florida, since all work was completed under their permits.

This year, we observed similar nesting and hatchling numbers compared to 2015. We had eight successful nests found and 127 hatchlings tagged and released.

The first successful nest was discovered on June 17, 2016, with the last successful nest located on August 10, 2016. There were two successful nests found within the crocodile habitat in the Everglades Mitigation Bank which was constructed in 2014.

For more on these results, see Figure 2, Table 1 and Table 4.

4.0 DISCUSSION

During the 2016 American crocodile nesting season, a total of eight successful nests were found (four in the cooling canal system, two in the constructed Mitigation Crocodile Sanctuary (MCS) in the Everglades Mitigation Bank, one along the interceptor ditch road, and one near the north test canal road) and 127 hatchlings were captured and released at Turkey Point. This is compared to the 9 nests (7 in the cooling canals and 2 in the MCS) and 119 hatchlings captured in 2015.

This past year, the cooling canal system continued to experience heightened levels of salinity and algae. Over the past two years, we have begun executing a multi-phased strategy to improve the long-term health of the canals. Independent analysis show that rainfall, or, increasing the amount of freshwater in the system by other means, is the best, quickest way to reduce salinity and temperature, two factors that encourage algae growth. These strategies, along with other activities (increased construction, dredging, traffic) taking place on-site can provide additional risk to crocodiles. For these reasons, FPL continued to release all hatchlings outside of the cooling canal system.

The 2016 season began with the first hatched nest discovered on June 17, 2016 in the cooling canals on B31SXN5. The first nest hatched earlier than the previous year (June 22, 2015). Of the remaining nests, an additional nest hatched in June, five hatched in July, with the last nest hatching in August. The last hatched nest was east of the interceptor ditch (ID) road at the C-107 curve, on August 10, 2016. This is almost a month later than the last nest that hatched in 2015. Six of the eight nesting sites were in traditional nesting hot spots, with two nests discovered in new locations (locations not expected based on long

term nesting trends), both found outside the cooling canals on Turkey Point property. One on the east ID canal road (nest 08-16) and the other off the north test canal road (nest 07-16). Both these locations were in areas of high vegetation and substrate disturbance. Nest 08-16 was located on a patch of dirt that was pushed into a mound as a result of routine vegetation removal. Whereas, nest 07-16 was dug into fairly hard substrate next to a heavily used access road that had a pipe running parallel to the road and the nest.

Several female crocodiles utilized existing ponds built to attract the females, transporting the hatchlings to these lower salinity nurseries. This behavior once again reinforces the importance and success of having fresh water ponds throughout the nesting habitat of the American crocodile within the cooling canals.

During the capture of hatchlings in a mangrove pond by kayak from nest 04-16, the female was encountered in a pond next to the hatchlings. As observed several times before, the female did not exhibit any aggression to the surveyor as they navigated around her, capturing the hatchlings. Throughout the duration of capturing the hatchlings in the pond, the female remained submerged in the shallow clear water. Care was taken to not disturb the female.

Similar to last year, there was potential predation of hatchlings by a juvenile crocodile. When the nest was discovered, a juvenile crocodile was observed nearby and the surveyors were only able to capture two hatchlings.

During the 2016 season, 127 hatchlings were captured, marked, and released. The average weights of hatchlings were 60g and the average total lengths 26cm, fitting usual patterns from previous years. Hatchling captures were slightly higher in 2016 compared to 2015. However, in 2016, staff caught more hatchlings per clutch because they were found in more accessible locations.

Every year, the MCS is prepped prior to nesting season by removing excessive ground vegetation, which has led to great success. This year, we had two hatched nests in the MCS. This same style of vegetation removal used on the berms in the cooling canals could create a more detailed way of removing exotic vegetation while maintaining native plants.

In an effort to educate the public on this threatened species, FPL works with media outlets and schools to showcase the efforts of the crocodile program. The FPL crocodile team showcased the crocodile program by participating in multiple career days at schools in Miami-Dade County in 2016. They also participated in several fundraisers for community partners in the area.

5.0 CONCLUSION

The American crocodile population continues to remain in a much stronger position than before the Turkey Point Cooling Canal System was established. Today, crocodiles continue migrate in and out of the system and call the system home.

Despite the environmental changes taking place within the Turkey Point Cooling Canal System, the American crocodiles had eight successful nests and 127 hatchlings were released at Turkey Point, outside of the cooling canal system.

FPL will continue to monitor the Turkey Point population in order to better understand the potential trends for this threatened species.

6.0 APPENDICES

Appendix 1

Proper note taking for the crocodile hatchling season

By Mario Aldecoa
Crocodile Specialist
FPL Turkey Point 2009

Note taking is one of the most important aspects of conducting any survey. It helps to keep the information organized and valid. The information that will be gathered during the hatchling surveys is required and will be documented in a crocodile database for permit purposes. Remember, these animals are a threatened species and the information we gather is needed to assess their health and status.

Key Terms:

- Canal number and section, Example: C13SXN4. Berm: B13SXN4. Keep in mind if you are in the north end or south end, B13SXN4 south.
- Temperatures read will be recorded in Celsius.
- Salinity will be recorded in Parts Per Thousand (ppt).

Heading

- Date, left hand corner
- Title of survey, example: Night Survey
- Initials of people conducting the survey, right hand corner
- Right hand corner, first line: Weather conditions, moon phase, mosquito severity

Crocodiles observed (non-captures)

- Location of animal observed will either be recorded in water (canal) or land (berm). Example: in a canal, C12SXN4, on a berm, B12SXN4.
- Estimate of size in meters. 1 meter = 3.28 feet. Example: 6ft animal is about 2 meters. Think first in feet then convert to meters.
- In the area of observation, record air temperature, water temperature, and salinity. Example: T air – 21°C, T water - 25°C, Salinity - 67ppt

Hatchlings Captured

- Location of captures (same format, B29SXN4 or C5ESXN2); if in a pond, B12SXN4 pond.
- Number captured
- If captured in a pond, take salinity and water temperature.

- Document details, Example: captured under tree, found in and out of water.
- If animals are captured in different locations, PLACE IN SEPARATE BAGS. Record specific location of captured animals on canvas bags.

Lab work

- Hatchlings will be placed in aquariums with clean water.
- A note will be placed on the aquarium with capture location and the number of hatchlings. If this information is not present, then the capture was useless and valuable information is lost.
- The return time will be documented and a review of notes shall be conducted to ensure accuracy.
- All equipment will be placed back into the proper place.

The information stated above must be followed and no deviations taken.

Appendix 2

Permit Designees/Researchers

James Lindsay
Frank Mazzotti
Joseph Wasilewski
Bob Bertelson
Mario Aldecoa
Jodie Gless
Kenneth Spivey
Monica Cardona
Kristin Eaton

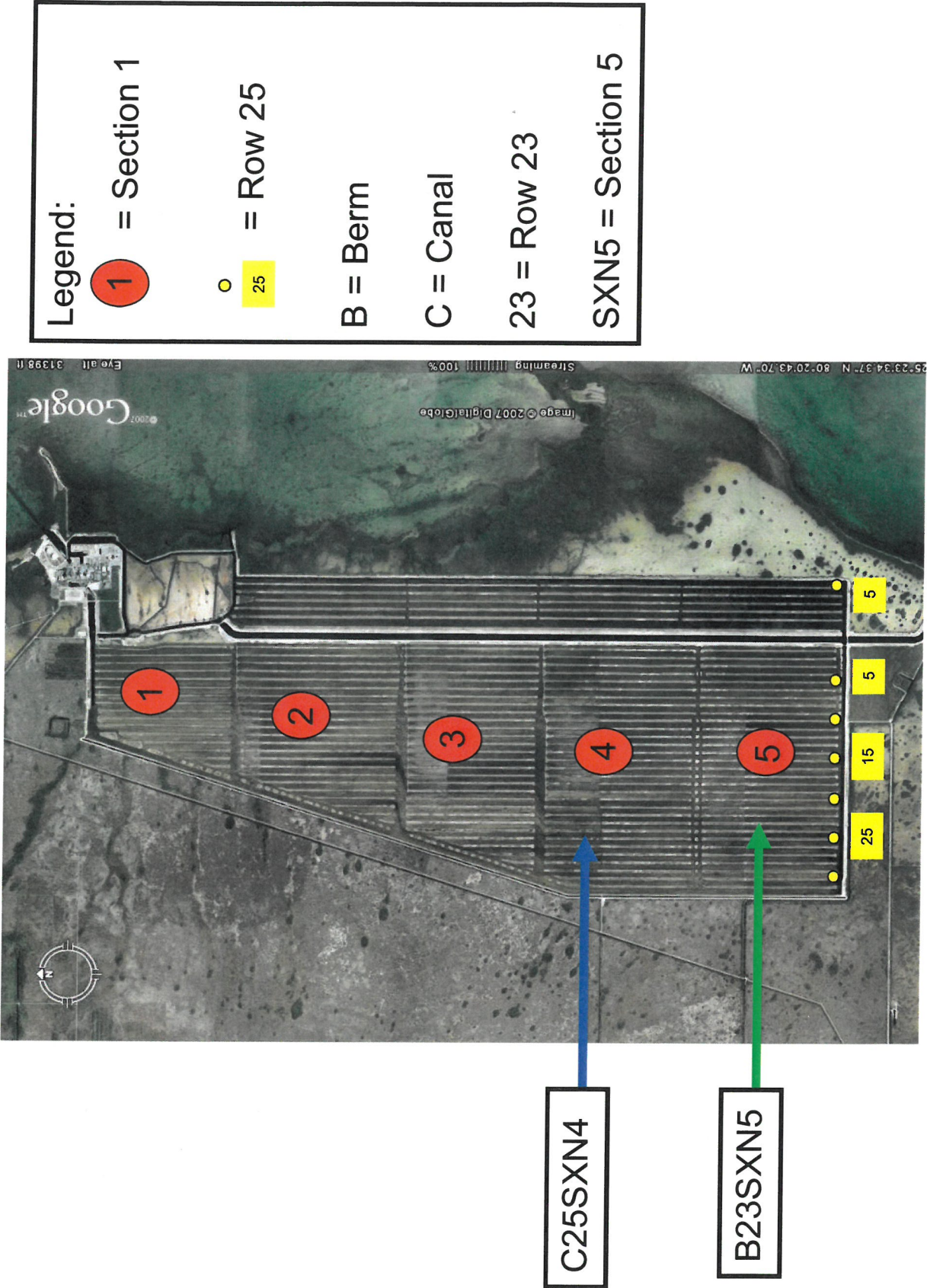


Figure 1. Numbering and Identification System for the Turkey Point Cooling Canal System



Figure 2. 2016 Nest Locations at Turkey Point

Table 1. Latitude and Longitude of Nest Locations 2016

Crocodile Nests 2016				
Date	Nest Number	Berm Location	Latitude	Longitude
6/17/2016	01-16	B31SXN5 (S of N pond)	25°22'11.34"N	80°21'58.81"W
6/28/2016	02-16	B3ESXN5 (S)	25°21'36.11"N	80°20'4.46"W
7/6/2016	03-16	B10SXN2 (N)	25°25'6.52"N	80°20'51.03"W
7/7/2016	04-16	Croc Mit Sanct (N) at Entrance	25°21'5.96"N	80°20'36.54"W
7/7/2016	05-16	Croc Mit Sanct (E) Middle Mound	25°21'3.26"N	80°20'35.59"W
7/8/2016	06-16	B5ESXN2(N)	25°25'5.60"N	80°19'56.73"W
7/18/2016	07-16	N of cooling canals by test canals	25°26'2.95"N	80°20'27.74"W
8/10/2016	08-16	ID canal rd E at C-107 curve	25°22'2.31"N	80°22'1.93"W

Date	Time start (a.m.)	Location	Nest Number	Number Egg shells	Number Un-hatched	Number Dead	Number Infertile	Number Captured	Comments	Surveyor
4/14/2016	8:39	B12SXN4(S)							Slight drags on east side and drags on west side leading into pond	M.A
		B1ESXN5(N) pond							Drags and digging	M.A
		B3ESXN5(S) by pond							Drags leading in in and out of pond, some digging	M.A
		B2ESXN2							Same spot as last year	M.A
		Mitigation Croc Sanctuary (MCS)							Drags on 4, mound, middle, south and two east side mounds. Possible spot on west side by finger canal	M.A
4/19/2016	10:17	B12SXN4 south of north pond, middle							Possible drags but might be an iguana nest.	M.A
		B3ESXN5(S)(W)							Drags	M.A
5/2/2016	7:44	B1ESXN5(N) pond							New spot, maybe	M.A
		B3ESXN5(S)							Fresh drags by pond and usual spot	M.A
6/9/2016	8:56	Nest survey hot spots route							No new activity	M.A
6/13/2016	10:00	B3ESXN5(S)(W)							Drags	M.A
6/14/2016	8:40	B31SXN5 (S of N pond)							Drags in small clearing, looks good.	M.A
		Nest survey hot spots route								M.A
6/17/2016	7:30	B31SXN5 (S of N pond)	01-16	12			3	18	Captured hatchlings under buttonwood C32	M.A
6/20/2016	7:51	B3ESXN5							Two spots by south pond and north of pond in the usual spot	M.A
6/22/2016	8:00	B3ESXN5							Set camera trap on potential nest location	M.A
		B2ESXN2							Possible drags in north end usual spot	M.A
		B1ESXN5(N) pond							Set camera trap on potential nest location	M.A
6/23/2016	7:51	B3ESXN5							Fresh drags	M.A
		B5ESXN2							Fresh drags and digging, nest for sure. Set camera trap on location.	M.A
6/24/2016	7:24	B3ESXN5							Fresh drags	M.A
		B2ESXN2							Fresh drags	M.A
6/27/2016	7:26	B3ESXN5							Lots of drags	M.A
		B5ESXN2							Fresh drags	M.A
6/28/2016	7:35	B2ESXN2	02-16	13		2		19	Captured hatchlings in small pond just south of nest, perfect location for female to have utilized.	M.A
6/29/2016	7:48	B2ESXN2							Fresh drags	M.A
6/30/2016	7:57	B2ESXN2							Fresh drags. No other activity in hot spots, even in mitigation area.	M.A
7/1/2016	8:20	B2ESXN2							Fresh drags. No other activity in hot spots.	M.A
7/4/2016	7:35	Nest survey hot spots route							No new activity	M.A
7/5/2016	7:45	B2ESXN2							Fresh drags	M.A
		B5ESXN2							Fresh drags. Camera trap captured female visiting the nest multiple times. Looks like she has an injury in one eye.	M.A
7/6/2016	7:25	B5ESXN2							At the very north tip of berm, hard to see and find. Maybe a few days old. 1.25m croc under buttonwoods in C11. Probably ate most of the hatchlings.	M.A
7/7/2016	7:35	B10SXN2	03-16	3		4			Lots of activity, should hatch any day.	M.A
		B2ESXN2							Drags out to WFC canal and then into mangrove pond.	M.A
		MCS Entrance to area W side	04-16		1				Captured 3 in small east middle pond. Drags leading out to EFC canal.	M.A
		MCS East middle mound	05-16					3	No visible signs of animal activity.	M.A
7/8/2016		B1ESXN5(N) Pond							Female exposed nest but did not remove the majority of nest. Hatched out the remaining eggs from nest by hand.	B.B
		B5ESXN2	06-16		23		9		No new activity	M.A
7/11/2016	7:42	Nest survey hot spots route							No new activity	M.A
7/12/2016		Nest survey hot spots route							No new activity	M.A
7/14/2016		Nest survey hot spots route							No new activity	M.A
7/15/2016		Nest survey hot spots route							Call received by security informing of large croc by side of road, turned out to be the female excavating the nest.	M.A
7/18/2016		North end access road by test canals	07-16	4	10	2	6		No new activity	M.A
8/4/2016	8:36	Nest survey hot spots route							Drags leading into ID canal and into C-107. Nest is several days old and could not locate any hatchlings.	M.A, J.W
8/10/2016		ID East road at C-107 curve	08-16	4			3			M.A

Crocodile Night Surveys 2016							
<u>Date</u>	<u>Start time (p.m.)</u>	<u>Conditions</u>	<u>Hatchlings Captured</u>	<u>Location of Capture</u>	<u>Crocodiles observed</u>	<u>Comments</u>	<u>Surveyors</u>
6/17/2016	8:40		14	C32SXN5 under buttonwood	2.0 m croc under a nearby buttonwood, probably the female.		M.A/P.A
6/28/2016	8:41		12	9 crocs in pond B3ESXN5 and 3 in C3ESXN5 along berm			M.A/K.S
7/6/2016	8:40	Slight wind	2	Captured 2 under buttonwood in C11SXN2		Green heron nest on overhanging buttonwood, another potential predator.	M.A/P.A
7/8/2016	8:30	clear skies	12	middle east pond croc mit sanct.			B.B/K.S
7/11/2016	8:30		9+1+1	9 from west mangrove pond + 1 recapture. 1 from east mit pond	2.5 m female in pond with hatchlings.	Female in west mangrove pond with hatchlings. Took kayak in and was right over her in the water!!	M.A/P.A
7/13/2016	8:40		2+1	2 from C5ESXN2 and 1 from B4ESXN2 pond, all appear to be from nest 06-16		Surveyed all hot spots and shined for hatchlings.	M.A/P.A/K.S

Date Marked	Nest Number	Turkey Point Number	Tag Number	Snout Vent (cm)	Total Length (cm)	Head Length (cm)	Head Width (cm)	Weight (g)	Sex	Capture location	Release Location	Scute clippings	Comments
6/29/2016	02-16	2206	836381062	12.9	26	4.2	2	63.5 F		BSESXN2 (S) Pond	WFC mangrove pond	RD 2, 9	06.11
6/29/2016	02-16	2207	83656593	13.2	27.3	4.1	2	65.8 M		BSESXN2 (S) Pond	WFC mangrove pond	2.9	07.11
6/29/2016	02-16	2208	836572113	13.2	26.9	4.1	1.9	62.2 F		BSESXN2 (S) Pond	WFC mangrove pond	2.9	08.11
6/29/2016	02-16	2209	836557561	13.2	26.6	4.2	1.9	61.6 M		BSESXN2 (S) Pond	WFC mangrove pond	2.9	09.11
6/29/2016	02-16	2210	836567105	12.4	25.5	4	2	64 F		BSESXN2 (S) Pond	WFC mangrove pond	2.9	11
6/29/2016	02-16	2211	836572355	13.2	26.5	4.2	2	65.5 M		BSESXN2 (S) Pond	WFC mangrove pond	2.9	11.11
6/29/2016	02-16	2212	836572809	13.3	27	4.1	2	65 M		BSESXN2 (S) Pond	WFC mangrove pond	2.9	12.11
6/29/2016	02-16	2213	836571290	13.1	26.6	4.1	2	62.3 M		BSESXN2 (S) Pond	WFC mangrove pond	2.9	13.11
6/29/2016	02-16	2214	836570351	13.2	26	4.1	2	62.5 F		BSESXN2 (S) Pond	WFC mangrove pond	2.9	14.11
7/1/2016	03-16	2204	836560782	13.3	26.8	4.2	2	62.2 M		B10SXN2 C11	Mangrove pond south EMB	2.9	04.11
7/1/2016	04-16	2205	836560048	12.1	24.9	4.1	1.9	56.8 F		B10SXN2 C11	Mangrove pond south EMB	2.9	05.11
7/1/2016	04-16	2206	836569787	12.5	25.1	4	1.9	54.1 F		(N) Mit. Croc. Sanct.	Mangrove pond south EMB	2.9	06.11
7/1/2016	05-16	2207	836551381	13.1	25.8	4.2	2	57.5 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	07.11
7/1/2016	05-16	2208	836577394	13.2	25.8	4.2	2	58.2 F		E Mit. Croc. Sanct.	C-107 mangroves	2.9	08.11
7/1/2016	05-16	2209	836568523	12.9	25.4	4.1	2	58.7 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	09.11
7/1/2016	05-16	2210	836555311	13	25.5	4.2	2	58.4 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	11
7/1/2016	05-16	2211	836561191	12.6	24.9	4.1	1.9	51.5 F		E Mit. Croc. Sanct.	C-107 mangroves	2.9	11.11
7/1/2016	05-16	2212	836574791	13	26.2	4.2	2	59.8 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	11.11
7/1/2016	05-16	2213	836564273	13.3	26.6	4.2	2	62.5 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	12.11
7/1/2016	05-16	2214	836552874	13.1	26	4.1	2	54.9 F		E Mit. Croc. Sanct.	C-107 mangroves	2.9	13.11
7/1/2016	05-16	2215	836546784	12.5	25.2	4.1	2	54.3 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	14.11
7/1/2016	05-16	2216	836566783	13.1	25.8	4.2	2	58.6 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	15.11
7/1/2016	05-16	2217	836557033	13.2	25.9	4.2	1.9	58.2 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	16.11
7/1/2016	05-16	2218	836573058	12.9	25.8	4.1	2	59.9 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	17.11
7/1/2016	05-16	2219	836574373	13.1	25.7	4	2	55.9 F		E Mit. Croc. Sanct.	C-107 mangroves	2.9	18.11
7/1/2016	05-16	2220	836553074	13.1	26	4.1	2	58.4 F		E Mit. Croc. Sanct.	C-107 mangroves	2.9	19.11
7/1/2016	05-16	2221	836577318	12.1	24.5	4	1.9	52.1 M		E Mit. Croc. Sanct.	C-107 mangroves	2.9	20.11
7/1/2016	06-16	2222	836580525	13.2	27	4.2	2	65 M		BSESXN2	New tidal area (old met tower rd)	2.9	21.11
7/1/2016	06-16	2223	836547341	13.2	25.5	4.2	2	59 M		BSESXN2	New tidal area (old met tower rd)	2.9	22.11
7/1/2016	06-16	2224	836576786	13.2	25.9	4.1	1.9	56.6 M		BSESXN2	New tidal area (old met tower rd)	2.9	23.11
7/1/2016	06-16	2225	836547865	13.5	26.7	4.2	2	66.3 M		BSESXN2	New tidal area (old met tower rd)	2.9	24.11
7/1/2016	06-16	2226	836550276	13.1	25.9	4	2	59.6 M		BSESXN2	New tidal area (old met tower rd)	2.9	25.11
7/1/2016	06-16	2227	836576592	13.1	26.3	4.1	2	60.2 M		BSESXN2	New tidal area (old met tower rd)	2.9	26.11
7/1/2016	06-16	2228	836578061	12.8	25.3	4.2	2	58.2 F		BSESXN2	New tidal area (old met tower rd)	2.9	27.11
7/1/2016	06-16	2229	836550787	13.5	26.9	4.1	2	62.1 M		BSESXN2	New tidal area (old met tower rd)	2.9	28.11
7/1/2016	06-16	2230	836558824	12.6	25	4	2	59.9 M		BSESXN2	New tidal area (old met tower rd)	2.9	29.11
7/1/2016	06-16	2231	836579374	13	26.1	4.1	2	61.3 F		BSESXN2	New tidal area (old met tower rd)	2.9	30.11
7/1/2016	06-16	2232	836567817	12.9	26.3	4.1	2	56.9 F		BSESXN2	New tidal area (old met tower rd)	2.9	31.11
7/1/2016	06-16	2233	836567817	13.2	26.3	4.2	2	66 M		BSESXN2	New tidal area (old met tower rd)	2.9	32.11
7/1/2016	06-16	2234	836559023	13.1	25.9	4.1	2	62 M		BSESXN2	New tidal area (old met tower rd)	2.9	33.11
7/1/2016	06-16	2235	836570354	12.9	25.6	4.1	2	57.8 M		BSESXN2	New tidal area (old met tower rd)	2.9	34.11
7/1/2016	06-16	2236	836556800	13.2	25.4	4.2	2	60.9 M		BSESXN2	New tidal area (old met tower rd)	2.9	35.11
7/1/2016	06-16	2237	836557779	13.1	26.1	4.2	2	63.5 M		BSESXN2	New tidal area (old met tower rd)	2.9	36.11
7/1/2016	06-16	2238	836556337	13.3	26.4	4.2	2	62.8 M		BSESXN2	New tidal area (old met tower rd)	2.9	37.11
7/1/2016	06-16	2239	836553522	13.2	26.7	4.2	2	68.8 M		BSESXN2	New tidal area (old met tower rd)	2.9	38.11
7/1/2016	06-16	2240	836564869	13.1	25.7	4.1	2	61.1 F		BSESXN2	New tidal area (old met tower rd)	2.9	39.11
7/1/2016	06-16	2241	836562257	13.1	25.9	4.1	2	57.6 M		BSESXN2	New tidal area (old met tower rd)	2.9	40.11
7/1/2016	06-16	2242	836566004	12.8	25.4	4.1	2	60.9 F		BSESXN2	New tidal area (old met tower rd)	2.9	41.11
7/1/2016	06-16	2243	836551370	13	25.7	4.1	2	56.6 F		BSESXN2	New tidal area (old met tower rd)	2.9	42.11
7/1/2016	04-16	2244	836574894	13.3	26.3	4.2	2	56.9 M		Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	43.11
7/1/2016	04-16	2245	836558537	12.9	25.5	4.2	2.1	59.7 M		Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	44.11
7/1/2016	04-16	2246	836580077	12.6	25.5	4.1	2	59.2 M		Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	45.11

Table 4. Tagged Hatchlings 2016

Date Marked	Nest Number	Turkey Point Number	Tag Number	Snout Vent (cm)	Total Length (cm)	Head Length (cm)	Head Width (cm)	Weight (g)	Sex	Capture location	Release Location	Scute clippings		Comments	
												RD	S		
7/12/2016	04-16	2247	836558073	12.5	24.4	3.9	2	58.8	M	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	4.7	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	04-16	2248	836570313	12.9	25.9	4.2	2	63.9	M	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	4.8	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	04-16	2249	836551541	13	25.7	4.2	2	55.7	M	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	4.9	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	04-16	2250	836551812	13.3	26.4	4.2	2	62.3	M	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	5	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	04-16	2251	836553091	13	26	4.2	1.9	59	M	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	5.1	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	04-16	2252	836570515	13.2	26.3	4.2	2	60.4	UKN	Croc Mit Sanct N rd entrance, (W) mangrove pond	W mangrove pond mit sanct.	2.9	5.2	1.11	Captured hatchlings in west mangrove pond with female present in pond.
7/12/2016	05-16	2253	836553681	12.7	25.3	4.2	2	55.1	F	E Mit. Croc. Sanct. Middle mound	W mangrove pond mit sanct.	2.9	5.3	1.11	Straggler from pond
7/14/2016	06-16	2254	836575037	13.3	26.1	4.2	2.1	63.7	M	BSESX2	EFC mangrove pond	2.9	5.4	1.11	Straggler
7/14/2016	06-16	2255	836551813	13.1	25.7	4.2	2.1	62.4	M	BSESX2	EFC mangrove pond	2.9	5.5	1.11	Straggler
7/14/2016	06-16	2256	836553017	13.3	26	4.3	2.1	66	F	BSESX2	EFC mangrove pond	2.9	5.6	1.11	Straggler
7/18/2016	07-16	2257	836550885	13.5	26.8	4.3	2.1	65.8	F	N end test canal access rd	Met lower rd tidal flats and canal	2.9	5.7	1.11	
7/18/2016	07-16	2258	83657123	13.6	26.5	4.3	2	60.5	F	N end test canal access rd	Met lower rd tidal flats and canal	2.9	5.8	1.11	
7/18/2016	07-16	2259	836547291	13	26.1	4.2	2	62.8	UKN	N end test canal access rd	Met lower rd tidal flats and canal	2.9	5.9	1.11	
7/18/2016	07-16	2260	836547814	13.1	26.3	4.1	2	64.5	F	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6	1.11	
7/18/2016	07-16	2261	836564305	13.4	26.9	4.2	2	64	M	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.1	1.11	
7/18/2016	07-16	2262	836552873	13.2	26.1	4.1	2	60.8	M	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.2	1.11	
7/18/2016	07-16	2263	836574282	13.1	26.2	4.1	2	54.3	F	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.3	1.11	
7/18/2016	07-16	2264	836561106	13.3	26.5	4.2	2.1	62.5	F	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.4	1.11	
7/18/2016	07-16	2265	836578818	13.3	26.4	4.1	2	59.2	UKN	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.5	1.11	
7/18/2016	07-16	2266	836556314	13.2	26.8	4.2	2	60.5	UKN	N end test canal access rd	Met lower rd tidal flats and canal	2.9	6.6	1.11	
8/17/2016	Misc.*	2267	836568559	14.3	28.1	4.6	2.1	56.8	M	C3ESXN3	Met lower rd tidal flats and canal	2.9	6.7	1.11	
			Avg.	13.0189	26.062913	4.1393701	1.988189	59.92283							
7/12/2016	Recapture	2196	836547595	14.4	29.3	4.1	2	72.6	M	W mangrove pond mit sanct	W mangrove pond mit sanct.				

2016 Hatching Release Points and Dates

Release Date	Nest Number	Number Released	Release Location	Comments
6/20/2016	01-16	14+18	EFC Mangrove pond	
6/29/2016	02-16	19+12	West mangrove pond mit. Sanctuary	FPL film crew and photographer present for release
7/7/2016	03-16	2	Mangrove pond south EMB	
7/11/2016	04-16 and 05-16	3+12+1	C-107 mangroves	
	06-16	22	New tidal area, old met tower rd	
7/12/2016	04-16 and 05-16	1+9+1	West mangrove pond WFC mit croc sanct	Released hatchlings back into pond with female.
7/14/2016	06-16	3	EFC Mangrove pond	One recapture
7/18/2016	07-16	10	New tidal area, old met tower rd	

EFC - East Finger Canal
 EMB - Everglades Mitigation Bank
 WFC - West Finger Canal

Crocodile ID Surveys 2016							
Date	Start Time	Distance From Start (miles)	No. of Crocodiles observed	Location	Total Length (est. meters)	Surveyor	Comments
2/3/2016	9:55 a.m.	0.31	1.00	ID EB Basking	2.5	M.A	
		4.64	1	Center ID	2		
		5.29	1	EB ID	3.25		
		5.6		NID			
3/7/2016	9:15 a.m.	0.18	1	Center ID	2.75	M.A	
		0.21	1	EB ID	2.5		
		0.22	1	EB ID	2		
		0.82	1	Center ID	2.75		
		1.06	1	ID EB Basking	2		
		5.05	1	ID EB Basking	2.75		
		5.56		NID			
5/26/2016	10:33 a.m.	41ft	1	EB ID	1.5	M.A	
		156ft	1	EB ID	2		
		0.11	1	EB ID	1		
		0.17	1	EB ID	1.75		
		0.28	1	EB ID	1.5		
		0.30	1	EB ID	1.75		
		0.50	1	EB ID	1.25		
		3.00	1	EB ID	1		
		3.39	1	EB ID	1.25		
		4.75					Construction of wells, lots of activity and traffic for the remaining northern stretch of the ID canal
8/23/2016	8:15 a.m.	5.59		NID			
		0.29	1	Center ID	1.75	M.A	
		0.35	1	EB ID	2		
		0.38	1	Center ID	1.5		
		0.41	2	EB ID	1.5, 1.25		
		0.43	1	Center ID	2		
		0.60	1	Center ID	2.5		
		1.28	1	Center ID	1.5		
		3.36	1	EB ID	1.5		
		3.63	1	EB ID	1.3		
		5.56		NID			
8/29/2016	9:33 a.m.	0.17	1	EB ID	2	M.A	
		0.21	1	EB ID	1.5		
		0.27	1	EB ID	1.5		
		0.55	1	EB ID	1.5		

EB ID - East Bank Interceptor Ditch
 NID - North Interceptor Ditch
 UKN - Unknown Length

Crocodile ID Surveys 2016							
Date	Start Time	Distance From Start (miles)	No. of Crocodiles observed	Location	Total Length (est. meters)	Surveyor	Comments
		2.48	1	EB ID	2		
		2.88	1	EB ID	1.5		
		3.34	1	Center ID	1.25		
		3.53	1	EB ID	1.25		
		4.68	1	EB ID	2		
		5.57		NID			
9/19/2016	9:20 a.m.	0.30	1	EB ID	2	M.A	
		0.43	1	EB ID	1.75		
		0.45	1	Center ID	1.25		
		0.47	1	EB ID	1.25		
		2.22	1	EB ID	1.5		
		5.62		NID			
9/30/2016	8:55 a.m.	0.16	1	EB ID	1.5	M.A	
		0.28	1	ID EB Basking	2		
		0.41	1	EB ID	1.75		
		2.44	1	Center ID	1.25		
		3.04	1	EB ID	2		
		4.07	1	Center ID	1.25		
		5.56		NID			
10/18/2016	9:47 a.m.	311FT	1	EB ID	1.5	M.A	
		0.19	1	EB ID	2.5		
		5.58		NID			
10/25/2016	9:12 a.m.	0.26	1	EB ID	1.75	M.A	
		0.33	1	EB ID	2		
		0.90	1	EB ID	1.75		
		1.65					Ended survey early due to construction activity.
11/1/2016	8:43 a.m.	0.11	1	EB ID	1.75	M.A	
		0.19	1	ID EB Basking	2.5		
		0.24	1	EB ID	1.5		
		0.45	1	EB ID	1.5		
		1.12	1	EB ID	2.75		
		1.46	1	Center ID	1.5		
		3.39	1	EB ID	1.5		
		5.58		NID			
11/8/2016	10:57 a.m.	0.12	1	EB ID	1.5	M.A	
		0.18	1	EB ID	2		
		0.24	1	EB ID	1.5		

EB ID - East Bank Interceptor Ditch
 NID - North Interceptor Ditch
 UKN - Unknown Length

Crocodile ID Surveys 2016							
Date	Start Time	Distance From Start (miles)	No. of Crocodiles observed	Location	Total Length (est. meters)	Surveyor	Comments
		0.35	1	EB ID	2.75		
		0.43	1	Center ID	2		
		0.57	1	EB ID	1.75		
		1.23	1	ID EB Basking	3.25		
		1.86	1	EB ID	2		
		2.82	1	ID EB Basking	2		
		3.72	1	EB ID	1.25		
		5.57		NID			
11/16/2016	10:05 a.m.	0.27	1	EB ID	2	M.A	Ended survey early due to construction activity.
11/28/2016	1:45 p.m.	0.77				M.A	
							3.0m male patrolling center of canal, 2.5m female croc approached with head raised in submissive posture. 3.0m male swam passed.
11/29/2016	8:37 a.m.	0.16	2	Center ID	3.0, 2.5	M.A	
		0.25	1	EB ID	1.75		
		0.35	1	ID EB Basking	2		
		0.47	1	EB ID	3		Visible bite marks on tail and rear legs. Same male that fights with the other dominant male in canal.
		0.56					E and E sampling in truck on east road.
		0.65	1	EB ID	2		
		2.10					Ended survey early due to construction activity.
12/20/2016	10:37 a.m.	511ft	1	EB ID	1.75	M.A	
		0.20	1	Center ID	3		Male patrolling
		0.24	1	EB ID	3		
		0.29	1	Center ID	3		
		0.32	1	ID EB Basking	2.5		
		1.24	1	EB ID	1.5		
		1.73					Ended survey early due to construction activity.

Table 7. American Crocodile Data from Turkey Point Power Plant 2012-2016

Number of:	2012	2013	2014	2015	2016
Tagged Hatchlings	229	429	409	119	127
Adults Sighted in ID Canal	165	275	157	124	82
Successful Nests Found	18	25	25	9	8

American Crocodile (*Crocodylus acutus*) Data from Turkey Point Power Plant 2012-2016

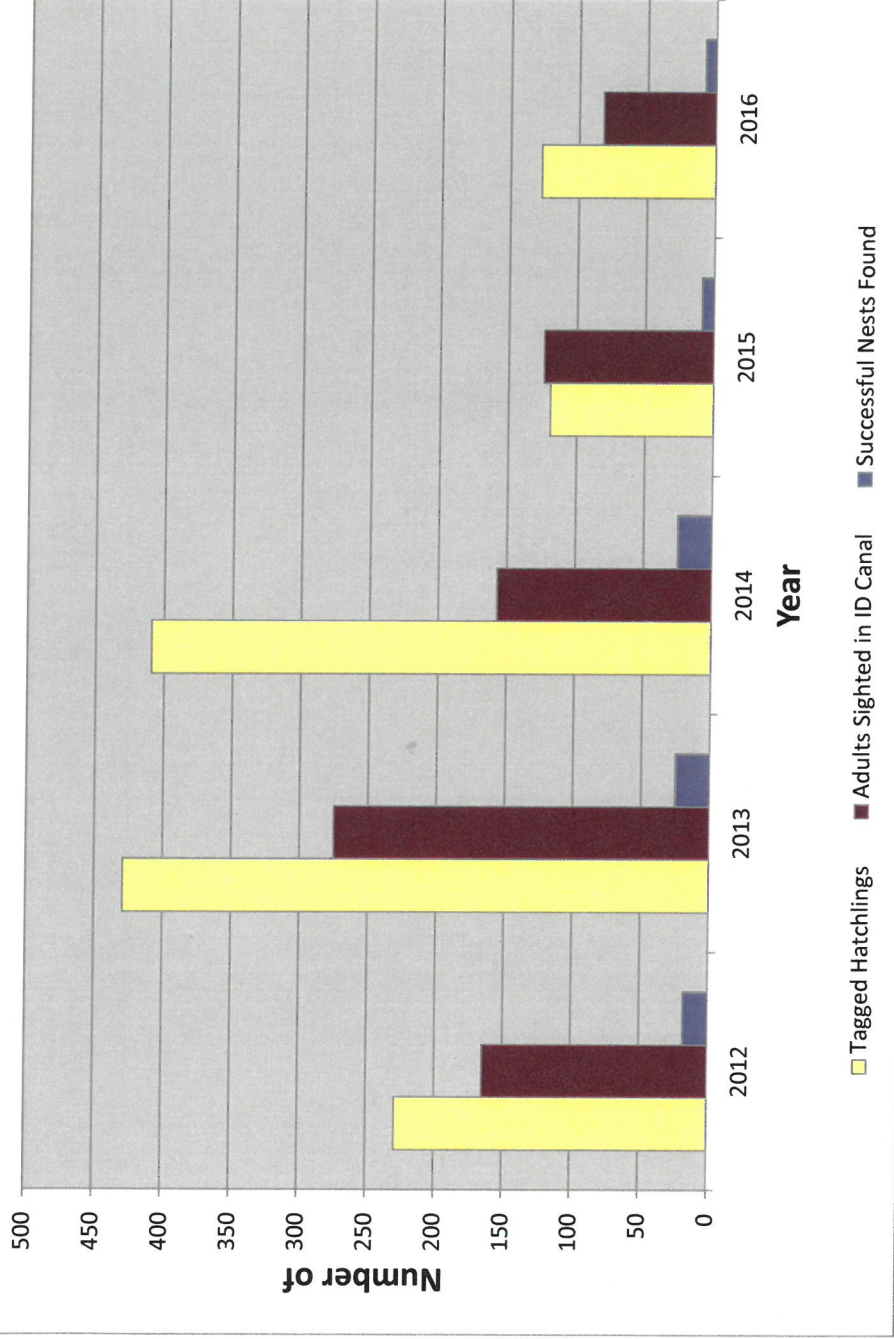


Chart 1. American Crocodile Data from Turkey Point Power Plant 2012-2016