

## PMNorthAnna3COLPEmails Resource

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**From:** Christopher Cook  
**Sent:** Tuesday, December 11, 2007 5:39 PM  
**To:** 'Harry Ruth'  
**Cc:** Michael Masnik; Alicia Williamson  
**Subject:** Re: Lake Anna concerns and forwarding of the PNNL report on Lake Anna

Dear Mr. Ruth,

I wanted to let you know that I received your email (and phone call today), and that we are working on a response. Part of the delay is a result of Mike Masnik not receiving your email. I have since forwarded your email to him - regrettably after some delay. Alicia Williamson, the COL Project Manager, is included on this email and should also be included on future email correspondence with us.

The other part of the delay is due to the North Anna Combined Operating License (COL) being submitted to the NRC soon after your email arrived. We are currently in the process of reviewing the application for completeness and technical sufficiency. If you are interested in viewing the application, it is available on the NRC web site at <http://www.nrc.gov/reactors/new-licensing/col/north-anna.html> .

Best regards,  
Chris

>>> "Harry Ruth" <HC.RUTH@LOUISA.NET> 11/16/2007 1:16:28 PM >>>

Hi Michael and Chris,

Thanks for sending the report. We will look at the report and try to understand the equilibrium temperature you were referring to

1. Based on our conversation yesterday, it seems that you confirmed that with the planned Unit 3 (with a combination of wet/dry cooling) that the Lake Anna water level will decrease much faster at approximately 12.5 million gallons per days due to evaporation, which will cause the overall water temperatures to increase at a more rapid rate. Logic says that if you are going to increase the average drought period from 21 to 40 days (most likely during the summer months) that the overall lake temperature will increase more rapidly and to a higher level then previously experienced.

Can you with your Lake Model give a comparison of today's water levels and water temperatures during the summer months, versus the predicted water levels and water temperatures with Unit 3 operating recognizing that 99% of the water is re-circulated and gets hotter and hotter as the summer months progress ?

2. Can you also forward some basic data on the Clinton, Illinois nuclear plant that you referred to where their is recreation on the water and residential development around the lake. If I understood you correctly, the associated lake also re-circulates its heated water discharge.

3. Has the NRC invested into any type of research on how the "HEAT ENERGY" that is discharged into the nation's waters could be recaptured before the discharge and used in some beneficial manner to produce needed energy that can be used by human's to reduce the amount of dependency on foreign oil? At a recent meeting, I was told that the nuclear reactors are only about 30 to 35% efficient. If this is true it would appear that if the "HEAT Energy" at each of the nation's nuclear power plants could be effectively utilized that it would solve many problems, including adding much less heat to the nations waters which in turn would mitigate many of our concerns with humans, fish, mussels, aquatic life, etc. .

4. We would also like to re-emphasize our concern that Unit 3 was looked at during the ESP cycle as an independent unit, as opposed to being a

new unit added to a plant that currently has 2 operating units. As we indicated yesterday, we request that you insure that the NRC, during the COL phase, looks in depth at the totality of the environmental impacts of Units 1, 2 and 3 and how the Unit 3 cooling methodology can assist with mitigating the overall impacts currently being experienced with Units 1 and 2.

5. Re the Clam/Mussel Survey requested by VA Dept of Game and Inland Fisheries. Brian Watson (phone 434-525-7522 is the DGIF Wildlife Diversity Biologist/Malacologist who requested a total Lake Anna clam/mussel survey be conducted by a Virginia State certified malacologist within the last 2 year time period. If you are aware of such a survey, could you please forward a copy to Brian and myself. Brian has identified that the Asian clam (*Corbicula fluminea*), Eastern elliptio (*Elliptio complanata*), Paper pondshell (*Uterbackia imbecillis*) and Eastern Floater (*Pyganodon cataracta*) are resident in Lake Anna. In addition, he is concerned over the potential impacts of elevated water temperatures upon native freshwater mussels and that other freshwater rare species mussels (*Yellow lampmussel-lampsills cariosa*), (*eastern lampmussel\_lampsills radiata radiata*), Eastern pondmussel-*liguimia nasuta*) and the (*Tidewater mucket-leptodea ochraces*) which are rare species may also be present in Lake Anna.

6. Re the *Naegleria Fowleri* (NF) (brain eating amoeba) study being conducted by the Virginia Commonwealth University in Lake Anna.. The initial studies have confirmed that the NF amoeba is present at the upper end of the lake above the 208 bridge in addition to various other locations throughout the entire lake. We expect the study will be completed within the next month and will forward a copy upon its completion. As you are aware the NF amoeba is proliferated by water temperatures above the mid-80's (F) and our understanding is that the hotter the temperatures, the more the amoeba will proliferate. This coupled with 99% of the water being re-circulated within Lake Anna, coupled with the potential hotter water temperatures due to increased drought rates with the 12.5 million gallons per day of evaporation from Unit 3, coupled with the water getting hotter faster, which inturn will last for a longer period of time in turn appears to provide the environment with overall hotter lake temperatures throughout which will enhance the NF population for a longer time. We measured 106 (F) at the end of the discharge canal last year. What is your forecast using you Unit 3 model and actual data recorded by the Lake Anna Civic Association for upper water temperatures we could experience in the future with Unit 3 operating?

7. We look forward to working with you in the future and sharing data. We are also reminded with the NRC mission statement "To protect the public health and safety, promote the common defense and security and protect the environment" and also the role that the NRC has with the National Environmental Policy Act (NEPA) for similar activities. We are hopeful that you will exercise the federal oversight that you have at your disposal with both your mission statement and the NEPA Act and not let politics sway your responsibilities to the U.S. public in protecting Lake Anna's environment (reducing water temperatures), while still regulating nuclear activities. We believe that both can be accomplished successfully using available technology. Thanks in advance for your help.

Sincerely,

Harry

Harry Ruth  
for the Friends of Lake Anna  
C/O 230 Heather Drive, Bumpass, Va. 23024 Phone 540-872-3632

----- Original Message -----

From: "Christopher Cook" <CBC1@nrc.gov>

To: <hc.ruth@louisiana.net>

Cc: "Alicia Williamson" <ARW1@nrc.gov>; "Michael Masnik" <MTM2@nrc.gov>; "Mark Thaggard" <MXT3@nrc.gov>

Sent: Friday, November 16, 2007 7:42 AM

Subject: PNNL report on Lake Anna

> Dear Mr. Ruth,  
> Attached is the report I mentioned yesterday. The report was produced  
> in early 2005, when once-through Unit 3 cooling was still being  
> considered by Dominion. I think the report will still be of interest  
> to you, especially Section 2.3 which discusses equilibrium temperature.  
> The report also provides several additional references on the topic.

>  
> Regards,  
> Chris

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> Christopher B. Cook, Ph.D.  
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**Hearing Identifier:** NorthAnna3\_Public\_EX  
**Email Number:** 143

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**Subject:** Re: Lake Anna concerns and forwarding of the PNNL report on Lake Anna  
**Sent Date:** 12/11/2007 5:38:30 PM  
**Received Date:** 12/11/2007 5:38:30 PM  
**From:** Christopher Cook

**Created By:** Christopher.Cook@nrc.gov

**Recipients:**

"Michael Masnik" <Michael.Masnik@nrc.gov>  
Tracking Status: None  
"Alicia Williamson" <Alicia.Williamson@nrc.gov>  
Tracking Status: None  
"Harry Ruth" <HC.RUTH@LOUISA.NET>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

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MESSAGE	7945	12/11/2007 5:38:30 PM

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