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August 10, 2011

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

Serial No. NA3-11-033R
Docket No. 52-017
COL/JBL

DOMINION VIRGINIA POWER
NORTH ANNA UNIT 3 COMBINED LICENSE APPLICATION
ESRP 2.5.3, 2.7, 4.1.3, 5.1.3, 5.2.2, 7.1, AND 7.2: RESPONSE TO ER RAI LETTER

On May 23, 2011, the NRC requested additional information to support the review of certain portions of the North Anna Unit 3 Combined License Application (COLA) Environmental Report. The letter contained nine questions. The responses to seven Requests for Additional Information (RAI) questions listed below are provided in the enclosures. As discussed with NRC Environmental Project Manager, the two remaining questions will be submitted as follows: the response for RAI MET-03, Criteria Pollutant Emissions, will be submitted by August 31, 2011, and the response for RAI ACC-04, SAMDA Analysis, will be submitted by September 30, 2011.

- | | |
|---------------------------------------|------------------------------------|
| • RAI HYD-01, Hydrology/Water Quality | Tritium Concentration |
| • RAI MET-01, Meteorology/Air Quality | Revised Distances to the EAB |
| • RAI MET-02, Meteorology/Air Quality | Updated Meteorological Data |
| • RAI ACC-01, Postulated Accidents | LPZ Doses and Source Terms |
| • RAI ACC-02, Postulated Accidents | Updated Severe Accident Assessment |
| • RAI ACC-03, Postulated Accidents | Severe Accident Descriptors |
| • RAI CR-1, Cultural Resources | Documentation and Management Plan |

This information will be incorporated into a future submission of the North Anna Unit 3 COLA, as described in the enclosures.

Please contact Tony Banks at (804) 273-2170 (tony.banks@dom.com) if you have questions.

Very truly yours,

Eugene S. Grecheck

D089
N/A

Enclosures:

1. Response to ER RAI Letter Dated May 23, 2011, RAI HYD-01
2. Response to ER RAI Letter Dated May 23, 2011, RAI MET-01
3. Response to ER RAI Letter Dated May 23, 2011, RAI MET-02
4. Response to ER RAI Letter Dated May 23, 2011, RAI ACC-01
5. Response to ER RAI Letter Dated May 23, 2011, RAI ACC-02
6. Response to ER RAI Letter Dated May 23, 2011, RAI ACC-03
7. Response to ER RAI Letter Dated May 23, 2011, RAI CR-1

Commitments made by this letter:

1. Incorporate proposed changes in a future COLA submission.

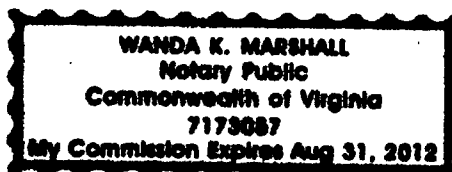
COMMONWEALTH OF VIRGINIA

COUNTY OF HENRICO

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Eugene S. Grecheck, who is Vice President-Nuclear Development of Virginia Electric and Power Company (Dominion Virginia Power). He has affirmed before me that he is duly authorized to execute and file the foregoing document on behalf of the Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 10th day of August, 2011
My registration number is 7173057 and my
Commission expires: August 31, 2012

Wanda K. Marshall
Notary Public



cc: U. S. Nuclear Regulatory Commission, Region II
C. P. Patel, NRC
T. S. Dozier, NRC
J. T. Reece, NRC

ENCLOSURE 1

Response to NRC RAI Letter Dated May 23, 2011

RAI HYD-01

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: HYD-01 (RAI Letter DATED MAY 23, 2011)

ESRP SECTION: 5.2.2 WATER USE IMPACTS

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: HYD-01

The staff has reviewed Bechtel Calculation No. 25161-M-501 which provides details of the calculation for estimated tritium concentration in the NAPS discharge canal as a result of the operation of Unit 3. Concentration estimates in Lake Anna, the WHTF, and the discharge canal are of interest to the staff for evaluating water quality impacts of Unit 3 operation. Staff requests the following additional information related to Calc. No. 25161-M-501.

1. Calculation of the concentration of tritium in the discharge canal due to the operation of Unit 3 makes the assumption that the Unit 3 discharge will be diluted with 100,000 gpm of Lake Anna water. Provide the basis for the use of 100,000 gpm given that
 - Unit 3 may be in operation while Units 1 and 2 are not operating, and
 - Blowdown for Unit 3 may vary from zero (during periods when dry cooling alone is used) to 5565 gpm (in Energy Conservation mode).
2. The calculation of tritium concentration makes the assumption that tritium is completely mixed over the volumes of the WHTF and Lake Anna. Provide the basis for this assumption in the event that Units 1 and 2 are not operating and explain the effect on tritium concentrations in the discharge canal, the WHTF, and Lake Anna when this assumption is not valid.
3. Calculation of the tritium concentration was completed using a long-term discharge from the dam of 300 cfs. Explain the impact on tritium concentrations in the discharge canal, the WHTF, and Lake Anna when discharge from the dam is 40 cfs or less for an extended period of time, such as during the 2002 drought.
4. Calculation of the tritium concentration uses a steady-state model. Explain the impact on tritium concentrations of the temporal variability in inputs to (precipitation and streamflow) and outputs from (evaporation and dam discharge) the WHTF and Lake Anna. Explain whether the steady state analysis provides conservative estimates of tritium concentrations for evaluating the impact of Unit 3 operation on water quality.

Supporting Information

Bechtel Calculation No. 25161-M-501, "Radiological Impacts of APWR Normal Operations," provides details of the calculation of tritium concentration that Dominion reported in the FSAR Rev 3. This calculation is based on the model described in North Anna Units 1 & 2 FSAR Section 11.2.5.1, which was also reviewed by staff. This model was derived to estimate concentrations in Lake Anna and the WHTF, from which concentration in the discharge canal can be calculated. The staff is requesting additional information to better understand the basis of the assumptions made to obtain the tritium concentration presented in the above referenced calculations.

Dominion Response

Responses to the specific questions about Bechtel Calculation 25161-M-501 are as follows:

1. The Early Site Permit (ESP) Application [Ref 1, ER Section 5.4.1.1] indicates that a discharge canal flow rate of 100,000 gpm is used to conservatively limit the dilution credit for liquid effluents, given that the effluent analysis in the existing Units 1 and 2 Updated Final Safety Analysis Report (UFSAR) credits a dilution flow of 962 cfs [Ref 2, Table 11.2-20] or approximately 430,000 gpm in the discharge canal. ESP Section 5.4.1.1 also indicates that the flow of 100,000 gpm is used with an effluent discharge rate of 100 gpm, yielding a dilution factor of 1000. Dominion has committed to maintaining a sufficient flow in the discharge canal such that a dilution factor of 1000 is ensured even if Units 1 and 2 are not operating. This commitment is reflected in the Release Point Dilution Factor specified in Appendix D of ESP-003 [Ref 3, Table D-1, Page D-9], which is one of the plant parameters incorporated as a condition by paragraph 3.D of ESP-003. The dilution contribution provided by the Unit 3 blowdown is negligible compared to the discharge canal flow of 100,000 gpm.
2. As indicated in the response to Item 1 above, Dominion has committed to maintaining sufficient flow in the discharge canal to ensure a dilution factor of 1000. Hence, the mixing model utilized in the calculation is valid even if Units 1 and 2 are not operating.
3. Bechtel Calculation 25161-M-501, Section 5.1.1 uses the flow model from the NAPS UFSAR [Ref 2, Section 11.2.5.1] to calculate the tritium concentration in the discharge canal. The UFSAR model for Lake Anna assumes environmental flows into the reservoir and the waste heat treatment facility (WHTF) of 270 and 30 cfs, respectively [Ref 2, Table 11.2-20]. To balance these flows, the overflow rate from the reservoir is assumed to be 300 cfs.

UFSAR Section 11.2.5.1 provides the following justification for using these flow rates:

"The total amount of water in the North Anna Reservoir and the Waste Heat Treatment Facility and the amount of overflow at the dam vary between the dry and wet seasons; hence, the concentrations also vary. However, because the average residence time of the body of water comprising both the North Anna Reservoir and the Waste Heat Treatment Facility is nearly 2 years, it takes about 7 years for a long-lived radionuclide to reach equilibrium in either the North Anna Reservoir or the Waste Heat Treatment Facility. Since projected minimum North Anna Reservoir overflow rates cannot be sustained for this length of time, there is justification for using average flows and volumes rather than minimum values."

Enclosure 1

The drought of 2002 followed one of the driest periods of precipitation in Virginia in over a century [Ref 1, SSAR Section 2.4.11.3]. Based on UFSAR Section 11.2.5.1, however, such droughts are expected to have a negligible impact on the calculated equilibrium concentration for tritium, a radionuclide with a 12-year half-life. Furthermore, there is considerable margin between the calculated concentration from Unit 3 of $1.35\text{E-}5$ $\mu\text{Ci/ml}$ and the 10 CFR 20, Appendix B, Table 2 effluent concentration limit for tritium of $1.0\text{E-}3$ $\mu\text{Ci/ml}$.

4. As indicated in the response to Item 3 above, the input and output flows for Lake Anna are average values that take expected seasonal variations into account. It takes years for a radionuclide such as tritium to reach steady-state concentrations. One way to assess the conservatism of the calculation model is to compare it to operational data from the existing units. In the EIS for the ESP, the NRC Staff determined the average tritium concentration in Lake Anna based on site measurements from 2001 to 2006, then adding contribution from two new units releasing a total of 1700 Ci/yr to yield a total from all four units of $9.42\text{E-}6$ $\mu\text{Ci/ml}$ [Ref 4, Section H.3.3]. As the expected tritium release from the single APWR unit of 1600 Ci/yr is within the 1700 Ci/yr considered in the EIS, the total concentration of $9.42\text{E-}6$ $\mu\text{Ci/ml}$ remains bounding for Units 1, 2 and 3. The concentration from Units 1, 2 and 3 based solely on calculations is $1.9\text{E-}5$ $\mu\text{Ci/ml}$, as shown in Bechtel Calculation 25161-M-501 Table 5-3 and FSAR Table 11.2-12R. This demonstrates that the calculated concentration is conservative by a factor of two compared to the value calculated in the EIS.

References

1. North Anna Early Site Permit Application, Rev 9.
2. North Anna Power Station Updated Final Safety Analysis Report, Rev 45.
3. North Anna Early Site Permit No. ESP-003.
4. Environmental Impact Statement for an Early Site Permit (ESP) at the North Anna ESP Site, NUREG-1811, Volume 1.

Proposed COLA Revision

None.

ENCLOSURE 2

Response to NRC RAI Letter Dated May 23, 2011

RAI MET-01

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: MET-01 (RAI Letter DATED MAY 23, 2011)

ESRP SECTION: 2.7 METEOROLOGY AND AIR QUALITY

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: MET-01

Dominion has indicated that distances to the EAB have been revised. EAB distances are used to evaluate the consequences of design basis accidents. The NRC staff requests the following information:

Describe changes to the EAB distances that resulted from changing the method used to determine the distances. Describe the general magnitude of the changes including the number of distances that decreased, the maximum decrease in distance, and the effects of these changes on the X/Q values used to evaluate the consequences of design basis accidents.

Supporting Information

During the audit, NRC staff learned that Dominion has reevaluated EAB distances in all directions using a methodology different from what was used in the previous versions of their application. Dominion has claimed that most of the distance changes are small, but some distances decreased. During the audit, the staff requested that Dominion provide a statement to justify their conclusion that the changed distances are not significant new information.

On Feb 24, 2011, Dominion provided a statement in their reading room related to this matter. The statement was reviewed on Mar 22, 2011. Staff determined that the statement does not contain sufficient quantitative information to conclude that the information on EAB distances is not significant. The statement needs to specifically address the magnitudes of the differences in distance, identifying at least the largest decrease in distance. The statement also needs to address the net effect these differences have on the 50% and 95% X/Qs used in evaluating design basis accident doses.

Dominion Response

Distances to the EAB presented in COL Application ER Table 2.7-1 and FSAR Table 2.3-15R differ from those presented in ESP Application ER Tables 2.7-10 and 2.7-16. The distance values provided in the COL Application reflect using a Geographic Information System (GIS) technology, similar to a standardized approach in other COL Applications. These distance values, however, were not used as inputs to derive X/Q values. The EAB distances used to derive X/Qs continue to be those presented in ESP Application ER Tables 2.7-10 and 2.7-16.

The ESP Application methodology was based on release points located along the PPE boundary. Each release point was considered to be the center of the directional sectors. The ESP Application methodology identified the shortest distance from the PPE boundary to the EAB for each direction. In contrast, the GIS-based methodology established directional sectors based on the centroid of the PPE area to determine the shortest distance from any point on the PPE boundary to the EAB. The GIS-based methodology has been determined to be less conservative than the ESP methodology for the irregular shape of the PPE.

As described above, the GIS-based distances to the EAB were not used as calculation inputs and had no effect on the X/Q values used to evaluate normal doses or the consequences of design basis accidents. Differences in the X/Q values from the ESP Application to the COL Application are associated with changes in model inputs for building cross-sectional area and height.

ER Section 2.7 and ER Tables 2.7-1, 2.7-2 and 2.7-4 will be revised to reflect the more conservative distances presented in the ESP Application, as those values were used as inputs to the X/Q calculations.

Proposed COLA Revision

ER Section 2.7 will be revised as indicated on the attached markups. The FSAR will be revised to be consistent in the next COL Application submittal.

Markup of North Anna COLA

The attached markup represents Dominion's good faith effort to show how the COLA will be revised in a future COLA submittal in response to the subject RAI. However, the same COLA content may be impacted by revisions to the DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be somewhat different than as presented herein.

2.6 Geology

The information for this section is provided in ESP-ER Section 2.6 and in FEIS Section 2.4.

No new and significant information has been identified for this section.

2.7 Meteorology and Air Quality

The information for this section is provided in ESP-ER Section 2.7 and in FEIS Section 2.3. Supplemental information concerning atmospheric dispersion coefficients is provided in Sections 2.7.5 and 2.7.6.

2.7.1 General Climate

No new and significant information has been identified for this section.

2.7.2 Regional Air Quality

No new and significant information has been identified for this section.

2.7.3 Severe Weather

No new and significant information has been identified for this section.

2.7.4 Local Meteorology

No new and significant information has been identified for this section.

2.7.5 Short-Term Diffusion Estimates

For the short-term atmospheric dispersion coefficients (used in the evaluation of doses due to design basis accidents, in Section 7.1), the ESP values listed in FEIS Table 5-14 are used for this ER.

2.7.6 Long-Term (Routine) Diffusion Estimates

As a part of the preparation of this ER, the annual Radiological Environmental Monitoring Program was reviewed to determine if the distances to any of the nearest sensitive receptors, modeled for the ESP-ER have changed. The results are documented in Table 2.7-1 based on a field survey and plotting of receptor locations using Geographic Information System (GIS) technology. This process provided improved distance accuracy for these receptors. The results show the closest receptor to be a residence in the NW direction at a distance of 1.28 km (4207 feet). For the purposes of the atmospheric dispersion analysis and the subsequent dose evaluations, it was conservatively assumed that each sensitive receptor (meat animal, vegetable garden, residence) is at the location of the closest receptor and that the closest receptor is the residence in the NW direction at the previously determined distance of 1.20 km (3930 ft). Therefore, one of each type of receptor was assumed to be at 1.20 km (3930 feet) in each compass direction. The maximum annual average

χ/Q value calculated for the nearest residence, vegetable garden, and meat animal, all assumed at 1.20 km (0.74 mi), is $3.90\text{E-}6 \text{ sec/m}^3$ in the ESE direction. The maximum D/Q for those receptors is $1.10\text{E-}8 \text{ m}^{-2}$ in the NNE direction. In the evaluation performed for this ER, ~~the distance to the site boundary (EAB) was found to be 0.94 mile in the direction where the maximum χ/Q is calculated. However, for conservatism, the greater χ/Q value from the ESP-ER, which is based on a distance of 0.88 miles, is retained for use in this ER. The the maximum annual χ/Q (no decay, undepleted) at the EAB is $3.70\text{E-}6$ $3.0\text{E-}6 \text{ sec/m}^3$, at based on a distance of 1.42 km (0.88 mile) to the ESE of the facility boundary from ESP-ER Table 2.7-16 and a minimum reactor building cross sectional area of 3092 m^2 . The results are summarized in Table 2.7-2 and Table 2.7-3. These tables present the maximum calculated χ/Q s and D/Qs at sensitive receptors and at various distances from the site.~~

Long-term (annual average) χ/Q and D/Q estimates generated by the XOQDOQ model for the sensitive receptors and at distances between 0.25 mile to 50 miles, as well as for various segment boundaries, are also presented. Table 2.7-4 presents χ/Q and D/Q estimates at the specific points of interest.

Table 2.7-5 presents the no decay and undepleted χ/Q estimates at various downwind distances between 0.4 km (0.25 mi) and 80.5 km (50 mi). Table 2.7-6 presents the no decay and undepleted χ/Q estimates for various distance segments out to 80.5 km (50 mi).

Table 2.7-7 presents the 2.26 day decay (for short-lived noble gases) and undepleted χ/Q estimates at the same downwind distances. Table 2.7-8 presents the 2.26 day decay and undepleted χ/Q estimates for the same distance segments.

Table 2.7-9 presents the 8 day decay (for all iodines released to the atmosphere) and depleted χ/Q estimates at the same downwind distances. Table 2.7-10 presents the 8 day decay and depleted χ/Q estimates for the same distance segments.

Table 2.7-11 presents the D/Q estimates for the same downwind distances. Table 2.7-12 presents the D/Q estimates for the same distance segments.

The methodology used to determine the long-term dispersion and deposition coefficients (used in the evaluation of doses due to normal operating releases) remains the same as that described in ESP-ER Section 2.7.6.

The following input data and assumptions were used in the XOQDOQ modeling:

- Meteorological Data: Three-year combined (1996–1998) onsite joint frequency distribution of wind speed, wind direction, and atmospheric stability.
- Type of Release: Ground level.
- Wind Sensor Height: 10 m.
- Vertical Temperature Difference: 10 m–48.4 m.
- Number of Wind Speed Categories: 7.

- Release Height: 10 m (default height).
- Reactor (containment) Building effective Height: 64.8 m.
- Minimum Reactor Building Cross-Sectional Area: 3092 m².
- Distances from the release point to the nearest residence, ~~nearest site boundary~~, milk cow, vegetable garden, milk goat, meat animal: See Table 2.7-1.
- Distances from the release point to the nearest point on the site boundary: See Tables 2.7-1 and 2.7-4, which provide the same distances as ESP-ER Table 2.7-16.

For the dispersion analysis, the containment portion of the reactor building was used to determine the minimum building cross-sectional area for evaluating building downwash effects. The containment portion of the reactor building, which has a height of 69.9 m and a shortest width of 65.0 m, was used to determine the height and building cross-sectional area for evaluating building downwash effects. Conservatively, only the Containment portion of the reactor building was considered in the calculation of the effective height and cross-sectional area inputs to the XOQDOQ model. The effective height was based on a containment width of 47.7 m. Because of its complex geometry, the cross-section of the containment area was broken into 2 pieces: an upper ellipse and a lower rectangle. The area of the upper ellipse was calculated to be 894 m² and that of the lower rectangle was determined to be 2198 m². Adding these 2 areas generates a gross cross-sectional area of 3092 m². Dividing the cross-sectional area by the containment width of 47.7 m results in an equivalent height of 64.8 m [3092 m²/47.7 m]. Both the cross-sectional area and effective height were used as inputs to the XOQDOQ model. For the NAPS site, the χ/Q and D/Q values were found to depend on building height but not cross-sectional area.

ESP-ER Tables 2.7-13 through 2.7-20 have been replaced in this ER by Tables 2.7-1 through 2.7-12.

No other new and significant information has been identified for this section.

Table 2.7-1 Source to Sensitive Receptor Distances

<u>Type (Note 3)</u>	<u>Direction from Unit 3</u>	<u>Distance from Plant Facility Boundary (ft) (Note 1)</u>	<u>Distance from Plant Facility Boundary (miles/km) (Note 1)</u>
Vegetation			
Veg	S	5605	1.06/1.71
Veg	SSW	22877	4.33/6.97
Veg	SW	17254	3.27/5.26
Veg	WSW	No Receptor	
Veg	W	14891	2.82/4.54
Veg	WNW	7608	1.44/2.32
Veg	NW	No Receptor	
Veg	NNW	11399	2.16/3.47
Veg	N	13672	2.59/4.17
Veg	NNE	17318	3.28/5.28
Veg	NE	5029	0.95/1.53
Veg	ENE	13272	2.51/4.05
Veg	E	8519	1.61/2.60
Veg	ESE	11826	2.24/3.60
Veg	SE	4658	0.88/1.42
Veg	SSE	4609	0.87/1.40
Meat Animal			
Meat	S	8712	1.65/2.66
Meat	SSW	9476	1.79/2.89
Meat	SW	6468	1.23/1.97
Meat	WSW	No Receptor	
Meat	W	20424	3.87/6.23
Meat	WNW	21339	4.04/6.50
Meat	NW	No Receptor	
Meat	NNW	No Receptor	
Meat	N	11441	2.17/3.49

Table 2.7-1 Source to Sensitive Receptor Distances

Type (Note 3)	Direction from Unit 3	Distance from Plant Facility Boundary (ft) (Note 1)	Distance from Plant Facility Boundary (miles/km) (Note 1)
Meat Animal (continued)			
Meat	NNE	7868	1.49/2.40
Meat	NE	7940	1.50/2.42
Meat	ENE	14428	2.73/4.40
Meat	E	19631	3.72/5.98
Meat	ESE	7058	1.34/2.15
Meat	SE	7711	1.46/2.35
Meat	SSE	10445	1.98/3.18
Resident			
Res	S	4339	0.82/1.32
Res	SSW	4575	0.87/1.39
Res	SW	6468	1.23/1.97
Res	WSW	6107	1.16/1.86
Res	W	5263	1.00/1.60
Res	WNW	5421	1.03/1.65
Res	NW	4207	0.80/1.28
Res	NNW	4587	0.87/1.40
Res	N	4846	0.92/1.48
Res	NNE	5695	1.08/1.74
Res	NE	5029	0.95/1.53
Res	ENE	8748	1.66/2.67
Res	E	7158	1.36/2.18
Res	ESE	7506	1.42/2.29
Res	SE	4830	0.91/1.47
Res	SSE	4394	0.83/1.34

Table 2.7-1 Source to Sensitive Receptor Distances

Type (Note 3)	Direction from Unit 3	Distance from Plant Facility Boundary (ft) (Note 1)	Distance from Plant Facility Boundary (miles/km) (Note 1)
Site Boundary (Exclusion Area Boundary)			
EAB	S	3499	0.66/1.07
EAB	SSW	2924	0.55/0.89
EAB	SW	2841	0.54/0.87
EAB	WSW	2892	0.55/0.88
EAB	W	2852	0.54/0.87
EAB	WNW	3295	0.62/1.00
EAB	NW	3678	0.70/1.12
EAB	NNW	4064	0.77/1.24
EAB	N	4468	0.85/1.36
EAB	NNE	4800	0.91/1.46
EAB	NE	4726	0.90/1.44
EAB	ENE	4816	0.91/1.47
EAB	E	5315	1.01/1.62
EAB	ESE	4980	0.94/1.52
EAB	SE	4255	0.81/1.30
EAB	SSE	3877	0.73/1.18
<u>EAB</u>	<u>S</u>	<u>3274</u>	<u>0.62/1.00</u>
<u>EAB</u>	<u>SSW</u>	<u>3009</u>	<u>0.57/0.92</u>
<u>EAB</u>	<u>SW</u>	<u>2851</u>	<u>0.54/0.87</u>
<u>EAB</u>	<u>WSW</u>	<u>2903</u>	<u>0.55/0.88</u>
<u>EAB</u>	<u>W</u>	<u>2851</u>	<u>0.54/0.87</u>
<u>EAB</u>	<u>WNW</u>	<u>2956</u>	<u>0.56/0.90</u>
<u>EAB</u>	<u>NW</u>	<u>3274</u>	<u>0.62/1.00</u>
<u>EAB</u>	<u>NNW</u>	<u>3802</u>	<u>0.72/1.16</u>
<u>EAB</u>	<u>N</u>	<u>4593</u>	<u>0.87/1.40</u>
<u>EAB</u>	<u>NNE</u>	<u>4646</u>	<u>0.88/1.42</u>

Table 2.7-1 Source to Sensitive Receptor Distances

<u>Type</u> <u>(Note 3)</u>	<u>Direction</u> <u>from</u> <u>Unit 3</u>	<u>Distance</u> <u>from Plant</u> <u>Facility</u> <u>Boundary</u> <u>(ft) (Note 1)</u>	<u>Distance</u> <u>from Plant</u> <u>Facility</u> <u>Boundary</u> <u>(miles/km)</u> <u>(Note 1)</u>
<u>EAB</u>	<u>NE</u>	<u>4751</u>	<u>0.90/1.45</u>
<u>EAB</u>	<u>ENE</u>	<u>4806</u>	<u>0.91/1.46</u>
<u>EAB</u>	<u>E</u>	<u>4698</u>	<u>0.89/1.43</u>
<u>EAB</u>	<u>ESE</u>	<u>4646</u>	<u>0.88/1.42</u>
<u>EAB</u>	<u>SE</u>	<u>4383</u>	<u>0.83/1.34</u>
<u>EAB</u>	<u>SSE</u>	<u>3855</u>	<u>0.73/1.18</u>

Notes:

- Distances are from the plant facility boundary. See FSAR Figure 2.0-205.
- ~~Actual distance is 1.36 km (4453 ft)~~ Not used.
- No milk cows or goats within a 5-mile radius of NAPS.

Table 2.7-2 XOQDOQ Predicted Maximum χ/Q and D/Q Values at Specific Points of Interest

Type of Location	Direction from Site	Distance (miles)	χ/Q (No Decay, Undepleted)	χ/Q (2.260 Day Decay, Undepleted)	χ/Q (8.000 Day Decay, Depleted)	D/Q
Residence	ESE	0.74	3.9E-06	3.9E-06	3.5E-06	1.1E-08 ^b
EAB ^e	ESE	0.88	3.7E-06 <u>3.0E-06</u>	3.7E-06 <u>3.0E-06</u>	3.3E-06 <u>2.6E-06</u>	1.2E-08 <u>1.1E-08^a</u>
Meat Animal	ESE	0.74	3.9E-06	3.9E-06	3.5E-06	1.1E-08 ^b
Veg. Garden	ESE	0.74	3.9E-06	3.9E-06	3.5E-06	1.1E-08 ^b

Notes:

χ/Q – sec/m³

D/Q – 1/m²

a: direction South and distance of 0.62 mi for maximum D/Q for EAB

b: direction North-Northeast for maximum D/Q for residence, meat animal, and vegetable garden

e: from ~~ESP-ER Table 2.7-14~~

Table 2.7-4 Long-Term Average χ/Q (sec/m³) for Routine Releases at Specific Points of Interest

Ground Level Release – No Purge Releases								
Release ID	Type of Location	Direction From Site	Distance		χ/Q no decay, undepleted (sec/m ³)	χ/Q 2.260 day decay, undepleted (sec/m ³)	χ/Q 8.000 day decay, depleted (sec/m ³)	D/Q (per m ²)
			miles	meters				
A	Residences	S	0.74	1198	1.50E-06	1.50E-06	1.30E-06	8.50E-09
A	Residences	SSW	0.74	1198	1.20E-06	1.20E-06	1.00E-06	5.60E-09
A	Residences	SW	0.74	1198	1.00E-06	1.00E-06	9.30E-07	4.60E-09
A	Residences	WSW	0.74	1198	9.70E-07	9.70E-07	8.60E-07	4.00E-09
A	Residences	W	0.74	1198	1.20E-06	1.20E-06	1.00E-06	4.70E-09
A	Residences	WNW	0.74	1198	1.00E-06	1.00E-06	9.10E-07	4.40E-09
A	Residences	NW	0.74	1198	1.00E-06	1.00E-06	9.20E-07	3.90E-09
A	Residences	NNW	0.74	1198	8.70E-07	8.70E-07	7.80E-07	2.90E-09
A	Residences	N	0.74	1198	2.20E-06	2.20E-06	2.00E-06	7.60E-09
A	Residences	NNE	0.74	1198	2.80E-06	2.80E-06	2.50E-06	1.10E-08
A	Residences	NE	0.74	1198	2.30E-06	2.30E-06	2.10E-06	8.90E-09
A	Residences	ENE	0.74	1198	1.40E-06	1.40E-06	1.30E-06	4.80E-09
A	Residences	E	0.74	1198	2.60E-06	2.60E-06	2.30E-06	6.70E-09
A	Residences	ESE	0.74	1198	3.90E-06	3.90E-06	3.50E-06	9.00E-09
A	Residences	SE	0.74	1198	2.80E-06	2.80E-06	2.50E-06	8.00E-09
A	Residences	SSE	0.74	1198	1.50E-06	1.50E-06	1.40E-06	7.20E-09

Table 2.7-4 Long-Term Average χ/Q (sec/m³) for Routine Releases at Specific Points of Interest

Ground Level Release – No Purge Releases								
Release ID	Type of Location	Direction From Site	Distance		χ/Q no decay, undepleted (sec/m ³)	χ/Q 2.260 day decay, undepleted (sec/m ³)	χ/Q 8.000 day decay, depleted (sec/m ³)	D/Q (per m ²)
			miles	meters				
A	EAB	S	0.66	1066	1.80E-06	1.80E-06	1.60E-06	1.00E-08
A	EAB	SSW	0.66	894	1.80E-06	1.80E-06	1.60E-06	9.20E-09
A	EAB	SW	0.64	866	1.70E-06	1.70E-06	1.50E-06	7.90E-09
A	EAB	WSW	0.66	881	1.50E-06	1.50E-06	1.40E-06	6.70E-09
A	EAB	W	0.64	869	1.90E-06	1.90E-06	1.70E-06	8.00E-09
A	EAB	WNW	0.62	1004	1.30E-06	1.30E-06	1.20E-06	5.90E-09
A	EAB	NW	0.70	1121	1.10E-06	1.10E-06	1.00E-06	4.40E-09
A	EAB	NNW	0.77	1239	8.30E-07	8.30E-07	7.40E-07	2.70E-09
A	EAB	N	0.86	1362	1.90E-06	1.80E-06	1.60E-06	6.10E-09
A	EAB	NNE	0.91	1463	2.10E-06	2.10E-06	1.90E-06	7.80E-09
A	EAB	NE	0.89	1440	1.80E-06	1.80E-06	1.60E-06	6.50E-09
A	EAB	ENE	0.91	1468	1.00E-06	1.00E-06	9.10E-07	3.40E-09
A	EAB	E	1.01	1620	1.70E-06	1.70E-06	1.50E-06	4.00E-09
A	EAB	ESE	0.94	1518	2.70E-06	2.70E-06	2.40E-06	6.00E-09
A	EAB	SE	0.81	1297	2.50E-06	2.40E-06	2.20E-06	7.00E-09
A	EAB	SSE	0.73	1182	1.60E-06	1.60E-06	1.40E-06	7.30E-09

Table 2.7-4 Long-Term Average χ/Q (sec/m³) for Routine Releases at Specific Points of Interest

Ground Level Release – No Purge Releases								
Release ID	Type of Location	Direction From Site	Distance		χ/Q no decay, undepleted (sec/m ³)	χ/Q 2.260 day decay, undepleted (sec/m ³)	χ/Q 8.000 day decay, depleted (sec/m ³)	D/Q (per m ²)
			miles	meters				
<u>A</u>	<u>EAB</u>	<u>S</u>	<u>0.62</u>	<u>998</u>	<u>1.90E-06</u>	<u>1.90E-06</u>	<u>1.80E-06</u>	<u>1.10E-08</u>
<u>A</u>	<u>EAB</u>	<u>SSW</u>	<u>0.57</u>	<u>917</u>	<u>1.70E-06</u>	<u>1.70E-06</u>	<u>1.60E-06</u>	<u>8.70E-09</u>
<u>A</u>	<u>EAB</u>	<u>SW</u>	<u>0.54</u>	<u>869</u>	<u>1.70E-06</u>	<u>1.70E-06</u>	<u>1.50E-06</u>	<u>7.90E-09</u>
<u>A</u>	<u>EAB</u>	<u>WSW</u>	<u>0.55</u>	<u>885</u>	<u>1.50E-06</u>	<u>1.50E-06</u>	<u>1.40E-06</u>	<u>6.60E-09</u>
<u>A</u>	<u>EAB</u>	<u>W</u>	<u>0.54</u>	<u>869</u>	<u>1.90E-06</u>	<u>1.90E-06</u>	<u>1.70E-06</u>	<u>8.00E-09</u>
<u>A</u>	<u>EAB</u>	<u>WNW</u>	<u>0.56</u>	<u>901</u>	<u>1.60E-06</u>	<u>1.60E-06</u>	<u>1.40E-06</u>	<u>7.00E-09</u>
<u>A</u>	<u>EAB</u>	<u>NW</u>	<u>0.62</u>	<u>998</u>	<u>1.40E-06</u>	<u>1.30E-06</u>	<u>1.20E-06</u>	<u>5.30E-09</u>
<u>A</u>	<u>EAB</u>	<u>NNW</u>	<u>0.72</u>	<u>1159</u>	<u>9.20E-07</u>	<u>9.10E-07</u>	<u>8.20E-07</u>	<u>3.00E-09</u>
<u>A</u>	<u>EAB</u>	<u>N</u>	<u>0.87</u>	<u>1400</u>	<u>1.80E-06</u>	<u>1.80E-06</u>	<u>1.60E-06</u>	<u>5.80E-09</u>
<u>A</u>	<u>EAB</u>	<u>NNE</u>	<u>0.88</u>	<u>1416</u>	<u>2.20E-06</u>	<u>2.20E-06</u>	<u>1.90E-06</u>	<u>8.30E-09</u>
<u>A</u>	<u>EAB</u>	<u>NE</u>	<u>0.90</u>	<u>1448</u>	<u>1.80E-06</u>	<u>1.70E-06</u>	<u>1.50E-06</u>	<u>6.40E-09</u>
<u>A</u>	<u>EAB</u>	<u>ENE</u>	<u>0.91</u>	<u>1465</u>	<u>1.00E-06</u>	<u>1.00E-06</u>	<u>9.10E-07</u>	<u>3.40E-09</u>
<u>A</u>	<u>EAB</u>	<u>E</u>	<u>0.89</u>	<u>1432</u>	<u>2.00E-06</u>	<u>2.00E-06</u>	<u>1.80E-06</u>	<u>5.00E-09</u>
<u>A</u>	<u>EAB</u>	<u>ESE</u>	<u>0.88</u>	<u>1416</u>	<u>3.00E-06</u>	<u>3.00E-06</u>	<u>2.60E-06</u>	<u>6.80E-09</u>
<u>A</u>	<u>EAB</u>	<u>SE</u>	<u>0.83</u>	<u>1336</u>	<u>2.30E-06</u>	<u>2.30E-06</u>	<u>2.10E-06</u>	<u>6.70E-09</u>
<u>A</u>	<u>EAB</u>	<u>SSE</u>	<u>0.73</u>	<u>1175</u>	<u>1.60E-06</u>	<u>1.60E-06</u>	<u>1.40E-06</u>	<u>7.40E-09</u>

ENCLOSURE 3

Response to NRC RAI Letter Dated May 23, 2011

RAI MET-02

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: MET-02 (RAI Letter DATED MAY 23, 2011)

ESRP SECTION: 2.7 METEOROLOGY AND AIR QUALITY

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: MET-02

Meteorological data are used in evaluation of the consequences of severe accidents. Data more than 10 years old have been used to evaluate potential consequences of APWR severe accidents at the NAPS site. Therefore, the staff requests the following information:

Review the representativeness of the meteorological data used for the severe accident consequence assessment for the US-APWR reactor at the NAPS site and describe your assessment of the significance of any differences.

Supporting Information

As a result of the change in reactor design, the staff is assessing the consequences of postulated accidents for the new design at the NAPS site. The evaluation of the potential consequences of severe accidents uses meteorological data. The meteorological data used by Dominion to evaluate potential consequences of severe accidents for the new reactor are now more than 10 years old. More recent meteorological data are available for the NAPS site because a meteorological program is required at operating reactor sites.

The NRC staff bears the responsibility of ensuring that the applicant's process for identifying new and significant information is effective. During the site audit, the staff questioned Dominion as to the representativeness of the old meteorological data. Dominion representatives stated that more recent meteorological data were not significantly different than the data submitted in support of the NAPS ESP application. However, the representatives did not have documentation available to support this conclusion. Dominion agreed to provide documentation to support the conclusion. This documentation had not been provided to the Reading Room as of April 21, 2011.

Dominion Response

The MACCS2 code analysis for North Anna Unit 3 (Unit 3) described in COLA ER Rev. 3 utilized meteorological data for years 1996 through 1998. This data set was previously determined to be representative in the FEIS.

Dominion performed MACCS2 code sensitivity comparisons using meteorological data for years 2006 through 2008. In these comparisons, other input parameters remained unchanged from those used in the COLA ER Rev. 3 analysis. The results of the sensitivity comparisons showed a maximum difference in dose of approximately 4% between the 1997 and 2008 meteorological data input. This difference is not significant as there was a difference in dose of approximately 4% within the 1997 and 1998 meteorological data as shown in COLA ER Table 7.2-2. The difference in dose between the COLA ER analysis base case, which used the single year input of 1998 met data, and the current sensitivity base case, using 2008 met data is less than 1%. In addition, the dollar comparison between the COLA ER base case (1998 met data) and the current sensitivity base case (2008 met data) is less than 1%.

Therefore, the 1996 through 1998 meteorological data remains representative of the North Anna Power Station site for use in support of the severe accident consequence evaluation for Unit 3.

Proposed COLA Revision

None.

ENCLOSURE 4

Response to NRC RAI Letter Dated May 23, 2011

RAI ACC-01

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**North Anna Unit 3
Dominion
Docket No. 52-017**

RAI NO.: ACC-01 (RAI Letter DATED MAY 23, 2011)

ESRP SECTION: 7.1 DESIGN BASIS ACCIDENTS

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: ACC-01

10 CFR 51.71 charges the NRC staff with independently evaluating and being responsible for the reliability of information in the draft EIS. The staff has been unable to fully verify the dose calculations for design basis accidents contained in Rev 3 of the ER. Therefore the staff requests the following information as described in ESRP 7.1:

Describe how the LPZ doses presented in ER Section 7.1.4 were calculated. Verify the doses for the LPZ for intermediate time periods for each of the design basis accidents. Provide isotopic source terms for use in evaluating doses at the EAB.

Supporting Information

In its review of analysis of the US-APWR design basis accidents for NAPS Unit 3 in Rev 3 of the Dominion ER, the staff was unable to duplicate the analysis using the procedure set forth in the ER because the US-APWR DCD does not include the LPZ doses for the 0 to 8 hr, 8 to 24 h, 1 to 4 day, and 4 to 30 day time periods specified in NRC guidance. Further, staff was unable to verify the 0 to 2 hour doses at the exclusion area boundary by direct calculation from isotopic release rates.

Dominion Response

As indicated in ER Section 7.1.4, the site-specific dose at the low population zone (LPZ) is calculated by multiplying the time-dependent LPZ dose for the US-APWR DCD by the time-dependent ratio of site atmospheric dispersion factor (χ/Q) to DCD χ/Q . To perform this calculation, time-dependent DCD doses, and DCD and site χ/Q values are needed. The χ/Q values are shown in ER Table 7.1-2, with the DCD values obtained from DCD Table 15.0-13 and the Unit 3 values obtained from ER Section 2.7.

DCD Chapter 15 provides the total LPZ dose for each accident with radiological consequences, but does not provide the dose as a function of time. The time-dependent

DCD doses presented in ER Tables 7.1-4 to 7.1-12 were obtained from MHI. The MHI document which provided this information will be made available in the Dominion North Anna Unit 3 Reading Room at the Tetra Tech office in Richland, Washington by August 31, 2011.

DCD Appendix 15A provides isotopic activity releases to the environment for each accident for various time intervals. However, the two-hour period yielding the maximum dose at the exclusion area boundary (EAB) is not among the time intervals presented. Tables 1 through 9 show the activity releases for the two-hour period yielding the maximum EAB dose for each accident. The period of maximum EAB dose is 0 to 2 hours for each accident except the RCP Rotor Seizure (10 to 12 hours) and LOCA (0.5 to 2.5 hours). The MHI document which provided this information will also be made available in the Dominion North Anna Unit 3 Reading Room at the Tetra Tech office in Richland, Washington by August 31, 2011.

Proposed COLA Revision

None.

Table 1. Released Activity for Period of EAB Dose for Steam System Piping Failure
(Pre-transient Iodine Spike)

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	8.04E+00
Kr-85m	1.33E-01
Kr-87	6.14E-02
Kr-88	2.30E-01
Xe-133	2.72E+01
Xe-135	1.05E+00
Iodines	
I-131	1.06E+01
I-132	5.24E+00
I-133	1.80E+01
I-134	3.38E+00
I-135	1.15E+01
Alkali Metals	
Rb-86	8.49E-02
Cs-134	8.65E+00
Cs-136	2.28E+00
Cs-137	4.92E+00
TOTAL	1.01E+02

Table 2. Released Activity for Period of EAB Dose for Steam System Piping Failure
(Transient-initiated Iodine Spike)

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	8.04E+00
Kr-85m	1.33E-01
Kr-87	6.14E-02
Kr-88	2.30E-01
Xe-133	2.78E+01
Xe-135	3.57E+00
Iodines	
I-131	2.76E+01
I-132	5.61E+00
I-133	4.10E+01
I-134	3.03E+00
I-135	1.97E+01
Alkali Metals	
Rb-86	8.49E-02
Cs-134	8.65E+00
Cs-136	2.28E+00
Cs-137	4.92E+00
TOTAL	1.53E+02

Table 3. Released Activity for Period of EAB Dose for RCP Rotor Seizure

Nuclide	Activity Release for Period of EAB Dose, 10-12 hr (Ci)
Noble Gases	
Kr-85	2.81E+01
Kr-85m	2.40E+02
Kr-87	3.38E+02
Kr-88	6.19E+02
Xe-133	1.75E+03
Xe-135	5.18E+02
Iodines	
I-131	7.93E+01
I-132	2.54E+00
I-133	7.40E+01
I-134	4.08E-02
I-135	3.08E+01
Alkali Metals	
Rb-86	2.96E-02
Cs-134	3.00E+00
Cs-136	7.98E-01
Cs-137	1.71E+00
TOTAL	3.69E+03

Table 4. Released Activity for Period of EAB Dose for Rod Ejection Accident

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	6.73E+01
Kr-85m	1.37E+03
Kr-87	1.91E+03
Kr-88	3.52E+03
Xe-133	9.92E+03
Xe-135	3.02E+03
Iodines	
I-131	5.36E+02
I-132	3.62E+02
I-133	9.42E+02
I-134	4.59E+02
I-135	6.57E+02
Alkali Metals	
Rb-86	4.02E-01
Cs-134	4.02E+01
Cs-136	1.09E+01
Cs-137	2.29E+01
TOTAL	2.28E+04

Table 5. Released Activity for Period of EAB Dose for Failure of Small Lines Carrying Primary Coolant Outside Containment

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	6.84E+02
Kr-85m	1.25E+01
Kr-87	7.05E+00
Kr-88	2.26E+01
Xe-133	2.32E+03
Xe-135	7.70E+01
Iodines	
I-131	1.72E+02
I-132	7.98E+01
I-133	2.93E+02
I-134	4.33E+01
I-135	1.85E+02
TOTAL	3.90E+03

Table 6. Released Activity for Period of EAB Dose for SGTR
(Pre-transient Iodine Spike)

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	3.41E+03
Kr-85m	6.16E+01
Kr-87	3.40E+01
Kr-88	1.11E+02
Xe-133	1.16E+04
Xe-135	3.74E+02
Iodines	
I-131	4.17E+02
I-132	2.08E+02
I-133	7.14E+02
I-134	1.28E+02
I-135	4.60E+02
Alkali Metals	
Rb-86	4.07E-03
Cs-134	4.15E-01
Cs-136	1.09E-01
Cs-137	2.36E-01
TOTAL	1.75E+04

Table 7. Released Activity for Period of EAB Dose for SGTR
(Transient-initiated Iodine Spike)

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	3.41E+03
Kr-85m	6.16E+01
Kr-87	3.40E+01
Kr-88	1.11E+02
Xe-133	1.16E+04
Xe-135	3.68E+02
Iodines	
I-131	1.07E+02
I-132	5.21E+01
I-133	1.83E+02
I-134	3.05E+01
I-135	1.17E+02
Alkali Metals	
Rb-86	4.07E-03
Cs-134	4.15E-01
Cs-136	1.09E-01
Cs-137	2.36E-01
TOTAL	
	1.60E+04

Table 8 (1/2). Released Activity for Period of EAB Dose for LOCA

Nuclide	Activity Release for Period of EAB Dose, 0.5-2.5 hr (Ci)
Noble Gases	
Kr-85	1.97E+02
Kr-85m	3.03E+03
Kr-87	2.00E+03
Kr-88	6.55E+03
Xe-133	2.97E+04
Xe-135	1.04E+04
Iodines	
I-131	8.72E+02
I-132	1.09E+03
I-133	1.68E+03
I-134	3.09E+02
I-135	1.30E+03
Alkali Metals	
Rb-86	1.13E+00
Cs-134	1.13E+02
Cs-136	3.07E+01
Cs-137	6.44E+01
Tellurium Group	
Sb-127	8.55E+00
Sb-129	1.74E+01
Te-127	8.56E+00
Te-127m	1.14E+00
Te-129	1.99E+01
Te-129m	3.90E+00
Te-131m	1.13E+01
Te-132	1.17E+02
Strontium and Barium	
Sr-89	3.89E+01
Sr-90	3.23E+00
Sr-91	4.25E+01
Sr-92	2.79E+01
Ba-139	1.83E+01
Ba-140	6.16E+01

Table 8 (2/2). Released Activity for Period of EAB Dose for LOCA

Nuclide	Activity Release for Period of EAB Dose, 0.5-2.5 hr (Ci)
Noble Metals	
Co-58	3.36E-03
Co-60	1.32E-02
Mo-99	7.94E+00
Tc-99m	7.01E+00
Ru-103	6.26E+00
Ru-105	2.74E+00
Ru-106	2.19E+00
Rh-105	3.80E+00
Lanthanides	
Y-90	4.79E-02
Y-91	4.90E-01
Y-92	2.57E+00
Y-93	4.99E-01
Zr-95	6.20E-01
Zr-97	5.56E-01
Nb-95	6.24E-01
La-140	1.05E+00
La-141	3.74E-01
La-142	1.87E-01
Pr-143	5.53E-01
Nd-147	2.30E-01
Am-241	6.17E-05
Cm-242	1.52E-02
Cm-244	1.85E-03
Cerium Group	
Ce-141	1.46E+00
Ce-143	1.35E+00
Ce-144	1.11E+00
Np-239	1.53E+01
Pu-238	4.35E-03
Pu-239	3.29E-04
Pu-240	5.15E-04
Pu-241	1.14E-01
TOTAL	5.78E+04

Table 9. Released Activity for Period of EAB Dose for Fuel Handling Accident

Nuclide	Activity Release for Period of EAB Dose, 0-2 hr (Ci)
Noble Gases	
Kr-85	1.20E+03
Kr-85m	3.90E+02
Kr-87	5.98E-02
Kr-88	1.25E+02
Xe-133	9.90E+04
Xe-135	2.21E+04
Iodines	
I-131	3.67E+02
I-132	2.75E+02
I-133	2.31E+02
I-134	2.71E-06
I-135	3.80E+01
TOTAL	1.24E+05

ENCLOSURE 5

Response to NRC RAI Letter Dated May 23, 2011

RAI ACC-02

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: ACC-02 (RAI Letter dated May 23, 2011)

ESRP SECTION: 7.2 – SEVERE ACCIDENTS

7.3 – SEVERE ACCIDENT MITIGATION ALTERNATIVES

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: ACC-02

The staff intends to evaluate the potential consequences of severe accidents and severe accident mitigation alternatives for the US-APWR at the NAPS site in its supplemental EIS. The site characteristics data used in evaluation of potential consequences of US-APWR severe accidents in ER Rev 3 are now more than 10 years old. These site characteristics, particularly land use and population, may have changed significantly. Therefore the staff requests the following information:

Update the severe accident consequence assessment using more recent land use and population data. For population data more than ten years old, provide a comparison with more recent data, especially for those areas in the downwind direction.

Supporting Information

Section 7.2 in Rev 3 to the Dominion ER includes an analysis of the potential consequences of severe accidents for a US-APWR at the NAPS site. The severe accident consequence assessment in Section 7.2 is based on site characteristics used in the severe accident consequence assessments for the NAPS ESP review. The data used to evaluate the site characteristic are now more than 10 years old. The site characteristics, particularly those associated with land use and population may have changed significantly.

In addition, section 7.3 of the ER evaluates severe accident mitigation alternatives (SAMAs) for the US-APWR at the NAPS Site. The SAMA analysis is based on the results of the site specific severe accident consequences assessment. As a result, an acceptable SAMA analysis cannot be completed unless an up-to-date site-specific severe accident consequence assessment is available.

Dominion Response

To update the severe accident consequence assessment, more recent population and economic data using the SECPOP2000 code, projected for year 2030, was prepared as a site characteristic file in suitable MACCS2 input format. This file was used to determine the differences in consequences from the population and economic data (using SECPOP90 code) which were the basis for the consequence analysis described in COLA ER Revision 3. The population distribution and regional economic data were updated with SECPOP2000 and with 2010 census and agricultural data available in March 2011 and then projected out to the year 2030. The same projected year 2030 was selected as the reference point to allow comparison with the previous analysis results.

The results from the previous base case (CASE1A) with the 1998 meteorological data were compared to the new base case (CASE8A) with the 2008 meteorological data. Specifically, a dose comparison was made between the previous base case with the 1998 meteorological data and SECPOP90 population data, and the new base case with the 2008 meteorological data and SECPOP2000 population data. The difference in population dose between these two cases was found to be an increase of approximately 22%. The increase in the population dose is consistent with the increase in the overall population during this 10-year time period within the 50-mile radius from the plant site boundary.

The difference in dollar consequence between CASE1A and CASE8A was increased by approximately 76%. This increase in the cost consequence is also consistent with the increase in the land value and labor cost over this time period based on the CPI index.

Areas in the downwind direction are included in the above comparisons because the calculation of population dose and economic data costs are determined in part by the meteorological data sets used.

A subsequent corollary review of MHI-provided severe accident mitigation design alternatives (SAMDA) applying 2008 meteorological, SECPOP2000 population, and updated economic data, indicate none would become cost-beneficial. As shown in the response to RAI ACC-03 (Enclosure 6 to this letter), the severe accident consequences derived using this data remain consistent with NRC Safety Goals.

Proposed COLA Revision

None.

ENCLOSURE 6

Response to NRC RAI Letter Dated May 23, 2011

RAI ACC-03

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3
Dominion
Docket No. 52-017

RAI NO.: ACC-03 (RAI Letter dated May 23, 2011)

ESRP SECTION: 7.2 – SEVERE ACCIDENTS

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: ACC-03

In its EIS, the NRC staff presents the potential consequences of severe accidents using several consequence descriptors. The tables in Section 7.2.1 of ER Rev. 3 do not list the consequences for all of the descriptors used by NRC staff. Also, in reviewing Section 7.2.4 of Rev 3 of the ER, the NRC staff noted that there is a comparison of the risks of a US-APWR at the NAPS site with safety goals set forth in the NRC Safety Goal Policy Statement (51 FR 30028). However the description of how the latent health effects are calculated appear to be inconsistent with the definitions in the policy statement. Therefore the staff requests the following information:

Provide the results of US-APWR severe accident consequence assessments at the NAPS site for all consequence descriptors shown in Table 5-19 of NUREG-1811 for each type of initiating event. Ensure that the average individual early and latent fatality risks are estimated in a manner that is consistent with the definitions in the Safety Goal Policy Statement.

Supporting Information

In its EIS, the NRC staff presents the potential consequence of severe accidents using several consequence descriptors. Table 5-19 of NUREG-1811 (NAPS ESP EIS) shows these consequence descriptors for the designs evaluated during the ESP review. While section 7.2.1 of Rev 3 of the Dominion ER presents the results of its evaluation of the potential consequences of a US-APWR at the NAPS site, the tables in Section 7.2.1 do not list the consequences for all of the descriptors used by NRC staff.

Dominion Response

The results of US-APWR severe accident consequence assessments at the North Anna site for all consequence descriptors shown in Table 5-19 of NUREG-1811 for each type of initiating event are summarized in Table 1 below. These values are based on 2008

meteorological data and SECPOP2000 population and economic data that are included in a MACCS2 file for the site. The early and latent fatalities are the average individual risk mean values reported in the MACCS2 output file. These reported fatalities are consistent with the NRC Safety Goal Policy statement (51 FR 30028) regarding early fatalities for the population residing within one mile from the plant site boundary and latent cancer fatalities for the population residing within ten miles from the plant site boundary.

Proposed COLA Revision

None.

Table 1: Mean Environmental Risks from the US-APWR Severe Accidents at the North Anna Site

Release Category Description (Accident Class)	Core Damage Frequency (Ryr ⁻¹)	Population Dose (Person-Sv Ryr ⁻¹)	Environmental Risk				
			Fatalities (Ryr ⁻¹)		Cost (\$ Ryr ⁻¹)	Land Requiring Decontamination (ha Ryr ⁻¹)	Population Dose from Water Ingestion (person Sv Ryr ⁻¹)
			Early	Latent			
RC1 - Containment bypass which includes both core damage after SGTR and thermal induced SGTR after core damage.	7.5E-09	6.51E-04	5.72E-11	1.68E-09	1.97E+02	8.33E-04	2.30E-05
RC2 - Containment isolation failure.	2.1E-09	1.36E-04	4.85E-12	4.29E-10	2.96E+01	1.80E-04	1.55E-06
RC3 - Containment overpressure failure before core damage due to loss of heat removal.	2E-08	2.90E-03	7.02E-10	1.25E-08	8.48E+02	1.97E-03	1.49E-04
RC4 - Early containment failure due to dynamic loads which includes hydrogen combustion before or just after reactor vessel failure, in-vessel or ex-vessel steam explosion, rocket-mode reactor vessel failure and containment direct heating.	1.1E-08	5.20E-04	8.79E-12	2.49E-10	1.38E+02	6.91E-04	8.46E-06
RC5 - Late containment failure which includes containment overpressure failure after core damage, hydrogen combustion long after reactor vessel failure and basemat melt through.	6.5E-08	2.28E-03	2.11E-14	6.25E-10	3.41E+02	2.36E-03	1.93E-05
RC6 - Intact containment in which fission products are released at design leak rate.	1.1E-06	1.14E-05	0.00E+00	1.33E-10	1.13E-02	2.28E-07	2.93E-08
Total	1.21E-06	6.49E-03	7.73E-10	1.57E-08	1.55E+03	6.03E-03	2.01E-04

ENCLOSURE 7

Response to NRC RAI Letter Dated May 23, 2011

RAI CR-01

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

North Anna Unit 3

Dominion

Docket No. 52-017

RAI NO.: CR-1 (RAI Letter DATED MAY 23, 2011)

ESRP SECTION: 2.5.3, 4.1.3, 5.1.3 HISTORIC PROPERTIES

DATE OF RAI ISSUE: 05/23/2011

QUESTION NO.: CR-1

Staff requests that applicant commit to providing the following cultural resources information as it becomes available. Docketing should follow NRC guidelines regarding sensitive cultural resources location information. When submitting reports only include the cover page, abstract, introduction and conclusions. Do not include maps or coordinates of site location information.

1. Cultural resource reports that have been generated by the applicant after February 2, 2009.
2. Correspondence to and from Tribes, VDHR and interested parties after February 2, 2009 which is not already on the docket.
3. Inventory of reports and correspondence regarding cultural resources that have been generated by the applicant and responses received from the Tribes, VDHR, and interested parties. This list will serve as the library or catalog for tracking purposes.
4. Latest version of the Cultural and Historic Resources Management Plan for the North Anna Site.

These reports and correspondence letters contain essential information on the cultural environment of the area, studies that have been done to fulfill Section 106 of the National Historic Preservation Act, and commitments for future studies required by the State Historic Preservation Office. The requested information is needed by the staff to evaluate impacts to these resources.

Supporting Information

Staff requests that applicant commit to providing the following cultural resources information as it becomes available. Docketing should follow NRC guidelines regarding sensitive cultural resources location information. When submitting reports only include the cover page, abstract, introduction and conclusions. Do not include maps or coordinates of site location

information. These reports and correspondence letters contain essential information on the cultural environment of the area, studies that have been done to fulfill Section 106 of the National Historic Preservation Act, and commitments for future studies required by the State Historic Preservation Office. The requested information is needed by the staff to evaluate impacts to these resources.

Dominion Response

The requested reports are included in the attachments to this response. Dominion will provide cultural resources information relevant to this docket to NRC, as it becomes available in final form, and in accordance with guidelines regarding sensitive cultural resources location information. Information will be provided until issuance of the Combined License (COL). As requested, please find attached:

1. Final cultural resource reports that have been generated by the applicant after February 2, 2009 (see Attachment 1):
 - Cultural Resource Assessment of a Proposed Heavy Haul Route to the North Anna Power Station ESP Site, June 2009.
 - Archaeological Survey Dominion Combined License Project North Anna Power Station, June 2009
 - Archaeological Survey as Part of a Cultural Resource Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, June 2009
 - Architectural Survey of the Proposed north Anna-Ladysmith 500kV Transmission Line, June 2009
 - Viewshed Impact Analysis for VDHR#088-0126, #088-0133 and #016-5042, October 2010
2. Correspondence to and from Tribes, VDHR and interested parties after February 2, 2009 which is not already on NRC Docket No. 52-017 (see Attachment 2):
 - VDHR letter to DOM Transmission Line 11-9-2009
 - VDHR letter to DOM (new property & haul route) 11-9-2009
 - DOM letter to VDHR (viewshed report) 5-18-2010
 - LBG letter to VDHR (response to information requests) 6-25-2010
 - VDHR response to DOM (viewshed) 8-11-2010
 - DOM letter to VDHR (telecom tower) 12-10-2010
 - DOM letter to VDHR (revised viewshed report) 1-10-2011
 - DOM Environmental Policy Statement (effective date June 2010)
 - Cherokee NAGPRA POC No Objection letter received by Dominion 6-3-2011
3. Inventory of reports and correspondence regarding cultural resources that have been generated by the applicant and responses received from the Tribes, VDHR, and

interested parties. These lists will serve as the library or catalog for tracking purposes (see Attachment 3).

- NAPS Historical Reports Inventory 7-20-2011
 - NAPS Historical Consultations Inventory 8-1-2011
4. Summary of the latest version of the Cultural and Historic Resources Management Plan for the North Anna Unit 3 Project (see Attachment 4).

Proposed COLA Revision

None.

Attachment CR-1 Item #1

Final cultural resource reports that have been generated
by the applicant after February 2, 2009.

CULTURAL RESOURCE ASSESSMENT OF A PROPOSED HEAVY HAUL ROUTE TO THE NORTH ANNA POWER STATION ESP SITE

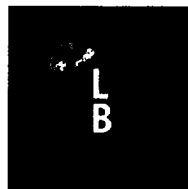
**Louisa, Hanover, Caroline,
and King William Counties, Virginia**

VDHR FILE No.: 2000-1210

Prepared for:

DOMINION RESOURCES, INC.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, Virginia 23060
(804) 273-2170

Prepared by:



THE LOUIS BERGER GROUP, INC.
801 East Main Street, Suite 500
Richmond, Virginia 23219
(804) 225-0348

FINAL
June 2009

A. INTRODUCTION

The Louis Berger Group, Inc. (Berger), Richmond, Virginia, has completed a cultural resource assessment of a proposed Heavy Haul Route (HHR) to the North Anna Power Station (NAPS) Early Site Permit (ESP) site. The cultural resource assessment was performed on behalf of Dominion Resources, Inc. (Dominion), in preparation for a Joint Permit Application, and as part of an environmental assessment for a combined license application for Unit 3 at the NAPS ESP site. The HHR, presented in a feasibility study to Dominion in 2008, is a potential course for the delivery of large equipment items associated with proposed construction at the NAPS ESP site. The HHR includes the Haley East parcel, an alternate construction support area for large equipment and material storage. The cultural resource assessment involved (1) preliminary background research about the project area, and (2) field inspection of the HHR and associated parcel.

The cultural resource assessment was conducted pursuant to the National Historic Preservation Act of 1966 (as amended), the Archaeological and Historical Preservation Act of 1974, Executive Order 11593, and Title 36 of the Code of Federal Regulations, Parts 660-66 and 800 (as appropriate). The field investigations and technical report meet the qualifications specified in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (*Federal Register* 48:190:44716-44742) (United States [U.S.] Department of the Interior 1983) and the VDHR (2001) *Guidelines for Conducting Cultural Resource Surveys in Virginia*. The Project Manager and Project Archaeologist who performed the cultural resource investigations met or exceeded the qualifications described in the Secretary of the Interior's Professional Qualifications Standards (*Federal Register* 48:44738-44739) (United States Department of the Interior 1983).

The assessment was conducted under the direction of Project Manager Eric Voigt. The field inspection was conducted by Archaeologist Greg LaBudde.

D. SUMMARY AND RECOMMENDATIONS

On behalf of Dominion, Berger has completed a cultural resource assessment of a proposed HHR and the associated Haley East parcel. Preliminary background research and a field inspection of the project areas have identified multiple locations where the proposed undertakings have a potential to impact cultural resources. This assessment indicates that, as project planning and design proceeds, additional consultation with the VDHR will be necessary until the Section 106 process is completed.

ARCHAEOLOGICAL SURVEY
DOMINION COMBINED LICENSE PROJECT
NORTH ANNA POWER STATION

Louisa County, Virginia

VDHR FILE NO.: 2000-1210

Prepared for:

DOMINION RESOURCES, INC.
Innsbrook Technical Center
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Prepared by:



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Final
June 2009

ABSTRACT

The Louis Berger Group, Inc. (Berger), Richmond, Virginia, has completed an archaeological survey of the proposed expansion of the area of potential effects (APE) for the proposed undertaking at the North Anna Power Station (NAPS), Louisa County, Virginia, on behalf of Dominion Resources, Inc. (Dominion). Part of the expanded APE is located on the south side of the Lake Anna impoundment on the North Anna River, north and south of Route 700. It consists of a tract of land encompassing approximately 95.6 acres (38.7 hectares) on separate tax parcels located on property outside the perimeter of the existing Dominion NAPS site, for which final plans for future use are not fully developed. The expanded APE also includes land for three proposed parking lots encompassing approximately 9.7 acres (3.9 hectares) located within the existing NAPS site. The total expanded APE is approximately 105.3 acres (42.6 hectares) in size.

The objectives of the archaeological survey, conducted between March 31 and April 15, 2008, were to (1) identify any archaeological sites within the expanded APE and (2) evaluate the possible eligibility of any such sites for inclusion in the National Register of Historic Places. Prior to the fieldwork, background research was conducted at the Virginia Department of Historic Resources to determine whether any additional cultural resources had been recorded within a 1-mile (1.6-kilometer) radius of the expanded APE subsequent to archaeological assessment investigations conducted by Berger in 2001, 2006, and 2007. Nine previously recorded historic resources were identified within a 1-mile (1.6-kilometer) radius of the expanded APE; none (prehistoric or historic) are located within the expanded APE. The archaeological fieldwork consisted of pedestrian survey and subsurface testing throughout the expanded APE. Six previously unrecorded historic archaeological sites (44LS0229, 44LS0230, 44LS0231, 44LS0232, 44LS0233, and 44LS0234) and seven isolated artifact locations (IA 3691-02, IA 3691-03, IA 3691-04, IA 3691-05, IA 3691-06, IA 3691-07, and IA 3691-08) were identified during the survey.

Parcel-specific archival research was conducted for the six parcels in which historic sites were identified, including review of county deed books, wills, chancery cases, and obituaries, and a search of United States Census records. Judging from the results of the archival research, and the results of the archaeological fieldwork, Berger recommends that additional archival research of these parcels or the historical property owners lacks the potential to contribute significant additional knowledge to the history of this portion of Louisa County in the late nineteenth to early twentieth centuries.

Site 44LS0229 represents the remains of a late nineteenth- to early twentieth-century domestic and/or mining-related site, possibly associated with African-American occupation dating to the Reconstruction and Growth era. The cultural deposits are relatively shallow and confined to the surface of the A-horizon. Several intact historic surface features were encountered but appear to represent types (prospecting pits and/or root cellars and outbuilding foundations) that are ubiquitous in this part of Louisa County. The relatively low density and limited range of artifacts and the presence of possible mining features suggest that the site may represent an ephemeral or short-term occupation associated with mining that lacks further research potential. Berger therefore recommends this site as not eligible for the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied but found to be not applicable.

Site 44LS0230 represents the remains of a late nineteenth- to mid-twentieth-century domestic site, possibly associated with African-American occupation dating to the Reconstruction and Growth era. The cultural deposits are relatively shallow and confined to the A-horizon, and no historic surface features or buried intact cultural features were encountered. The complete destruction of the house once associated with the site appears to have resulted in significant disturbance to the soil stratigraphy, diminishing the likelihood of intact deposits. Berger therefore recommends this site as not eligible for the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not

contribute important information about history or prehistory (Criterion D). Criterion C was applied but found to be not applicable.

Site 44LS0231 represents the remains of an early to mid-twentieth-century domestic site, possibly associated with African-American occupation dating to the World War I to World War II era. The cultural deposits are relatively shallow and confined to the A-horizon, and no historic surface features or buried intact cultural features were encountered. The presence of a large surface anomaly suggests that the site's stratigraphy has been significantly impacted by mechanical demolition, disturbing the site's soil stratigraphy and diminishing the likelihood of encountering intact cultural deposits. Berger therefore recommends this site as not eligible for the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied but found to be not applicable.

Site 44LS0232 represents the remains of a late nineteenth- to early to mid-twentieth-century domestic and/or mining related site, possibly associated with African-American occupation dating to the Reconstruction and Growth era. The site has two surface features, but the cultural deposits are relatively shallow and confined to historic fill or the A-horizon, and artifact densities are low and limited to the site's immediate vicinity. The two surface features appear to represent types (prospecting pits and/or root cellars and an outbuilding foundation) that are ubiquitous in this part of Louisa County. The relatively low density and limited range of artifacts and the presence of possible mining features suggest that the site may represent an ephemeral or short-term occupation associated with mining that lacks further research potential. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied but found to be not applicable.

Site 44LS0233 represents the remains of a late nineteenth- to early twentieth-century domestic site, possibly associated with Euro-American occupation dating to the Reconstruction and Growth era. Artifact deposits, while generally shallow and low in density, extended into the upper levels of the B1-horizon, suggesting that intact cultural deposits may still be present. One historic surface feature and remnants of a collapsed log cabin were observed, further suggesting that the site retains some integrity. Berger therefore recommends the site as eligible under Criterion D, as it may yield information important to history. Criteria A, B, and C were applied and found to be not applicable. Given that permanent development plans have not yet been established for the portion of the expanded APE in which Site 44LS0233 is located, Berger recommends that the site be avoided and preserved in place if feasible.

Site 44LS0234 represents the remains of a late nineteenth- to early twentieth-century domestic site, possibly associated with African-American occupation dating to the Reconstruction and Growth era. Although the site has at least one intact historic surface feature, the cultural deposits are relatively shallow and confined to the A-horizon, and artifact density is extremely low. The presence of a large surface anomaly suggests that the site's stratigraphy has been significantly impacted by mechanical demolition, disturbing the site's soil stratigraphy and diminishing the likelihood of encountering intact cultural deposits. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied but found to be not applicable.

IA 3691-02, IA 3691-03, IA 3691-04, IA 3691-05, IA 3691-06, IA 3691-07, and IA 3691-08 all represent isolated prehistoric artifact locations. No additional artifacts were recovered from any of the radial shovel tests excavated around any of the isolated artifact locations, and no intact cultural features or cultural deposits were encountered at the locations. Berger recommends these seven isolated artifact locations as not meeting the VDHR definition of an archaeological site.

I. INTRODUCTION

The Louis Berger Group, Inc. (Berger), Richmond, Virginia, has completed an archaeological survey of the proposed expansion of the area of potential effects (APE) for the proposed undertaking at the North Anna Power Station (NAPS), Louisa County, Virginia, on behalf of Dominion Resources, Inc. (Dominion) (Figure 1). The expanded area of potential effects (APE) consists of (1) a tract of land encompassing approximately 95.6 acres (38.7 hectares) on separate tax parcels located on property outside the NAPS site, at the intersection of Routes 700 and 652 (Figure 2), and (2) to the east, three proposed parking lots encompassing approximately 9.7 acres (3.9 hectares) located within the existing NAPS site (see Figure 1). The total expanded APE is approximately 105.3 acres (42.6 hectares) in size.

The archaeological survey consisted of background research conducted at the Virginia Department of Historic Resources (VDHR) in Richmond and pedestrian survey and subsurface testing throughout the proposed expansion of the APE. The objectives of the archaeological survey, conducted between March 31 and April 15, 2008, were to (1) identify any archaeological sites within the expanded APE and (2) evaluate the possible eligibility of any such sites for inclusion in the National Register of Historic Places (National Register).

In the expanded APE located within the NAPS site, Dominion proposes to build a total of three parking lots with three associated stormwater basins. The western parking lot encompasses 5 acres (2 hectares) of land, and the eastern parking lot is approximately 3.3 acres (1.3 hectares) in size. The third proposed parking lot, located north of Haley Road, encompasses approximately 1.4 acres (0.56 hectares) and is situated on land that has already been heavily disturbed by the construction of the nuclear facility. As the proposed northern parking lot has been artificially cut and graded, and is currently being used as a storage area for fill dirt, no subsurface testing was conducted in this area.

All parcels of the expanded APE located outside the NAPS site have had the archaeological surveys conducted, and final plans for the future use of the land are not yet fully developed.

The following land parcels outside the NAPS site were evaluated for cultural resources: 30-3-A, 30-3-B, 30-3-C, 49, 50, 52 (which includes 51), 53, 54, 55, 56, and 57. Of this additional property outside the NAPS site, parcels 30-3-A, 49, 50, and 55 are not being pursued for acquisition by Dominion at this time.

The archaeological survey was conducted pursuant to the National Historic Preservation Act of 1966 (as amended) and its implementing regulations (36 CFR 800, as revised); the Archaeological and Historic Preservation Act of 1974; Executive Order 11593; and Title 36 of the Code of Federal Regulations, Parts 60-66 and 800 (as appropriate). The field investigations and technical report meet the specifications of the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (*Federal Register* 48:190:44716-44742) United States [U.S.] Department of the Interior 1983) and the VDHR (2003) *Guidelines for Conducting Cultural Resource Surveys in Virginia*. The Project Manager and Project Archaeologist meet or exceed the qualifications described in the Secretary of the Interior's Professional Qualifications Standards (*Federal Register* 48:190:44738-44739) (U.S. Department of the Interior 1983). All cultural materials collected, along with all records of this contract, have been cared for in accordance with the requirements set forth in 36 CFR 79 and will be curated with the VDHR.

This report has been organized into seven chapters. Chapter II describes the project setting. Chapter III presents the background research. The methods used for the archaeological survey are discussed in Chapter IV, and the results of the archaeological survey are presented in Chapter V. Chapter VI provides a summary and recommendations regarding the implications of the archaeological survey. Chapter VII provides a list of the references cited. Appendix A contains an inventory of the artifacts recovered during the archaeological survey and a description of the laboratory methods and analytical techniques used.

VI. SUMMARY AND RECOMMENDATIONS

The Louis Berger Group, Inc. (Berger), Richmond, Virginia, has completed an archaeological survey of the expanded APE for the proposed undertaking at the North Anna Power Station, Louisa County, Virginia, on behalf of Dominion (see Figure 1). The expanded APE is located on the south side of the Lake Anna impoundment on the North Anna River and north and south of Route 700. It consists of (1) a block of land encompassing approximately 95.6 acres (38.7 hectares) on separate tax parcels located outside the NAPS site, and (2) three proposed parking lots encompassing approximately 9.7 acres (3.9 hectares) located within the existing NAPS site. The total expanded APE is approximately 105.3 acres (42.6 hectares) in size.

The objectives of the archaeological survey, conducted between March 31 and April 15, 2008, were to (1) identify any archaeological sites within the expanded APE and (2) evaluate the possible eligibility of any such sites for inclusion in the National Register of Historic Places (National Register). The archaeological survey fieldwork consisted of pedestrian surface survey and shovel testing. Prior to the archaeological fieldwork, background research was conducted at the VDHR in Richmond to determine whether any additional historic properties had been recorded within a 1-mile (1.6-kilometer) radius of the expanded APE subsequent to previous archaeological assessment investigations conducted by Berger (Ahlman and Mullin 2001; Mullin 2006; Jones et al. 2007). Nine historic resources were identified within a 1-mile (1.6-kilometer) radius of the expanded APE. No previously recorded historic resources are located within the expanded APE.

Six previously unrecorded historic archaeological sites (44LS0229, 44LS0230, 44LS0231, 44LS0232, 44LS0233, and 44LS0234) and seven isolated artifact locations (IA 3691-02, IA 3691-03, IA 3691-04, IA 3691-05, IA 3691-06, IA 3691-07, and IA 3691-08) were identified during the survey (see Figure 1).

Parcel specific archival research was conducted for the six parcels in which historic sites were identified. The archival research consisted of a review of the available documentation at the Louisa County courthouse, including deed books, wills, chancery cases, and obituaries. A search of United Census records was also conducted, using the names of property owners as identified from the deed research. Judging from the results of the archival research, and the results of the archaeological fieldwork, Berger recommends that additional archival research of these parcels or the historic property owners lacks the potential to contribute significant additional knowledge to the portion of Louisa County in the late nineteenth to early twentieth centuries.

Site 44LS0229 represents the remains of a late nineteenth to early twentieth-century domestic and/or mining-related site. Although archival research and the recovered artifacts suggest that the site may be associated with African-American occupation dating to the Reconstruction and Growth era, the cultural deposits are relatively shallow and confined to the surface of the A-horizon. Several intact historic surface features were encountered at the site; however, these features appear to represent types (prospecting pits and/or root cellars and outbuilding foundations) that are ubiquitous in this part of Louisa County. The relatively low density and limited range of artifacts and the presence of possible mining related features suggests that the site may represent an ephemeral or short-term occupation associated with mining activities. Such sites generally lack research potential beyond the survey level. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D) (see Table 8). Criterion C was applied but found to be not applicable.

Site 44LS0230 represents the remains of a late nineteenth- to mid-twentieth-century domestic site. Although archival research and the recovered artifacts suggest that the site may be associated with African-American occupation dating to the Reconstruction and Growth era, the cultural deposits are relatively shallow and confined to the A-horizon, and no historic surface features or buried intact cultural features were encountered during the survey. Furthermore, the complete destruction of the house once associated with the site appears to have resulted in significant disturbance to the soil stratigraphy, diminishing the likelihood of intact deposits. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D) (see Table 8). Criterion C was applied but found to be not applicable.

Site 44LS0231 represents the remains of an early to mid-twentieth-century domestic site. Archival research and the recovered artifacts suggest that the site may be associated with African-American occupation dating to the World War I to World War II era, but the cultural deposits are relatively shallow and confined to the A-horizon, and no historic surface features or buried intact cultural features were encountered during the survey. Furthermore, the presence of the large surface anomaly suggests that the site's stratigraphy has been significantly impacted by mechanical activities associated with demolition, disturbing the site's soil stratigraphy and diminishing the likelihood of encountering intact cultural deposits. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D) (see Table 8). Criterion C was applied but found to be not applicable.

Site 44LS0232 represents the remains of a late nineteenth- to early to mid-twentieth-century domestic and/or mining related site. Archival research indicates that the site may be associated with African-American occupation dating to the Reconstruction and Growth era. The site has two surface features, but the cultural deposits are relatively shallow and confined to historic fill or the A-horizon, and artifact densities are low and limited to the immediate vicinity of the site. The two surface features appear to represent types (prospecting pits and/or root cellars and an outbuilding foundation) that are ubiquitous in this part of Louisa County. The relatively low density and limited range of artifacts and the presence of possible mining related features suggest that the site may represent an ephemeral or short-term occupation associated with mining activities. Such sites generally lack research potential beyond the survey level. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D) (see Table 8). Criterion C was applied but found to be not applicable.

Site 44LS0233 represents the remains of a late nineteenth- to early twentieth-century domestic site. Artifact deposits, while generally shallow and low in density, extended into the upper levels of the B1-horizon, suggesting that intact cultural deposits may still be present at the site. One historic surface feature and a collapsed but still extant log cabin were also observed at the site, further suggesting that the site retains some integrity. Archival research and the recovered artifacts indicate that the site may be associated with Euro-American occupation dating to the Reconstruction and Growth era. Berger therefore recommends the site as eligible under Criterion D, as it may yield information important to history (see Table 8). Criterion A (associated with events important in history), Criterion B (association with persons important in history) and Criterion C (embodiment of distinctive characteristics; work of a master; possession of high artistic values; or representative of a component of a larger, significant entity)

were applied and found to be not applicable. Given that permanent development plans have not yet been established for the portion of the expanded APE in which Site 44LS0233 is located, Berger recommends that the site be avoided and preserved in place if feasible.

Site 44LS0234 represents the remains of a late nineteenth- to early twentieth-century domestic site. Archival research indicates that the site may be associated with African-American occupation dating to the Reconstruction and Growth era. Although the site has at least one intact historic surface feature, the cultural deposits are relatively shallow and confined to the A-horizon, and artifact density is extremely low. Furthermore, the presence of the large surface anomaly suggests that the site's stratigraphy has been significantly impacted by mechanical activities associated with demolition, disturbing the site's soil stratigraphy and diminishing the likelihood of encountering intact cultural deposits. Berger therefore recommends this site as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D) (see Table 8). Criterion C was applied but found to be not applicable.

IA 3691-02, IA 3691-03, IA 3691-04, IA 3691-05, IA 3691-06, IA 3691-07, and IA 3691-08 all represent isolated prehistoric artifact locations. As no additional artifacts were recovered from any of the radial shovel tests excavated around any of the isolated artifact locations, and no intact cultural features or cultural deposits were encountered at the location, Berger recommends these seven isolated artifact locations as not meeting the VDHR definition of an archaeological site.

TABLE 8

NATIONAL REGISTER RECOMMENDATIONS FOR
HISTORIC RESOURCES WITHIN THE APE

VDHR NUMBER	SITE TYPE	TEMPORAL PERIOD	RECOMMENDATION
44LS0229	Domestic and/or Mining Related	Late 19 th -Early 20 th c.	Not Eligible
44LS0230	Domestic	Late 19 th - Mid 20 th c.	Not Eligible
44LS0231	Domestic	Early - Mid 20 th c.	Not Eligible
44LS0232	Domestic and/or Mining Related	Late 19 th - Mid 20 th c.	Not Eligible
44LS0233	Domestic	Late 19 th - Early 20 th c.	Eligible
44LS0234	Domestic	Late 19 th – Early 20 th c.	Not Eligible

ARCHAEOLOGICAL SURVEY
AS PART OF A CULTURAL RESOURCE SURVEY
OF THE PROPOSED NORTH ANNA-LADYSMITH
500kV TRANSMISSION LINE

Louisa, Spotsylvania, and Caroline Counties, Virginia

VDHR FILE NO.: 2009-0430

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ABSTRACT

The Louis Berger Group, Inc., has completed a Phase I archaeological survey as part of a cultural resource survey of the proposed North Anna-Ladysmith 500kV transmission line in Louisa, Spotsylvania, and Caroline counties, Virginia, on behalf of Dominion Resources, Inc., in preparation of a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County. The proposed transmission line, approximately 14.5 miles (23.3 kilometers) in length, will be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers will be located adjacent to existing towers but are expected to be constructed with an increase in height greater than 10 percent.

The objectives of the archaeological survey were (1) to document previously recorded cultural resources within the area of potential effects; (2) to identify any previously unrecorded archaeological sites within the project corridor, and (3) to evaluate the possible eligibility of any such sites for listing in the National Register of Historic Places. The fieldwork portion of the survey included a pedestrian reconnaissance of the transmission line right-of-way augmented with subsurface testing at selected locations. Excluding the submerged portions of the project corridor, the total area surveyed for archaeological resources measures approximately 464 acres (188 hectares).

The survey resulted in the identification of four previously unrecorded archaeological sites (44CE0624, 44SP0616, 44SP0617, 44SP0618) and three artifact locations (AL4381-01, AL4381-02, and AL4381-03). The newly recorded sites include one prehistoric site, two historic sites, and one site with both historic and prehistoric components. Three of the newly recorded sites (44CE0624, 44SP0616, and 44SP0617) lack subsurface deposits and have low potential to contain significant archaeological information. As such, these sites are recommended as not eligible for listing in the National Register of Historic Places.

Site 44SP0618, the presumed remains of a mid-nineteenth-century structure, has potential to yield significant archaeological information relative to the Domestic, and possibly the Agriculture/Subsistence themes during the Antebellum Period (1830-1860) through the Reconstruction and Growth (1865-1917) time periods in the Upper Coastal Plain region of Virginia. Berger recommends that Site 44SP0618 be avoided during any future development or modification of the transmission line corridor. If the site cannot be avoided, Berger recommends additional archival research to determine if Site 44SP0618 is eligible for inclusion in the National Register of Historic Places under Criterion A or B. Archaeological investigations are recommended to determine if Site 44SP0618 is eligible under Criterion D. Criterion C was applied to this resource and found to be not applicable.

I. INTRODUCTION

The Louis Berger Group, Inc. (Berger), has completed a Phase I archaeological survey as part of a cultural resource survey of the proposed North Anna-Ladysmith 500kV transmission line in Louisa, Spotsylvania, and Caroline counties, Virginia, on behalf of Dominion Resources, Inc., in preparation for a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County (Figure 1). The proposed transmission line, approximately 14.5 miles (23.3 kilometers) in length, will be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way (ROW). New towers will be located adjacent to existing towers but are expected to be constructed with an increase in height greater than 10 percent.

The objectives of the archaeological survey were (1) to document previously recorded cultural resources within the area of potential effects (APE); (2) to identify any previously unrecorded archaeological sites within the project corridor, and (3) to evaluate the possible eligibility of any such sites for listing in the National Register of Historic Places (National Register). The fieldwork portion of the survey included pedestrian reconnaissance of the transmission line ROW augmented with subsurface testing at selected locations. Excluding the submerged portions of the project corridor, the total area surveyed for archaeological resources measures approximately 464 acres (188 hectares). The pedestrian reconnaissance, conducted August 26-28, 2008, identified areas of no, low, and moderate to high archaeological potential within the project corridor. The subsurface testing, conducted March 16-20, 2009, resulted in the identification of four previously unrecorded archaeological sites (44CE0624, 44SP0616, 44SP0617, 44SP0618) and three artifact locations (AL4381-01, AL4381-02, and AL4381-03).

The archaeological survey was conducted pursuant to the National Historic Preservation Act of 1966 (as amended), the Archaeological and Historical Preservation Act of 1974, Executive Order 11593, and Title 36 of the Code of Federal Regulations, Parts 660-66 and 800 (as appropriate). The field investigations and technical report meet the qualifications specified in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (*Federal Register* 48:190:44716-44742) (United States [U.S.] Department of the Interior 1983) and the Virginia Department of Historic Resources (VDHR) *Guidelines for Conducting Cultural Resource Surveys in Virginia* (VDHR 2001) and *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008). The Project Manager and Project Archaeologist who performed the cultural resource investigations met or exceeded the qualifications described in the Secretary of the Interior's Professional Qualifications Standards (*Federal Register* 48:44738-44739) (U.S. Department of the Interior 1983).

This report has been organized into seven chapters. Chapter II describes the project setting. Chapter III presents the background research. The methods and results of the field inspection are discussed in Chapter IV. Chapter V presents the results of the archaeological survey. Chapter VI provides a summary and recommendations regarding the implications of the archaeological investigation. Chapter VII provides a list of the references cited.

The archaeological investigations were conducted under the direction of Project Manager Eric Voigt. The archaeological fieldwork was conducted by Archaeologist Greg LaBudde, assisted by Crew Chief Keith Googins, and Field Archaeologists Warren Wilson, Sarah Smalt, Zan Rothrock, and Brian Wenham. The report was prepared by Mr. LaBudde. Graphics were prepared by Brad Duplantis and Jacqueline Horsford. C. Carol Halitsky provided editing.

VI. SUMMARY AND RECOMMENDATIONS

A. SUMMARY

Berger has completed a Phase I archaeological survey of the proposed North Anna-Ladysmith 500kV transmission line in Louisa, Spotsylvania, and Caroline counties, Virginia, on behalf of Dominion Resources, Inc., in preparation for a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County (see Figure 1). The proposed transmission line, approximately 14.5 miles (23.3 kilometers) in length, will be constructed entirely within the existing 275-foot-wide (84-meter) ROW. New towers will be located adjacent to existing towers.

The objectives of the archaeological survey were (1) to document previously recorded cultural resources within the APE; (2) to identify any previously unrecorded archaeological sites within the project corridor, and (3) to evaluate the possible eligibility of any such sites for listing in the National Register. The fieldwork portion of the survey consisted of a pedestrian reconnaissance of the transmission line ROW augmented with subsurface testing. Excluding the submerged portions of the project corridor, the total area surveyed for archaeological resources measures approximately 464 acres (188 hectares).

B. ARCHAEOLOGICAL RESOURCES

The survey, which consisted of a pedestrian reconnaissance of the existing ROW, and the excavation of 134 shovel tests at selected locations, resulted in the identification of four previously unrecorded archaeological sites (44CE0624, 44SP0616, 44SP0617, 44SP0618) (see Figure 3a-c) (Table 2) and three artifact locations (AL4381-01, AL4381-02, and AL4381-03).

1. Site 44CE0624

Site 44CE0624 is a surface scatter of architectural debris probably dating to the mid- to late twentieth century. Possibly the remains of a bulldozed structure, the site is nearly completely destroyed and has low potential to contain significant archaeological information relative to the Domestic theme during the Reconstruction (1865-1917) through New Dominion (1945-present) time periods in the Upper Coastal Plain region of Virginia. Berger recommends Site 44CE0624 as not eligible for inclusion in the National Register as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied to the site and found to be not applicable.

2. Site 44SP0616

Site 44SP0616 is a multicomponent site consisting of a prehistoric lithic scatter and a nineteenth- to twentieth-century historic-period scatter of domestic and architectural debris. The site lacks subsurface deposits, and as such, has low potential to contain significant archaeological information relative to the domestic theme during the broad prehistoric period, and during the Early National (1789-1830) through New Dominion (1945-present) time periods in the Upper Coastal Plain region of Virginia. Berger recommends Site 44SP0616 as not eligible for inclusion in the National Register, as it is not associated with the broad patterns of local, state, or national history (Criterion A); it is not associated with individuals of local, state, or national significance (Criterion B); and the archaeological information at the

site will not contribute important information about history or prehistory (Criterion D). Criterion C was applied to the site and found to be not applicable.

3. *Site 44SP0617*

Site 44SP0617 is a prehistoric lithic scatter dating to the Early and Late Archaic periods. The site lacks subsurface deposits, and as such, has low potential to contain significant archaeological information relative to the domestic theme during the Early Archaic and Late Archaic periods in the Upper Coastal Plain region of Virginia. Berger recommends Site 44SP0617 as not eligible for listing in the National Register as it will not contribute important information about history or prehistory (Criterion D). Criteria A, B, and C were applied to this site and found to be not applicable.

4. *Site 44SP0618*

Site 44SP0618 is the presumed remains of a mid-nineteenth-century structure probably associated with a nearby mid-nineteenth-century plantation. The site has potential to yield significant archaeological information relative to the Domestic, and possibly the Agriculture/Subsistence themes during the Antebellum (1830-1860) through Reconstruction and Growth (1865-1917) time periods in the Upper Coastal Plain region of Virginia. Berger recommends that Site 44SP0618 be avoided during any future development or modification of the transmission line corridor. If the site cannot be avoided, Berger recommends additional archival research to determine if Site 44SP0618 is eligible for inclusion in the National Register under Criterion A or B. Archaeological investigations are recommended to determine if Site 44SP0618 is eligible under Criterion D. Criterion C was applied to this resource and found to be not applicable.

TABLE 2

RECOMMENDATIONS FOR NEWLY IDENTIFIED ARCHAEOLOGICAL SITES

VDHR No.	TEMPORAL PERIOD	RECOMMENDATION
44CE0624	Mid-20th Century	Not Eligible
44SP0616	1) Unknown Prehistoric 2) 19th/Early 20th Century	Not Eligible
44SP0617	Early/Late Archaic	Not Eligible
44SP0618	19th Century	Potentially Eligible

ARCHITECTURAL SURVEY OF THE PROPOSED NORTH ANNA-LADYSMITH 500kV TRANSMISSION LINE

Louisa, Spotsylvania, and Caroline Counties, Virginia

VDHR FILE NO.: 2009-0430

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ABSTRACT

The Louis Berger Group, Inc., Richmond, Virginia, has completed a Phase I architectural survey as part of a cultural resource study of the proposed North Anna-Ladysmith 500kV transmission line corridor in Louisa, Caroline, and Spotsylvania counties, Virginia, on behalf of Dominion Resources, Inc., in preparation of a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles (23.3 kilometers) long, will be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers will be located adjacent to but are expected to be more than 10 percent taller than the existing towers.

Following the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*, the architectural area of potential effects for the 14.5-mile (23.3-kilometer) North Anna-Ladysmith 500kV transmission line was defined to include any architectural resources approximately 50 years or older within 0.5 mile (0.8 kilometer) on either side of the existing corridor centerline, owing to a greater than 10 percent increase in tower height.

The objectives of the architectural survey were to (1) review and update existing information on previously recorded architectural resources within the Area of Potential Effects; (2) identify and record, at a reconnaissance level, any previously unrecorded architectural resources within the area of potential effects; and (3) evaluate the eligibility of these resources for listing in the National Register of Historic Places. Thirty-six previously unrecorded architectural resources were surveyed within the area of potential effects, the majority of which were examples of common mid-nineteenth-century to mid-twentieth-century single dwellings and vernacular farm buildings. Berger recommends 35 of the 36 newly surveyed architectural resources and 14 of the 17 previously recorded architectural resources in the surveyed area as *not eligible* for inclusion in the National Register of Historic Places, as none appear to be associated with significant events or persons (Criteria A and B), they do not possess characteristics of demonstrable significance with respect to design, construction, or use of materials (Criterion C), and they have not yielded, nor are they likely to yield, information important to prehistory or history (Criterion D). Three of the 17 previously recorded resources within the area of potential effects could not be surveyed because they were made inaccessible by locked and gated private roads: Pine Forest (088-0054), Bel-air (088-0133), and 4236 Lewiston Road (088-5044). One of these, Pine Forest, was determined to be not eligible for listing in the National Register of Historic Places by the Virginia Department of Historic Resources in December 1980. The other two remain unevaluated. One newly surveyed resource (016-5042 / Farm, Blantons Road) is recommended as eligible for inclusion in the National Register of Historic Places.

I. INTRODUCTION

The Louis Berger Group, Inc., Richmond, Virginia, has completed a Phase I architectural survey as part of a cultural resource study of the proposed North Anna-Ladysmith 500kV transmission line corridor in Louisa, Caroline, and Spotsylvania counties, Virginia, on behalf of Dominion Resources, Inc., in preparation of a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles (23.3 kilometers) long, will be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers will be located adjacent to but are expected to be 10 percent taller than the existing towers.

The cultural resource study included a Phase I archaeological survey and architectural survey within the area of potential effects (APE). Following *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (Virginia Department of Historic Resources 2008), the architectural APE for the 14.5-mile (23.3-kilometer) North Anna-Ladysmith 500kV transmission line was defined to include any architectural resources approximately 50 years or older within 0.5 mile (0.8 kilometer) on either side of the existing corridor centerline, owing to a greater than 10 percent increase in tower height (Figure 1). Research concerning previously recorded cultural resources and past cultural resource investigations was conducted in the archives of the Virginia Department of Historic Resources (VDHR). Prior to the fieldwork, the background research identified 17 previously recorded architectural resources within the architectural APE (Figure 2a-c). Tax records were reviewed through the county websites for Louisa, Spotsylvania, and Caroline counties to obtain dates of construction, acreage, and ownership information on the previously unrecorded resources.

The objectives of the architectural survey were (1) to review and update existing information on previously recorded architectural resources within the Area of Potential Effects (APE); (2) to identify and record, at a reconnaissance level, any previously unrecorded architectural resources within the APE; and (3) to evaluate the eligibility of these resources for listing in the National Register. Research concerning previously recorded cultural resources and past cultural resource investigations was conducted in the archives of the VDHR. Prior to the fieldwork, the background research identified 17 previously recorded architectural resources within the architectural APE (Figure 2a-c). Tax records were reviewed through the county websites for Louisa, Spotsylvania, and Caroline counties to obtain dates of construction, acreage, and ownership information on the previously unrecorded resources.

The cultural resource survey was conducted pursuant to the National Historic Preservation Act of 1966 (as amended) and its implementing regulations (36 CFR 800, as revised); the Archaeological and Historic Preservation Act of 1974; Executive Order 11593; and Title 36 of the Code of Federal Regulations, Parts 60-66 and 800 (as appropriate). The field investigations and technical report meet the specifications of the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (*Federal Register* 48:190:44716-44742) (United States [U.S.] Department of the Interior 1983) and the VDHR (2001) *Guidelines for Conducting Cultural Resource Surveys in Virginia*. The Project Manager, Project Archaeologist, and Project Architectural Historian meet or exceed the qualifications described in the Secretary of the Interior's Professional Qualifications Standards (*Federal Register* 48:190:44738-44739) (U.S. Department of the Interior 1983).

This report has been organized into five chapters. Chapter II presents the background research. Chapter III presents the methods and results of the architectural survey. Chapter IV provides a summary and recommendations regarding the implications of the cultural resource investigation. Chapter V provides a list of the references cited.

IV. SUMMARY AND RECOMMENDATIONS

A. SUMMARY

The Louis Berger Group, Inc., Richmond, Virginia, has completed a Phase I architectural survey as part of a cultural resource study of the proposed North Anna-Ladysmith 500kV transmission line corridor in Louisa, Caroline, and Spotsylvania counties, Virginia, on behalf of Dominion Resources, Inc., in preparation of a Virginia State Corporation Commission application. The proposed 500kV transmission line begins at the North Anna Substation in Louisa County, crosses Lake Anna into Spotsylvania County, and continues east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles (23.3 kilometers) long, will be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers will be located adjacent to but are expected to be 10 percent taller than existing towers.

The objectives of the architectural survey were (1) to review and update existing information on previously recorded architectural resources within the APE; (2) to identify and record, at a reconnaissance level, any previously unrecorded architectural resources within the APE; and (3) evaluate the eligibility of these resources for listing in the National Register.

Prior to the fieldwork, Berger's background research identified 17 previously recorded architectural resources within the architectural APE (Figure 2a-c). Three of the 17 previously recorded resources within the area of potential effects could not be surveyed because they were made inaccessible by locked and gated private roads: Pine Forest (088-0054), Bel-air (088-0133), and 4236 Lewiston Road (088-5044). One of these, Pine Forest, was determined to be not eligible for listing in the National Register of Historic Places by the Virginia Department of Historic Resources in December 1980. The other two remain unevaluated.

Tax records were reviewed through the county websites for Louisa, Spotsylvania, and Caroline counties to obtain dates of construction, acreage, and ownership information on previously unrecorded resources. Thirty-six previously unrecorded architectural resources were identified and surveyed within the area of potential effects, the majority of which were examples of common mid-nineteenth-century to mid-twentieth-century single dwellings and vernacular farm buildings.

B. RECOMMENDATIONS

A summary of the eligibility recommendations for all of the resources within the APE can be found in Table 2 at the end of this chapter.

Caroline County

One surveyed resource in Caroline County, a farm on Blanton's Road (VDHR No. 016-5042), is recommended eligible for listing in the National Register as an excellent example of a mid-nineteenth through early twentieth-century farm complex in rural Caroline County, Virginia. Although it appears to be vacant (with the exception of grazing cattle), the circa 1860 farm is remarkably intact, with numerous outbuildings, including a detached kitchen. It is recommended eligible under Criterion A for its association with the development of Caroline County agriculture and rural society in the nineteenth century, and under Criterion C for its architectural significance. The intact single dwelling and associated outbuildings retain a high level of integrity sufficient to demonstrate the property's original domestic and agricultural functions.

The remaining eight resources in Caroline County are recommended *not eligible*, as they do not possess sufficient architectural significance with respect to design, construction or use of materials (Criterion C). They do not appear to be associated with significant broad patterns, historic events or persons (Criteria A and B). They have not yielded, nor are they likely to yield, information important to history (Criterion D). Many of them are deteriorated or have been altered over the years, diminishing their architectural integrity.

The 1916 Allen's Store (016-0060) replaced the 1870 Blanton's Store that occupied the same site and while broadly representative of the rural economy of Caroline County in the early twentieth century, it does not possess outstanding architectural or historical significance. The building retains much of its original fabric but is currently suffering owing to vacancy and neglect.

Both the J.F. Davis House (016-0062) and Mount Tea Rose (016-0247), dating to circa 1900 and 159, respectively, have been subject to extensive alterations and updates: the former has had all of its original siding, windows, and porch materials replaced, and the latter has been compromised through the large, attached garage addition and replacement of original features, including the windows.

The two houses on Countyline Church Road (016-5043 and 016-5044), the house at 6017 Gatewood Road (016-5046), and the house on Cedon Road (016-5047) are all examples of undistinguished wood-frame single dwellings constructed between circa 1930 and circa 1940 that lack historical and architectural significance and have been subject to alterations, including replacement roofing materials and windows.

In addition to lacking sufficient historical and architectural significance, the circa 1930 farm on Bullocks Road (016-5045) has a house and other buildings that are vacant and unmaintained, and have seen their architectural integrity diminished through deterioration owing to neglect.

Spotsylvania County

All 41 resources that were surveyed in Spotsylvania County are recommended *not eligible*, as they do not possess sufficient architectural significance with respect to design, construction or use of materials (Criterion C). They do not appear to be associated with significant broad patterns, historic events or persons (Criteria A and B). They have not yielded, nor are they likely to yield, information important to history (Criterion D). The majority of these resources are mid-nineteenth- to mid-twentieth-century single dwellings and vernacular farm buildings that do not exhibit architectural or historical significance and are common examples of their type. Many of them are deteriorated or have been altered over the years, diminishing their architectural integrity.

The following 11 resources were constructed between circa 1940 and circa 1960, and none of them possess notable architectural or historical significance. They are predominantly simple wood-frame, concrete-block, or brick-veneer single dwellings constructed with elements of the Colonial Revival/Cape Cod or Ranch styles that can be readily found throughout Spotsylvania County and Virginia. Many have been altered through the replacement of original exterior materials including siding, roofing, windows, and doors.

088-5335 (House, Lewiston Road)	088-5336 (House, Lewiston Road)
088-5338 (House, 3820 Lewiston Road)	088-5347 (House, Partlow Road)
088-5348 (House, Partlow Road)	088-5350 (House, Fairview Road)
088-5353 (House, 3101 Partlow Road)	088-5354 (House, Winding Road)
088-5356 (House, 3631 Shirleys Hill Road)	088-5359 (House, 3300 Winding Road)
088-5362 (House, Blantons Road)	

The following three commercial/institutional buildings were all constructed between circa 1945 and circa 1960: 088-5340 (Weaver Auto Care), 088-5351 (Partlow Ruritan Club), and 088-5352 (Spotsylvania Volunteer Fire Department). They do not possess any known historical significance, nor do they exhibit notable architectural features that would merit listing in the National Register. Partlow Ruritan Club is a wood-frame building that has had its original siding and windows replaced, while Weaver Auto Care and

the Spotsylvania Volunteer Fire Department building are both nondescript mid-twentieth-century concrete-block buildings that are common examples of their type.

VDHR No. 088-5346 (Farm, Partlow Road) and 088-5361 (Farm, Blantons Road) are both mid-twentieth-century farms dating to between circa 1940 and circa 1945. The former does not appear to be a working farm now but a residential property that happens to have retained a collection of well-maintained agricultural outbuildings. The latter has no associated dwelling, and the primary resource is a circa 1940 concrete-block barn. The remaining resources associated with the farm on Blantons Road suffer from neglect and range in condition from fair to ruinous. Both farms contain common examples of barns, sheds, and other outbuildings dating to this time period, none of which possesses outstanding architectural or historical significance.

The following 16 resources are single dwellings and/or vernacular farm buildings dating to between circa 1900 and circa 1930. None have any known historical associations of note and all are unremarkable from an architectural standpoint. Many have been altered with replacement building materials over time and others suffer from vacancy, deterioration, or neglect. One, 088-5342 (House and Barns, Wallers Road), consists of a circa 1990 contemporary single dwelling with a vacant circa 1900 single dwelling, shed, and barn, and a later garage.

088-5013 (House, Breaknock Road)	088-5103 (3501 Winding Road)
088-5104 (3341 Winding Road)	088-5109 (3120 Winding Road)
088-5113 (3049 Partlow Road)	088-5114 (House, 22534 Partlow Road)
088-5363 (Many Rock Farm, Boggs Drive)	088-5280 (House, 4031 Moss Lane)
088-5337 (House, 3939 Lewiston Road)	088-5342 (House and Barns, Wallers Road)
088-5344 (House, Partlow Road)	088-5349 (Barn and Outbuildings, Shirleys Hill Road)
088-5355 (House, 8806 Marye Road)	088-5357 (House, Shirleys Hill Road)
088-5358 (Barn, Wallers Road)	088-5360 (Tenant Quarters, Blantons Road)

Seven resources date to the nineteenth century. Two are religious properties: 088-5345 (Cemetery, Wallers Road) and 088-0123 (Saint John's Church, 4040 Lewiston Road). The remaining five are a combination of single dwellings and vernacular farm buildings dating to between circa 1820 and circa 1885. The cemetery on Wallers Road (088-5345) is associated with the Waller family and contains nineteen marked graves: the oldest dated burial is 1823, but the stone commemorating that death appears to be more recent. Although it is associated with the Wallers, a once-prominent local family after whom several landmarks (including the road) are named, the cemetery lacks outstanding architectural and historical significance. Saint John's Church (088-0123) is an undistinguished example of a circa 1890 vernacular wood-frame church with Gothic Revival influences, and lacks sufficient architectural and historical significance. Neither the cemetery nor the church appears to be eligible under Criterion Consideration A, governing religious properties.

According to the previous surveys conducted in 1967 and 1971, Llangollen (088-0126) dates to 1814 and was once a school. In addition to lacking architectural and historical significance, the building appears to have been extensively altered over time and is also in poor condition, undermining its architectural integrity. The house at 3944 Lewiston Road (088-5079) is a relatively common example of a late-nineteenth-century, two-story, cross-gabled wood-frame single dwelling that has been extensively altered with modern updates such as new siding, windows, and roofing and as such has lost much of its architectural integrity.

Although it maintains a fair amount of architectural integrity, the dwelling at Rockland Farm (088-5339) has been modified over the years with additions and a large, non-historic deck, and several of the agricultural buildings have deteriorated to the point of near-collapse. The property is not used agriculturally, and the condition of the barns further diminishes the integrity of feeling and association that could have made this an excellent example of an early nineteenth-century Spotsylvania County farm.

The house at 3425 Lewiston Road (088-5341) is a commonplace example of a late nineteenth century two-story side-gabled house that can be found throughout Spotsylvania County and Virginia. It has been subject to a number of alterations, including additions and replacement siding and windows. The circa 1860 House and Barns at 9900 Wallers Road (088-5343), once part of the Wildwood Plantation, were historically associated with the Waller family, after whom the road, a historic tavern, and a church located approximately a mile to the northeast are named. In addition to being vacant and deteriorated, the house lacks historical and architectural significance necessary to warrant National Register eligibility.

Two resources within the APE in Spotsylvania County date to the eighteenth century, and both were previously recorded but not evaluated. The Federal-style William Walker House (088-5039) dates to circa 1795 and although there are no sources for the claim, previous documentation notes that Kunta Kinte (made famous in the book and television series *Roots*) was enslaved at this plantation. Without further evidence to support this anecdotal information, the property does not appear to be associated with significant broad patterns, historic events, or persons. Although it was previously described as an unaltered example of a Federal-style southern Spotsylvania County farmhouse, its architectural integrity has since been diminished with recent updates, including replacement siding, windows, and a sizeable addition. The period detached kitchen has also been altered through replacement of the original siding and roofing materials.

Livingston Farm (088-0120) is a circa 1770 Georgian-style single dwelling with outbuildings dating to between circa 1900 and circa 1940. The property also includes a contemporary pole barn used for hay storage. Although the house is quite old for Spotsylvania County, it does not retain a particularly high level of exterior architectural integrity as a result of modifications such as replacement siding and roofing, substantial later additions, and a modified and partially enclosed front porch. Moreover, the surrounding agricultural outbuildings all appear to date to the twentieth century and represent a different period of the property's history.

TABLE 2

NATIONAL REGISTER RECOMMENDATIONS FOR
ARCHITECTURAL RESOURCES WITHIN THE APE

VDHR NO.	SITE TYPE/ NAME, LOCATION	RECOMMENDATION
<i>LOUISA COUNTY</i>		
-- NO RESOURCES --		
<i>CAROLINE COUNTY</i>		
1 016-0060	Allen's Store and Warehouses	Not Eligible
2 016-0062	J.F. Davis House	Not Eligible
3 016-0247	Mount Tea Rose	Not Eligible
4 016-5042	Farm, Blantons Road	RECOMMENDED ELIGIBLE
5 016-5043	House, Countyline Church Road	Not Eligible
6 016-5044	House, Countyline Church Road	Not Eligible
7 016-5045	Farm, Bullocks Road	Not Eligible
8 016-5046	House, 6017 Gatewood Road	Not Eligible
9 016-5047	House, Cedon Road	Not Eligible
<i>SPOTSYLVANIA COUNTY</i>		
10 088-0054	Pine Forest	Not Accessible / Not Eligible (VDHR 1980)
11 088-0120	Livingston Farm	Not Eligible
12 088-0123	Saint John's Church, 4040 Lewiston Road	Not Eligible
13 088-0126	Llangollen	Not Eligible

TABLE 2 (continued)

	VDHR NO.	SITE TYPE/ NAME, LOCATION	RECOMMENDATION
14	088-0133	Bel-air	Not Accessible
15	088-5013	House, Breaknock Road	Not Eligible
16	088-5039	William Walker House	Not Eligible
17	088-5044	4236 Lewiston Road	Not Accessible
18	088-5079	3944 Lewiston Road	Not Eligible
19	088-5103	3501 Winding Road	Not Eligible
20	088-5104	3341 Winding Road	Not Eligible
21	088-5109	3120 Winding Road	Not Eligible
22	088-5113	3049 Partlow Road	Not Eligible
23	088-5114	House, 22534 Partlow Road	Not Eligible
24	088-5280	House, 4031 Moss Lane	Not Eligible
25	088-5335	House, Lewiston Road	Not Eligible
26	088-5336	House, Lewiston Road	Not Eligible
27	088-5337	House, 3939 Lewiston Road	Not Eligible
28	088-5338	House, 3820 Lewiston Road	Not Eligible
29	088-5339	Rockland Farm, 3609 Lewiston Road	Not Eligible
30	088-5340	Weaver Auto Care, 3519 Lewiston Road	Not Eligible
31	088-5341	House, 3425 Lewiston Road	Not Eligible
32	088-5342	House and Barns, Wallers Road	Not Eligible
33	088-5343	Wildwood / House and Barns, 9900 Wallers Road	Not Eligible
34	088-5344	Barn, Wallers Road	Not Eligible
35	088-5345	Cemetery, Wallers Road	Not Eligible
36	088-5346	Farm, Partlow Road	Not Eligible
37	088-5347	House, Partlow Road	Not Eligible
38	088-5348	House, Partlow Road	Not Eligible
39	088-5349	House, Partlow Road	Not Eligible
40	088-5350	House, Fairview Road	Not Eligible
41	088-5351	Partlow Ruritan Club, 3229 Partlow Road	Not Eligible
42	088-5352	Spotsylvania Volunteer Fire Department, Partlow Road	Not Eligible
43	088-5353	House, 3101 Partlow Road	Not Eligible
44	088-5354	House, Winding Road	Not Eligible
45	088-5355	House, 8806 Marye Road	Not Eligible
46	088-5356	House, 3631 Shirleys Hill Road	Not Eligible
47	088-5357	House, Shirleys Hill Road	Not Eligible
48	088-5358	Barn and Outbuildings, Shirleys Hill Road	Not Eligible
49	088-5359	House, 3300 Winding Road	Not Eligible
50	088-5360	Tenant Quarters, Blantons Road	Not Eligible
51	088-5361	Farm, Blantons Road	Not Eligible
52	088-5362	House, Blantons Road	Not Eligible
53	088-5363	Many Rock Farm, Boggs Drive	Not Eligible

**VIEWSHED IMPACT ANALYSIS
FOR
VDHR#088-0126, #088-0133 and #016-5042**

**ADDENDUM TO
ARCHITECTURAL SURVEY
OF THE PROPOSED NORTH ANNA-LADYSMITH
500kV TRANSMISSION LINE**

Louisa, Caroline, and Spotsylvania Counties, Virginia

VDHR FILE NO.: 2009-0430

Prepared for:

**DOMINION RESOURCES, INC.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, Virginia 23060
(804) 273-2170**

Prepared by:

Megan Rupnik, Emily Larson, James Puckett, George Dizelos, and Barry Layman

**THE LOUIS BERGER GROUP, INC.
801 E. Main Street, Suite 500
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October 2010

ABSTRACT

The Louis Berger Group, Inc., Richmond, Virginia, has completed a viewshed impact analysis as an addendum to the *Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia* (Berger 2009). This work was conducted as part of a cultural resource study of the proposed North Anna-Ladysmith 500kV transmission line corridor in Louisa, Caroline, and Spotsylvania counties, Virginia, on behalf of Dominion Resources, Inc., (Dominion). A current schedule for submission of the proposed project to the Virginia State Corporation Commission has not been finalized. The proposed 500kV transmission line would begin at the North Anna Power Station in Louisa County, cross Lake Anna into Spotsylvania County, and continue east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles (23.3 kilometers) long, would be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers would be located adjacent to existing towers. Also, tower heights would be similar to existing towers, though some may be more than 10 percent taller than existing towers.

Based on the results of the 2009 *Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia*, and based on subsequent consultations with VDHR, the viewshed impact analysis was completed for three resources located in the Architectural APE: VDHR #088-0126, #088-0133, and #016-5042. Following the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*, the architectural APE was defined as 0.5 mile buffer on either side of the existing corridor centerline for resources determined eligible for the National Register of Historic Places (National Register). As a result of the architectural survey and consultations with VDHR, VDHR #088-0126 and #016-5042 are being treated as eligible for listing in National Register. Berger recommended VDHR #016-5042 as eligible, and VDHR concurred. VDHR requested additional information on VDHR #088-0126, and Berger is treating the resource as eligible. VDHR #088-0133 and a second architectural resource, VDHR #088-5044, were not accessible during the initial architectural survey and have not been evaluated for the National Register. For this study, Dominion was able to obtain property access, and during the fieldwork, it was determined that VDHR #088-5044 was incorrectly mapped in the files at the Virginia Department of Historic Resources (VDHR), and its actual location is outside the architectural APE. VDHR was notified of this error and has corrected their mapping of the resource. Therefore, the viewshed impact analysis was only completed for VDHR #088-0126, #088-0133 and #016-5042. Based on the field visit and analysis, VDHR #088-0126 and #088-0133 would not have any views of the proposed transmission line due to dense vegetation. A photosimulation was completed for VDHR #016-5042. Due to the presence of the existing transmission line and ROW, and based on consultations with VDHR, the visual impact on VDHR #016-5042 was determined to be low.

1. INTRODUCTION

The Louis Berger Group, Inc. (Berger), Richmond, Virginia, has completed a viewshed impact analysis as an addendum to the *Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia* (Berger 2009). This work was conducted as part of a cultural resource study of the proposed North Anna-Ladysmith 500kV transmission line corridor in Louisa, Caroline, and Spotsylvania counties, Virginia, on behalf of Dominion Resources, Inc. (Dominion). A current schedule for submission of the proposed project to the Virginia State Corporation Commission has not been finalized. The proposed 500kV transmission line would begin at the North Anna Power Station in Louisa County, cross Lake Anna into Spotsylvania County, and continue east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles (23.3 kilometers) long, would be constructed entirely within the existing 275-foot-wide (84-meter) right-of-way. New towers would be located adjacent to existing towers. Also, tower heights would be similar to existing towers, though some may be more than 10 percent taller than existing towers.

Based on the results of the 2009 *Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia*, and based on subsequent consultations with VDHR, the viewshed impact analysis was completed for three resources located in the Architectural APE: VDHR #088-0126, #088-0133, and #016-5042. Following the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*, the architectural APE was defined as 0.5 mile buffer on either side of the existing corridor centerline for resources determined eligible for the National Register of Historic Places (National Register). No previously surveyed architectural resources located in the APE had been determined eligible for the National Register. As a result of the architectural survey and consultations with VDHR, VDHR #088-0126 and #016-5042 are being treated as eligible for listing in National Register. Berger recommended VDHR #016-5042 as eligible, and the Virginia Department of Historic Resources (VDHR) concurred. A viewshed analysis and photosimulation was completed for the resource.

VDHR requested additional information on VDHR #088-0126, and Berger is, for the purpose of this study, treating the resource as eligible. A viewshed analysis was conducted for VDHR #088-0126. Based on the viewshed analysis and field visit, VDHR #088-0126 would not have any views of the proposed transmission line due to distance and intervening vegetation.

VDHR #088-0133 and a second architectural resource, VDHR #088-5044, were not accessible during the initial architectural survey and have not been previously evaluated for the National Register. For this study, Dominion was able to obtain property access, and during the fieldwork, it was determined that VDHR #088-5044 was incorrectly mapped in the files at the VDHR, and its actual location is outside the architectural APE. VDHR was notified of this error and has corrected their mapping of the resource. Since it was determined that the resource was located outside the architectural APE, a viewshed impact analysis was not completed for VDHR #088-5044.

A reconnaissance-level survey of VDHR #088-0133 was conducted, however, during the viewshed and impact analysis. As a result of the survey, Berger is recommending VDHR #088-0133 as eligible for the National Register under Criterion C. Based on the viewshed analysis and field visit, VDHR #088-0133 would not have any views of the proposed transmission line due to dense vegetation.

Attachment CR-1 Item #2

Correspondence to and from Tribes, VDHR and interested parties
after February 2, 2009 which is not already on NRC Docket No. 52-017.



COMMONWEALTH of VIRGINIA

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Secretary of Natural Resources

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Kathleen S. Kilpatrick
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November 9, 2009

Mr. Tony Banks
Dominion Resource Services, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060

Re: (1) *Archaeological Survey as part of a Cultural Resource Survey of the Proposed North Anna – Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia*

(2) *Architectural Survey of the Proposed North Anna – Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia*

DHR File No. 2009-0430

Dear Mr. Banks:

We have received the reports referenced above prepared by The Louis Berger Group, Inc. for Dominion Resources, Inc. These studies were conducted in accordance with Section II of DHR's *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008). We reserve the right to provide additional comment as part of consultation with any responsible Federal agency under Section 106 of the National Historic Preservation Act, if applicable.

Archaeological shovel testing was conducted at 56 proposed tower locations and at several other points where warranted. The survey identified four new archaeological sites and three artifact locations. The locations are, by definition, not eligible for listing in the National Register of Historic Places and no additional investigation of these resources is warranted. The consultant recommends, and DHR concurs, that sites **44CE0624**, **44SP0616**, and **44SP0617** are *not eligible* for listing in the National Register and that site **44SP0618** is *potentially eligible* for listing. We understand that site 44SP0618 will be avoided. As such, no further investigations are warranted at this time. If and when access roads and staging areas are identified and if those locations require additional ground disturbance of intact soils, additional archaeological survey of those locations is recommended.

Regarding the architectural survey, the consultant recommends, and DHR concurs, that the Farm, Blantons Road (DHR ID #016-5042) is *potentially eligible* for listing in the National Register. It is our opinion that the three following properties in Spotsylvania County may also be potentially eligible and warrant additional consideration:

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Roanoke Region Office
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088-054 Pine Forest: Not surveyed due to inaccessibility. Though the report references the property being found ineligible in 1980, our review of the archives file reveals some confusion regarding eligibility. It appears that the property was reconsidered and found eligible, but that there was concern at that time about its deteriorated condition. The file contains 1980s correspondence from someone who acquired the property with plans to restore it; however, there is nothing in the file to indicate whether this ever occurred. If the property is still extant, it could be eligible, or the property may indeed be a ruin.

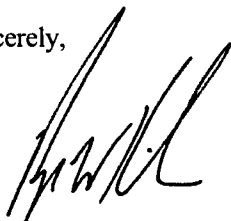
088-0126 Llangollen: This property was surveyed by the consultant and recommended ineligible due to exterior alterations and neglect. Intrigued by its form and two interior chimneys, we reviewed the archives file and concluded that this property may have significant interior features that would compensate for exterior integrity issues.

088-0133 Bel-air: This property was not surveyed due to inaccessibility. The archives file contains nothing recent and the photos show a property in neglected condition. Like Pine Forest, if this property is still standing and has received appropriate attention, it may be eligible.

In the case of Pine Forest and Bel-air, we recommend the use of aerial photos and/or Google Earth to confirm whether the properties are still standing. If they are extant and there is reason to conclude that they are in stable condition, we recommend consideration of the effect of the transmission line on these two properties. In the case of Llangollen, we recommend additional evaluation to include documentation of the interior.

Please provide the requested information at your earliest convenience. We are uncertain whether the tiered analysis of impacts on known resources as presented in Section I of DHR's *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* has been completed. Please ensure that this stage of analysis is satisfied prior to submitting your application to the SCC. Finally, please submit to our Archives the necessary architectural documentation for the 53 surveyed properties. If you have any questions concerning our review of this project, please do not hesitate to contact me at roger.kirchen@dhr.virginia.gov.

Sincerely,



Roger W. Kirchen, Archaeologist
Office of Review and Compliance

c: Mr. Eric Voigt, The Louis Berger Group, Inc.

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November 9, 2009

Mr. Tony Banks
Dominion Resource Services, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060

RE: (1) *Archaeological Survey, Dominion Combined License Project, North Anna Power Station, Louisa County, Virginia* (June 2009)

(2) *Cultural Resource Assessment of a Proposed Heavy Haul Route to the North Anna Power Station ESP Site, Louisa, Hanover, Caroline, and King William Counties, Virginia* (June 2009)

DHR File No. 2000-1210

Dear Mr. Banks:

We have received for consideration the above-referenced documents prepared by The Louis Berger Group, Inc. for Dominion Resource Services, Inc. We are pleased to inform you that these studies meet DHR's *Survey Guidelines* (revised 2003).

The archaeological survey covered 105.3 acres, which includes 9.7 acres within the existing North Anna property and 95.6 acres of adjacent and contiguous land. The survey identified six new archaeological sites and seven artifact locations. The locations are, by definition, not eligible for listing in the National Register of Historic Places and no further investigation of these resources is warranted. The consultant recommends, and DHR concurs, that sites **44LS0229, 0230, 0231, 0232, and 0234** are *not eligible* for listing in the National Register. The remaining site, **44LS0233**, is recommended as *potentially eligible* and DHR concurs. We understand that site 44LS0233 will be avoided and preserved in place throughout construction and operation of the new generation unit. Accordingly, we do not recommend further evaluation at this time. It has previously been agreed that four other recorded sites – 44LS0221, 44LS0222, 44LS0226, and 44LS0227 – will be avoided during construction and operation. If at any point, avoidance of these sites is deemed impractical, please reinitiate consultation with our office concerning the effect of this undertaking.

Regarding the *Cultural Resource Assessment*, we concur that if any ground-disturbing activity is to take place within the Haley East parcel, additional archaeological survey is warranted. Furthermore, DHR concurs with the recommendations regarding the need for additional cultural resource studies in support of the heavy haul route and must stress the importance of consultation with the Mattaponi and Upper Mattaponi on impacts to the

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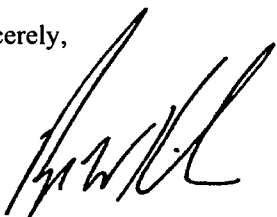
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historic ferry and archaeological sites along the North Anna River. Impacts, even if temporary and reversible, to historic districts through which the heavy haul route runs should also be considered.

Thank you for your continued consultation on the potential impacts of this project on historic resources. We look forward to working with NRC and Dominion to conclude the Section 106 process. If you have any questions, please do not hesitate to contact me at roger.kirchen@dhr.virginia.gov.

Sincerely,



Roger W. Kirchen, Archaeologist
Office of Review and Compliance

c: Mr. Eric Voigt, The Louis Berger Group, Inc.

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May 18, 2010

COL-0535

Mr. Roger Kirchen, Project Review Archaeologist
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Mr. Kirchen:

**Re: Dominion Virginia Power, North Anna Power Station Unit 3
Viewshed Impact Analysis for the Proposed North Anna-Ladysmith
500 kV Transmission Line, Louisa, Caroline and Spotsylvania Counties, Virginia
VDHR File No.: 2009-0430**

Enclosed for your review and concurrence is a viewshed impact analysis prepared as an addendum to the *Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia*, (Architectural Survey) previously submitted by Dominion Virginia Power (Dominion) to the Virginia Department of Historic Resources (VDHR) on September 25, 2009 (COL-0467). This analysis was conducted by the Louis Berger Group as part of a cultural resource study of the proposed North Anna-Ladysmith 500 kV transmission line corridor in Louisa, Spotsylvania, and Caroline Counties. The field work was conducted September 22, 2009 and the final report is dated March 2010.

Pending state and federal regulatory approval of a new generation unit at the North Anna Power Station site, the proposed 500kV transmission line would begin at the North Anna Power Station in Louisa County, cross Lake Anna into Spotsylvania County, and continue east to its terminus at the Ladysmith Switching Substation in Caroline County. The line, approximately 14.5 miles long, would be constructed entirely within the existing 275-foot-wide right-of-way (ROW). New towers would be located adjacent to existing towers. The new tower heights would be similar to existing towers, though some may be more than 10 percent taller than existing towers.

Based on the results of the 2009 Architectural Study, the viewshed impact analysis was to be completed for three resources located in the Architectural Area of Potential Effects (APE): VDHR #088-0133, #088-5044, and #016-5042. Following the *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*, the architectural APE was defined as 0.5 mile buffer on either side of the existing corridor centerline for resources determined eligible for the National Register of Historic Places (National Register). VDHR #088-0133 and #088-5044 were not accessible during the initial architectural survey and were not evaluated for the

National Register. VDHR #016-5042 was the only architectural resource in the APE accessible and recommended as eligible.

For this enclosed analysis, Dominion was able to obtain property access for VDHR #088-0133 and #088-5044. During conduct of the field work, it was determined that VDHR #088-5044 was incorrectly mapped in the VDHR files, and its actual location is outside the architectural APE. VDHR was notified of this and has corrected their mapping of the resource. Therefore, it was only necessary to complete the viewshed impact analysis for VDHR #088-0133 and #016-5042. Based on the field visit and analysis, due to dense vegetation, VDHR #088-0133 would not have any views of the proposed transmission line. A photosimulation was completed for VDHR #016-5042. The visual impact on VDHR #016-5042 would be low to moderate due to the presence of the existing transmission line and ROW corridor. As a matter of practice, visual impacts would be mitigated by aligning the new towers with the existing towers, selecting material colors that would blend into the surroundings, and maintaining a screen of natural vegetation in the corridor on each side of major highways and rivers.

Dominion has designed the North Anna Unit 3 project activities to ensure that historic resources will not be impacted. Dominion seeks VDHR concurrence that construction of the transmission line towers will have no effect on historic resources. Dominion will continue to consult with VDHR until the Section 106 process is completed, to consult with U.S. Nuclear Regulatory Commission (USNRC) to meet its regulatory obligations, and to address historic resources and preservation, as appropriate.

If you have any questions, please contact Tony Banks at 804-273-2170 or Tony.Banks@dom.com.

Very truly yours,



Eugene S. Grecheck

cc: Project File

Enclosure (2 copies):

Viewshed Impact Analysis for VDHR #088-0133 and #016-5042, Addendum to Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, March 2010



THE Louis Berger Group, INC.

801 East Main Street, Suite 500, Richmond, Virginia 23219
Tel 804 225 0348 Fax 804 225 0311 www.louisberger.com

June 25, 2010

Mr. Roger Kirchen, Archaeologist
Office of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Dear Mr. Kirchen:

This letter and submittal are intended as a follow-up to your letter to Tony Banks dated November 9, 2009, as well as Andrea Kampinen's e-mail to Eric Voigt dated June 16, 2010 (attached). Enclosed please find the original hard copy DSS forms, photos, and site plans associated with the already-submitted *Architectural Survey Report of the Proposed North Anna-Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia* (VDHR File No. 2009-0430). The following comments address specific questions raised by yourself and Ms. Kampinen regarding resources within the project APE.

Regarding Pine Forest (VDHR# 088-0054): We were denied access to this resource and consequently it could not be surveyed. It was not included on the list of potentially eligible properties for which viewshed analysis and photo-simulations were performed, as it was determined not eligible by VDHR in 1980 and removed from the Virginia Landmarks Register in 1981. A current check of the DSS record for this resource online verifies this status.

Because the resource could not be accessed, aerial photography of the parcel was examined in Google Earth. The house appears to be extant; however, it stands in a state of abandonment and disrepair. The aerial imagery indicates that roofing material is missing on several sections of the house. The foundations and ruins of outbuildings are also visible on the imagery. The integrity of this resource was in doubt as long ago as 1981.

According to the aerial imagery the surrounding property appears to have been cleared and subdivided for development in the near future. In addition, the resource is located only 0.25 mile north of an existing transmission line and right-of-way, which, given the flat topography, would already constitute an existing moderate visual effect.

Regarding Bel-Air (VDHR# 088-0133): An updated DSS form with photos and site plan for this resource is included with this submittal. The resource was recommended as eligible for listing in the National Register under Criterion C; however, viewshed analysis and field visits confirmed that the proposed transmission line will have no visual effects on this property.



COMMONWEALTH of VIRGINIA

Douglas W. Domenech
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Kathleen S. Kilpatrick
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

August 11, 2010

Ms. Joyce B. Livingstone
Dominion Resource Services, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060

Re: *Viewshed Impact Analysis for VDHR #088-0133 and #016-5042*
Addendum to Architectural Survey of the Proposed North Anna – Ladysmith 500kV Transmission Line, Louisa, Spotsylvania, and Caroline Counties, Virginia
DHR File No. 2009-0430

Dear Ms. Livingstone:

We have received the above-referenced analysis and requested archival materials prepared by The Louis Berger Group, Inc. for Dominion Resources, Inc. These studies were conducted in accordance with DHR's *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (January 2008). We reserve the right to provide additional comment as part of consultation with any responsible Federal agency under Section 106 of the National Historic Preservation Act, if applicable.

Visual impact analyses were completed for three resources: Bel-Air (DHR ID #088-0133), House on Lewiston Road (DHR ID #088-5044), and the Farm, Blanton's Road (DHR ID #016-5042). Our comments on these analyses are presented below:

088-0133, Bel-Air

This property was previously not accessible during the Phase I Reconnaissance Survey. In our letter dated November 9, 2009, DHR requested additional consideration for the property to confirm whether or not it was still extant. The consultant gained access to the property and a reconnaissance level survey was completed. The consultant currently recommends Bel-Air, a ca. 1728 two-story frame dwelling, as *eligible* for listing in the NRHP under Criterion C, and DHR concurs with this recommendation. The report also states, and DHR concurs, that the proposed transmission line will have no visual impact on Bel-Air due to tree coverage and dense vegetation.

088-5044, House at 4236 Lewiston Road

This house was previously not accessible during the Phase I Reconnaissance Survey. DHR did not request additional consideration of the resource. Regardless, the consultant determined that

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this property was incorrectly mapped in DHR files and the property is actually located outside of the architectural APE. DHR concurs that no further work is needed for this property.

016-5042, Farm, Blanton's Road

This farm was previously recommended *eligible* during the Phase I Reconnaissance Survey and DHR concurred in our letter dated November 9, 2009. The proposed transmission line will be visible from the property at a great distance, as well as being partially obscured by a tree line. Based upon a review of the information provided, DHR recommends that the proposed project will have a low visual impact, as opposed to a low-to-moderate impact, on the Farm, Blanton's Road. No further mitigative measures are warranted for this resource.

In our November 9, 2009 letter, DHR requested additional consideration of Pine Forest (DHR ID #088-0054) and additional evaluation, including interior documentation, of Llangollen (DHR ID #088-0126). The *Viewshed Impact Analysis* report did not address our previous concerns with these two properties; however, we received additional information on June 29, 2010.

088-0054, Pine Forest

The consultant was denied access to the resource and a viewshed analysis was not completed. The resource was determined not eligible by DHR in 1980 and removed from the VLR in 1981. The house is extant, but in the consultant's opinion, has lost integrity due to the poor condition. As evidenced from the aerial imagery, several sections of roofing are missing, the foundation is in ruins, and the surrounding landscape has been cleared and subdivided for development. DHR assumes that based on the additional information, the consultant maintains that Pine Forest is *not eligible*. Since access was denied, and it appears the resource is in a state of ruin, DHR concurs with the consultant's recommendation. However, for future reference, any eligibility decision made by our office nearly thirty years ago must be re-evaluated today.

088-0126, Llangollen

The consultant revisited the property and maintains that the property does not possess sufficient architectural integrity for listing in the National Register of Historic Places. The consultant concludes that the property has been altered with replacement materials including roofing, siding, windows, and porch, and the structure also does not exhibit characteristics that would make it a representative example of an early 19th century vernacular frame dwelling. DHR does not concur with the consultant's recommendation of not eligible. In our November 9, 2009 letter, we requested intensive-level survey of Llangollen, including interior documentation; however, we received no interior photographs. The complete archival record for this property on file at our office includes one interior photograph from 1971 that reveals significant interior details. We remain intrigued by its form and construction method as an early nineteenth century vernacular frame dwelling, with possible educational themes and an association to Bel-Air (DHR ID #088-0133). Regardless of its exterior integrity, which is logical given the age of this property, we suggest that this property may have significant interior features (woodwork, structural framing, brick chimney construction, floor plan) that would compensate for exterior integrity issues. We respectfully reiterate our request for a full intensive-level survey of Llangollen.

Depending on the outcome of the evaluation of Llangollen, additional visual impacts analyses may be needed. Accordingly, we cannot concur at this time with Dominion's finding of no effect on historic resources. Furthermore, if and when access roads and staging areas are identified and if those locations require additional ground disturbance of intact soils, additional archaeological survey of those locations is

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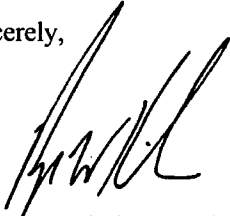
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Roanoke Region Office
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recommended. If you have any questions concerning our comments on architectural resources, please contact Andrea Kampinen at andrea.kampinen@dhr.virginia.gov; otherwise, please do not hesitate to contact me at roger.kirchen@dhr.virginia.gov.

Sincerely,



Roger W. Kirchen, Archaeologist
Office of Review and Compliance

c: Mr. Tony Banks, Dominion Resource Services, Inc.
Mr. Eric Voigt, The Louis Berger Group, Inc.

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December 10, 2010

COL-0735

Mr. Roger Kirchen, Project Review Archaeologist
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Mr. Kirchen:

Re: North Anna Power Station Telecom Tower
1022 Haley Drive, Mineral, Louisa County, Virginia
VDHR File No.: 2009-0430
FCC FRN: 0002073492

Dominion Virginia Power (Dominion) is planning to remove an existing 230' telecom tower (with current FCC FRN 0002073492 registered under Virginia Electric and Power Company) and build a new 255' telecom tower approximately 800 feet southeast of the existing tower. The Louis Berger Group, Inc. (Berger), on the behalf of Dominion, has filed an electronic Form 620 with the FCC for the proposed telecom tower.

The proposed telecom tower is being built as part of pre-construction activities associated with adding a proposed new reactor at the North Anna Power Station. Archaeological assessments for the construction of the new reactor have been previously reviewed by the Virginia Department of Historic Resources (VDHR). As part of this submittal, Berger reviewed the files of the VDHR in order to identify historic properties listed in or eligible for listing in the National Register of Historic Places (National Register) located within the area of potential effects (APE) for direct effects and the APE for visual effects. No historic properties listed in or eligible for the National Register are located in the APE for direct effects or the APE for visual effects.

Dominion is requesting a concurrence of a No Effect finding for the proposed telecom tower. Please contact me at 804-273-2170 or tony.banks@dom.com if you have any questions.

Thank you.

Respectfully,

Tony Banks, MPH, CHMM
Nuclear Project Technical Support
North Anna 3 Project

cc: Project File

Enclosures (2 copies):

FCC Form 620 (hardcopy)
M. Rupnik Resume
North Anna Power Station Telecom Tower Map.pdf
North Anna Power Station Telecom Tower APE.pdf
FCC SiteSep-Tribal Consultations.pdf
FCC SiteSep-Local Government Involvement.pdf
FCC SiteSep-Public Involvement.pdf

Eugene S. Grecheck
Vice President
Nuclear Development

Dominion Energy, Inc. • Dominion Generation
Innsbrook Technical Center
5000 Dominion Boulevard, Glen Allen, VA 23060
Phone: 804-273-2442, Fax: 804-273-3903
E-mail: Eugene.Grecheck@dom.com



January 10, 2011

COL-0719

Mr. Roger Kirchen, Project Review Archaeologist
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

Dear Mr. Kirchen:

**Re: Dominion Virginia Power, North Anna Power Station Unit 3
Revised Viewshed Impact Analysis for the Proposed North Anna-Ladysmith
500 kV Transmission Line, Louisa, Caroline and Spotsylvania Counties, Virginia
VDHR File No.: 2009-0430**

Enclosed for your review and concurrence is a revised viewshed impact analysis dated October 2010 for the proposed North Anna-Ladysmith 500 kV Transmission Line in Louisa, Caroline and Spotsylvania Counties, Virginia.

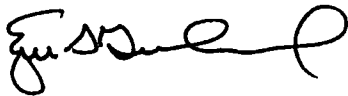
On August 11, 2010, the Virginia Department of Historic Resources (VDHR) provided comments to Dominion on the original analysis, submitted May 18, 2010. As part of its review, VDHR observed that the Llangollen property (designated VDHR #088-0126) held potential as a property suitable for registry with the National Register of Historic Places (NRHP). However, an intensive-level survey and interior documentation of the Llangollen property, as requested in your letter, has not been performed due to the difficulty of obtaining owner permission and physical access to the interior of the structure.

Dominion is sensitive to VDHR's view that the property could have significant interior details and accepts the assessment that the property is "potentially eligible." However, even without the results of NRHP eligibility confirmed by an interior survey, Dominion's consultant (Louis Berger Group) was able to provide conclusive evidence that the property would have no views of the proposed transmission line due to dense vegetation. Field work originally conducted September 22, 2009 provided the basis for the conclusion and the attached viewshed impact analysis was revised by LBG for Dominion to document that finding.

Dominion has designed North Anna Unit 3 project activities to ensure that historic resources will not be impacted. Dominion seeks VDHR concurrence that construction of the transmission line towers will have no effect on historic resources. Dominion will continue to consult with VDHR until the Section 106 process is completed, to consult with U.S. Nuclear Regulatory Commission (NRC) to meet its regulatory obligations, and to address historic resources and preservation, as appropriate.

If you have any questions, please contact Tony Banks at 804-273-2170 or Tony.Banks@dom.com.

Very truly yours,

A handwritten signature in black ink, appearing to read "Eugene S. Grecheck". The signature is fluid and cursive, with a large loop at the end.

Eugene S. Grecheck

Enclosure (2 copies): Viewshed Impact Analysis for VDHR #088-0126, #088-0133 and #016-5042, Addendum to Architectural Survey of the Proposed North Anna-Ladysmith 500kV Transmission Line, October 2010

Attachment CR-1 Item #3

Inventory of reports and correspondence regarding cultural resources
that have been generated by the applicant and responses received
from the Tribes, VDHR, and interested parties.

Dominion's North Anna 3 Document Inventory of Cultural and Historic Resources Reports

<i>Date</i>	<i>ADAMS #</i>	<i>Title or Description</i>	<i>Notes</i>
03/31/2001	ML020160087	From LBG to DOM - Cultural Resources Assessment (NAPS)	Attachment 3 - Info provided during site audits (license renewal)
10/31/2001	ML020160094	Addendum to the Cultural Resource Assessment - NAPS October 2001	Attachment 4 - Info provided by DOM during NRC site audits (5 pages from 64 page report); appears on NRC's ADAMS
09/21/2006	ML062770252	Dominion Nuclear North Anna, LLC (NA ESP) Cultural Resources Assessment Archeological Survey	Enclosure: Archeological Survey, Dominion Early Site permit Project, Sept 2006; appears on NRC's ADAMS
10/01/2007	...	From LBG to DOM - Supplemental Archaeological Survey - NAPS	Based on surveys Sept 4-7, 2007
06/30/2009	...	From LBG to DOM - NAPS to Ladysmith Transmission Line Architectural Survey	Based on surveys March 2009
06/30/2009	...	From LBG to DOM - NAPS to Ladysmith Transmission Line Archaeological Survey	Based on surveys Aug 26-28, 2008 (pedestrian survey); March 16-20, 2009 (subsurface testing)
06/30/2009	...	From LBG to DOM - NAPS Archaeological Survey	Includes Rt 700 parcels, based on survey March 31 - April 15, 2008
06/30/2009	...	From LBG to DOM - Cultural Resource Assessment of a Proposed Haul Route / Haley East	Based on survey May 14, 2009
11/09/2009	...	From LBG to DOM - NAPS Archaeological Survey/Heavy Haul Route Cultural Resource Assessment	From LBG to DOM; provided to NRC via Reading Room
03/01/2010	Superceded	From LBG to DOM - Transmission Line Viewshed Impact Analysis	Based on LBG survey conducted September 2009
10/01/2010	...	From LBG to DOM - Revision to original Transmission Line Viewshed Impact Analysis	Includes Llangollen and supercedes March 2010 report
06/30/2011	...	From LBG to DOM - Terrestrial and Underwater Archaeological Survey of the Proposed Large Component Transport Route	Based on LBG surveys April 19-22, May 3, May 20, and May 31-June 2, 2011

Dominion's North Anna 3 Document Inventory of Cultural and Historic Resources Consultations

<i>Date</i>	<i>ADAMS #</i>	<i>Title or Description</i>
04/19/1972	...	Appraisal of NAR archaeological resources
05/31/1972	...	VHLC Transmittal of structure locations
01/03/2002	ML020070569	NRC letter to VDHR re: License renewal effect on cultural resources
12/04/2003	ML040570380	LBG addendum re: Field Inspection / ESP Project / NAPS
12/05/2003	ML040570383	NA ESP Resource Assessment
11/03/2005	ML053130173	VDHR NA ESP Review (TAC NO. MC1128) DHR File No. 2000-1210
11/27/2005	ML052730103	NA ESP Review (TAC NO. MC1128)
08/09/2006	ML062340378	VDHR letter to NRC re: NA ESP application - Draft EIS, Supplemental
10/20/2006	ML063110525	VDHR discussion of Archaeological Survey, Dominion Early Site Permit, Project (NAPS)
11/03/2006	ML062900330	NA ESP Review (TAC NO. MC1128)
12/15/2006	ML070050054	VDHR letter to NRC re: NA ESP Application - Finding of No Adverse Effect
10/11/2007	ML082910714	DOM letter transmitting Supplemental Archaeological Survey Dom COL Project
11/07/2007	ML082910712	VDHR letter discussing Supplemental Archaeological Survey Dom COL Project
05/01/2008	ML082410167	VDHR letter to NRC
11/04/2008	ML083220171	DOM Letter to VDHR - Project Update
01/27/2009	ML090370135	PNNL/NRC consultation with Pamunkey Chief Kevin Brown
02/03/2009	ML090540397	Pamunkey Tribal Consultation letter to NRC
02/03/2009	ML090540397	Pamunkey Tribal Consultation letter to NRC
02/03/2009	ML090650462	VDHR Comments to NRC on Draft NUREG-1917 (SEIS)
03/09/2009	ML090710426	USACE authorizes the USNRC to conduct Section 106 coordination on its behalf
09/25/2009	ML092810030	DOM letter to VDHR transmitting Transmission Line Archaeological & Architectural Surveys
09/25/2009	ML092881297	DOM letter to VDHR transmitting New Property & Heavy Haul Route Assessments
11/09/2009	...	VDHR response to Dom Report new property and haul route report submittal
11/09/2009	...	VDHR response to Transmission Line reports (architectural and archeological)
01/19/2010	ML093500380	NRC Summary of Govt - Govt meeting between Pamunkey Tribal Govt and NRC

<i>Date</i>	<i>ADAMS #</i>	<i>Title or Description</i>
05/18/2010	...	DOM letter transmitting Viewshed Impact Analysis for Proposed North Anna-Ladysmith 500 kV Transmission Line
06/16/2010	...	VDHR Consultation with Louis Berger Group about T-line architectural resources, DSS forms
06/25/2010	...	LBG response to VDHR RFIs (11/9/2009 and 6/16/2010 email)
08/10/2010	...	Pamunkey Tribal consultation sent to DOM
08/11/2010	...	VDHR response to Viewshed Impact Analysis submittal.
08/20/2010	...	DOM Update to Pamunkey Tribal Chief on Joint Permit Application
12/10/2010	...	DOM Request for concurrence of Section 106 "No Effect finding"
12/22/2010	...	VDHR concurrence with "No Effect Finding" of FCC tower on historic properties
01/10/2011	...	DOM letter transmitting Revised Viewshed Impact Analysis for Proposed North Anna-Ladysmith 500 kV Transmission Line
01/31/2011	ML110530427	VDHR Receipt/ Concurrence of Revision to original Transmission Line Viewshed Impact Analysis
02/07/2011	...	DOM Outreach to Mattaponi Tribal Asst. Chief Mark Custalow
02/07/2011	...	DOM Outreach to Pamunkey Tribal Chief Brown
03/10/2011	ML110800388	VDHR receipt of NOIA - Supplemental EIS NUREG-1917
05/12/2011	...	DOM transmittal of publically available docs to C. Custalow
05/17/2011	...	DOM Outreach - Off Loading Alternatives Analysis for NA3 Components
06/03/2011	...	United Keetoowah Band of Cherokee Indians (Oklahoma) letter to Dominion stating no objections to referenced project.
06/07/2011	...	DOM Corporate Environmental Policy Statement / re: cultural resource protection
07/07/2011	...	DOM letter transmitting Large Component Transport Route final archaeology report to DHR
07/29/2011	...	VDHR concurrence letter of "no adverse effect" for Walkerton Roll-off location

Attachment CR-1 Item #4

Summary of the latest version
of the Cultural and Historic Resources Management Plan
for the North Anna Power Station Unit 3 Project.

**North Anna Power Station Unit 3 Project
Cultural and Historic Resources Management Plan**
(Adapted from <http://www.dom.com/about/environment/corporate-environmental-policy.jsp>)

The purpose of this document is to describe the protective measures routinely employed by Dominion Virginia Power (DVP) and its contractors (Contractor) to avoid or minimize adverse impacts to cultural and historic resources during construction and other land-disturbing activities at the North Anna Power Station (NAPS). Procedures identified below currently apply to work on the NAPS site property. DVP and Contractor personnel are required to be familiar with the existing referenced policies and procedures prior to initiating construction or excavation.

- Dominion's Corporate Environmental Policy Statement specifies that in addition to complying with all applicable environmental laws and regulations, we commit to practice sound environmental stewardship of all company-owned facilities and properties and all natural and cultural resources under our management.
- General Maintenance Procedure (NA-PROC59-000-GMP-C-102), Excavation and Backfill, Units 1 & 2 identifies the Supervisor in charge of the excavating activities as responsible for notifying the Director, Nuclear Safety and Licensing of an inadvertent discovery of archaeological, historical, or other cultural resource that has occurred during the process of excavating.
- Administrative Procedure SA-AA-106, Drilling, Digging and Cutting discusses the protection of historic and archaeological resources in accordance with the National Historic Preservation Act (NHPA) during construction and excavation activities. If evidence of historic or archaeological resources is discovered during job preparation or excavation, all personnel are instructed to stop work, place the job in a safe condition, notify the job supervisor who notifies the Director, Nuclear Safety and Licensing who then evaluates the artifacts that have been discovered and determines the appropriate course of action.
- Project Managers are responsible for monitoring land-disturbing activities, conducting pre-job briefs, and ensuring compliance with all applicable requirements relating to cultural resources protection, ensuring that Cultural Monitors will be on-site when construction activities would be taking place in areas known to contain significant cultural resources. Equipment Operators are responsible for following project procedures and during and after the exposure of cultural resources.
- For project work conducted off-site, clear guidance will be provided to workers regarding stop-work requirements applicable to inadvertent discovery in pre-job briefs, consistent with other procedural guidance.
- Reference documents defining protected areas are readily accessible for use by site construction personnel. Protection strategies for avoiding historic sites determined to be eligible for the National Register of Historic Places, as described in consultations with the Virginia Department of Historic Resources, are noted on site plans and implemented using some form of physical control measure (fencing, signage, barriers).
- Consultation with VDHR will be re-initiated to determine other appropriate treatment measures if avoidance of a resource is impractical.