

## NRR-PMDAPEm Resource

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**From:** Gless, Jodie [Jodie.Gless@fpl.com]  
**Sent:** Wednesday, January 25, 2012 8:41 PM  
**To:** Shelley Norton  
**Cc:** Jones, John; Rydman, Kathy; Pinnock, Ashley; Hix, Ron; Piper, Rich; Logan, Dennis; Balsam, Briana; Gould, Alan; Abbott, Liz  
**Subject:** RE: FPL Response for NMFS  
**Attachments:** PSL Surface Water Summary - 2005-2010.pdf

Hi Shelley,

Please see the attached table for the requested historical temperature data from 2005-2010. It provides you with the months and hours that the ambient ocean water temperature (i.e. measured at plant intake – not influenced by St. Lucie Plant discharge) exceeded 86°F. It also gives you the maximum discharge temperature for that month as measured in the plant discharge canal. The maximum observed temperature in the plant discharge canal during this timeframe was 111.1°F. Modeling suggests that based on this maximum discharge temperature there were **zero hours** at which the surface water was greater than 92°F.

Please let me know if you have more questions.

Thank you,

Jodie

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**From:** Shelley Norton [<mailto:shelley.norton@noaa.gov>]  
**Sent:** Monday, January 23, 2012 6:46 AM  
**To:** Gless, Jodie  
**Cc:** Jones, John; Rydman, Kathy; Pinnock, Ashley; Munne, Vince; Hollowell, Ed; Hix, Ron; Piper, Rich; Logan, Dennis; [Briana.Balsam@nrc.gov](mailto:Briana.Balsam@nrc.gov)  
**Subject:** Re: FPL Response for NMFS

Hi Jodie, thank you for the response. Based on your response, I need to know how often the maximum temperatures exceeded 86°F and 92°F between 2005-2010. I also need to know the months the temperatures exceeded 86°F and 92°F. Once I have these numbers I need to calculate the number hatchlings (by species) that may be affected by the .1 acre discharge plume based on the average number of sea turtle nests that may be found along the shoreline of the St. Lucie Nuclear Power Plant. Let me know if you have any questions.

Thanks,  
Shelley

On Fri, Jan 20, 2012 at 4:46 PM, Gless, Jodie <[Jodie.Gless@fpl.com](mailto:Jodie.Gless@fpl.com)> wrote:

Shelley,

We propose that you use the text presented below. With this new information, we don't think there is a need for the deleted sentence, especially since we were unable to find the document (Bellmund et al. 1982) to confirm the information.

Please let me know if you need anything else.

Thank you,

Jodie

Jodie Gless

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### *Thermal Plume*

In November, 2010, FP&L submitted a license amendment request to the NRC for Unit 1 Extended Power Uprate (EPU) and in February 2011, FPL submitted a license amendment request for the Unit 2 EPU which will increase the licensed core thermal power of each unit by 11.85%. No increases in water withdrawal from the Atlantic Ocean are proposed and the water discharge limits will remain within the range of the St. Lucie Nuclear Power Plant's allowable current limits stated in their National Pollution Discharge Elimination System permit.

In 2010, as part of an NPDES permit revision associated with the EPU, FP&L ran a thermal plume model for the two-unit operation. The results indicate that the maximum surface temperatures are strongly dependent on ambient ocean conditions. ~~The maximum surface horizontal temperature difference is predicted to be less than 4.9°F (2.7°C) and the resulting +2°F (+1.1°C) surface isotherm is estimated to encompass 963 acres (390 ha) (Bellmund et al. 1982).~~ Between 2005 and 2010, the maximum monthly average water temperature observed at the St. Lucie Plant intake (which represents approximate ambient ocean water temperatures) was 85.3°F (September, 2007). Hatchlings experience reduced swimming speeds when they are exposed to thermal regions over 86°F (30°C). In waters heated to 92°F (33°C), hatchlings may become disoriented; however, these hatchlings should be able to re-orient themselves once they leave this very minimal area (Applied Biology, Inc, 1980). At the St. Lucie plant, even after the EPU is complete, modeling conducted by FPL that assumes a discharge temperature of 115°F (permit limit) and an ambient ocean temperature of 85°F, showed that the maximum temperature that a hatchling swimming on the surface would be exposed to is 92°F over a total area of less than 0.1 acres.

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**Subject:** RE: FPL Response for NMFS  
**Sent Date:** 1/25/2012 8:41:04 PM  
**Received Date:** 1/25/2012 8:42:03 PM  
**From:** Gless, Jodie

**Created By:** Jodie.Gless@fpl.com

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# St. Lucie Plant

## Total Hours Ambient Ocean Surface Temperature Exceeded 86°F and Surface Plume Exceeded 92°F Historical Data - 2005 through 2010

Month/ Year	Hours Ambient Ocean Water Temp > 86°F	Maximum Discharge Temp - °F (Measured in Discharge Canal)	Hours Estimated Discharge "Plume" > 92°F at Surface
August-05	10	111*	0
August-07	48	111.1	0
September-07	239	111	0
October-08	1	107.2	0
September-09	259	109.3	0
October-09	223	111	0
September-10	49	110.3	0

\* Estimated - Discharge Temperature Probe OOS for several days