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**To:** "Jack Cushing" <JXC9@nrc.gov>  
**Date:** 9/9/2006 12:26:41 PM  
**Subject:** Comments of the Natural Resources Defense Council re NAPS-ESP--Attn Jack Cushing  
**cc:** "Geoffrey Fettus" <gfettus@nrdc.org>,"Tom Cochran" <tcochran@nrdc.org>

Please find attached our comments regarding the SDEIS on the NAPS Early Site Permit.

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Please find attached our comments regarding the SDEIS on the NAPS Early Site Permit.

September 8, 2006

Mr. Jack Cushing, Environmental Project Manager  
for North Anna ESP Site Application,  
U.S. Nuclear Regulatory Commission,  
Washington D.C. 20555  
Via email to JXC9@NRC.GOV

Dear Mr. Cushing:

On behalf of the Natural Resources Defense Council (NRDC), a national environmental organization with some one million members and on-line activists, some of whom reside in Virginia, I am writing to comment on whether the NRC's Supplemental Draft EIS (SDEIS) of July 2006 is sufficient to support Dominion Power's request for state concurrence that the terms of its proposed NRC Early Site Permit (ESP) for two new reactors at its North Anna, VA nuclear power plant are consistent with the enforceable policies of Virginia's Coastal Zone Management Program (VCP). (These same comments have also been submitted to the VDEQ).

After studying the matter, we find that we have a number of serious objections to the SDEIS and to the state's providing its concurrence at this time. These concerns are summarized in the numbered sections below.

**(1) Concurrence Now Would be Premature and Not in the Interests of Ensuring Protection of Virginia's Coastal Zone Management Area.**

We draw your attention, first of all, to the fact that an ESP is not a required step in NRC's licensing process, but merely affords the applicant the opportunity and convenience of resolving and permanently disposing of site-specific environmental issues years—and possibly decades—ahead of the actual inception of reactor construction. While Dominion is seeking an ESP, other companies, such as Progress Energy, South Carolina Electric & Gas, Duke Power, and Constellation Energy, are electing to resolve environmental siting issues at the subsequent Construction and Operating License (COL) stage, and many of these companies have announced nominal target dates for submitting COL license applications that are in the same time frame as Dominion's (Fall 2007).

Moreover, environmental concerns that the NRC deems to have been "resolved" during an ESP proceeding cannot be raised again at a subsequent stage of NRC's "streamlined" licensing process. Faced with a project whose design is continually evolving, this foreclosing aspect of the ESP process is not in the state's favor. And finally, as you well know, once a state concurs, even with conditions, once having done so it "retains no further consistency authority over the project..." and cannot, through the CZMA, enforce its conditions after it has concurred (Federal Register, Vol., 65, No. 237, page 77127). But by objecting, VDEQ preserves its option either to continue its objection or to revisit the issue if Dominion agrees to conditions that are fully protective of the environmental equities at stake.

Since the ESP is an optional early stage process devised primarily for the convenience of the applicant, and the environmental impacts of Dominion's continually evolving proposal are at this point still defined by a general "plant parameter envelope," comprised of nominal operating values rather than those pertaining to a site-specific detailed plant design, we see no advantage, and significant disadvantages, to VDEQ offering its concurrence (or conditional concurrence) at this time.

**(2) Understanding of the Long-Term and Cumulative Environmental Impacts from Operating Dominion's Proposed Unit 3 "Wet-Dry" Hybrid Cooling System is Currently Insufficient to Support a Federal Consistency Determination..**

A major issue confronting the VDEQ is whether the newly proposed "wet-dry" cooling system will reduce environmental impacts sufficiently to warrant concurring in Dominion's federal consistency determination for the pending ESP. VDEQ's "Consistency Status Report" to Dominion, dated August 3, 2006, states: "That new method involves a new, closed cycle wet and dry cooling method that would reduce the water demands associated with the once through cooling proposed in the original certification. During periods of relative surplus (when lake levels are at or above 250 feet above mean sea level), wet towers would be used. During dry periods (lake levels under 250 feet for 7 consecutive days or more, a dry cooling tower would be used, unless weather conditions dictate otherwise (the "maximum water conservation mode") [see Draft EIS Supplement, pages 3-8 and 3-9]

From our reading of the NRC's July 2006 Supplemental Draft Environmental Impact Statement (SDEIS), the preceding represents an incomplete and possibly mistaken view of how the proposed system would actually operate. During full power operation and "a hot and humid atmosphere at tower level" – fairly typical conditions for a peak power summer day in Central Virginia – the applicant is committing only that "*a minimum of one-third* of the rejected heat from Unit 3 would actually be removed by the dry tower system. The remaining excess heat would be dissipated by the wet tower system." [NUREG-1811, SDEIS, at 3-11 and K-4]

However, "During periods of favorable [but unspecified] atmospheric conditions, *more than one-third* (and *possibly* as much as 100 percent) of the rejected heat may be dissipated through the dry towers." [SDEIS, at K-4, emphasis added] "Therefore, although the MWC [Maximum Water Conservation Mode] mode uses less water than the EC mode, it is possible that *up to two-thirds of the total heat load* would be dissipated by wet cooling." [SDEIS at 3-11] Not only possible, but probable. It's clear to us that this is the only binding commitment the applicant is making. After all, operating the dry cooling tower increases the parasitic load and would cost Dominion money, so one would expect that like any profit-seeking entity, Dominion will at all times and in all places seek to minimize its costs while complying with its minimum commitment to dissipate "at least one-third" of the Unit 3 reject heat through dry cooling.

### **3. The SDEIS prepared by the NRC Staff Fails to Analyze a Reasonable Range of Reasonably Foreseeable Impacts from Operating Unit 3.**

Here are some of the nominal critical parameters listed by the NRC for the originally proposed once-through cooling system that VDEQ found unacceptable:

Rate of Lake water Withdrawal: 1,140,000 gallons per minute (gpm);

Induced Evaporation Rate: 28 cubic feet per second (cfs)

Additional Lake Level Drawdown under Drought Conditions: 3.4 feet

Here are the Supplemental DEIS estimates for the same parameters as above, for the wet-dry semi-closed loop system:

Maximum Rate of Lake water Withdrawal: 22, 269 gpm in (normal) “Energy Conservation Mode”

Induced Evaporation Rate: 20 cfs

Additional Lake Level Drawdown under Drought Conditions: 1.6 ft

These estimated impacts are still quite significant. In particular, the induced evaporation rate from operation of the wet-dry cooling system *is still 71 percent of the environmentally unacceptable once-through system*. The additional lake level drawdown under simulated drought conditions is still *almost half that of the once-through system*, and there are major uncertainties associated with this calculation that the NRC and Dominion have not bounded with a sensitivity analysis. (This analysis should be based on plausible excursions from and negative feedback interactions between their model’s input parameters over the projected period in which the three reactors will be withdrawing water from Lake Anna.)

### **4. The Projected Lake Levels Pose Environmental and Energy Security Risks That Require Further Detailed Analysis Before Concurrence Can be Granted.**

Under the Lake Level Contingency Plan (a condition of the North Anna plant’s VPDES permit), releases from the dam are designed to maintain the lake level as close to 250 ft. above Mean Sea Level (MSL) as possible. When the lake level elevation drops below 250 MSL, releases from the North Anna Dam are reduced to 40 cfs. If the lake level drops below 248 MSL, releases are cut to 20 cfs. Releases are increased to 40 cfs when the lake level rises again to 248 ft MSL, and increased further when the lake level rises above 250 ft MSL.

According to the NRC’s analysis, from 1978 to 2003, Lake Anna has been under the 250 ft MSL target level 62.7 percent of the time due to the combined effects of reduced inflows and the evaporative effects of operating Units 1 and 2. According to the NRC staff’s historical simulation, the addition of the Unit 3 wet-dry cooling system would

have increased that overall figure slightly, to 66.4 percent of the period spent under the target lake level, while also reducing the total time the lake level was at or above the target level by 3.7%.

So, *looking backward*, the addition of the Unit 3 wet-dry cooling system would clearly have reduced flows to the lower North Anna-Pamunkey river system. The biggest impact would have been registered in the increased number of days in which the lake level would have been at or below 248 feet, causing releases into the lower reaches of the North Anna river to be cut in half from 40 to 20 cfs. According to the NRC staff, these significantly reduced flow days would have increased by 6.2% over the 25 year period had the Unit 3 wet-dry cooling system been in operation.

As might be expected, there are numerous and severely debilitating problems with the NRC-Dominion water budget analysis for Lake Anna. As the NRC staff itself notes, “inherent in this analysis is the assumption that the 23-year period of record simulated would be representative of future conditions (e.g. inflows, precipitation, etc.) at the site.” (NUREG-1811, SDEIS, Appendix K-13, emphasis added).

In light of the National Environmental Policy Act (NEPA) requirement that an EIS analyze all “*reasonably foreseeable*” impacts, the NRC analysis clearly falls short, because its water budget model is not predicated on any credible, forward-looking scientific estimates of what hydrological conditions within the North Anna-Pamunkey drainage could be like for the next 40 – 60 years, including population increases, water-table levels and recharge rates, competing uses for surface waters that could limit inflows to the lake, projected climate trends and attendant effects on evaporation rates, population increases, and so forth.

Moreover, the NRC staff estimate of historical inflows to the lake is not based on actual measurement of flows in the North Anna River drainage area, but estimated from flows in a smaller nearby (Little River) drainage for which there was historical data, and then scaling the results to estimate inflows to Lake Anna. Local precipitation is estimated based on rain gauges at the Richmond Airport, some 40 miles away. This methodology, and its historical bias, suggests that the model results are at best a gross approximation, and heightens the importance of a sensitivity analysis of the results

But there is no evidence that the NRC performed an analysis to test the sensitivity of its historical model results to plausible variances in the input data. For example, what is the effect on lake temperatures, on natural and induced evaporation rates, and coolant intake requirements if one assumes a small but steady increase in average surface temperatures over the next 60 years, punctuated by periods of that combine reduced precipitation with above-average summer temperatures?

One can envision the formation of a damaging negative feedback loop, in which increased natural heating of cooling intake water increases the evaporation rate of both the wet-dry and existing once-through cooling systems, leading to higher discharge temperatures and/or increased net withdrawals from the lake, leading to reduced lake

volume via increased lake-surface and/or coolant tower evaporation (the heat has to be dissipated somewhere), leading to further heating of the reduced volume of intake water, and the cycle repeats itself. At this point, no one knows how vulnerable the proposed setup is to such a negative feedback loop scenario, but under stressful conditions of increased climate warming, falling water tables, and reduced rainfall, regulators might well be faced under the current ESP proposal with choosing between shutting down or reducing power at one or more North Anna units, or incurring serious ecological damage to the North Anna-Pamunkey river system and the recreational uses of Lake Anna, which are now extensive. This is not a hypothetical danger, as water-cooled reactors in Europe and the United States, all located on water bodies or rivers more substantial than Lake Anna, were forced in the summer of 2006 to temporarily shut down or reduce power due to excessive coolant intake temperatures and/or excessive thermal discharges.

To bound the possible effects of Unit 3 cooling on Lake Anna water levels and downstream releases, the NRC analysis purports to examine the simulated impacts of operating Unit 3 wet-dry cooling during what was a critical drought period between April 2001 and February 2003. This simulation is hardly encouraging. Operation of Unit 3 with wet-dry cooling would have dropped the minimum lake level experienced during this period by an additional 1.7 feet, to 243.5 MSL. That is only 1.5 feet above the minimum operational plant intake level of 242 ft MSL, where the North Anna reactors would be forced to shut down. Given possible errors and plausible variances in the model's input data, we do not believe this provides a sufficient or safe operating margin.

Aside from miles of mudflats surrounding the residences, docks, marinas and State Park lining the shores of Lake Anna, this scenario suggests a disturbing vulnerability in Virginia's electrical supply. Units 1 and 2 already account for about 15% of the state's electric power generation, and adding Unit Three's 1560 MWe would probably boost the NAPS contribution to 25% or more of the state's total. Putting the state's public safety and economy at the mercy of a prolonged heat wave, or possible sabotage of the North Anna dam, does not suggest to us a responsible energy policy for the State.

## **5. The Status Quo is Not an Acceptable Baseline for NEPA Analysis.**

The NRC analysis is implicitly predicated on the assumption that the current environmental impacts of Units 1 and 2 are themselves an acceptable environmental baseline, when such operations have already resulted in excessive temperatures in the main body of Lake Anna (i.e. well outside of the cooling lagoons), and produced many days of reduced flows into the lower reaches of the North Anna River.

A more credible baseline for analysis, and for estimating cumulative environmental impacts, would be the temperatures, flows and fauna in the North Anna river system before the river was impounded to form Lake Anna. For example, prior to dam construction, flows of 25 cfs or lower would occur for about 10 weeks once every 10 years. From NRC's modeling data, one can calculate that operation of Units 1 and 2 has increased that frequency to 30 weeks every ten years, tripling the number of low flow



days that prevailed before impoundment of the North Anna River. Such an analysis would appear to be required under NEPA's requirement to consider cumulative impacts.<sup>1</sup>

## **6. The NRC's DEIS Unreasonably Discards Dry-Cooling for Unit 3 as an Alternative Worthy of Detailed Analysis, but VDEQ Should Not.**

In its prior review of NRC's original DEIS for the North Anna ESP, VDEQ's Division of Water Resources expressed its concern for the adequacy of Lake Anna as a source of cooling water, based on the fact that a once-through design transfers all the reject heat to the aquatic environment. According to the SDEIS, this increased heat load would have pushed warmer water out of the cooling lagoons further into Lake Anna, extending lagoon-like conditions into about 19% of the total volume of the lake, and reducing the productivity of fish populations that are sensitive to temperature. The Division looked at other nuclear reactors along the East Coast to compare the water resources available to them with the water resources at North Anna. This review demonstrated:

- Most of the intake locations are tidal and have an essentially unlimited water supply;
- Of the remaining locations, the North Anna location has the least abundant water supply, based on the average flow of a small watershed (342 square miles) and a medium-sized reservoir;
- A limited number of nuclear power stations are located on non-tidal rivers, but in these cases, the power plants are on large rivers such as the Connecticut and the Susquehanna; and
- The only location remotely similar to North Anna's situation is the Oconee plants on Lake Keowee in South Carolina, but immediately below Lake Keowee is Hartwell Lake, so the section of non-tidal stream affected by consumptive loss is very short.

Dominion itself has recognized that Lake Anna would not support once-through, wet-cooling, or even a combination wet and dry cooling system for a fourth unit, and is therefore proposing an exclusively dry cooling system for this unit, construction of which is purely speculative at this point. Of course, this fact begs the question of why dry-cooling could not also be employed for the proposed Unit 3. This alternative is briefly mentioned as a "System Design Alternative" in the Supplemental DEIS issued July 2006, but it is dismissed in three paragraphs (out of a several hundred page document). Its benefits are briefly summarized as follows:

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<sup>1</sup> From SDEIS Table K-3: Data is from 1978-2003 inclusive, so 26 years x 52 weeks = 1352 weeks x 0.057 time fraction at 20 cfs reduced flow = 77 weeks over 26 years or 77/2.6 = 29.64 weeks over ten years.

“The use of a dry cooling system design versus the proposed combination wet and dry cooling system design for Unit 3 would largely eliminate the [unit’s] impacts on aquatic biota in Lake Anna and the North Anna River downstream. The Lake would not be heated by rejected heat from Unit 3, and there would be no additional consumptive water use.” (SDEIS at 8-5, emphasis added)

Despite these very sizable environmental benefits, the SDEIS fails to identify the dry-cooling option as an “environmentally preferable” alternative deserving of further analysis. As justification, it merely states that “dry cooling systems are more expensive to build and are not as efficient as wet cooling systems.” In support of this contention the SDEIS cites recent Dominion estimates that “the power needed to operate dry cooling towers would be 8.5 to 11 percent of the plant power output,” or about 150 MW(e), reducing the net power output of the plant, versus a predicted parasitic load of “1.7 – 4 percent” to operate the wet-dry cooling system.

Relying on this scant body of evidence and analysis, the NRC staff concludes that, “based on its analysis that Lake Anna could support Unit 3 using a combination wet and dry cooling system, and given the environmental impact of increased use of resources [i.e. more land area and electricity] needed by using a less efficient dry cooling system, a combination wet and dry cooling system is [environmentally] preferable to a dry cooling system for Unit 3. (SDEIS at 8-5). But coincident with its judgment that a parasitic load of 150 MW(e)—if indeed it is that large—would be too burdensome on the Unit 3 project, Dominion and the NRC staff revised the ESP permit to increase the thermal output of Unit 3 by 200 MW(t), thereby allowing them to recover almost half of the electric output that would be “lost” to operation of the dry-cooling system.

According to GE, the ESBWR has a rated generating capacity of 1560 MW(e) and thermal power of 4500 MW(t). If the parasitic load to operate the dry tower cooling is 8.5–11 percent of plant output, then the load would be in the range of 133-172 MW(e), or “about 150 MW(e)” in the words of the NRC staff analysis. So the recent increase in the “plant parameter envelope” from 4300 to 4500 MW(t) implies that until very recently the “plant envelope” was 1490 MW(e), and that the recent power increase would allow recovery of some 70 MW(e) or about half of the estimated parasitic load for dry cooling..

Assuming that the project was deemed economically viable at the previous power level with the proposed wet-dry cooling system consuming up to 4% of output, or 60 MW(e): then the net output of Unit 3 with *wet-dry cooling before the power increase* would have been 1430 MW(e); and the net electrical output of Unit 3 with *dry-air cooling after the power increase* would be 1410 MW(e). It’s difficult to understand why the difference of a mere 20 MW(e) would make or break the economics of a project of this magnitude, or lead NRC staff to summarily dismiss the dry-cooling option as being environmentally inferior to Dominion’s preferred wet-dry system. One suspects that the real calculus here is not environmental benefits or lack thereof but the forecast profitability of the project, which may be marginal even with the eight-year 1.8 cent/kWh production tax credit. Whatever the real motives at work, the SDEIS analysis of the dry-cooling alternative for

Unit 3 is clearly inadequate, and the VDEQ should demand more information on this option before offering its concurrence.

**7. Before Concurring that the Environmental Impacts of Activities Described in Dominion's Early Site Permit Are Consistent with the Enforceable Policies of the Virginia's Coastal Zone Management Program, VDEQ Has a Duty to Resolve Outstanding Issues Surrounding the Existing VPDES Permit for the North Anna Power Station,.**

According to the testimony of citizen groups ("Friends of Lake Anna," and the "Lake Anna Civic Association" ) at the August 16, 2006 public hearing held in Mineral , VA., their water studies indicate that the North Anna River (3 miles before it enters Lake Anna) is 13 degrees cooler than the central part of the lake (above the Rt. 208 Bridge). These groups contend that several areas in the main body of the lake have recently experienced temperatures in the low to high nineties, which clearly exceed the 89.6 degree F temperature limitation in the Clean Water Act as defined in the NPDES.

We understand that Lake Anna is primarily an impoundment where the vast preponderance of the lake volume is re-circulated, which in turn causes the entire Lake to heat up. If water temperatures frequently exceed 90 degrees F at many locations around the lake, as alleged, we would concur in the assessment that Dominion appears to be in violation of the U.S. Clean Water Act and the terms of their current 316 variance, which cannot plausibly be interpreted to sanction thermal discharges sufficient to produce overheating of the entire lake. "The purpose of the variance is because the water temperatures in Lake Anna, *in the vicinity of Outfall 001* (i.e. the Dike 3 cooling water discharge point into the main body of the lake) *and in the shallow reaches near its tributaries*, occasionally exceeds the maximum criteria of 32C. Without the variance, Dominion would be subject to enforcement actions" [VA0052451 at 15, emphasis added]. This language does not appear to permit the kind of extensive heating that has occurred throughout the Lake, and suggests to us that Dominion might be subject to an enforcement action even under the terms of its existing variance. What does seem clear, however, is that excessive and heating of Lake Anna is occurring in violation of national standards.

In our view, the North Anna Power Station VPDES permit is one of the "enforceable policies" of Virginia's Coastal Zone Management Program. If the current 316A variance granted by the VPDES has led to overheating of Lake Anna in violation of the Clean Water Act, it follows that any future VPDES permit will probably also be in violation if immediate changes to protect the lake and downstream resources are not made a part of the state's concurrence process for federal consistency certification under the Coastal Zone Management Program.

We note that there are serious unresolved discrepancies between the Lake Anna water temperature data and monitoring conclusions contained in the draft VPDES Permit of 12/22/05 [Fact Sheet for VPDES Permit VA0052451] and the data and conclusions

reached by LACA and FOLA. According to the draft permit, “Except for [the summer of] 2002, the temperatures in Lake Anna did not exceed the 32 deg. C water quality criteria value. By letter dated July 5, 2005, the permittee formally stated that conditions have not changed substantially and thereby requested continuation of the 316 (a) variance.” [VA0052451 Attachment 10, at 2.]

These conclusions are disputed by citizens groups that monitor water temperatures in Lake Anna, and we see no reason at this point to discount their independent findings in favor of the applicant’s obviously self-interested assertions. The state must resolve this matter before any serious consideration can be given to concurring in a program that seems likely to produce *even further heating* of the lake (through evaporative loss reductions is average lake volume) in violation of CWA standards. If there is considerable uncertainty as to what the true current environmental baseline is, we do not see how anyone can claim to possess an adequate understanding of the incremental impacts on Virginia’s CZMA from the addition of Unit 3 cooling to the mix, and therefore we urge that the state continue its objection to federal certification on that basis alone.

We also note that there appears to be a significant and consequential historical error in the permit as currently drafted. Specifically, the draft permit asserts, “The value of 13.54E9 BTU/hr is the limit *originally assigned to the facility in the 401 certification in 1973*, and is what was used in part to design (size) the WHTF. The limit is carried forward since *the design and operating parameters for Units 1 and 2 have not changed* and there have been no water quality problems with the heat leaving Outfall 001.”

We believe this statement is most likely incorrect and must be further investigated. In fact, the thermal power of each existing NAPS was “uprated” (increased) by 4.2 percent in August 1986, for a total station increase of 236 MW(t). So the statement that the operating parameters for Units 1 and 2 have not changed since 1973 is incorrect. We note that a recent nuclear industry document cites an analysis performed for the Department of Energy regarding a further 5% uprating of these existing units with once-through cooling.<sup>2</sup> VDEQ should query Dominion regarding the thermal discharge effects of this potential upgrade before renewing the NAPS VPDES permit and variance or offering its concurrence in the granting of the Early Site Permit for Units 3 and 4.

We further note that the existing 316(a) variance is expressed as permission to discharge an unlimited condenser coolant outflow containing a certain *calculated* amount of reject heat, rather than as permission to discharge a *maximum* flow of x gallons per day that shall not exceed a specific (and continuously *measured*) outfall temperature. Such a loose compliance scheme obviously misses the combined effect on the cooling lagoons from both above-nominal discharges of reject heat and weather-induced heating, and therefore seems prone to chronically underestimating the heat transferred to the main body of the lake at the Dike 3 discharge point. In support of this point, we note that the waters of the Lake Anna cooling lagoons reached 106 degrees on August 3, 2006 as recorded by local residents. The Lake Anna Civic Association (LACA) Water Quality

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<sup>2</sup> Nuclear Energy Institute, “Nuclear Energy in Virginia” Factsheet, May 2006, p. 2

Team recorded 104.6 degrees F at the end of the discharge canal on the same day at a different time.

We are aware of legal arguments advanced by some citizens groups that the Clean Water Act applies both to the main body of the Lake Anna reservoir *and* the diked cooling lagoons, since under the CWA cooling lagoons are considered “navigable waters” of the U.S. In addition, they point to the fact that the U.S. Army Corps of Engineers (USACE) which administers CWA Section 404—Dredge and Fill of Navigable Waters of the U.S.—requires the issuance of 404 permits for dredge and fill activities in the NAPS cooling lagoons. This is necessarily predicated on the determination by USACE that the cooling lagoons are jurisdictional waters of the United States. The “Friends of Lake Anna” (FOLA) assert that the definition for Waters of the United States under the Sec. 404 implementing regulations at 33 USC Section 328.3 is identical in all necessary respects to that of the NPDES regulations implementing 402 (40 CFR Section 122.2)

Thus, FOLA asserts that there is “no question” that the cooling lagoons are waters of the U.S. and as such are subject to three federal regulations:

- (1) 404 (Dredge and Fill of Navigable Waters of the U.S.. administered by the U.S. Army Corp of Engineers)
- (2) 402 (National Pollution Discharge Elimination System – NPDES)
- (3) 401 (Water Quality Certifications as administered by VDEQ).

FOLA asserts, “VDEQ and the Virginia State Water Control Board do not have the authority to de-nationalize national waters and designate the Lake Anna cooling lagoons as a waste heat treatment facility....Federally delegated programs such as VPDES can be more stringent then the national program, but cannot be less. The Virginia State Water Control Board cannot arbitrarily exclude U.S. surface waters from the regulatory purview of its delegated national program.”

FOLA wants monitoring of the VPDES permit compliance to begin at the end of the North Anna power plant discharge canal, since the cooling ponds are national waters. FOLA also wants VDEQ to correct the existing VPDES regulations that exempt cooling lagoons from the definition of surface waters. They allege that VDEQ is in conflict with the national program (NPDES – 40 CFR Section 122.2) providing that cooling lagoons/cooling ponds which meet the definition of waters of the U.S. are not waste treatment systems.

We have not yet had the opportunity to conduct the legal research necessary to form an independent opinion as to the strength of these legal claims, but we have noted some pertinent facts. The lagoons are navigable, not otherwise polluted except thermally,<sup>3</sup> and are fed by the waters of some eight creeks and streams, in addition to the coolant water pumped from Lake Anna, and these waters ARE presumably exempt from appropriation as “private waters” not subject to regulation under the CWA. So irrespective of the legal merits to the claim that the State has erred in continuing to designate the lagoons as a

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<sup>3</sup> Except that elevated levels of PCB’s have recently been found in fish that inhabit the lake, and the source of this pollution has not yet been identified.

private “Waste Heat Treatment Facility,” Dominion cannot plausibly have it both ways, claiming these waters are indeed private, but then evading strict monitoring of CWA compliance at the Dike 3 point where these waters discharge into the regulated surface waters of the United States.

If VDEQ is unwilling to revise its longstanding regulatory approach to treating the lagoons as an unregulated “Waste Heat Treatment Facility,” then at a minimum a strict CWA-complaint regime for detecting and preventing excessive heat loads and temperatures must be established at the Dike 3 discharge point to ensure that Lake Anna and the North Anna-Pamunkey river system are adequately protected. Such a regime must be in place and operating reliably before any concurrence is given to the ESP for Units 3 and 4. The existing poorly monitored variance appears to be nothing more than a license for Dominion to save money by spreading the burden of dissipating its thermal discharges where it doesn’t belong, on the protected surface waters of the United States.

### **8. The NRC’s Early Site Permit Review Process is Defective and Hinders Meaningful Participation by the Public.**

The NRC has either deliberately devised or negligently allowed the ESP process to evolve in a way that overtaxes and bamboozles the public and even state regulators with a continuing and chaotic blizzard of ever-changing project documentation.

We note that the *Friends of Lake Anna* (FOLA) and others attempting to participate meaningfully in the process have definite objections to the way the NRC has chosen to conduct its review. As longstanding participants in the NRC’s proceedings, we can only concur in the objections raised by FOLA to the current process:

“The NRC does not provide for any public scrutiny of a draft Safety Evaluation Report prior to its issuance. The public’s safety should be the primary focus of any government agency. The public’s review of any safety projects is essential. *It appears the NRC is basing decisions on 5 year old data and has not considered recent property development around the lake or world events in any of their decision making.* The NRC’s staff projected population increase for the North Anna site through 2065 is not anywhere in the ballpark, Louisa County is currently the 73<sup>rd</sup> fastest growing county in the U.S.

“*The NRC continues to accept many changes to the ESP, without automatically extending the public comment period each time a change is issued.* Currently we are reviewing Revision 6 to the North Anna ESP, which is over 1,000 pages of technical data. In addition, just last month (July 2006) you issued a supplemental Draft Environmental Impact Statement relating to Revision 6 only, that was about 500 pages, which related to your first draft Environmental Impact Statement which was another 600 or 700 pages. You have also just within the past few weeks, issued Revision 7 and a Revision 8 with no automatic extension of the public comment.

*“While the Draft Environmental Impact Statement (DEIS) is still under review, Dominion continues to make revisions to issues that are analyzed [in the DEIS]. Hence our review of the DEIS is a moving target, without the NRC automatically extending the public comment period and giving the public sufficient time to review the changes. (emphasis added)*

“It seems like everyone is spinning wheels in trying to keep up with all the Dominion and NRC revisions, Requests for Information, Responses for Request for Information, additional revisions, draft environmental impact statements that pertain to the earlier revision only, and [this] is making a mockery of an extremely important governmental process....”<sup>4</sup>

We would hazard a guess that the logistical, analytical, and sheer time demands of keeping up with the NRC’s chaotic permit review process have deterred many citizens from participating in it at all, and discouraged others as soon as they became aware of its daunting demands and perverse complexity. The process effectively excludes anyone from meaningful participation who does not have the patience, time, and particular skill set to wade through the documentary swamp the NRC has generated. While our review stops at Revision 6 of the ESP, we understand that Dominion has recently submitted Revisions 7 and 8. As we have other things to do in our professional lives besides track the NRC’s paper trail, we are unable at present to comment on those revisions. But given the NRC’s conduct in this matter, we obviously feel that VDEQ is entitled to treat the date of the last revision as constituting a new Dominion certification of federal consistency under the CZMA, and to extend the concurrence response date accordingly.

**9. The NRC’s Site Comparison Methodology is Flawed and Obscures Important Environmental Advantages of Alternative Sites.** We are far from persuaded by the NRC staff determination that another site is not “obviously superior” on environmental grounds to the North Anna site, and note that this criterion begs the question of whether one or more alternative sites may be merely “superior” on environmental grounds to the North Anna site. The NRC criterion employed in assessing whether a proposed ESP site should be rejected in favor of an alternative site is whether the alternative site is “clearly and substantially” superior to the proposed site. Under prior NRC rulings, a proposed ESP site may not be rejected in favor of an alternative site when the alternative is “marginally better” than the proposed site, but only when it is “obviously superior.”

According to the NRC, an “environmentally preferred” alternative site is “a site for which the environmental impacts are sufficiently less than the proposed site so that the environmental preference for the alternative site can be established” (NUREG-1811 SDEIS, p. 9-1, citing NRC proceedings from 1978). If the Early Site Permit EIS process identifies one or more such “environmentally preferred” sites, then to uncover an “obviously superior alternative site,” the NRC staff then believes it must further

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<sup>4</sup> Presentation of Harry Ruth on behalf of the *Friends of Lake Anna* to the U.S. Nuclear Regulatory Commission public hearing on August 15, 2006 at Louisa Middle School, Louisa, Va., p. 2.

determine that “(1) one or more important aspects, either singly or in combination, of a reasonably available alternative site are obviously superior to the corresponding aspects of the applicant’s proposed site” and (2) the alternative site does not have “offsetting deficiencies” in other important areas. A staff conclusion that an alternative site is “obviously superior” would normally lead to a recommendation that the application for the ESP at North Anna be denied.

Since the NRC staff employs inherently fuzzy qualitative – “SMALL,” “MODERATE,” and “LARGE” – rather than quantitative criteria to compare environmental impacts at the alternative sites, this allows important differences between sites to be obscured by choosing “MODERATE” to describe harmful impacts at the Proposed Site that are actually environmentally significant, while “offsetting deficiencies” at alternative sites – such as visual impairment of an historical view shed, can subjectively be described as “LARGE” (without considering design or mitigation alternatives) thereby eliminating any prospect of ever making an “obviously superior” determination for an alternative site.

Aside from this sloppy methodology, which seemingly allows the NRC staff to recommend any site Dominion prefers short of causing an obvious environmental catastrophe, the NRC’s NEPA process raises three sets of legal issues:

(1) Has the NRC’s shoddy ESP process violated citizen’s due process rights under the Administrative Procedures Act, the National Environmental Policy Act, and NEPA’s implementing regulations;

(2) Has the NRC’s tailored alternatives analysis unreasonably failed to identify one of Dominion’s alternative sites – such as the existing Surrey Plant on the lower James River – as “obviously superior” to the proposed North Anna site, when both the impacts of heat dissipation and water withdrawal at the Surrey site, and possibly other sites, are clearly less than they are at North Anna; and

(3) has NRC correctly analyzed – or indeed performed ANY analysis – of the vulnerability of the North Anna site to both climate change and terrorist threats – i.e. what are the impacts if the lake steadily dries up in a future local climate of reduced rainfall and higher than average temperatures, and what are the impacts if terrorists manage to blow a hole in the dam, suddenly draining the lake and disabling the three units that depend wholly or in part on cooling water withdrawals from the lake, or attack the spent fuel storage pools.

Analysis of the climate change scenario seems indicated given the projected 60 year life span of a reactor and the recent spate of reactor cooling problems triggered by heat and drought conditions in Europe and the Midwestern U.S. And a recent 9<sup>th</sup> Circuit Court decision directing the NRC to analyze the reasonably foreseeable environmental impacts of a terrorist attack on a California reactor’s spent fuel storage facility suggests that such analysis should be part of the NEPA coverage for the North Anna ESP. The lack of these analyses in the present DEIS and SDEIS is yet another substantive reason for the State to object to Dominion’s certification of federal consistency for the ESP.



Please do not hesitate to contact me if you have any questions regarding these comments.

Sincerely,

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