COMMONWEALTH of VIRGINIA

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52-008

Ms. Pamela F. Faggert
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RE: Federal Consistency Certification under the Coastal Zone Management Act and the Virginia Coastal Resources Management Program: North Anna Early Site Permit Application
DEQ-03-223F

Dear Ms. Faggert:

Thank you for your January 12, 2004 letter (received January 20) withdrawing the above federal consistency certification pursuant to our January 7 discussion with the Nuclear Regulatory Commission staff. As you requested, I am enclosing copies of the comments developed by our reviewing agencies thus far.

As you know, the Department of Environmental Quality (DEQ), through this Office, is responsible for coordinating Virginia's review of federal environmental documents and responding to appropriate federal officials on behalf of the Commonwealth. DEQ is also the lead agency for coordination of federal consistency reviews under the Virginia Coastal Resource Management Program and the federal Coastal Zone Management Act. The following agencies and planning district commission joined in this review (starred (*) agencies administer one or more of the Enforceable Policies of the Coastal Resources Management Program):

Department of Environmental Quality:
- Water Division*
- Air Division*
- Waste Division
- Northern Virginia Regional Office*
- Office of Environmental Impact Review* (this Office)

Department of Game and Inland Fisheries*

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Department of Agriculture and Consumer Services
Department of Conservation and Recreation*
Department of Health*
Department of Mines, Minerals, and Energy
Thomas Jefferson Planning District Commission.

In addition, the following agencies and localities were invited to comment (same reference (*) as above):

Marine Resources Commission*
Department of Historic Resources
Chesapeake Bay Local Assistance Department*
Louisa County
Spotsylvania County.*

The following summary of the comments submitted by reviewers is provided to inform Dominion Virginia Power Company ("Dominion"), as applicant, and the Nuclear Regulatory Commission ("NRC"), as federal licensing agency, of issues that may merit attention as the consistency certification is reconsidered and as the Draft Environmental Impact Statement is prepared.

Project Description and Background

Dominion filed an Early Site Permit Application ("Application") with the NRC to add two units to the North Anna Power Station. The NRC is to determine whether the site is suitable for constructing new reactors using an Early Site Permit (ESP). Permits are issued for 10 to 20 years and can be renewed for 20 years. Environmental issues are addressed as part of the ESP, independent of any review of any specific reactor design. The ESP process uses a Plant Parameters Approach, which postulates an envelope of possible reactor designs; Dominion is considering seven different designs. In this Application, Dominion has postulated a maximum of two reactors of up to 4300 megawatts each of rated thermal capacity. The two reactors that Dominion formerly proposed but then cancelled each had a rated electrical capacity of 907 megawatts. Dominion postulates that the first new unit (referred to as Unit 3 herein) would use once-through cooling; the second would use a cooling tower. Issues resolved with finality under the ESP process, including environmental issues, are not re-examined in any subsequent licensing action by the NRC. The ESP process does not approve a particular reactor design, nor allow the construction of the reactor. However, it does authorize construction of all the items identified in the site redress plan, including:

- site clearing
- foundations
- intake structures
- outfall structures.

Dominion has requested that NRC issue the permit for 20 years (the maximum) and allow land clearing, stream filling, and intake structure construction to proceed under the site redress plan.

Deficiencies in the Document

The Application includes proposed Unit 4, but does not identify a source of water for that unit. The NRC regulations, at 10 CFR section 51.29, require that "information provided to the Commission by an applicant for a license, ... shall be complete and accurate in all material respects." For ESP applications, the NRC requires information on "types of cooling system intake and outflows for **each** facility" (10 CFR section 52.17(v)) (emphasis added). Because no water source for Unit 4 is identified in the Application, DEQ's Water Division cannot form an opinion on prospects for approval of such a project, or whether it would be consistent with state laws and regulations. The logical water source for Unit 4 would be Lake Anna. Groundwater resources are not capable of producing the large quantities of water that would be needed; nor does there appear to be any surface water source nearby, other than the Lake. Unit 4 should be withdrawn from the Application unless its water source(s) and related cumulative impacts are identified. If Dominion leaves Unit 4 in the Application, but does not identify a water source, then NRC should consider denying the application for any site redress work associated with Unit 4.

If Lake Anna were the source of water identified for Unit 4, the additional heat load and evaporative losses would result in deeper and longer drawdown periods on the Lake and longer periods of low flows in the North Anna River. Given the small watershed, with average runoff of only 370 cubic feet per second (cfs), it is probable that the additional cumulative impact of a fourth unit would have an unacceptable impact on the Lake and the River downstream of it.

Federal Consistency Certification Issues

Federally licensed or permitted activities affecting coastal uses or resources must be conducted in a manner consistent with Virginia's approved Coastal Resources Management Program ("VCP"). In order to be consistent with the VCP, the project must be consistent with the Enforceable Policies of the VCP (15 CFR Part 930, section 930.50) (first enclosure). In addition, we recommend that applicants and federal licensing agencies take the Advisory Policies of the VCP into account (second enclosure).

The VCP applies in Virginia localities bordering the seacoast and our tidal tributaries, including Spotsylvania County, which is bounded by the North Anna River and Lake Anna. As DEQ's Office of Wetlands and Water Protection indicates, operation of one or both of the proposed generating units would diminish in-stream flows on the North Anna River, directly affecting the River and the anadromous fish habitat therein.

1. Fisheries Management Concerns. As the Department of Game and Inland Fisheries (DGIF) indicates (enclosed comments), the proposed addition of two generating units to the two that are already operating at the North Anna Power Station would have a number of adverse effects upon the lake and the river downstream of it.

(a) Water Withdrawal Increases in the Lake. Increases in water withdrawals would present complications for fish populations through increased fish impingement and entrainment in water intakes. Impingement, or the collisions of fish against water intake screens, would increase by 230% over current levels with the addition of the proposed intakes, according to DGIF. Estimated impingement mortality of striped bass would nearly double; it should be mentioned that striped bass is a leading Lake Anna sportfish annually stocked by DGIF.

Similarly, the number of fish entrained by virtue of increased water withdrawals from the Lake is expected to increase. Using estimates from the applicant's six-species category, DGIF states that the number of fish lost to entrainment could exceed 468 million fish annually, 63% of which would be gizzard shad, another important North Anna River species. (Confirmed, Ellis/Odenkirk, 2/9/04. The lower estimate by DEQ's Office of Wetlands and Water Protection is a sub-set of the above estimate; it is based on losses attributable to the addition of Unit 3 only (Ellis/Hassell, 2/9/04).

Existing intake criteria at the North Anna Power Station substantially exceed DGIF recommendations, as the chart shows:

	water velocity (feet per second)	screen mesh (millimeters)
DGIF recommendation	0.25 FPS	1.0 mm
existing criteria	0.70 FPS	9.5 mm

DGIF indicates that even its recommendations, which reflect current state-of-the-art technology, are not expected to provide full resource protection. The existing screen would be expected to exclude only compressed fish (such as sunfish) larger than 50 mm and elongated fish (such as striped bass and largemouth bass) larger than 86 mm. Accordingly, DGIF recommends that Dominion investigate further the addition of a submerged intake structure (a curtain wall as detailed on page 3-5-38 of the Application

that would reduce fish impingement and entrainment and align the intake criteria with current DGIF recommendations.

(b) Water Withdrawal Increases and the River Downstream. The addition of one or two new units to the North Anna Power Station would have significant impacts on downstream resources by reducing river flows and the frequency of higher flows. For example, the water budget presented in the Application shows that significant changes in flows have already taken place as a result of the construction of the dam; drought flow frequency (flows less than 20 cfs) occurs 5.3% of the time now, versus 4.2% of the time before the dam was built (1929-1971). Drought flow frequency would rise to 11.8% of the time with one additional unit; the flow analysis did not address what would happen with a fourth unit. The impact of a fourth unit should be addressed in this process, or else the fourth unit should be taken out of the permit application.

DGIF recommends an In-stream Flow Incremental Methodology (IFIM) Study as a means of determining flow recommendations downstream of the Lake. The study should include evaluation of a habitat time series (i.e., pre-project, current, and proposed conditions) for native and naturalized species, and may result in recommendations for different flow operating rules than currently exist for the downstream resource. The Tennant Method yields a summer flow in the range of 74 to 111 cfs for resource protection, and current minimum flows would be rated as poor to degraded in that regard. As DEQ's Office of Wetlands and Water Protection states, the addition of another generating unit, which is expected to increase the consumptive loss from the watershed by an additional 39 cfs, would create nearly perennial conditions of severe degradation every fall. See "Additional Analysis Needs," item 4, below.

(c) Water Temperature Increases. Water temperature increases resulting from the additional units are likely to affect fish habitat in Lake Anna and in the North Anna River. This issue has several aspects.

(i) Present Conditions. Dominion has documented the current situation and available literature (Application, pages 3-5-55 through 3-5-58). The current temperature and oxygen stratification patterns at the Lake limit the potential of the Lake fishery, but have not resulted in catastrophic fish kills to date. Adult striped bass grow slowly, exhibit reduced fitness, and have low maximum sizes as a result of the present marginal habitat conditions, but an important recreational fishery has nonetheless developed in this habitat. The Lake does not often stratify, but when it does the stratification is weak. Total temperature differences (top to bottom) in many cases were less than 1 degree Celsius (1.8 degrees Fahrenheit) based on DGIF samples taken in late summer and early fall at lower reservoir sites. Stratification patterns dictate striped bass habitat and are subject to much variability at Lake Anna. Accordingly, a horizontal and vertical increase in the thermal plume would exacerbate a currently tenuous situation.

(ii) Impacts of Water Temperature Increases; Mitigation. It is likely that a small increase in reservoir water temperature would have a dramatic effect, further reducing already limited habitat and perhaps jeopardizing the entire striped bass fishery. The maximum daily surface temperature is expected to rise by 7.2 degrees Fahrenheit (4 degrees Celsius) near the dam as a consequence of the proposed new generating units. Re-configuring the flow within the waste heat treatment facility (WHTF) to allow for more efficient cooling (i.e., forcing water to use the entire facility, consisting of three cooling lagoons, by sealing the lower tributary arm between Elk Creek and Millpond Creek and cutting a canal through the headwater areas; Ellis/Kauffman, 2/6/04) would expand the residence time within the WHTF and probably reduce thermal impacts to Lake Anna and the North Anna River.

(d) Alternatives. Given the scope and magnitude of aquatic resource impacts anticipated in the event of building out the two units, it seems prudent, according to the Department of Game and Inland Fisheries, to investigate alternatives to the heavily consumptive proposal of another once-through system and a new wet cooling tower. See "Additional Analysis Needs," item 2, below. One alternative, addressing the conflict between consumptive use and impingement and entrainment, would be to consider a single new reactor using a cooling tower with Lake Anna as its source water (see item 3(b)(ii), below). The Draft EIS should include a thorough analysis of this and other alternatives to the proposed project.

2. Wetland Management and Water Resources. DEQ's Water Division indicates that additional studies on the impacts to in-stream beneficial uses, water quality, and aquatic life would be needed to adequately assess the impacts of the proposed new generating units. Preservation of in-stream flows for protection of fish and wildlife habitat and resources and also recreation values is a beneficial use of state waters. Habitat and recreational uses are present in both the Lake and downstream, in the North Anna and Pamunkey Rivers. Conditions in a Virginia Water Protection Permit may include, but are not limited to, the volume of water to be withdrawn as part of the permitted activity.

(a) Consumptive Use and In-stream Flow. An additional unit of the size contemplated in the Application would be the largest single consumptive withdrawal ever considered in the history of the Virginia Water Protection Permit Program. The average annual flow of Lake Anna and the North Anna River is 370 cfs. The typical recommendation to the Water Division from the Department of Game and Inland Fisheries, in processing a Water Protection Permit, is not to allow cumulative consumptive use to exceed 10% of the river's flow. The current evaporation rate and the existing two generating units very often exceed this benchmark. Accordingly, permitting of additional withdrawals, even with prescriptive conditions, cannot be guaranteed.

For these reasons, DEQ's Office of Wetlands and Water Protection has recommended that Dominion withdraw its federal consistency certification, at least until such time as a Draft Environmental Impact Statement is available. Under the present circumstance, DEQ's Office of Wetlands and Water Protection could not agree with the certification that the project would be in compliance with the Enforceable Policies of the Virginia Coastal Resources Management Program, because that Office does not have the information necessary to allow such concurrence.

(b) Impingement and Entrainment. As mentioned above (item 1(a)), a once-through cooling process for Unit 3 will result in a significant addition to the number of aquatic organisms impinged (240,000) or entrained (148,000,000) every year (see item 1(a), above, for the Department of Game and Inland Fisheries (DGIF) estimate of the total losses with all units; this number is a sub-set of the DGIF estimate). While once-through cooling represents a cost saving over cooling towers, it results in higher impingement and entrainment losses. On the other hand, it has less consumptive loss per megawatt of electricity produced, because some of the heat in once-through cooling is dissipated by processes other than pure evaporation.

(i) Permitting Questions. DEQ's Office of Wetlands and Water Protection and its Northern Virginia Regional Office would normally address impingement and entrainment through the Virginia Water Protection Permit. However, because the intake is for cooling water and will not be built for some time, the impingement and entrainment issue will fall under the new regulations pursuant to Section 316(b) of the Clean Water Act and be addressed in the facility's Virginia Pollutant Discharge Elimination System (VPDES) permit. The new unit may be treated as an existing intake or a new intake under the section 316(b) regulations (see item 4 and also "Regulatory and Coordination Needs Summary," item 1, below).

(ii) Limiting Impingement/Entrainment versus Limiting Consumption. The proposed once-through cooling proposed for Unit 3 will raise impingement and entrainment losses as compared with a cooling tower, but it would reduce consumptive use. A cooling tower would also keep thermal conditions in the Lake tolerable for aquatic life. DEQ's Office of Wetlands and Water Protection recommends that the Draft EIS include an alternative not considered in the Application to address this matter: such an alternative would consist of a single new reactor using a cooling tower with Lake Anna as its source.

(c) Water Quantity Issues. For the purpose of this discussion, DEQ's Office of Wetlands and Water Protection assumes that only one additional unit is proposed, because proposed Unit 4 has no identifiable water source.

The proposed addition of Unit 3 would increase the frequency and duration of drawdowns in the Lake. The Application indicates, in Table 2.4.6, that the amount of time that Lake Anna would drop two feet or more would increase from 5.6% of the time to 11.6% of the time. As DEQ's Office of Wetlands and Water Protection indicates, this would mean that flow in the North Anna River below the dam is 20 cfs for 11.6% of the time. Under pre-dam conditions (1929-1971), the streamflow in the River below the dam was 20 cfs only 4.2% of the time, as the Department of Game and Inland Fisheries also points out (see item 1(b), above). This flow rate equals 5.4% of the River's mean annual flow (MAF) at the dam. Under the Tennant rating system, a stream flow of between 0 and 10% of MAF is rated as "severe degradation." Unlike natural drought, which is temporary, the addition of another generating unit which increases the consumptive loss from the watershed would create nearly perennial conditions of severe degradation every fall. For this reason, DEQ's Office of Wetlands and Water Protection is requesting additional studies; see "Additional Analysis Needs," items 1 and 2, below.

The addition of a fourth unit would cause a net loss of 35 additional cfs, according to DEQ's Northern Virginia Regional Office. This would bring the operating level of the lake down to 242 feet MSL, which is 6 feet lower than the target level at which the lake contingency plan currently goes into effect.

(d) Regulatory Authority under the Virginia Water Protection Permit Program. The Application and the request for concurrence with the consistency certification both fail to describe correctly the applicability of State laws and regulations pertaining to water withdrawals. Table 1.2.1 indicates that the Virginia Water Protection Permit regulation, 9 VAC 25-210, is only necessary for "discharge of dredge, fill, or pollutants into surface waters." In fact, since 2000, a wider range of activities in surface waters has been covered by this program, including water withdrawals in particular. Secondly, the attachment listing programs for coastal zone management consistency fails to make the connection, saying only that permits under *Virginia Code* section 62.1-44.15:5 are required to excavate in a wetland. These regulatory authorities should be clarified in the new submission of the federal consistency certification as well as in the license application and Draft EIS.

(e) Timing of NRC Action in relation to Virginia Water Protection Permit. DEQ's Office of Wetlands and Water Protection recommends that because of the lack of abundant water resources in the Lake Anna watershed and the possibility that a Virginia Water Protection Permit may not be issued, the Nuclear Regulatory Commission should consider one of the following:

- Do not issue the Early Site Permit until Dominion receives a Virginia Water Protection Permit; or

- Require that Dominion obtain a Virginia Water Protection Permit prior to conducting any work specified in the site redress plan associated with the Early Site Permit.

3. Non-point Source Water Pollution Control. Utility companies that undertake land-disturbing activities of 10,000 square feet or more for construction, installation, and maintenance of power lines (including essential supporting activities inside and outside the utility easement, such as sub-stations, staging areas, access roads, and borrow/spoil areas) must file general erosion and sediment control specifications annually with the Department of Conservation and Recreation's Division of Soil and Water Conservation for review and approval in accordance with the Virginia Erosion and Sediment Control Law (*Virginia Code* section 10.1-563.D.). All regulated activities must comply with the Erosion and Sediment Control specifications, irrespective of whether work is undertaken on company property or on an easement owned by another party (including VDOT right-of-way).

Construction of company buildings, facilities, and other structures are not regulated by section 10.1-563.D., and must therefore comply with the requirements of the appropriate local program. Dominion should contact Louisa County (David Fisher, Soil and Water Conservation Director, telephone (540) 967-0401) to ensure compliance with applicable local requirements.

Erosion and Sediment Control specifications should include, at a minimum, a description of all measures and policies that will be implemented on the project site to ensure compliance with the state program. Standard practices (general narrative and plan sheets with appropriate details and symbols) must be provided that meet the requirements of the 19 Minimum Standards in the Virginia Erosion and Sediment Control Regulations (see 4 VAC 50-30-40) that apply. Practices in the most current edition of the *Virginia Erosion and Sediment Control Handbook* must serve as minimum design criteria. Variance requests (especially those for MS-16, Trench Length) must be submitted for approval on a project-specific basis to ensure that site characteristics (soils, topography, adjacent areas) are fully considered.

Specifications covering all planned regulated activities for a given calendar year must be approved by the Department of Conservation and Recreation's Division of Soil and Water Conservation prior to initiation of the project. Questions may be addressed to the Division's central office (Lee Hill, telephone (804) 786-3998).

4. Point Source Water Pollution Control. As indicated above (item 2(b)(i)), the impingement and entrainment issue will fall under the new regulations pursuant to Section 316(b) of the Clean Water Act and be addressed in the facility's Virginia Pollutant Discharge Elimination System (VPDES) permit. Whether the new unit would

be treated as an existing intake or a new intake under the section 316(b) regulations is not yet clear. (See "Regulatory and Coordination Needs Summary," item 1, below.)

5. Air Pollution Control.

(a) Permitting Requirements. According to DEQ's Northern Virginia Regional Office, the project does not appear to require any air pollution control permits at this time. In light of the fact that the Application mentions concrete batch plants, however, we recommend that Dominion verify this "no permits required" conclusion with DEQ's Northern Virginia Regional Office (John Bowden, telephone (703) 583-3880) following completion of the design phase of the project.

(b) Fugitive Dust Rules. The Application did not indicate a commitment to abide by fugitive emissions rules. During construction, fugitive dust must be kept to a minimum by using control methods outlined in 9 VAC 5-50-60 et seq. of the Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, of water or chemicals for dust control;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials; and
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

(c) Open Burning Rules. If project activities include the burning of construction or demolition material, this activity must meet the requirements of the Regulations for open burning (9 VAC 5-40-5600 et seq.), and it may require a permit. The Regulations provide for, but do not require, the local adoption of a model ordinance concerning open burning. The applicant should contact Louisa County officials to determine what local requirements, if any, exist. The model ordinance includes, but is not limited to, the following provisions:

- All reasonable effort shall be made to minimize the amount of material burned, with the number and size of the debris piles;
- The material to be burned shall consist of brush, stumps and similar debris waste and clean burning demolition material;
- The burning shall be at least 500 feet from any occupied building unless the occupants have given prior permission, other than a building located on the property on which the burning is conducted;
- The burning shall be conducted at the greatest distance practicable from highways and air fields;

- The burning shall be attended at all times and conducted to ensure the best possible combustion with a minimum of smoke being produced;
- The burning shall not be allowed to smolder beyond the minimum period of time necessary for the destruction of the materials; and
- The burning shall be conducted only when the prevailing winds are away from any city, town or built-up area.

Advisory Policies and Other Environmental Issues

1. Natural Heritage Resources. The Department of Conservation and Recreation has searched its Biotics Data System for occurrences of natural heritage resources in the project area. "Natural heritage resources" are defined as the habitat of rare, threatened, or endangered plants and animals, unique or exemplary natural communities, significant geologic formations, and similar features of scientific interest. The Department of Conservation and Recreation (DCR) reports that natural heritage resources have not been documented in the project area.

The Department of Agriculture and Consumer Services (VDACS) has responsibility for state-listed endangered or threatened plant and insect species. VDACS indicates that the data bases maintained by the Department of Game and Inland Fisheries and the U.S. Fish and Wildlife Service, with whom Dominion consulted concerning endangered species, have incomplete records of state-protected plant and insect species. Recent changes in regulations implementing the Virginia Endangered Plant and Insect Species Act will necessitate further review of the project by VDACS or by DCR's Natural Heritage Division.

Under a memorandum of agreement between the Department of Conservation and Recreation and the Department of Agriculture and Consumer Services, DCR represents VDACS in commenting on potential impacts on state-listed threatened and endangered plant and insect species. According to DCR's records, the proposed project would not affect any documented state-listed plants or insects.

2. Recreation Impacts. The increased water withdrawal needed for new generating units would be likely to reduce lake levels during the summer and fall due to increased power plant demand and evaporation. Most of the 43,000 anglers visiting this important recreational lake every year use the ramps at the State Park or those belonging to commercial operators to gain access to the Lake. Pleasure traffic greatly exceeds angler traffic, by as much as 10 to 15 times according to DGIF wardens. Increased drawdowns proposed to serve the new units would adversely affect lake access, and local economic conditions in the process. For example, during the 2002 drought, the reservoir pool dropped from 250 feet above mean sea level to 245.1 feet, and most boat ramps could not support launches. If the third generating unit had been added in that situation,

the drawdown would have been an additional 2.5 feet, or 242.6 feet MSL. The Draft EIS should provide a full analysis of the impacts of the proposed units upon Lake recreation, along with an analysis of potential mitigation of such impacts. The analysis should include the time of year (presumably in the fall) that drawdowns occur (see "Additional Analysis Needs," item 3, below).

The project may affect the views from across the Lake as well as from Route 76, the interstate bicycle route. Designs for development of the proposed site should include efforts to minimize these visual impacts, according to the Department of Conservation and Recreation.

3. VPDES Stormwater General Permit Applicability. According to DEQ's Northern Virginia Regional Office, the disturbance of approximately 200 acres of land on the south side of Lake Anna for the proposed project will necessitate permit coverage under the Virginia Pollutant Discharge Elimination System (VPDES) permit for stormwater discharges associated with construction activity. Questions on fulfillment of this requirement may be addressed to DEQ's Northern Virginia Regional Office (John Bowden, telephone (703) 583-3880).

4. Solid and Hazardous Waste Management. The Application addressed solid and hazardous waste issues, but did not include a search of waste-related databases, according to DEQ's Waste Division. The Waste Division did a cursory review of its data files and did not find any contamination sites that might affect or be affected by the proposed project.

Any soil that is suspected of contamination, or wastes that are generated, must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations. These include, but are not limited to, the Virginia Waste Management Act (*Virginia Code* sections 10.1-1400 et seq.), the Virginia Hazardous Waste Management Regulations (9 VAC 20-60), and the Virginia Solid Waste Management Regulations (9 VAC 20-80). (For additional citations, see the enclosed DEQ memo, Modena to Irons, dated January 29, 2004).

The Application addressed pollution prevention. DEQ encourages Dominion to implement pollution prevention principles in all projects, including the reduction of waste materials at the source, re-use of materials, and recycling of waste materials.

5. Alternatives Discussion. As mentioned above, the Draft EIS should demonstrate consideration and analysis of a single new unit with a cooling tower and Lake Anna as a water source (see "Federal Consistency...," items 1(e) and 2(b)(ii), above). Moreover, it should consider alternatives to the entire proposal as a means of

ensuring that significant environmental impacts do not occur to the fishery resources in and downstream of Lake Anna (see "Federal Consistency...," item 1(e), above).

6. Local and Regional Concerns. The Thomas Jefferson Planning District Commission considered this review at its regular meeting on January 8, 2004. The Commission had no comment on the project.

Additional Analysis Needs

1. Downstream Flows. DEQ's Office of Wetlands and Water Protection recommends that a range of variability study be performed, comparing the pre- and post-project Index of Hydrologic Alterations for the North Anna River immediately below the dam. The methodology for conducting such a study may be found at:

http://www.conserveonline.org/2000/12/a/en/iha_meth.pdf

DEQ's Office of Wetlands and Water Protection is interested in whether and to what extent the pre- and post-project conditions are different for the 90-day minima, creating long-term low-flow stress conditions. The range of variability analysis may not show a significant change in pre- and post-project conditions. The minimum flow release (20 cfs) is above the extreme minimum flows experienced by the river in its natural pre-dam state in the 1930 drought and similar to low flows in the 1933 drought. However, the full range of the record needs to be examined.

In addition, DEQ's Office of Wetlands and Water Protection is interested in whether the Lake and reactors have significantly changed the Julian date of annual maxima which could affect spring spawning. It is possible that the watershed and wintertime stream flows are large enough that the Lake returns to a full condition each spring, and the Julian date of annual maxima is not changed by the power plants, but the simulation modeling and range of variability analysis should be done to confirm this.

Performance of these statistical studies does not require field work, so they could be initiated immediately, and the results reported in the Draft Environmental Impact Statement ("Draft EIS").

2. In-stream Studies: Usable Habitat as a Function of Flow. DEQ's Office of Wetlands and Water Protection may also recommend further in-stream studies as a supplement to the Draft EIS or as pre-requisite to any permit issuance, depending on confirmation of the concerns expressed above regarding near-perennial low-flow conditions (see "Federal Consistency...," item 2(c), above). This work should characterize weighted usable habitat as a function of flow for the indigenous fishery species in the North Anna River.

DEQ's Office of Wetlands and Water Protection requests the daily output of the simulation models used by Dominion, if it is available in Excel worksheet format, to predict the frequency and duration of the lake drawdown, inflows, evaporation losses, and outflows that were used to develop Tables 5.2.3 and 5.2.4 in the Application.

A statistical analysis of the indicators of hydrologic alteration should be performed, and the results presented in the Draft EIS, according to DEQ's Office of Wetlands and Water Protection.

3. Impact on Recreational Uses of Lake Anna. The Application does not thoroughly address the water-based recreational uses of Lake Anna. While Table 5.2.4. demonstrates the frequency with which the Lake will fall below certain levels (see "Federal Consistency...," item 2(c) and "Advisory Policies...," item 2, above), we do not know the time of year this occurs and what impact it has on lake recreation. This information should be developed for the Draft EIS for the proposed project.

4. Submerged Intake Structure. The Department of Game and Inland Fisheries (DGIF) recommends that Dominion investigate further the addition of a submerged intake structure (a curtain wall as detailed on page 3-5-38 of the Application that would reduce fish impingement and entrainment and align the intake criteria with current DGIF recommendations (see "Federal Consistency...,"item 1(a), above). Results of this analysis should be provided in the Draft EIS for this project.

5. Federal Consistency Certification. Dominion's re-submission of the federal consistency certification may be accomplished separately or, as we would recommend, in conjunction with either the Draft or the Final EIS for this project but would, in any case, be subject to the requirements applicable to consistency certifications for federally licensed projects. These appear in the Federal Consistency Regulations at Title 15, Code of Federal Regulations, Part 930, sub-part D ("Consistency for Activities Requiring a Federal License or Permit," sections 930.50 through 930.66). The new consistency certification should reflect not only further development of the project proposal, but also appropriate additional analysis as detailed in this letter. Questions on consistency may be addressed to this Office (Charles Ellis, telephone 698-4488).

6. Draft Environmental Impact Statement. Although not required to satisfy the Federal Consistency Regulations, for administrative purposes we recommend that the federal consistency certification be submitted at the same time as the Draft EIS. This would allow for concurrent reviews of the two documents, and the information and analysis in the Draft EIS can support the analysis of the consistency certification. If you have questions about the interplay of the Draft EIS and the consistency certification requirement, please feel free to contact me at telephone 698-4325.

Regulatory and Coordination Needs Summary

1. Water Resources Permitting. As indicated previously, the proposed addition of either one or both of the proposed new generating units at the North Anna Power Station will require Virginia Water Protection Permits and, to the extent the land disturbance exceeds one acre, VPDES Stormwater General Permit coverage for construction activities. For water withdrawals requiring Virginia Water Protection Permits, Dominion must apply to DEQ's Office of Wetlands and Water Protection (Joe Hassell, telephone 698-4072). Results of the studies requested or recommended in regard to water resources (see "Additional Analysis Needs," items 1 and 2, above) should be submitted to that Office at 629 East Main Street, 9th floor, Richmond, Virginia 23219, Attn: Joseph P. Hassell. Copies of these study results should be submitted to the Department of Game and Inland Fisheries, attn: Gary Martel (Director, Fisheries Division), 4010 West Broad Street, Richmond, Virginia 23230. .

For land disturbance involving one acre or more, Dominion should apply to DEQ's Northern Virginia Regional Office (John Bowden, Deputy Regional Director, telephone (703) 583-3880) for coverage under the VPDES Stormwater General Permit for construction activities. Similarly, the issue of impingement and entrainment effects is to be addressed under new regulations implementing section 316(b) of the Clean Water Act; advice on this matter may be obtained from the same Office or from DEQ's Office of Wetlands and Water Protection (Joe Hassell, telephone (804) 698-4072).

2. Air Permitting. Questions relating to air quality rules and air permitting, for activities ranging from open burning to operation of concrete batch plants or other fuel-burning equipment, should be addressed to DEQ's Northern Virginia Regional Office (Mr. Terry Darton, Air Permits Manager, telephone (703) 583-3845).

3. Erosion and Sediment Control; Stormwater Management. Questions relating to the fulfillment of the Erosion and Sediment Control Plan and Stormwater Management Plan requirements should be addressed to the Department of Conservation and Recreation's Soil and Water Conservation Division (Lee Hill, telephone 786-3998). Questions on fulfillment of local erosion control requirements should be addressed to Louisa County (David Fisher, Soil and Water Conservation Director, telephone (540) 967-0401).

We hope this information is helpful to you.

Sincerely,

Ellie L. Irons
Program Manager
Office of Environmental Impact Review

Enclosures

cc: Michael P. Murphy, DEQ
Joseph P. Hassell, DEQ-Water
John B. Bowden, DEQ-NVRO
Jeffrey Talbott, DEQ-NVRO
Kotur S. Narasimhan, DEQ-Air
Thomas D. Modena, DEQ-Waste
Gary Martel, DGIF
Keith R. Tignor, VDACS
Derral Jones, DCR
Catherine M. Harold, CBLAD
Gerald P. Wilkes, DMME
Alan D. Weber, VDH
Rochelle Garwood, Thomas Jefferson PDC
David Fisher, Louisa County
C. Lee Hill, DCR-DSWC
Andrew J. Kugler, USNRC
Jud White, Dominion
Tony Banks, Dominion

COMMONWEALTH of VIRGINIA

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

William L. Woodfin, Jr.
Director

January 27, 2004

Ms. Ellie Irons
Program Manager
Office of Environmental Impact Review
Virginia Department of Environmental Quality
629 East Main Street, 6th Floor
Richmond, VA 23219

Dear Ms. Irons:

I am responding to your November 6, 2003 request for comment on the North Anna Early Site Permit (ESP) Application. Staff members have reviewed pertinent portions of the ESP submitted to the Nuclear Regulatory Commission (NRC) for development of an Environmental Impact Statement to satisfy National Environmental Policy Act (NEPA) requirements.

Fish community impacts to Lake Anna and the North Anna River and public access to Lake Anna are the primary concerns of the Department of Game and Inland Fisheries (DGIF) relating to this proposal. The operation of the two additional nuclear power units (numbers three and four) is expected to result in: (1) water withdrawal increases from the reservoir, (2) water temperature increases in the reservoir, and (3) decreased flows in the North Anna River. These issues and other concerns are discussed below.

Water withdrawal increases to accommodate a third and fourth nuclear unit present biological complications for fish populations through increased fish impingement and entrainment. Annual estimated fish impingement of six "representative important species" with build-out (defined herein as the addition of a third "once-through" and a fourth "cooling tower" unit) is 426,887 fish including 4,441 striped bass, a leading Lake Anna sportfish stocked annually by DGIF. With the proposed intakes, the number of fish impinged would increase by 230% over current levels. Estimated impingement mortality of striped bass would nearly double as the result of build-out; however, the size and age distributions of impinged fish were not provided. The number of fish entrained is expected to increase in a similar fashion with an estimated 468,886,689 fish (from the applicant's six-species category) lost annually – including about 63% gizzard shad. Existing intake criteria at North Anna Power Station (velocity of 0.7 feet per second [FPS] and screen mesh of 9.5 mm) substantially exceed our current recommendations of 0.25 FPS and 1 mm mesh. Even our current recommendations are not expected to provide full resource protection but utilize current state-of-the-art technology. The existing screen would be expected to only exclude compressed fish such as sunfish larger than 50 mm and elongated fish

such as stripers and largemouth bass larger than 86 mm. Thus, it seems appropriate for the applicant to further investigate the addition of a submerged intake structure (curtain wall as detailed on page 3-5-38) to reduce fish impingement and entrainment and align intake criteria with current DGIF recommendations.

Water withdrawal increases are also likely to result in lower lake levels during summer and fall months due to increased power plant demand and evaporation. Lake Anna is an important recreational fishery, and most of the estimated 43,000 anglers annually access the reservoir by boat from one of the many commercial ramps or via the State Park. Pleasure boat traffic greatly exceeds angler traffic, and proposed increased drawdowns could have a deleterious impact on lake access (thereby impacting local economic conditions). For example, during the drought of 2002, the reservoir pool dropped from 250' MSL to 245.1' MSL, and most ramps could not support launches. With the addition of the third unit, the drawdown would have been an additional 2.5'. Estimates from our Wardens are that recreational boating is 10-15 times that of fishing boating. The Early Site Permit review needs to fully analyze impacts and discuss potential mitigation for impacts on recreational boating.

Addition of one to two new units will have significant impacts on downstream resources by reducing flow and the frequency of higher flows. The current minimum release is 40 cubic feet per second (CFS) with 20 CFS during drought periods. Drought releases are triggered when the lake declines to elevation 248' MSL. Current minimum releases are about 10% of mean annual flow and drought releases are about 5% of mean annual flow. It is apparent from the water budget that significant changes in the flow regime have occurred with significant increases in the time flows are under 100 CFS. Preliminary analysis of drought flow frequency indicates that prior to dam construction, flows less than 20 CFS occurred only 4.2% of the time, occur now at 5.3%, and would be expected to increase with one more unit to 11.8%. A fourth unit would increase that occurrence even more, but Unit 4 fails to be addressed in the flow analysis. It is highly unlikely that an outside source of water will be used for unit 4, and its water consumption should be addressed as if water were being withdrawn from the lake (or Unit 4 should not be part of the permitting process). We recommend use of the Index of Hydrologic Analysis to compare pre-lake, current and predicted flow conditions based upon the addition of units three and four. This will quantify the changes in the hydrologic regime.

Changes in the hydrologic regime would be expected to impact the downstream aquatic resource. A common desktop method for flow recommendations is the Tennant method. Resource agency flow recommendations using that method generally are in the range of 20-30% of mean annual flow for the summer and higher levels (60-100% MAF) for the spring spawning period. Recommendations using this method would yield summer flows in the range of 74 to 111 cfs for resource protection. Current minimum releases would be rated in the poor to

degraded range of resource protection. Since this is an over allocated resource, we recommend quantifiable procedures than the Tennant desktop method. An Instream Flow Incremental Methodology study should be conducted for the impacted downstream reaches. Such a study should include evaluation of a habitat time series (pre-project, current and proposed) for native and naturalized species and may result in a recommendations for different flow operating rules than currently exists for the downstream resource.

Water temperature increases predicted to occur as a result of build-out will likely impact fish habitat in Lake Anna and in the North Anna River. Probably the greatest issue is the potential decrease in striped bass habitat within the reservoir. The applicant documented the current situation and available literature concerning the phenomena of striped bass "habitat squeeze" in southeastern reservoirs (the impacts of summer thermal stratification patterns on the habitat needs of adult striped bass) on pages 3-5-55 to 3-5-58. Current conditions (temperature and oxygen stratification patterns) at Lake Anna limit the potential of this fishery but have not resulted in catastrophic fish kills to date. Adult striped bass grow slowly, exhibit reduced fitness (condition) and have low maximum sizes as a result of the marginal habitat conditions now present, but an important recreational fishery within this habitat capacity has developed. However, it is likely that even a small increase in reservoir water temperature would have a dramatic effect – further reducing already limited habitat and perhaps jeopardizing the entire striped bass fishery. The maximum daily surface temperature is expected to increase by 7.2°F near the dam. Currently, the lake frequently does not stratify, and when it does; many times it is a weak stratification. Total temperature differences (top to bottom) in many cases were less than 1°C based on DGIF samples taken during late summer and early fall at lower reservoir sites. Stratification patterns dictate striped bass habitat and are subject to a great deal of variability at Lake Anna – a horizontal and vertical increase in the thermal plume would exacerbate a currently tenuous situation.

Reconfiguring the flow within the WHTF to allow for more efficient cooling (e.g., forcing water to use the entire WHTF by sealing the lower tributary arm between Elk Creek and Millpond Creek and cutting a canal through the headwater areas) would expand the residence time within the WHTF and probably reduce thermal impacts to Lake Anna and the North Anna River. Conflicting information was provided concerning efficiency and water residence time in the WHTF: a figure of 14 days was listed on page 3-2-71, while a figure of seven days was listed on page 3-5-42.

Additional comments concern several inconsistencies in the applicant's report. The proposed fourth unit was addressed repeatedly throughout the document as a "closed-cycle cooling water system" using towers (either wet or dry); however, on page 3-5-45 a reference is made to this unit under "Scenario 3" as a once-through cooling system (e.g., a fourth once-

through unit). This reference is particularly disconcerting since no evaluations of the dramatic increase in water consumption and heat output under this scenario were discussed. In short, it appeared the possibility of a fourth once-through unit was never mentioned either before or after this point, and no review of its environmental impact was made. Frequent references were also made throughout the document to "make-up water" replacing water lost from the cooling processes originating "from an outside source", but these sources were not readily apparent. It seems likely that "outside sources" would likely either be surface or subsurface draws from within the Lake Anna watershed exacerbating the proposed aquatic impacts. A great deal of importance was placed on the Lake Anna water budget, and a key component of this equation was reservoir inflow. This variable was estimated due to an absence of stream gauges and real data, and 370 CFS was presented in Table 5.2-1. This figure was referenced from a model in Section 5.2.2, but no calculations were given with 370 CFS as a derivative. Thus, the figure's origin remains unclear.

Due to the scope and magnitude of aquatic resource impacts anticipated with build-out, it seems prudent to investigate alternatives to the heavily consumptive proposal of another once-through system and a new wet cooling tower.

I hope that this information is helpful as you contemplate license renewal at North Anna Power Station. Please do not hesitate to contact either John Odenkirk (540-899-4169) or John Kauffman (434-296-4731) of my staff if we can be of further assistance.

Sincerely,

Gary Martel
Director, Fisheries Division

cc: J. W. Kauffman
J. S. Odenkirk
D. K. Whitehurst
W. L. Woodfin, Jr.

RECEIVED

JAN 15 2004

DEQ-Office of Environmental Impact Review

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

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Fax (804) 698-4500 TDD (804) 698-4021
www.deq.state.va.us

Robert G. Burnley
Director

(804) 698-4000
1-800-592-5482

Subject: North Anna Early Site Permit Coastal Zone Consistency Determination

To: Ellie Irons

From: Joseph P. Hassell

Copies: Mike Murphy, Larry Lawson, Terry Wagner, Ellen Gilinsky, DEQ; John Davy, DCR; Charlie Sledd, DGIF

Date: January 15, 2004

I. Summary

The Office of Wetlands and Water Protection and the Division of Water Resources have reviewed the Early Site Permit (ESP) Application. We believe that it is premature to concur that the issuance of this ESP would be consistent with Virginia's Coastal Zone Management Program nor does the application currently form an adequate basis for the preparation of an Environmental Impact Statement by the Nuclear Regulatory Commission (NRC). Additional studies on the impacts to instream beneficial uses from consumptive loss of water by one or both reactors would be required to adequately assess the environmental impacts of the project, particularly the impacts to the recreational use of the lake and the impacts to water quality and aquatic life downstream of Lake Anna within the North Anna River.

II. Background

Dominion Power filed an ESP application with the NRC to add two units to the North Anna Power Station. The NRC determines whether or not the site is suitable for constructing new reactors using an ESP. Permits are issued for 10 to 20 years and can be renewed for 20 years. Environmental issues are addressed as part of the ESP, independent of any review of any specific reactor design. The ESP process uses a Plant Parameters Approach, which postulates an envelope of possible reactor designs. Dominion is considering seven different designs. In this application Dominion has postulated a maximum of two reactors of up to 4300 megawatts each of rated thermal capacity. That is an extremely large outside envelope. The two reactors that Dominion formerly proposed but then cancelled each had a rated electrical capacity of 907

megawatts. Dominion postulates that the first new unit would use once through cooling. The second new unit would use a cooling tower. Issues resolved with finality under the ESP (including environmental issues) are not reexamined in any subsequent licensing action by the NRC. The ESP does not approve a particular reactor design nor allows the construction of the reactor. The ESP authorizes construction of all of the items identified in the site redress plan, in this case site clearing, foundations, intake structures and outfall structures. Dominion has requested that NRC issue the permit for 20 years (the maximum) and allow land clearing, stream filling and intake structure construction to proceed under the site redress plan.

III. Unit 4

Unit 4 is included in the ESP application, yet Dominion does not identify a source of water for Unit 4. NRC regulation, 10 CFR 51.29 requires that "information provided to the Commission by an applicant for a license,..., shall be complete and accurate in all material respects". For Early Site Permit Applications NRC regulation 10 CFR 52.17 (v), requires information on "types of cooling system intake and outflows for **each** facility" (emphasis added) Because no water source is identified in the ESP application, it is not possible to form an opinion on the prospects for approval of such a project or whether it would be consistent with State laws and regulations. The logical water source for Unit 4 would be Lake Anna. Groundwater resources are not capable of producing the large quantities of water needed, nor does there appear to be any surface water source nearby other than Lake Anna. The inclusion of Unit 4 should be withdrawn from the application unless its water source(s) and related cumulative impacts are identified. If Dominion leaves Unit 4 in the application, but does not identify a water source, then the NRC should consider denying the application for any site redress work associated with Unit 4

If the source of water for Unit 4 were Lake Anna, the additional heat load and evaporative losses would result in deeper and lengthier drawdown periods on the Lake and longer periods of low instream flows in the North Anna River. Although no analysis of the additional impacts have been provided, given the small watershed with average runoff of only 370 cfs, there is a good probability that the additional cumulative impact of a fourth unit would have an unacceptable impact on Lake Anna and the North Anna River.

IV. Coastal Zone Management Act Consistency

An applicant for a federal Permit or license shall provide in the application a certification that the proposed activity complies with the enforceable policies of the State approved program. The decision by Dominion to seek CZM consistency was appropriate. Although the power plant is located outside of the Coastal Zone proper, operation of the power plant will have a direct effect on the Coastal Zone because it will diminish instream flow on the North Anna River which is suitable anadromous fish habitat.

The Virginia Water Protection Permit is an enforceable part of the Virginia's Coastal Zone Management Program. The State Water Control Board issues Virginia Water Protection Permits

for projects impacting state waters if it has determined that the proposed activity will protect instream beneficial uses. The preservation of instream flows for purposes of the protection of fish and wildlife resources and habitat and recreation values is a beneficial use of Virginia's waters. These uses are present in both Lake Anna and downstream in the North Anna and Pamunkey Rivers. Conditions contained in a Virginia Water Protection Permit may include, but are not limited to, the volume of water which may be withdrawn as a part of the permitted activity. (§62.1 44:15.5 C, Code of Virginia).

The issuance of a permit for an additional unit of the size envisioned would constitute the approval of the single largest consumptive withdrawal ever considered in the history of the Virginia Water Protection Permit Program. This consumptive withdrawal would be from a water body with an average annual flow of 370 cubic feet per second. The typical recommendation that we receive from the Department of Game and Inland Fisheries is not to allow cumulative consumptive use to exceed 10% of the river's flow. The lake's current evaporation rate and the existing two units already surpass that mark much of the time. Therefore granting of additional withdrawals, even with prescriptive conditions, can not be guaranteed.

For the above reason, the Office of Wetlands and Water Protection recommends that Dominion withdraw their request for Coastal Zone Management Program consistency at least until such time as a draft environmental impact statement is available. If Dominion does not withdraw the request, then we cannot agree with Dominion's certification that the proposed activity is in compliance with the enforceable policies of Virginia Coastal Zone Management Program, due to a lack of information to make that determination. Dominion could definitively resolve the issue by applying for a permit for the proposed withdrawal. VWP Permits for water withdrawals have long durations and are granted for up to a 15-year term.

V. Water Quantity Issues:

For the purpose of this discussion we will assume only one unit is proposed, because as we have noted earlier, the second unit, unit 4, has no identifiable water source.

The addition of Unit 3 will affect water resources by increasing the frequency and duration of drawdown on Lake Anna and increasing the frequency and duration of low flow downstream. According to Table 2.4.6 in the ESP, the amount of time that Lake Anna would drop two feet or more will increase from 5.6 % of the time to 11.6 % of the time. Assuming the modeling is correct and assuming the current minimum low flow release stays the same, this will increase the amount of time that flow in the North Anna below the dam is equal to 20 cfs to 11.6% of the time. Under pre-dam conditions dam (1929-1971), streamflow in the North Anna River below the dam was 20 cfs or less only 4.2 % of the time. That statistic is based on streamflow records from USGS North Anna near Doswell gage adjusted to reflect the smaller drainage area at the dam site.

The State Corporation Commission set the original minimum release for the North Anna dam in 1969. The State Water Control Board proposed 80 cfs. The Attorney General in 1971 opined that because of the language of the Water Power Act §62.1 – 82, the State Corporation Commission was the appropriate authority to set such a release, and that the SWCB itself could not set a higher rate. In response to the drought of 1989-2002 and complaints about low water levels by lake front property owners, legislation was created that required the development of lake level contingency plans in VPDES permits that contained minimum releases for impoundments whose primary purpose was cooling water. This legislation applies only to Dominion and Lake Anna. Thus, the 40 cfs figure that the State Water Control Board did not think was sufficient in 1971 to protect downstream water quality has been cut in half by the lake level contingency plan whenever the lake level falls to 248.0 feet above mean sea level.

A minimum release of 20-cfs equals 5.4 % of the North Anna River's mean annual flow at the dam. Donald Tennant, a U.S. Fish and Wildlife Service fishery biologist, devised a well known rating system based on percentages of mean annual flow. In the Tennant rating system, a streamflow of 0% to 10 % of the mean annual flow is rated as "severe degradation". Unlike natural drought which is temporary, our concern is that with the addition of another unit, which is expected to increase the consumptive loss from the watershed by another 39 cfs, nearly perennial conditions of severe degradation will likely be created each fall. Accordingly we are requesting that Dominion perform additional statistical studies to determine whether these concerns have merit.

A range of variability study should be performed comparing the pre and post project Index of Hydrologic Alterations for the North Anna River immediately below the dam. The following URL address contains a methodology for conducting such a study:

http://www.conserveonline.org/2000/12/a/en/iha_meth.pdf

We are particularly interested in whether or not and to what extent the pre- and post- project conditions are different for the 90-day minima, thereby creating long-term low flow stress conditions. It is quite possible that the range of variability analysis will not show a significant change in pre- and post- project conditions. The minimum flow release (20 cfs) is above the extreme minimum flows experienced by the river in its natural pre-dam state in the 1930 drought and similar to low flows in the 1933 drought. However the full range of the record needs to be examined.

We are interested in whether or not the lake and reactors have significantly changed the Julian date of annual maxima which could impact spring spawning. It is possible that the watershed and winter- time stream flows are large enough that the lake returns to a full condition each and every spring and the Julian date of annual maxima is not changed by the power plants, but the simulation modeling and range of variability analysis should be done to confirm this.

We note that the performance of these statistical studies does not require field work, so they could be initiated immediately and hopefully the results reported in the draft environmental impact statement.

Pending the results of a range of variability study we might recommend further instream work as a supplement to the draft environmental impact statement or prior to the issuance of any permits. If our concerns regarding near perennial chronic low flow conditions are confirmed, we would recommend the performance of instream work to characterize weighted usable habitat as a function of flow for the indigenous fishery species of the North Anna River. We are not requesting these studies at this time but may request them in the future.

If it is available in Excel worksheet format we would appreciate being provided with the daily output of the simulation models used by Dominion to predict the frequency and duration of the lake drawdown, inflows, evaporation losses and outflows that were used to develop Table 5.2.3 and 5.2.4.

Another instream beneficial use that has not been thoroughly addressed by the ESP is how the additional consumptive use will affect the water-based recreational uses of Lake Anna. The most useful information appears in Table 5.2.4, which demonstrates the frequency with which the lake will fall below certain levels. What is not known is what time of year this occurs, presumably predominantly in the fall, and what impact this has on lake-based recreation.

VI. Impingement and Entrainment

A once through cooling process for Unit 3 will result in a significant number of aquatic organisms impinged (240,000) or entrained (148,000,000) annually. Normally, the Virginia Water Protection Permit is used to address this issue. However, in this case, because the intake is for cooling water and will not be built for some time, the impingement and entrainment issue will fall under the new Section 316(b) regulations and be addressed in the facility's VPDES permit. The Office of Water Permits and the Northern Regional Office will be the appropriate contacts. DEQ has had preliminary discussions with NRC and EPA on whether the new units would be treated as an existing intake or a new intake under the new 316(b) regulations. DEQ has not made a decision in this regard

Dominion proposes to first build Unit 3 as a once through cooling facility. Once through cooling represents a greater cost savings over cooling towers but will result in higher impingement and entrainment losses. On the positive side, once through cooling has lower consumptive loss per megawatt of electrical energy produced than the cooling towers because some of the heat in once through cooling is dissipated by processes other than pure evaporation.

Regardless of our ultimate decision on Section 316 (b), the use of a cooling tower may eventually be required, not just to reduce impingement and entrainment, but to keep the thermal conditions in the lake tolerable to aquatic life. DEQ's preference for once through cooling (to

reduce consumptive use) will be balanced against the need to keep thermal conditions acceptable and to limit impingement and entrainment. Therefore, an alternative not considered in the ESP application, namely the construction of a **single** new reactor using **a cooling tower** with **Lake Anna** as it source water, may ultimately prove to be the least environmentally damaging practicable alternative. Such an alternative should be thoroughly explored in the draft EIS.

VII. Comments on Regulatory Authority under the Virginia Water Protection Permit Program

Both the ESP application (Table 1.2.1 Federal State and Local Authorizations) and the request for CZM concurrence attachment which lists the applicable programs fail to correctly characterize the applicability of State laws and regulations related to water withdrawals. Table 1.2.1 claims that the Virginia Water Protection Permit Regulation, 9 VAC 25-210 is only necessary for the "discharge of dredge, fill or pollutants into surface waters"; actually since 2000 a wider range of activities in surface waters have been covered by this program, and in particular the program regulates water withdrawals. Likewise the attachment listing programs for coastal zone management consistency fails to make this connection, saying only that permits under §62.1-44.15.5 are required to excavate in a wetland. The regulatory authority under the Virginia Water Protection Permit Program should be clarified in the application.

VIII. Timing Issues and License Term

Dominion Resources has requested that the NRC issue a permit for a maximum of 20 years. Under the regulation, NRC has the authority to issue a permit for a term of not less than 10 years nor more than 20 years. Due to the lack of abundant water resources in the basin and the possibility that a VWP permit would not be issued, we would recommend that the NRC consider the following possibilities in issuing an ESP:

- Do not issue the ESP until Dominion receives a VWP Permit, or,
- Require that Dominion obtain a VWP Permit prior to conducting any work specified in the site redress plan.

IX. Conclusions and Recommendations

The site is probably not suitable for the construction of two new nuclear reactors of the size proposed due to a lack of sufficient water resources. Two new reactors would remove an additional 78-cfs from a watershed that had an average flow of only 370 cfs even before the lake and the first two reactors were built.

The site may be suitable for the construction of one additional unit, however there is no guarantee that the appropriate permits could be obtained. We would recommend that Dominion Power seek a Virginia Water Protection Permit as early in the process as practicable to resolve water resource issues prior to investing large sums of money in site preparation.

A request for concurrence with Coastal Zone Management Consistency should only be granted to the extent that the determination is given with the caveat that a Virginia Water Protection Permit would have to be obtained for the consistency determination to be valid. Probably the same qualifying statement can be applied to any necessary amendments to the VPDES permit to accommodate the additional thermal load on Lake Anna.

Additional instream flow studies would be needed before the DEQ would grant a permit to remove an additional 39-cfs from the Lake Anna Watershed. A statistical analysis that analyzes the indicators of hydrologic alteration should be performed and the results made available as a part of the preparation of the Draft Environmental Impact Statement.

If you cannot meet the deadline, please notify ELLIE IRONS at 804/698-4325 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. ELLIE IRONS
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

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JAN 30 2004

DEQ-Office of Environmental Impact Review

Ellie Irons, Program Manager
Environmental Impact Review

COMMENTS

Statements in the project document concerning endangered species were reviewed. The document references consultation with USFWS and DGIF on federal and state listed endangered and threatened species. Databases maintained by these agencies have incomplete records of state protected plant and insect species. Recent changes in regulation of the Virginia Endangered Plant and Insect Species Act would necessitate further review of this project by the Natural Heritage Division of DCR or VDACS.

(signed) (Keith R. Tignor) (date) January 28, 2004

(title) Endangered Species Coordinator

(agency) VDACS, Office of Plant and Pest Service

PROJECT # 03-223F **8/98**

February, 2004
MEMORANDUM

TO: Ellie Irons, OCS

FROM: Jeff Talbott, NVRO

COPY: Tom Faha, NVRO

SUBJECT: Early Site Permit Review – Virginia Power – North Anna Facility
VPDES No. VA0052451

Here are the main concerns that are not address in the Joe Hassell's memo. They are:
1) Water level in the cold side of the lake.
2) Water level in the hot side of the lake.
3) Temperatures in the hot and cold side of the lake.
4) Effects on down stream users.

The following are facts listed in the ESP report

Unit 3 will be once-through cooling water system and have the following effects:
- Increase the water temp would effect the both the hot and cold sides of Lake Anna
- The additional uptake of 29 cfs
- During drought conditions, this could result in the operating level of the lake at 245'. Stated in the report that with Unit 3 operational during the drought years of 1981 and 2002 the draw down would have been 1.5 to 2.5 feet greater. The 245' is 3' lower than the target 248' in which the lake contingency plan currently goes into effect. This will have a significant effect on the lake and it's uses.

Unit 4 will be a closed cycle cooling tower system and will have the following effects:
- A further increase in the water temp in both the hot and cold sides.
- The additional uptake of 44 cfs with 9 cfs being discharged back into the lake with a net lost of 35 cfs.
- During drought conditions, this would result in the operating level of the lake at 242'. The 242' is 6' lower than the target 248' in which the lake contingency plan currently goes into effect. This will have a huge effect on the lake and it's uses.

The following is a statement in the report: "the water supply for the lake can support the water supply needs for Unit 3 and 4 on a long-term average basis. On a short-term basis during drought conditions there may be periods when an additional source of water maybe required." There were also statements that this may effect the downstream users.

Irons,Ellie

From: Bowden,John
Sent: Friday, January 30, 2004 10:11 AM
To: Irons,Ellie
Subject: Consistency Certification #03-223F

NVRO comments regarding North Anna Early Site Permit (ESP) sponored by the Nuclear Regulatory Commission are as follows:

1. Wetlands and Water Permitting-NVRO concurs with comments by Joe Hassel, Central Office, and have coordinated this review with him.

2. Water Program Compliance-The project as described will involve land disturbance activities on approximately 200 acres of land located in Louisa County, Virginia, within the existing site of the North Anna Power Station on the south side of Lake Anna. VPDES permit coverage for stormwater discharges associated with construction activity will be required. Observance of state and local erosion and sediment control requirements should minimize short term impacts to surface water quality.

3. Air Program Compliance-The summary of the applicable regulatory framework for the proposed project discusses the attainment status of two areas: Louisa County and the Richmond Metro Statistical Area. NVRO will defer to Central Office on the accuarcy of the non-attainment discussion. While the report acknowledges in the introduction that there are air regulatory issues related to construction (e.g., concrete batch plants), I see no discussion of the issue in detail, nor a commitment to abide by the relevant regulations pertaining to fugitive emissions.

4. Air Program Permitting-In the information package, it was stated that the facility would comply with all air permitting laws and regulation as they were derived from the Code of Federal Regulation and the Virginia Administrative Code. It went on to state the all appropriate applications would be provided once the design phase had been completed. Based on the information provided on the CD the Early Permitting Project does not require any air pollution control permits at this time.

John D. Bowden
Deputy Regional Director
Department of Environmental Quality
Northern Virginia Regional Office
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COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
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Robert G. Burnley
Director

(804) 698-4000
1-800-592-5482

MEMORANDUM

TO: Ellie Irons

FROM: Thomas Modena TDM

DATE: January 29, 2004

COPIES: Kevin Greene

SUBJECT: Coastal Zone Management Consistency Certification
North Anna Power Station Early Site Permit

The Waste Division has reviewed the North Anna Power Station Early Site Permit Coastal Zone Management Consistency Certification, Louisa County. We have the following comments concerning waste issues associated with this project.

The report addressed solid and hazardous waste issues, but did not include a search of waste-related databases. The Central Office of the Waste Division did a cursory review of its data files, and did not find any sites that might impact or be impacted by this project.

Any soil that is suspected of contamination or wastes that are generated must be tested and disposed of in accordance with applicable Federal, State, and local laws and regulations. Some of the applicable state laws and regulations are: Virginia Waste Management Act, Code of Virginia Section 10.1-1400 *et seq.*; Virginia Hazardous Waste Management Regulations (VHWMR) (9VAC 20-60); Virginia Solid Waste Management Regulations (VSWMR) (9VAC 20-80); Virginia Regulations for the Transportation of Hazardous Materials (9VAC 20-110). Some of the applicable Federal laws and regulations are: the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Section 6901 *et seq.*, and the applicable regulations contained in Title 40 of the Code of Federal Regulations; and the U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 CFR Parts 107, 171.1-172.558.

Finally, pollution prevention was addressed in the report. VDEQ encourages all construction projects and facilities to implement pollution prevention principles, including the

reduction, reuse, and recycling of all solid wastes generated.

If you have any questions or need further information, please let me know.

W. Tayloe Murphy, Jr.
Secretary of Natural Resources

Joseph H. Maroon
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

203 Governor Street
Richmond, Virginia 23219-2010
TDD (804) 786-2121

MEMORANDUM

Date: 2 January 2004

To: Ellie Irons, Virginia Department of Environmental Quality

Derral Jones

From: Derral Jones, Planning Bureau Manager

Subject: DEQ#03-223F: North Anna Early Site Permit (ESP), Nuclear Regulatory Commission

The Department of Conservation and Recreation (DCR) functions to preserve and protect the environment of the Commonwealth of Virginia and advocate the wise use of its scenic, cultural, recreation and natural heritage resources. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, state unique or exemplary natural communities, significant geologic formations and similar features of scientific interest.

DCR has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. According to the information currently in our files, natural heritage resources have not been documented in the project area. This absence of data may indicate that the project area has not been surveyed rather than confirm that the area lacks natural heritage resources.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

On page 5, under "Environmental Impacts", it indicates that the project will be undertaken in accordance with best management practices in the Virginia Erosion and Sediment Control

Handbook. The applicant also needs to be aware that utility companies that undertake land-disturbing activities of 10,000 square feet or more for construction, installation, and maintenance of lines (including essential supporting activities within and outside the easement, such as substations, staging areas, access roads, borrow/spoil areas) must file general erosion and sediment control (ESC) specifications annually with DCR's Division of Soil & Water Conservation (DCR-DSWC) for review and approval in accordance with Section 10.1-563D of the Virginia Erosion and Sediment Control Law (VESCL). All regulated activities must comply with the ESC specifications, whether work is undertaken on company property or an easement (including VDOT right-of way) owned by another party. Construction of company buildings, facilities, and other structures are not regulated at Section 10.1-563D, and therefore, must comply with the requirements of the appropriate local ESC Program. ESC specifications should include, at a minimum, a description of all ESC measures and policies that will be implemented on site to ensure compliance with the state program. Standard practices (general narrative and plan sheets with appropriate details, symbols, etc.) must be provided that meet the requirements of the 19 Minimum Standards (MS) in Section 4VAC50-30-40 of the Virginia Erosion and Sediment Control Regulations (VESCR) that apply to company activities. Practices in the most current edition of the *Virginia Erosion & Sediment Control Handbook* must serve as minimum design criteria. Variances requests (especially those for MS-16, trench length) must be submitted for approval on a project-specific basis to ensure that site-specific characteristics (soils, topography, adjacent areas) are fully considered.

Company-specific specifications that cover all planned regulated activities for a given calendar year must be approved by DCR-DSWC prior to project initiation. Inquiries and questions regarding ESC specifications should be directed to Mr. C. Lee Hill in DCR's Central Office, at (804) 786-3998. *[Reference: VESCL§10.1-563.D; VESCR §4VAC50-30-30, §4VAC50-30-40]*

If the site is determined to be suitable, the potential exists for visual impacts to the view from across the lake as well as from Route 76, the interstate bicycle route. Designs for the development of the proposed site should make efforts to minimize these visual impacts.

Thank you for the opportunity to comment on this project.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

ENVIRONMENTAL REVIEW COMMENTS APPLICABLE TO AIR QUALITY

TO: Ellie Irons **DEQ - OEIA PROJECT NUMBER: 03 – 223F**

PROJECT TYPE: ☐ STATE EA / EIR / FONSI **X FEDERAL EA / EIS** ☐ SCC

X CONSISTENCY DETERMINATION/CERTIFICATION

PROJECT TITLE: NORTH ANN EARLY SITE PERMIT (ESP)

PROJECT SPONSOR: NUCLEAR REGULATORY COMMISSION

PROJECT LOCATION:
- ☐ OZONE NON ATTAINMENT AREA
- ☐ OZONE MAINTENANCE AREA
- ☐ STATE VOLATILE ORGANIC COMPOUNDS & NITROGEN OXIDES EMISSION CONTROL AREA

REGULATORY REQUIREMENTSMAY BE APPLICABLE TO:
- ☐ CONSTRUCTION
- ☐ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS THAT MAY APPLY:

1. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 E – STAGE I
2. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 F – STAGE II Vapor Recovery
3. ☐ 9 VAC 5-40-5490 et seq. – Asphalt Paving operations
4. **X 9 VAC 5-40-5600 et seq. – Open Burning**
5. **X 9 VAC 5-50-60 et seq. Fugitive Dust Emissions**
6. ☐ 9 VAC 5-50-130 et seq. - Odorous Emissions; Applicable to_____
7. ☐ 9 VAC 5-50-160 et seq. – Standards of Performance for Toxic Pollutants
8. ☐ 9 VAC 5-50-400 Subpart_____, Standards of Performance for New Stationary Sources, designates standards of performance for the_____
9. ☐ 9 VAC 5-80-10 et seq. of the regulations – Permits for Stationary Sources
10. ☐ 9 VAC 5-80-1700 et seq. Of the regulations – Major or Modified Sources located in PSD areas. This rule may be applicable to the _____
11. ☐ 9 VAC 5-80-2000 et seq. of the regulations – New and modified sources located in non-attainment areas
12. ☐ 9 VAC 5-80-800 et seq. Of the regulations – Operating Permits and exemptions. This rule may be applicable to _____

COMMENTS SPECIFIC TO THE PROJECT:

Subject to obtaining necessary construction permits as applicable.

K. S. Narasimhan

(Kotur S. Narasimhan)
Office of Air Data Analysis

DATE: December 19, 2003

If you cannot meet the deadline, please notify ELLIE IRONS at 804/698-4325 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MS. ELLIE IRONS
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

RECEIVED
JAN 30 2004
DEQ-Office of Environmental Impact Review

Ellie Irons, Program Manager
Environmental Impact Review

COMMENTS

No comments

(signed) Alan O. Weber (date) 1-27-04

(title) _____

(agency) VDH

PROJECT # 03-223F **8/98**

If you cannot meet the deadline, please notify ELLIE IRONS at 804/698-4325 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

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629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
PHONE #804/698-4319

RECEIVED
JAN 22 2004
DEQ-Office of Environmental Impact Review

Ellie Irons, Program Manager
Environmental Impact Review

COMMENTS

NO COMMENTS CONCERNING THE
VA COASTAL RESOURCES MANAGEMENT PROGRAM

(signed) _____ (date) 20 January 2004

(title) GEOLOGIST

(agency) DMME

PROJECT # 03-223F **8/98**

Thomas Jefferson
Planning District Commission
Regional planning linking transportation, land use, economy & environment

January 22, 2004

Ms. Ellie Irons
Virginia Department of Environmental Quality
Office of Environmental Impact Review
629 East Main St., Sixth Floor
Richmond, VA 23219

Dear Ms. Irons:

The Thomas Jefferson Planning District Commission reviewed project #03-223F, North Anna Early Site Permit, at its regular meeting on January 8, 2004. However, the Commission had no comment on this project. Thank you for the opportunity to review the project.

Sincerely,

Rochelle Garwood
Senior Planner – Environment

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