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March 10, 2014

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Re: VPDES Draft Permit VA0052451, Dominion North Anna Power Station

APPENDIX A

Overview

Dominion-Virginia Power operates two pressurized water reactor units at its North Anna Power Station, each licensed at 2,940 MW-thermal according to the US Nuclear Regulatory Commission Permits No. NPF-4 and NPF-7 (US NRC Docket Numbers 05000338 and 05000339). Unit 1 began commercial operation in June, 1978 and Unit 2 followed in December 1980; NRC licenses re-issued for both units on March 20, 2003.

The plant is located on the southern shore of Lake Anna which supplies necessary cooling water. The lakeôs 200 mile shore is also the site of many homes, marinas, and campgrounds. According to Lakeanna-va.com: ñLake Anna is the second largest fresh-water inland lake in Virginia, with over 250 miles of shoreline and some 13,000 surface acres of water. Lake Anna has become Central Virginia's premier choice for water sports and fishing. Initially known as a vacation community, the number of full time residents has grown steadily since the lake was created in 1972.ò

Dominion-Virginia Power claims 3,400 acres of the lake for its Waste Heat Treatment Facility (WHTF) and the company limits its access to local residents. The balance of 9,600 acres are the ñcool sideò and are open to the general public for fishing, boating and other recreation. According to VDEQ, there are a total of 10 discharge points directly to Lake Anna and 18 discharge points to the Waste Heat Treatment Facility. Outfall 101 empties heated water from the plant condenser into the hot side WHTF.[1] The hot side lagoon empties into Lake Anna at Outfall 001.[2] The VDEQ classifies Outfall 001 and Outfall 101 as ñIndustrial Process Wastewater.ò[3]

Lake Anna Streams Are Impaired

The Lake Anna Special Area Plan was published in 2000 by the Boards of Supervisors of Louisa, Orange, and Spotsylvania Counties at the request of the Lake Anna Advisory Committee. Among other things, the advisory committee found the following:

[1] VDEQ draft Permit VA0052451 Part I.A.9. ñOutfall 101-Condense Cooling Waterò
[2] VDEQ draft Permit VA0052451 Part I.A.1. ñOutfall 001-Waste Heat Treatment Facility at Dike 3ò
[3] Fact Sheet VPDES Permit VA0052451. VDEQ classifies most of the 28 outfalls as industrial process wastewater (22); the remainder are classified storm water (5) and municipal wastewater (1).

ñData from all sources are very limited and not consistently developed or reported. The State has, however, developed a list of ñimpairedò streams. These are streams that exceed pre-determined limits. Of ten Lake Anna tributaries, five are on Virginiaôs 1998 Clean Water Act Section 303(d) impaired waters listing.ò[4]

Water Pollution Statutes In Effect Prior to Startup of North Anna Power Station

Congress enacted the Federal Water Pollution Control Act (FWPCA) in 1948. The intent of the Act was to ñenhance the quality and value of our water resources and to establish a national policy for the prevention, control and abatement of water pollution.ò With the Water Pollution Control Act Amendments of 1956, Congress strengthened enforcement. The 1965 Water Quality Act set in motion the development of interstate water quality standards; a year later Congress enabled the levying of fines for polluters. The Water Quality Improvement Act of 1970 introduced anti-degradation standards to maintain water quality. In 1972 Congress further amended the FWPCA, empowering the newly formed Environmental Protection Agency and granting it authority to control the amount of pollution being discharged from point sources. In the 1972 amendments, Congress defined ñthermal dischargesò as the introduction of water from a point source at a temperature different from the ambient temperature of the receiving waters. Industries with point source thermal discharges were thereby required to use best available control technology.[5] The EPA issued a press release which clearly stated the new guidelines:[6]

> All waters should be protected for recreational uses in or on the water and for the preservation and propagation of desirable species of aquatic life. Use and value of water for public water supplies, agricultural, industrial, and other purposes, as well as navigation will also be considered in setting standards. However, only in special circumstances will the criteria supporting these uses be permitted to interfere with recreational uses and the preservation of desirable species of aquatic life.
>
> Minimum criteria for specified water use classifications are the minimum recommended levels set by the National Technical Advisory Committee in its report to the Secretary of the Interior on Water Quality Criteria, April 1, 1968, and other information provided from time to time by EPA. No criteria less restrictive than these minimum criteria will be approved unless it is demonstrated to the EPA Regional Administrator's satisfaction that the natural condition of the water does not exceed such lower quality or that other conditions exist that cannot be realistically controlled, thus precluding reaching the desired level of water quality.
>
> The guidelines stress that numerical values must be stated wherever possible in water quality standards. Narrative descriptions may be employed where other values cannot be established.
>
> The antidegradation statement previously adopted by the States and approved by the Federal Government will remain in effect as part of the water quality standards for all navigable waters. Their application will be consistent with the goals, objectives and requirements of the various provisions of the Federal Water Pollution Control Act

[4] *Lake Anna Special Area Plan, March 2000,* http://www.tjpdc.org/pdf/rep_envi_lakeanna.pdf
[5] *The Challenge of the Environment: A Primer on EPA's Statutory Authority*, EPA publication - December 1972
[6] ñEPA Releases Guidelines for New Water Quality Standards,ò EPA press release, February 13, 1973, downloaded 8/1/07 at http://www.epa.gov/history/topics/fwpca/02.htm

Amendments of 1972.

In 1977, the law was again amended and became the Clean Water Act (CWA); it set water quality standards for contaminants in surface waters and made it unlawful for any person to discharge any pollutant to unless a permit was obtained. The CWA defined ñwaters of the United Statesò as rivers, tributaries, lakes, estuaries, coastal waters, and wetlands.[7]

Some would rationalize the continual granting of a variance for the WHTF by citing the creation date of the lake prior to the enactment of the Clean Water Act. In a letter of reply to the Friends of Lake Anna, the EPA states, ñLake Anna was created in 1971 (i.e., before the 1972 enactment of the Clean Water Act) by the construction of a dam on the North Anna River.ò[8]

However, this statement omits the fact that the first NPDES was not issued by VDEQ until June 1977.[9] North Annaôs Unit 1 did not come on line until 1978. Therefore, DEQ cannot justify the granting of the variance and the subsequent lack of enforcement.

Designated Use Cannot Include Waste Transport

In the 1972 amendments to the FWPCA, Congress said that surface waters would no longer serve as waste conveyances or treatment systems. Water Quality Standards rules prohibit waste transport as a designated use (DU). Heat is recognized as a pollutant under federal law.

Once EPA has issued a criterion for water quality, states must adopt a corresponding criterion. Such criteria must provide the same level of protection, and must be documented. Only scientific considerations can be taken into account in a stateôs determination of water quality criteria; economic and social impacts cannot be considered.

Federal regulations allow states to waive applicable water quality standards only under certain circumstances such as ñmixing zones.ò But EPA policy holds that an entire lake or reservoir cannot be encompassed by a mixing zone and typically prohibits them from swimming areas and critical habitat for commercially, recreationally, or ecologically important species.

The CWA has a long-range goal of zero discharge of pollutants and makes it illegal to discharge pollutants from a point source to surface waters of the United States without a permit. Section 402 of the Act creates the National Pollutant Discharge Elimination System (NPDES). Occasionally, discharges to groundwater hydrologically connected to surface water are incorporated into the NPDES program.

[7] 33 U.S.C. §1251 et seq. (1972)
[8] USEPA to Harry Ruth and Friends of Lake Anna, Re: Dominion North Anna Power Station VPDES Permit No. VA0052451, July 13, 2007
[9] Per VDEQ Woodbridge office, Louis Zeller phone conversation with Susan Mackert, August 2, 2007

Clean Water Act Allows Changes in New Permit

Before issuing an NPDES permit, Section 401(a) requires state permitting agencies to submit to the EPA a certification that all discharges will comply with ambient water quality standards under the CWA. States may require changes in dam management to prevent impairment of designated uses in affected waters.

Two hydroelectric generators operate at the main dam which forms Lake Anna. One unit operates year round and requires a minimum flow rate of 40 cubic feet per second. The other unit operates when the lake level exceeds 250 feet amsl.[10]

Draft Permit Fails to Monitor and Control Pollution Limits

Waste Heat

The draft permit lists 28 emission points, yet the permit stipulates only one discharge at which heat limits apply: Outfall 101, Discharge of Condenser Cooling Water to Discharge Canal. The limit for Outfall 101 is listed as a ñheat rejected maximumò of 13.54 x 10^9 BTU/hour.

The draft permit contains the following formula for the calculation of heat rejection:

> 3. Compliance Reporting for Parameters in Part I.A.
> e. Heat Rejection - Heat rejected rate submitted monthly shall be a calculation of the maximum heat directed to the waste heat treatment facility from Units 1 and/or 2. The following calculation shall be used to determine heat rejection:
>
> $$Q = \frac{C_p m(\Delta T)}{24 \text{ hr}}$$
>
> Where Q = Heat Rejection, BTU/Hour
> C_p = Heat Capacity (Specific Heat) of pure water
> = 1.0 BTU/pound °F
> m = Mass of Water
> = flow rate (MGD) x specific gravity of pure water
> = flow rate (MGD) x 8.34 pounds/gallon
> ΔT = Temperature at outlet waterbox ï temperature of intake waterbox, °F

Dominion-Virginia Power has estimated that the nuclear power station adds 10% to the lakes natural summertime temperature. *id* No estimate was given for winter heat. Yet Outfall 101 has no discharge limitations for flow rate, water volume, or temperature. The draft permitôs formula for heat rejection (above) is a function of heat per unit of time; therefore, heat discharge remains the same per hour regardless of the volume of water flow. Without limitations on flow parameters in the permit, there is no virtually limit on lake temperature. This would account for the reports from many observers that water temperatures reach 104° F during summer months.

[10] *Lake Anna Special Area Plan, March 2000,* http://www.tjpdc.org/pdf/rep_envi_lakeanna.pdf

Furthermore, under the CWA, thermal discharges are subject to the best available control technology requirements. There appear to be no BACT requirements in this permit. The dumping hot water in a lake cannot be best available control technology. If DEQ is depending on a mixing zone, it cannot encompass an entire lake or reservoir according to the EPA.

The DEQ must ensure that the North Anna facility complies with state and federal regulations for heat pollution. Virginia law states:

> 9 VAC 25-260-60. Rise Above Natural Temperature
> Any rise above natural temperature shall not exceed 3°C except in the case of Class VI waters (natural trout waters,) where it shall not exceed 1°C. However, the Board can, on a case-by-case basis, impose a more stringent limit on the rise above natural temperature. Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.
>
> 9 VAC 25-260-70. Maximum hourly temperature change.
> The maximum hourly temperature change shall not exceed 2°C, except in the case of Class VI waters natural trout waters where it shall not exceed 0.5°C. These criteria shall apply beyond the boundaries of mixing zones and are in addition to temperature changes caused by natural conditions.
>
> 9 VAC 25-260-80. Thermal discharges into lakes and impoundments.
> In lakes and impoundments receiving thermal discharges, the temperature of the epilimnion, or surface water when there is no stratification, shall not be raised more than 3°C above that which existed before the addition of heat of artificial origin. The board may, on a case-by-case basis, impose a more stringent limit on temperature rise. The increase shall be based on the monthly average of the maximum daily temperature. The temperature of releases from these lakes and impoundments shall be consistent with standards established for the receiving waters. When an applicant for a permit proposes either a discharge of heated effluent into the hypolimnion or the pumping of water from the hypolimnion for return back into the same body of water, such practice shall not be approved unless a special study shows that the practice will not produce adverse effects.

Unless and until the DEQ can assure that thermal discharges from Dominion-Virginia Powerôs North Anna plant will not exceed the maximum hourly temperature changes in Lake Anna, it cannot issue a VPDES permit.

DEQ Must Enforce the Law

EPA regulations prohibit issuance of an NPDES permit that would result in an elimination of an existing use of a water of the United States. EPA has broad inspection and monitoring powers. The agency has a right of entry to all effluent sources and authority to inspect records, monitoring equipment and effluents. The EPA may bring suit if it finds that a polluter presents a danger to human health or to a personôs livelihood, such as the ability to market fish. Virginia DEQ may also exercise this power.

Citizen involvement in enforcement of the FWPCA is explicit in federal law; specifically, it provides for citizen participation in the enforcement of standards. Private citizens my seek judicial relief against a polluter for violations of an effluent standard or limitation.

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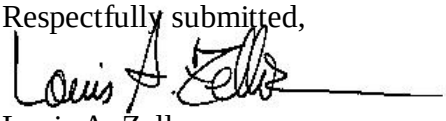
Citizens may also institute proceedings against the EPA for failure to act under the law.

Respectfully submitted,



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