



March 1, 2005

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 04-754  
ESP/JDH  
Docket No. 52-008

**DOMINION NUCLEAR NORTH ANNA, LLC**  
**NORTH ANNA EARLY SITE PERMIT APPLICATION**  
**COMMENTS ON NUREG-1811, DRAFT ENVIRONMENTAL IMPACT STATEMENT**  
**FOR AN EARLY SITE PERMIT (ESP) AT THE NORTH ANNA ESP SITE**

This letter provides Dominion's comments on the NRC staff's Draft Environmental Impact Statement (DEIS), NUREG-1811, for the Dominion Nuclear North Anna, LLC's North Anna Early Site Permit (ESP) application. Comments are provided in the enclosed tables. Table 1 addresses technical comments. Table 2 addresses editorial comments.

We appreciate this opportunity to provide our comments on the DEIS. In general, we find the DEIS to be a well-written document that provides a thorough evaluation consistent with the requirements of NEPA and 10 CFR Part 51 concerning environmental impacts associated with the potential construction and operation of new nuclear units at the North Anna ESP site.

If you have any questions or require additional information, please contact Mr. Tony Banks at 804-273-2170.

Very truly yours,

A handwritten signature in black ink, appearing to read "Eugene S. Grecheck".

Eugene S. Grecheck  
Vice President-Nuclear Support Services

Enclosure: Dominion Comments on NUREG-1811, "Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site"

Commitments made in this letter: None

cc: (with enclosures)

U. S. Nuclear Regulatory Commission, Region II  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW  
Suite 23T85  
Atlanta, Georgia 30303

Mr. Mike Scott  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. Jack Cushing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Mr. M. S. King  
NRC Senior Resident Inspector  
North Anna Power Station

Ms. Ellie Irons  
Virginia Department of Environmental Quality  
Office of Environmental Impact Review  
P.O. Box 10009  
Richmond, VA 23240

Serial No. 04-754  
Docket No. 52-008

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

**Enclosure**

**Dominion Comments on NUREG-1811,  
“Draft Environmental Impact Statement for an  
Early Site Permit (ESP) at the North Anna ESP Site”**

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
1	Page xxi Line 35  Other DEIS locations	“However, a CP or COL to construct and operate a nuclear power plant is a major federal action that requires its own environmental review in accordance with 10 CFR Part 51.”	<p>The 10 CFR Part 52 framework provides finality for previously resolved issues that is fully consistent with the requirements of NEPA. There is no requirement for NRC to re-review previously resolved issues or to prepare an EIS for a subsequent COL proceeding regarding impacts that were considered at ESP.</p> <p>Under NEPA, ESP and COL are “connected actions” because the EIS prepared for ESP considers the potential environmental impacts of constructing and operating one or more new nuclear plants at the proposed site. The environmental review at the COL stage (when an ESP is referenced) would therefore be limited to a showing that the specific design chosen falls within the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings. For any issues deferred from ESP to COL, the NRC could issue a supplemental EIS documenting its evaluation. This position is fully discussed in NEI’s February 10, 2005 letter to NRC. (ML050530439)</p>
2	Page 1-3 Line 33 1.1	“During the review of any future COL application referencing an ESP, the staff will assess the environmental impacts of the construction and operation	The environmental impacts of construction and operation are evaluated in the DEIS. The environmental review at the COL stage (when an ESP is referenced) would

<sup>1</sup> DEIS page numbers and line numbers are identified for the electronic version of NUREG-1811 from the NRC’s website, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1811/sr1811.pdf>.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
		of a specific plant design. If the environmental impacts addressed in the EIS written at the ESP stage are found to be bounding by the staff, no additional analysis of these impacts is required, even if the ESP applicant employed the PPE approach. However, environmental impacts not considered or not bounded at the ESP stage will be assessed at the CP or COL stage. In addition, measures and controls to limit adverse impacts should be identified and evaluated for feasibility and adequacy in limiting adverse impacts at the ESP stage, where possible, and at the CP or COL stage.”	therefore be limited to a showing that the specific design chosen falls within the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings.
3	Page 2-1 Line 31 2.1	“All site land, subsurface lands, and mineral rights are owned by Virginia Power, a subsidiary of Dominion Resources, Inc.”	ODEC’s joint ownership should be acknowledged similar to DEIS Page 2-5, Line 34.
4	Page 2-14 Line 8 2.3.1.5	“However, the site area has experienced the impacts of tropical storms that have passed in its vicinity. The one with the largest impact was Tropical Storm Floyd in September 1999. Rainfall at or exceeding 15 cm (6 in.) from this storm was recorded at two locations near the site. This storm produced a maximum 2-minute wind speed of 18 m/s (40 mph), which was recorded at the Richmond Airport.”	This wording is inconsistent with ER Section 2.7.3.4 (ESP Application Revision 3). Hurricane Camille, a tropical depression by the time it passed through the area within 100-nautical miles of the North Anna site, resulted in 11.18 inches of rainfall at the nearby Louisa observation station.
5	Page 2-17 Line 38 2.4	“The geotechnical properties of the saprolite beneath the site are unsuitable for use as a fill material for plant construction. Therefore, fill material will need to be imported to the ESP site during construction and excavated material will have to be removed to another location.”	<ul style="list-style-type: none"> <li>▪ The DEIS refers to the saprolite beneath the site as unsuitable for use as a fill material for plant construction. Instead of “fill, this should be “structural fill.”</li> <li>▪ The DEIS indicates that fill material will need to be imported to the ESP site during construction and</li> </ul>

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 1</b>  <b>North Anna Early Site Permit</b>  <b>Technical Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
			<p>excavated material will have to be moved to another location. Again, this should be “structural fill” rather than “fill” since all of the excavated material can be used as general fill.</p> <ul style="list-style-type: none"> <li>Also, as stated in SSAR Section 2.5.4.5.3, bedrock excavated for the deeper foundations can be crushed and used as structural fill. Thus, structural fill would only need to be imported to the ESP site as an alternative or supplement to the onsite crushed rock.</li> </ul>
6	Page 2-21 Line 13 2.6.1.3	“Nine of the groundwater wells are maintained to detect seepage from the service water reservoir for NAPS Units 1 and 2;...”	This wording is inconsistent with ER Section 6.3.1. Wells around the SWR are monitored every six months to evaluate the reservoir for leakage, assess the effectiveness of horizontal drains beneath the existing units pump house, and determine the flow rate and clarity of the associated discharge water.
7	Page 2-21 Line 31 2.6.1.3	“Because of the limited inflow data, it is not possible to create a reliable water budget for Lake Anna directly from inflow and discharge measurements.”	ER Sections 5.2.2.1.1 and 5.2.2.1.2 describe the formulation of the water balance model and the conservative methods used to calculate inflows. The DEIS wording suggests that inflow data was limited in some manner that adversely impacted the hydrological assessment. This implication is not accurate. The current hydrological monitoring program is appropriate and sufficient for its intended purpose. No changes to the hydrological monitoring program regarding inflow data are necessary.
8	Page 2-21 Line 40 2.6.1.3	“No water velocity measurements within the WHTF or Lake Anna have been recorded. When North Anna Dam was constructed, instruments for reliably measuring the	<ul style="list-style-type: none"> <li>This DEIS wording is inconsistent with ER Sections 5.2 and 6.3 and suggests that the absence of velocity measurements adversely impacts the ability of the</li> </ul>

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 1</b>  <b>North Anna Early Site Permit</b>  <b>Technical Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
		<p>relatively low current velocities in lakes, such as Lake Anna, were unavailable. The only practical methods at that time to measure currents were drogoue or dye experiments. Velocity measurements are important for both understanding of the hydrodynamics of the lake and to calibrate numerical models of fluid and heat transport process in the lake. Velocity flow measurements will be used in the hydrological evaluation at the CP/COL stage.”</p>	<p>cooling lake model developed for North Anna. This is not accurate. The Lake Anna cooling lake model used to predict lake water temperature was satisfactorily calibrated with field data collected during the operation of the two existing units. Extension of the model to include additional units was verified by laboratory experiments conducted by MIT. Also, some limited velocity measurements were made in the 1980s to support development of the MIT model. Velocity monitoring, especially for the period before the additional units come on line, will not improve the prediction capability of the Lake Anna cooling lake model. The current hydrological monitoring program is appropriate, sufficient, and will be continued. No changes to the hydrological monitoring program regarding velocity flow measurements are necessary.</p> <ul style="list-style-type: none"> <li>▪ The environmental impacts of construction and operation are evaluated in the DEIS. The environmental review at the COL stage (when an ESP is referenced) would therefore be limited to a showing that the specific design chosen falls within the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings.</li> </ul>
9	Page 2-23 Line 2	“One of the three counties is relying on obtaining water from the North Anna River drainage to satisfy their water	None of the three counties upstream of Lake Anna (Louisa, Spotsylvania, Orange) is relying on the North

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b>			
<b>North Anna Early Site Permit</b>			
<b>Technical Comments on NUREG-1811,</b>			
<b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
	2.6.2.1	demands. “	Anna River to satisfy their water demands.
10	Page 2-25 Line 2 2.6.3.2	“Pursuant to 10 CFR 100.20(3), site-specific groundwater chemistry data would be required as part of a construction permit (CP) application or in a combined license (COL) application.”	Draft Safety Evaluation Report (DSER) Open Item 2.4-11 requests information necessary to demonstrate compliance with 10 CFR 100.20(c)(3). Dominion’s response to this DSER Open Item will provide the requested information.
11	Page 2-40 Line 10 2.7.2.2	“However, fish are not stocked in the WHTF, and access to this fishery is restricted to the land owners along this part of the shoreline.”	This wording is inconsistent with DEIS Section 2.7.2.1 and ER Section 2.4.2.2. Grass carp were stocked in the WHTF in 1994 to control hydrilla.
12	Page 2-41 Line 31 2.7.2.3	“Since 1987, Virginia Power biologists have gathered data on the abundance and distribution of bass species in the lower North Anna River (VEPCo 2001a).”	Suggest that this DEIS statement reflect that Virginia Power biologists have gathered additional data on the abundance and distribution of black bass species in the lower North Anna River via direct observation techniques.
13	Page 2-42 Line 22 2.7.2.4	“The only aquatic species listed by the FWS as Federally endangered is the dwarf wedgemussel.”	Suggest that this DEIS statement reflect that the only listed aquatic species likely to be present in the vicinity of the North Anna ESP site is the dwarf wedgemussel, that none were collected in pre-impoundment surveys of the North Anna River, and none have been collected in more recent years during routine monitoring surveys.
14	Page 2-42 Line 29 2.7.2.4	“While VDGIF ecological databases indicate that there is the potential for one Federally listed mussel species, one State-listed mussel species, and one mussel species that is a candidate for Federal listing that occur in counties that border Lake Anna or the North Anna River, the three Federally or State-listed species – the Commonwealth freshwater mussel species dwarf wedgemussel ( <i>Alasmidonta heterodon</i> ), the Atlantic pigtoe ( <i>Fusconaia masoni</i> ), and James River spiny mussel ( <i>Pleurobema</i>	<ul style="list-style-type: none"> <li>▪ Based on a review of the Virginia Department of Conservation and Recreation website, two of the mussel species listed in the DEIS (<i>Fusconaia masoni</i> and <i>Pleurobema collina</i>) are found in the James River drainage, but not the York River drainage (which includes the North Anna River). It appears that the DEIS includes occurrences of protected/rare mussels in counties (such as Albemarle, Fluvanna, and Goochland) that are within 25 or 50 miles of</li> </ul>

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
		<i>collina</i> ) – could occur in local streams, none have been observed or collected in local streams.”	<p>NAPS, but do not adjoin Lake Anna or the North Anna River. Although there are inconsistencies in the treatment of protected/rare mussels, the conclusions of the ER and the DEIS are the same: one listed mussel species occurs in the counties of interest (Caroline, Hanover, Louisa, Orange, and Spotsylvania), and this population would not be affected.</p> <ul style="list-style-type: none"> <li>▪ Suggest that this DEIS wording should reflect that none of the Federally or State-listed species have been observed or collected in local streams or the North Anna River.</li> </ul>
15	Page 3-2 Figure 3-1	Figure 3-1 points to the location of the “Future Discharge Structure” for Units 3 & 4.	Per ER Figure 3.1-3, this DEIS figure should identify the Unit 3&4 discharge structure as existing.
16	Page 3-2 Figure 3-1	Figure 3-1 points to the location of the “Training Building.”	Per ER Figure 3.1-3, this DEIS figure should identify that the existing training building would be expanded.
17	Page 3-6 Line 2 3.2.1.1	“Dominion proposes to use the same ultimate heat sink system for both plants. This system would be composed of a mechanical draft cooling tower with a 71.6 m wide by 107 m long by 15.2 m deep (235 ft wide x 350 ft long by 50 ft deep) engineered underground basin constructed beneath the tower (Dominion 2004b). The basins will be large enough to store $1.2 \times 10^9$ L (30,600,000 gal), which is adequate to hold a 30-day supply of emergency cooling water. During periods when the ultimate heat sink cooling towers are in operation, the towers are expected to withdraw an average flow of 25.9 L/s (411 gpm) from the basin, with a maximum flow of 53.6 L/s (850 gpm).”	<ul style="list-style-type: none"> <li>▪ Not all reactor types require an ultimate heat sink.</li> <li>▪ The size, storage volume, flow rates, heat rejection rates, blowdown rates, etc. identified in the SSAR and ER are maximum values. In the event that the selected reactor design requires an UHS, the UHS would be appropriately sized for the unit as part of detailed engineering and described in the COL application.</li> </ul>

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
	Page 3-7 Line 16 3.2.2.1	<p>“Based on the PPE, during shutdown the ultimate heat sink systems for each unit will reject 123 MW/hr (4.2 x 10<sup>8</sup> BTU/hr) of heat to the environment. Make-up water for the mechanical draft ultimate heat sink cooling towers will be withdrawn from an engineered underground basin located beneath the tower. Each basin will maintain an adequate supply of water for 30 days of emergency operation. Based on the PPE, the maximum blowdown discharged to the discharge canal will be 54 L/s (850 gpm).”</p>	
	Page 3-8 Line 28 3.2.2.2	<p>“For safety-related cooling, the ultimate heat sink for each of the proposed Units 3 and 4 would provide water to the reactor cooling systems and safety-related components. As proposed, both plants would use the same ultimate heat sink system, which would be composed of a mechanical draft cooling tower with a 71.6 m wide by 107 m long by 15.2 m deep (235 ft wide by 350 ft long by 50 ft deep) engineered underground basin constructed beneath the tower (Dominion 2004b). The basin would have a storage capacity of 1.2 x 10<sup>8</sup> L (30,600,000 gal), which is adequate to hold a 30-day supply of emergency cooling water. During periods when the ultimate heat sink cooling towers are operating, the flow rate through the towers is expected to average 27.8 L/s (411 gpm) with a maximum of 53.6 L/s (850 gpm). During normal operating conditions, a negligible volume of water would maintain the pool in the basin beneath the cooling tower.”</p>	

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1 North Anna Early Site Permit Technical Comments on NUREG-1811, “Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
18	Page 3-7 Line 1 3.2.2.1	“Based on the PPE, the maximum temperature increase between the intake and the discharge will be 10°C (18°F) and the maximum discharge temperature will be 52.8°C (127°F).”	The maximum discharge temperature based on site characteristics would not exceed 113°F (maximum inlet temperature of 95°F plus maximum condenser temperature rise of 18°F from PPE). The PPE value of 127°F is not relevant in this instance.
19	Page 3-7 Line 3-4 3.2.2.1	“Dominion specified in the PPE that the flow rate through the condenser will not exceed 71,900 L/s (1,140,000 gpm).”	This DEIS wording is inconsistent with ER Table 3.1-9 which describes the cooling water withdrawal rate of 1,140,000 gpm as a nominal design coolant flow. Actual maximum circulating water flows would be dependent on the specific design of the circulating water pumps, but would be within a few percent of this value.
20	Page 3-8 Line 15 3.2.2.2	“Dominion estimates, in the PPE, a maximum evaporative loss of a once-through design to be 738 L/s (11,700 gpm) or 0.738 m <sup>3</sup> /s (26 cfs) as compared to 1230 L/s (19,500 gpm) or 1.23 m <sup>3</sup> /s (43 cfs) for wet cooling towers.”	This DEIS wording is inconsistent with ER Section 5.2.1.2. The average annual evaporative loss is estimated to be 29 cfs, which assumes Unit 3 operates at a 100% plant capacity factor.
21	Page 4-2 Line 3 4.1.1	“The ESP site is located entirely within the existing NAPS site, which is zoned for industrial use by Louisa County. However, construction of Units 3 and 4 at the site would require a conditional use permit from the county.”	According to Louisa County Code of Ordinance, Division 7 - Industrial District, Section 96-162, Permitted Uses, none of the 30 “restricted use” categories include electrical generating units explicitly. A conditional use permit may not be required for construction of new generating units.
22	Page 4-6 Line 37 4.3.3	“If Dominion applies for and receives a CP or a COL or conducts site preparation activities, a VPDES permit will be required from VDEQ before construction activities can commence.”	A VPDES permit would not be required for site preparation activities.
23	Page 4-13 Line 14 4.4.2	“The creation of Lake Anna has mitigated most water-quality impacts from Contrary Creek area runoff.”	Suggest that this DEIS statement reflect that the creation of Lake Anna has mitigated most adverse water-quality impacts from Contrary Creek area runoff, yielding a

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
			beneficial effect in the drainage basin.
24	Page 4-13 Line 28 4.4.2	“Dominion states that the design and operation of the intake bay for Units 3 and 4 would require that a barrier (e.g., a turbidity curtain or sheet piling) or some form of protection be installed between Units 3 and 4 and the lake to reduce the potential for silt and soil entrainment through the existing units to the Waste Heat Treatment Facility (WHTF) (Dominion 2004a).”	This DEIS wording is inconsistent with DEIS Sections 5.4.2.6 and 5.4.2.7 and ER Sections 5.3 and 5.10, which do not specify the need for a barrier (e.g., a turbidity curtain or sheet piling) or some form of protection during operation.
25	Page 4-19 Line 6 4.5.1.3	“However, the staff evaluation found that State Route (SR) 700 leading into NAPS from SR 618 is very narrow and paved. It is unlikely that this road could accept heavy construction traffic and the transportation of construction materials without substantial upgrading.”	This DEIS wording suggests that accessibility to the site would be restricted for heavy loads unless Route 700 is substantially upgraded. The condition of Route 700 between Route 652 and the site was discussed with the VDOT (Fluvanna and Louisa District) representative. This road has been upgraded with a fairly thick layer of asphalt that is capable of handling a number of heavy vehicles such as cement trucks, if needed. That is, it is not the same thin layer of asphalt/chips that is typical of local roads and that would easily be torn up with passage of a number of such trucks. Route 652 also has been upgraded with the heavier layer of asphalt. (Note that Route 700 west of the intersection with Route 652 is a typical local road.)
26	Page 4-33 Line 9 4.5.3.7	“At issue is how to accommodate any increased enrollment resulting from construction laborers locating to the county – whether through permanent construction or the use of modular trailer units (Baker 2003).”	This DEIS section assumes a worst case of a large number of workers relocating with their families even if they were in trailers. ER Section 4.4 implies that there would be little likelihood that most construction workers would relocate with their families for this effort, that is, this would be unusual.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1 North Anna Early Site Permit Technical Comments on NUREG-1811, “Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
27	Page 4-45 Lines 19-21, 38 4.11	<p>“When these prerequisites have been achieved, planned site preparation and preliminary construction activities may proceed and may include none, some, or all of the activities discussed below pursuant to 10 CFR 52.25 and 10 CFR 50.10(e)(1).”</p> <ul style="list-style-type: none"> <li>▪ “Drill sample/monitoring wells or additional geophysical borings”</li> </ul>	This DEIS wording is inconsistent with 10 CFR 50.10(c)(1) which allows “changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site or to the protection of environmental values.” Drilling for samples/monitoring wells or additional geophysical borings is not listed in Part 4, Section 1.1, of Dominion’s ESP application or in DEIS Section 10.1.
28	Page 5-5 Line 7 5.3	“The outflow from Lake Anna Dam was estimated by Dominion from the US Geological Survey (USGS) gauge downstream from the dam at Doswell, Virginia, after adjusting for the additional contributing area downstream between the dam and the Doswell gauge.”	The stream gauge data at Partlow, Virginia, was used to estimate outflow from Lake Anna Dam.
29	Page 5-6 Line 32 5.3.1  Other locations in this section.	“The staff’s bounding analysis used the applicant’s PPE estimates of induced evaporation for a once-through system 0.738 m <sup>3</sup> /s (11,700 gpm), and evaporation for a wet cooling tower 1.23 m <sup>3</sup> /s (19,500 gpm).”	This DEIS wording is inconsistent with ER Section 5.2.1.2. The average annual evaporative loss is estimated to be 29 cfs, which assumes Unit 3 operates at a 100% plant capacity factor. As a result, the predicted minimum water surface elevation of 243.4 ft msl on DEIS Page 5-9 (line 24) for Units 1 and 2 plus Unit 3 using once through cooling is higher than the corresponding 242.6 ft msl minimum water level estimated in ER Section 5.2.2.1.
30	Page 5-7 Line 19 5.3.1	“However, at the CP/COL stage, the applicant will provide sufficient temperature and velocity monitoring data and modeling results to ensure that the hydrological impact of the actual discharge design is bounded by this EIS.”	The environmental impacts of operation are evaluated in the DEIS. The environmental review at the COL stage (when an ESP is referenced) would therefore be limited to a showing that the specific design chosen falls within

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 1</b>  <b>North Anna Early Site Permit</b>  <b>Technical Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
			the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings.
31	Page 5-7 Line 34 5.3.2	“The impacts on water use are related to the water budget. Discharge of the additional condenser cooling heat from Unit 3 to the lake would increase the heat in the lake and increase evaporation. This additional volume of discharged cooling water would also change the hydrodynamic circulation of Lake Anna. The increased evaporation from Lake Anna from a third unit’s once-through cooling system would increase the duration that the flow rate from the Lake Anna Dam would be 0.57 m <sup>3</sup> /s (20 cfs) or less from 5.8 percent to 11.8 percent of the time...”	<ul style="list-style-type: none"> <li>▪ The minimum dam release required by the VPDES permit is normally 40 cfs. During a severe drought, a Lake Level Contingency Plan in effect allows a decrease in the release in increments of 5 cfs down to a minimum rate of 20 cfs.</li> <li>▪ The percent of time at 20 cfs is 5.3 percent.</li> </ul>
32	Page 5-9 Line 26 5.3.2	“These numbers are similar to results provided in the ER, in which Dominion estimated that during the critical period, the water surface elevation would drop an additional 0.6 m (2 ft), from below 75.0 m (246 ft) to below 74.4 m (244 ft), with the addition of Unit 3 (using wet cooling tower cooling).”	ER Revision 3 does not address the water use impact due to the use of a new wet cooling tower unit.
33	Page 5-10 Line 28 5.3.3	“Therefore, based on the review of the current VPDES permit for Units 1 and 2, the required VPDES permit for Units 3 and 4, Dominion’s ER, the environmental monitoring report, and its independent review, the staff concludes that the impact to water quality would be SMALL, and mitigation is not warranted. However, this will have to be verified at the CP/COL stage when a design has been selected.”	The environmental impacts of operation are evaluated in the DEIS. The environmental review at the COL stage (when an ESP is referenced) would therefore be limited to a showing that the specific design chosen falls within the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b>			
<b>North Anna Early Site Permit</b>			
<b>Technical Comments on NUREG-1811,</b>			
<b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
34	Page 5-37 Line 32 5.5.1.4	“Additionally, the results from screening hourly meteorological data collected at Richmond, Virginia, from 1996 to 2000 indicate that there were no hours concurrently having relative humidity greater than 90 percent and ambient temperatures below 0° C (32 F), the precursor conditions needed for steam fog formation.”	A relative humidity of greater than 90 percent and ambient temperature less than 32 F are conditions required for the formation of ice from steam fog.
35	Page 5-44 Line 6 5.5.3.4	“...would exacerbate conditions at the lake during times of drought.”	Suggest that this DEIS statement describe the concern as during times of severe drought.
36	Page 5-44 Line 27 5.5.3.4	“In addition, during drought years the impact to recreation could be moderate due to short term low lake level.”	Suggest that this DEIS statement describe the impact as during multiple drought years like 2001-2002.
37	Page 5-53 Line 35 5.8.3	“Construction noise at 3 m (10 ft) is listed as 110 decibels, and the human pain threshold is 120 decibels.”	Discussion of the impulse noise level from construction activities may not be an appropriate comparative measure for operational noise impacts.
38	Page 5-54 Line 24 5.8.4	“And verify the NESC limits at the COL stage for transmission of electricity from Units 3 and 4. At the CP/COL Dominion will have to verify that the transmission lines meet the NESC criteria.”	<ul style="list-style-type: none"> <li>▪ Sentence fragment.</li> <li>▪ This wording is inconsistent with ER Section 5.6.3 that describes the analysis results, which have already been confirmed by field verification.</li> </ul>
39	Page 5-62 Line 22 Table 5-10	Table 5-10 indicates that the maximum organ dose from liquid effluents is “0.017 mSv/yr teen liver”	Maximum organ dose from liquid effluents is to the liver of a child.
40	Page 5-63 Line 22 5.9.3	“A collective dose of 0.18 person-Sv/yr (18 person-rem/yr) was calculated for the liquid effluent pathway using the GASPARD II computer code.”	The dose of 18 person-rem/yr calculated using GASPARD II is for the gaseous effluent pathway.
41	Page 5-64 Line 15	“Dominion reported annual occupational dose estimates of 1.5 person-Sv (150 person-rem) for the AP1000, IRIS, and	The ABWR should be included in this DEIS statement.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 1</b>  <b>North Anna Early Site Permit</b>  <b>Technical Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
	5.9.4	GT-MHR reactor designs (Dominion 2002).”	
42	Page 5-69 Line 37 5.10.1	“Dominion has provided the staff with meteorological data for 1996, 1997, and 1998 for the North Anna ESP site. These data have been reviewed by the staff and found to be representative of the meteorological conditions at the site. The meteorological conditions will need to be updated at the CP/COL stage to ensure that meteorological data reflect site conditions for the plant during operation.”	The environmental impacts of construction and operation are evaluated in the DEIS. The environmental review at the COL stage (when an ESP is referenced) would therefore be limited to a showing that the specific design chosen falls within the parameters specified in the ESP and to consideration of other significant environmental issues, if any, not considered in the previous proceedings. As discussed in NEI’s February 10, 2005 letter (ML050530439), updated meteorological data may not be needed.
43	Page 5-70 Line 5-6 5.10  Page 5-70 Line 11 Table 5-14	“The second column lists the /Q values calculated by the applicant using the site meteorological information discussed in ER Section 2.7.2 (Dominion 2004a) and the EAB and LPZ distances from Section 2.7.5 of the ER.”  Table 5-14 lists the following time-dependent atmospheric dispersion factors (s/m <sup>3</sup> ) for the exclusion area boundary (EAB) and the low population zone (LPZ): EAB (0 to 2 hr) – 3.34E-5 LPZ (0 to 8 hr) – 2.17E-6 LPZ (8 to 24 hr) – 1.5E-6 LPZ (1 to 4 day) – 1.2E-6 LPZ (4 to 30 day) – 9.0E-7	Time-dependent X/Q values are not included in ER Section 2.7.2 and the DEIS Table 5-14 values were not provided by Dominion. The ER accident analysis is based on a single 50-percentile X/Q value for each location (EAB and LPZ). There is no time-dependency associated with 50-percentile X/Q values.
44	Page 5-71 Line 7 5.10.1	“In addition, the ABWR doses have been scaled to a power level of 4386 MW(t), 102 percent of the power proposed for an ABWR unit at the North Anna ESP site (Dominion 2004A). However, the scaling was performed	It is not clear what is meant by “the scaling was performed on doses and not on the source term.” If this implies that the activity releases in the ER are not scaled to 4386 MWt, then that is not correct.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1</b> <b>North Anna Early Site Permit</b> <b>Technical Comments on NUREG-1811,</b> <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
No.	DEIS Page, Location, Section <sup>1</sup>	DEIS Wording	Comment
		on doses and not on the source term.”	
45	Page 8-1 Line 42 8.1  Page 9-8 Line 14 9.4	...since Part 52 does not require an ER or EIS for an ESP to include consideration of energy alternatives or the benefits of construction and operation of a reactor or reactors at the ESP site, this draft EIS does not consider such matters. Accordingly, should the NRC ultimately determine to issue an ESP for the North Anna ESP site, these matters will be considered in the EIS for any CP or COL application that references such an ESP.	As described in NEI’s February 10, 2005 letter (ML050530439), for any issues deferred from ESP to COL, the NRC could issue a supplemental EIS documenting its evaluation.
46	Page 8-2 Line 32 8.2.1	“The staff estimates that the proposed once-through cooling system for Unit 3 could extend waste heat treatment facility (WHTF) conditions into the main body of Lake Anna. Based on the additional heat load and associated flow, the staff estimates that WHTF conditions could extend into approximately 19 percent of the main body of the lake.”	<ul style="list-style-type: none"> <li>▪ The DEIS phrase "WHTF conditions" is non-specific and should be further defined.</li> <li>▪ The “approximately 19 percent” is non-specific and should be further defined as to where and what (i.e., surface area, volume, temperature, etc.)</li> </ul>
47	Page 8-2 8.2	None.	The DEIS conclusions are consistent with ER Section 9. However, the DEIS comparison of two alternative heat dissipation systems (wet and dry cooling towers) with the base case once-through cooling system is inconsistent with ER Section 9.4.2, which evaluates alternative intake locations, discharge systems, discharge locations, water supplies, and water treatment processes. The ER evaluation addresses land use requirements, aesthetics, operating experience, generating efficiency, and capital and operating costs.
48	Page 9-8	“Accordingly, should the NRC ultimately determine to	As described in NEI’s February 10, 2005 letter

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<b>Table 1 North Anna Early Site Permit Technical Comments on NUREG-1811, “Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>1</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
	Line 17 9.4	issue an ESP for the North Anna ESP site, these matters will be considered in the EIS for any CP or COL application that reference such an ESP.”	(ML050530439), for any issues deferred from ESP to COL, the NRC could issue a supplemental EIS documenting its evaluation.
49	Page 10-5 Line 16 Table 10-1	Impact Category: “Hydrological and Water Use” Actions to Mitigate Impacts: “Use best construction management practices” Unavoidable Adverse Impacts: “Fill, and grading operations at the North Anna ESP site will alter two ephemeral streams”	Suggest that this DEIS wording reflect the description in Part 4, Section 1.2.2.3.2 of Dominion’s ESP application. The site drainage system would be designed to incorporate the flow currently conveyed by these streams to the lake. By providing alternate drainage facilities to convey the stream flows, no short-term or long-term adverse hydrologic impacts on site drainage would result.
50	Page 10-5 Line 19 Table 10-1  Page 10-6 Line 5 10.1	Impact Category: “Ecological, a. Terrestrial.” Unavoidable Adverse Impacts: “a. Removal of trees and vegetation and habitat.”  “The construction impacts on the terrestrial ecology of the site would be short-term.”	The wording in Table 10-1 and Page 10-6 appear to be inconsistent regarding terrestrial ecology impacts.
51	Page 10-6 Line 35 10.1  Page 10-7 Line 4 Table 10-2	“The unavoidable adverse impacts from operation for land use are small and further mitigation is not warranted.”  Impact Category: “Land Use” Actions to Mitigate Impacts: “Local land management plans” Unavoidable Adverse Impact: “Possible new housing and retail space added in vicinity due to potential growth”	The wording in Table 10-2 and Page 10-6 appear to be inconsistent regarding land use impacts. ER Section 5.8.2 concludes that there would be no unavoidable adverse environmental impacts. The Comprehensive Plans for the nearby counties already incorporate projected growth in population and the demand for public services, regardless of whether part of this increase in population growth consists of new operations personnel for new units at the ESP site.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 2</b>  <b>North Anna Early Site Permit</b>  <b>Editorial Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
<b>No.</b>	<b>DEIS Page, Location, Section<sup>2</sup></b>	<b>DEIS Wording</b>	<b>Comment</b>
1	Page 2-11 Line 27 2.3.1	“The maximum monthly snowfall was 71.9 cm (28.3 in.), which occurred in January 1940.”	The correct monthly snowfall is 28.5 inches.
2	Page 2-15 Line 16 2.3.1.6	“Data recovery rates for the period from January 1, 1996, to December 31, 2001, for the primary monitoring system, including reliable atmospheric stability information, ranged from 99.30 percent for the upper-level wind data in 1996 to 90.9 percent for the same data set in 1997.”	The correct percentage is 90.09.
3	Page 2-15 Line 23 2.3.1.6  Other DEIS locations	“The meteorological data for the period of January 1, 1996 to December 31, 1998, were used to generate atmospheric dispersion factor ( /Q values) used to ...”	The dispersion factor should be shown as X/Q.
4	Page 2-19 Lines 15 2.6.1.1	“An additional 3.02x10 <sup>8</sup> m <sup>3</sup> (2.45 10 <sup>5</sup> acre-ft) are available for flood control storage up to crest of the dam at elevation 80.8 m (265 ft) above MSL.”	Correct value is 2.45x10 <sup>5</sup> acre-ft.
5	Page 2-21 Lines 21-22 & 29-31 2.6.1.3	“This gauge reflects the release from Lake Anna and runoff from an additional 250 km <sup>2</sup> (97 mi <sup>2</sup> ) of watershed downstream of the Lake Anna Dam...The two upstream gauges on Contrary Creek and Pamunkey Creek, record flows representative of 120 km <sup>2</sup> (46 mi <sup>2</sup> ) or approximately 13 percent of the total upstream area contributing flow to Lake Anna.”	DSER page 2-61 states 251 km <sup>2</sup> and 119 km <sup>2</sup> , respectively.

<sup>2</sup> DEIS page numbers and line numbers are identified for the electronic version of NUREG-1811 from the NRC’s website, <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1811/sr1811.pdf>.

Dominion Comments on NUREG-1811, DEIS for North Anna ESP Site

<p align="center"><b>Table 2</b>  <b>North Anna Early Site Permit</b>  <b>Editorial Comments on NUREG-1811,</b>  <b>“Draft Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site”</b></p>			
No.	DEIS Page, Location, Section <sup>2</sup>	DEIS Wording	Comment
6	Page 2-35 Lines 33 & 38 2.7.2.1	White catfish listed twice, with a different scientific name in each case.	<i>Ameiurus catus</i> is the correct scientific name.
7	Page 2-36 Lines 10-12 2.7.2.1	Pericichthyidae, <i>Norone americana</i> and <i>N. saxatilis</i>	Percichthyidae, <i>Morone americana</i> , and <i>Morone saxatilis</i> are the correct scientific names. <i>Morone americana</i> and <i>Morone saxatilis</i> are correct in accompanying DEIS text.
8	Page 2-43 Line 9 2.7.2.4	<i>Alasmidonta heterodon</i>	<i>Alasmidonta heterodon</i> is the correct scientific name.
9	Page 5-6 Line 21 5.3.1	During normal operation at full power, based on the PPE, the primary cooling system for each unit is required to reject 2800 MW (9.7 BTU/hr) to the environment.	The correct value is $9.7 \times 10^9$ Btu/hr.
10	Page 5-78 Lines 10 & 12 Table 5-19	Early Fatalities per Reactor-year for: <ul style="list-style-type: none"> <li>▪ ABWR at North Anna ESP Site is 2.3E-11</li> <li>▪ AP1000 at North Anna ESP Site is 1.1E-10</li> </ul>	ABWR value is 2.4E-11; AP1000 value is 1.2E-10.
11	Page 5-80 Line 12 Table 5-20	Core Damage Frequency (per year) for AP1000 at North Anna ESP Site is 2.7E-07.	AP1000 value is 2.4E-07.
12	Page 7-2 Line 15 7.3	“Cumulative thermal effects are discussed in section 7.4.”	Reference should be to section 7.5.