Comments of Christopher Paine
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On the Reissuance of VPDES Permit VA0052451
North Anna Power Station Units 1 and 2
July 18, 2007

Before commenting on the larger issues at stake in the renewal of this permit, I would like to point out some specific problems in the wording of the permit itself.

In a letter to VDEQ Director David Paylor, dated March 30, 2006, the Attorney General of the Commonwealth states that because the so-called "Waste Heat Treatment Facility" (WHTF) was designed specifically as a waste treatment system, and such systems must be regulated at their point of discharge into "waters of the United States" subject to CWA jurisdiction, "the [State Water Control] Board has not imposed restrictions on the discharge of heat from NAPS [North Anna Power Station] into WHTF." [McDonnell to Paylor, 11/30/06 at 1].

Instead, the Attorney General notes that the state "has imposed conditions on discharges of heated water *into* the North Anna Reservoir *from* WHTF" because the Board "does not have the legal authorization to impose limitations on thermal effluent involved in discharges by Dominion Nuclear North Anna, LLC from its reactors at its North Anna Power Station" into "a series of connected cooling lagoons."

Now, I find these conclusions interesting, indeed puzzling, and not least because they are not reflected in the terms of the permit. At the Dike 3 Outfall # 001, where the Attorney General says "conditions on the discharge of heated water" may legally be imposed, the draft permit imposes no such conditions -- there are no limits on the BTU content, flow rate, or temperature of the discharges from the WHTF into the regulated "reservoir" side of Lake Anna. The only limits enumerated are for residual chlorine, measured once a month, and pH, measured once per week. There are in fact <u>no heat limits</u> on discharges that are imposed at the point at which the WHTF discharges water to the regulated surface waters of the United States, so either the Attorney General or the permit is wrong on this point.

On the other hand, what we do find in the draft permit is a “heat rejection limit” imposed at a new “Internal Outfall 101,” which is located at the very point where the Attorney General says the state lacks the authority to regulate, namely the point internal to the WHTF at which the reactors discharge cooling water into the canal leading to the first cooling lagoon. So apparently despite the Attorney General’s legal conclusions last November, VDEQ has somehow uncovered or retained authority to regulate the internal thermal discharges of the NAPS into the WHTF.

There appears to be some considerable disconnect between what the Attorney General is telling the public is legally possible, and what VDEQ is selectively proposing to do in this permit. If the point of compliance for monitoring reject heat discharged to the regulated surface waters of the United States can be moved internal to the North Anna Power Station, at the point at which the heated cooling water enters the WHTF, why cannot limits and compliance points for controlling other parameters of thermal discharges, such as temperature, also be moved internal to the WHTF?

While I am on the subject of the Heat Rejection Limit, I believe the calculated value contained in the draft permit is most likely incorrect. I would ask VDEQ to query Dominion regarding the accuracy of the following statement from Attachment 10 of the permit: “The value of 13.54E9 BTU/hr is the limit originally assigned to the facility in the 401 certification issued 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 …” I do not believe this statement is accurate. In reality, according to the NRC, the thermal power of each existing NAPS unit was uprated (increased) by 4.2 % 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 does not appear to be correct.

If VDEQ has been using the old 1973 values from 1986 to the present, then its understanding of the reject heat entering Lake Anna has likely been in error for the last

twenty years. Moreover, a recent nuclear industry document cites an analysis performed for the Department of Energy regarding a further 5% uprating of the existing NAPS units. [Nuclear Energy Institute, "Nuclear Energy in Virginia" Factsheet, May 2006 at 2.] Before the Board reissues this permit, VDEQ must query Dominion and inform the public regarding the thermal discharge effects of these past and potential power uprates, and whether the company is planning to carry out a power uprate of one or both existing units during the lifetime of this permit.

The draft permit also appears to be in error when it states, "Except for 2002, the temperatures in Lake Anna did not exceed the 32 deg. C water quality criteria value." [VA0052451 (DRAFT) Attachment 10 at 2]. This statement is at best grossly misleading. The values cited appear to be the hourly *mean* temperature (measured over a 24 hour period) for each month , as measured and reported by Dominion. If we look at the peak temperatures recorded, the picture is much different. The "32 deg. C water criteria value" was exceeded in the main body of the lake and downstream not only in July-August 2002, but also in July-August 01, July-August 05, and July-August 06. July-August 03 also was quite hot, producing peak temperatures throughout the lake and downstream in the range of 31-32 deg. C. [Attachment 11 at 1-5].

Now as any statistician will tell you, a "mean temperature" not exceeding 32 deg. C throughout the lake and downriver means that half of the hourly measurements were actually *above* this figure. That suggests that during midsummer daylight hours, when people are recreating in and on the lake and river, the heating problem is worse than suggested by the mean values cited in the permit. For the periods cited above, the Control Board should request to see the statistical distribution of summer temperature measurements around the mean value, to ascertain the prevalence of elevated temperatures during summer recreating hours.

Now I would like to make a few observations regarding the broader issues at stake in the reissuance of this permit. Regarding the overall state and EPA approach to asserting CWA jurisdiction over the WHTF, it seems mired in contradictions and dubious legal

rationales which, irrespective of whether they might be sustained in a court of law, do not well serve the public interest. For the purposes of regulating dredging and fills in the cooling lagoons, the Army Corps has asserted and maintained its Clean Water Act Sec. 404 jurisdiction over the WHTF, and this has not been challenged by anyone as far as I know. But when it comes to protecting the health, quality of life, and property values of lagoon area residents from excessive temperatures in the cooling lagoons, the State and it appear even EPA as well assert that they lack the legal jurisdiction to regulate the waters of Dominion's cooling lagoons because they comprise a "Waste Heat Treatment Facility."

I would point out that this term is a legal construct of local creation—to my knowledge it does not exist anywhere in the federal statutes and regulations that together comprise the Clean Water Act. The exemption for "waste treatment systems" was clearly intended to cover municipal and industrial waste treatment systems excavated on dry land for the purposes of treating, and then releasing effluents into the waters of the United States that comply with the pollutant discharge criteria adopted under the Act. Indeed the Act envisioned and led to the creation of a National Pollutant Discharge Elimination System that was intended and designed to lead, via a systematic permitting process, to continuing improvements in the nation's water quality. As far as I can tell, there has been no improvement or reduction in Dominion's thermal discharges, or in the resulting excessive temperatures in the lake, since the inception of this permit. So by that broad measure, State regulation of the NAPS is not meeting the broad purposes of the Clean Water Act by reducing thermal pollution of Virginia's waterways.

The CWA waste treatment exemption was never intended to sanction or provide an after-the-fact legal refuge for a 3400 acre private lake formed via the impoundment of 10 free-flowing tributaries of the North Anna river, or for its unregulated heating of public waters vastly in excess of the NPDES criteria limits for temperature. If this kind of massive expropriation of the public commons were being proposed today, everyone in this room knows it could not be sustained, legally or politically.

The definition of "waters of the United States" subject to CWA jurisdiction includes "all impoundments of waters otherwise defined as waters of the United States under this definition," including waters "which are used or could be used for industrial purposes by industries in interstate commerce." Dominion is both engaged in an industrial purpose – electric power generation – and markets electricity in more than one state, and it is using the public trust waters of the United States to do so.

Some 27 years ago EPA proposed and then abandoned a sentence in a regulation to clarify that its waste treatment exclusion applied only to "man-made bodies of water" that "neither were originally created in waters of the United States…nor resulted from impoundment of waters of the United States." The EPA's failure to complete a regulation that sought to clarify the scope of an exclusion to its CWA jurisdiction could not and did not alter the underlying definition of jurisdictional waters contained in the adopted and controlling federal regulations. By law, state implementing regulations for the CWA can be more but not less permissive than federal standards.

As it exists in federal law, today, the waste treatment definition actually removes power plant cooling ponds from the purview of the waste treatment system exclusion. The Attorney General's November 30 letter acknowledges that the current federal regulation defining surface waters of the United States contains an exemption for waste treatment systems that "specifically excludes cooling ponds from the definition of such systems." [McDonnell to Paylor, footnote 6 at 2.] But he adds that Virginia's own regulations depart from the federal regulations on this point, "contain no such exclusion," and specifically include "treatment ponds or lagoons *designed to meet the requirements of the Clean Water Act*" within the class of excluded "waste treatment systems" (emphasis added).

Please note that the cited regulation [9 VAC 25-31-10] does <u>not</u> specifically mention "*waste heat* treatment ponds or lagoons" or even "*cooling* ponds or lagoons" as being within the class of excluded "waste treatment systems." Given a federal regulation that <u>does exclude</u> such "cooling ponds" from falling under the waste treatment exception, the

legal case for the WHTF would appear to rest on a very thin reed indeed. The case is further weakened by the fact that even under the looser Virginia regs, the excluded treatment pond or lagoons still must be "designed to meet the requirements of the Clean Water Act." But the discharges from the WHTF into the main body of Lake Anna *do not meet* the federal criteria for temperature in the receiving body of water, and therefore require a variance. Dominion and state regulators cannot have it both ways – excluding the WHTF from the purview of the CWA on the grounds that it is treating heated cooling water to CWA- compliant levels, and then reissuing a variance-in-perpetuity that is proof positive that the WHTF is <u>not</u> "designed to meet the requirements of the Clean Water Act." [1]

Putting aside all these legal shenanigans and inconsistencies, it is quite clear that the State Water Control Board (and/or EPA) still has both the technical ability and the authority to control water temperatures in the WHTF, even if it clings to the view that it lacks formal jurisdiction over the WHTF. It can do so indirectly, by prescribing temperature limits for the receiving waters of the US that it agrees it has an uncontested legal duty to regulate – namely the impounded waters of the North Anna River. Credible limits on the peak and mean hourly surface temperatures as measured at representative locations around the lake, designed to preclude the proliferation of microorganisms deemed harmful to human health[2] as well as to ensure a healthy fish and wildlife population, will require Dominion

[1] This statement in 9 VAC 25-31-10 is clearly erroneous, for two reasons. First, the design of the NAPS cooling lagoons pre-dates the passage of the Clean Water Act and the adoption of its implementing regulations, so as a historical matter the WHTF could not have been "designed to meet the requirements of the Clean Water Act." Second, Dominion grossly overestimated the heat dissipation capacity of the lagoons and the reservoir. A heat dissipation system originally designed for 4-5 1000 MW(e) nuclear units is unable to dissipate adequately the heat from just two such units while staying within NPDES criteria limits for temperature. The inherent limitations of this system were again revealed when Dominion was forced to revert to a wet-dry cooling tower system for a proposed third unit, because analysis revealed that the North Anna impoundment and river could not tolerate the adverse environmental impacts of a third "once-through" condenser-cooled unit. Even after this change, serious credible doubts persist regarding the ability of the resulting total arrangement to protect Lake Anna and the North Anna River.

[2] See the letter from Robert B. Stroube, M.D., M.P.H., State Health Commissioner, to Mr. Robert Burnely, Director, Department of Environmental Quality, Sept. 15, 2005. Commissioner Stroube stated that the pathogenic Naegleria species "begins to proliferate at temperatures around 30 deg. C (86 F) and thrives especially well at temperatures of 35 to 45 C (95 to 113 F)." The latter includes a typical temperature range for the WHTF on a hot summer day, and the WHTF discharges to Lake Anna.

during the hottest months to adopt mitigation measures in the NAPS-WHTF to ensure that its thermal discharges do not overheat the Lake.

In this way, the Board can at least partially meet its obligation to protect the lake, lagoon residents, and the wider recreating public, while still adhering to its view that it lacks jurisdiction to regulate the waters of the WHTF directly. After all, it is technically possible today for Dominion to install a range of supplemental cooling measures, such as sprayers and towers, which would make the legal controversies moot. In theory, of course, Dominion could even do so voluntarily, in the public interest. But few expect the company will act in this public-spirited fashion. So the only real question is whether the Board will step up and do what needs to be done to strike the right balance between the public interest and the additional profit Dominion makes by avoiding the expense of additional active cooling measures during the summer months.

Thank you for your attention.