RJB received 2/9/05

From: Remmers Kenneth D CRBE <RemmersKD@nswccd.navy.mil>
To: "'NorthAnna_ESP@nrc.gov'" <NorthAnna_ESP@nrc.gov>
Date: 1/19/05 6:22AM
Subject: FW: Comments on Draft of Environmental Impact Statement(EIS) for North Anna Early Site Permit (ESP)

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400

> -----Original Message-----
> From: Remmers Kenneth D CRBE
> Sent: Wednesday, January 19, 2005 6:17 AM
> To: 'North Anna_ESP@nrc.gov'
> Subject: Comments on Draft of Environmental Impact Statement(EIS) for North Anna Early Site Permit (ESP)
>
> Please consider my comments on the Draft EIS for the ESP for North Anna Site
>
> <<ESP at NANPP.doc>>
>
> Kenneth Remmers,
> President, Waterside Property Owners Association of Lake Anna

E-RIDS=ADM-03
Case = J. Cushing (JXC 9)
A. Williamson (AKW1)

SISP Review Complete

Template = ADM-013

Mail Envelope Properties (41EE42E6.544 : 10 : 58692)

Subject:	FW: Comments on Draft of Environmental Impact Statement(EIS) for North Anna Early Site Permit (ESP)
Creation Date:	Wed, Jan 19, 2005 6:21 AM
From:	Remmers Kenneth D CRBE <RemmersKD@nswccd.navy.mil>
Created By:	RemmersKD@nswccd.navy.mil

Recipients
nrc.gov
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January 18, 2005

Comments on the ESP

1. Flow rates are confusing in the report. Some liters/ second, meters^3 / second, ft^3 / second, and gallons / minute are used. I suggest that the same units be used throughout the ESP report. I will try to use gallons/ minute in my discussion. Liters/second X 15.85 = gallons/ minute Feet cubed / second X 448.83 = gallons/ minute

2. ESP uses 242-foot level as the minimum lake level before shutdown for unit 3. Unit 3 should use the 244-foot level not 242 as is currently used by units 1 and 2 until NRC has studied the proposed 242 level.

2 **Can Dike 3 handle the increased discharge of the third plant or will the Waste Heat Treatment Facility (WHTF) (Warm side) level increase?**
Plants 1 & 2 each draws 952,873 gal/min in a once pass through cooling with a temperature increase of 14 degrees F. Plant 3 is proposed at 20% more discharge rate at 1,140,000 gal/min with no discussion as why, thereby increasing the output pass through temperature by 18-degree F. The total draw from the once pass through cooling for three plants is 3 Million gal/min or **4.38 Billion gal/day.** Section 5.3 states that one inch of lake level translates to 14m^3/sec (500 cfs) or 224,417 gal/min. This is not clear. If we use 13,000 acres of lake and calculate the number of gallon per inch of Lake Height, we get the following:

13,000 acres X 43,560 ft^2/acre X 1/12 ft height X 7.48052 gal/ft^3 = **353,005,738** gallons/inch of lake height

Dividing this into the daily pass through for cooling of 4.38 Billion gallons, we get an equivalent of 12.4 inches of Lake Height each day passing through the WHTF. This is compared to an equivalent of 7.7 inches of Lake Height passing through the WHTF each day with the existing two plants operating. For comparison, in low water levels, discharge from the damn is 20 cfs or 8,976 gallons/minute, which equates to 12.9 Million gallons per day. With 4.38 Billion gallons/day passing from the WHTF and only 12.9 Million gallons discharging, there will be serious mixing of the WHTF water in the lower and middle lake. Can dike 3 handle 4.38 Billion gallons/day discharge into the main lake?

3 **What can the maximum expected temperature of the WHTF be?**

ESP indicates the maximum temperature increase will be from 14 to 18 degrees F across the once passing cooling or an increase of 4 degrees F. Section 5.4.2.4 of the ESP indicates that on the cool side at the intake, Thurman Island, and Burrus Point, 95degrees F would be reached 6 days out of one year in 42. At this time the WHTF would be 113 degrees F. At the intake location, 90 degrees F would be exceeded 8 days per year during June to September. The WHTF would be 108 degrees F. Section 3.2.2.1 states that based on the PPE, the maximum discharge temperature will be 127 degrees F. This would equate to an input temperature at the intake of 119

degrees F. This seems inconsistent with the maximum of 95 degrees stated above. If we look at the history of water temperatures collected for the DEQ by LACA over the last four years, we can see actual temperatures at a depth of 0.3 meters for the power plant intake and an average of three points in the WHTF. The intake is LACA Site 4 and the averages of three points in the WHTF are from Rock Creek Site 30, Millpond Creek Site 31 and Elk Creek Site 32. Table 1 shows these temperatures measured four time a year. The first thing to point out in the table is during a non-drought year of 2003 in August the WHTF reached 96.8 degrees F. The delta from intake to exhaust was about 12.4 degrees. This agrees closely with the predicted 14 degrees F. If the third plant were added, this temperature would rise to 100.8 degrees F. Occurrence of mid 90 degree F water temperature in the WHTF occurs in three out of the last four years with the fourth year just below 90 degrees F with only two units operating. WHTF temperatures of 100 degrees F or more will make the WHTF unsuitable for recreation, swimming and aquatic life. In table 5.12 of the ESP, Hydrological alterations as presented will have an impact level of MODERATE and not SMALL as represented by ESP.

4. **What will happen to the Dissolved Oxygen (DO) in the WHTF at temperature 100 degrees F or higher?**
   The ESP addresses aquatic life in the cool side only at Burrus Point and Thurman Island. No mention was made as to the aquatic life in the WHTF. DEQ measurements by LACA show that the WHTF DO is about 1 PPM below saturation for the temperatures measured when using the more accurate electronic meters currently employed versus the Winkler method previously used. For temperatures at or above 100 degrees F, the DO of the WHTF will be in the 5 PPM where fish cannot survive. Table 5-21 of the ESP, for the Aquatic Ecosystems should have an impact level of MODERATE and not SMALL as represented by the ESP. Table 2 handout of Oxygen Saturation (ppm) by weight).

5. **What happens to temperatures and lake levels with the third plant operating?**

   ESP Section 5.3.2 states that the 20-cfs (8,977-gallons/min) discharge will go from 5.8% to 11.8% of the time. Therefore residence of the cool side can expect the time that the lake will be 2 foot or more down will be twice the time as currently seen. This low level will occur every two years versus every four years currently. Temperatures will be increased as outlined above in the WHTF and for the Cool side as well. They will be hotter earlier in the year and stay hotter longer due to the fact that the third plant is adding more waste heat. Currently when one plant is shut down for maintenance less heat is introduced to the WHTF by ½, but when three plants are operating only one is shut down, now 2/3 versus ½ of the heat continues to go into the WHTF.

6. **What solution will work with the ESP and not effect current Environmental System?**

   Two possible solutions are proposed. First, a Dry Cooling tower can be built for each Unit 3 and 4 or a larger one for both units 3 and 4. Since there is a penalty for dry cooling of 8.5 to 11%, it would only be used when the WHTF reaches a temperature of 96 degrees F or other prescribed conditions. Otherwise the once pass through

cooling would be used. A second option would be to shut down one of the three units when the WHTF reaches a temperature of 96 degrees F or other prescribed conditions. Either one of these solutions would be generally acceptable to residents of the lake.

Table 1 DEQ Data taken by LACA Water Quality CY 01 Through CY04

Date	Plant intake (deg F)	WHTF (deg F)	Delta increase (deg F)
3/15/01	~51.8	57	~5.2
5/30/01	69.8	80.6	10.8
8/22/01	81.1	93.2	12.1
12/5/01	57.2	too low	---
4/23/02	~62.6	83.1	~20.5
6/26/02	~80.6	94.1	~13.5
8/21/02	~84.2	91.4	~7.2
10/16/02	~68	73.4	5.4
4/28/03	60.8	71.6	10.8
6/16/03	77	83.3	6.3
8/19/03	84.4	96.8	12.4
10/20/03	65.8	77	11.2
4/20/04	62.6	73.4	10.8
7/23/04	77	87.8	10.8
8/18/04	79.7	89.6	9.9
10/18/04	68.2	76.6	8.4