

# South Carolina Department of Natural Resources



Vivianne Vejdani  
Environmental Coordinator  
Wildlife & Freshwater Fisheries Division  
Office of Environmental Programs  
1000 Assembly Street, Room 202  
PO Box 167  
Columbia, SC 29202  
Office: 803-734-4199  
Fax: 803-734-3766  
[vejdani@dnr.sc.gov](mailto:vejdani@dnr.sc.gov)

John E. Frampton  
Director  
Robert D. Perry  
Director, Office of  
Environmental Programs

August 1, 2008

Mr. Justin Leous  
US Nuclear Regulatory Commission  
Mail Stop T-6-D59  
Washington, DC 20555-0001

REFERENCE: Vogtle Electric Generating Plant, Units 1 and 2, License Renewal Application Review

Dear Mr. Leous:

South Carolina Department of Natural Resources (DNR) staff has reviewed the draft Supplement 34 to the Generic Environmental Impact Statement (SEIS) for license renewal of the Vogtle Electric Generating Plant (VEGP), Units 1 and 2. This correspondence includes comments to the draft SEIS and includes comments on cumulative impacts of potentially adding Units 3 and 4 as outlined in the document.

Due to decrease green-house gas emissions DNR generally supports development of nuclear energy as an important alternative to fossil fuel-fired, steam-driven electric generation facilities. However, DNR has concerns regarding natural resource impacts of the proposed addition of Units 3 and 4.

## **2.2.2. Water Use**

Consumptive water loss associated with operation of Units 1 and 2 is equal to  $\pm 77$  cfs. The addition of Units 3 and 4, with withdrawal and generation capacities equal to Units 1 and 2, will add an additional  $\pm 77$  cfs consumptive loss burden on the Savannah River, for a total combined burden of  $\pm 154$  cfs. The cumulative impact of proposed expansion, growing demands on water supply, and potential for extended, severe and unprecedented drought merits thorough consideration of alternatives and development of a cooling water contingency plan. DNR agrees with the NRC assessment that potential cumulative impacts associated with planned expansion also include increased thermal stresses within the Savannah River and increased release of contaminants to the river and to groundwater.

Mr. Justin Leous  
Vogtle Electric Generating Plant, Units 1 and 2  
License Renewal Application Review  
August 1, 2008

DNR continues to have concerns over potential impacts of consumptive water loss in the Savannah River and to groundwater resources during drought events. Although the draft SEIS states historic flows below 3,800 cfs have been rare (page 2-21), net inflow to Lake Thurmond recently has dropped to as little as  $\pm$  500 cfs, and the current drought is unprecedented in intensity and duration. The US Army Corps of Engineers recently has initiated an environmental assessment of effects of a proposed Level 4 Drought Protocol triggering a reduction of flow from Thurmond Dam to equal Lake Thurmond net inflow.

The draft SEIS makes reference to Southern Nuclear Operating Company's (SNC) *hypothetical* worst case scenario of flows as low as 957 cfs citing *impacts would be the result of naturally low precipitation rates, and therefore, would not be caused by the water withdrawals*. The draft SEIS also refers to the ability of the plant to operate at flow volumes of as low as 500 cfs and that at this flow VEGP consumptive water use would equal *only about 15 percent of the flow volume in the river* (Appendix E-52). DNR asserts that a consumptive burden of this magnitude could represent severe and unacceptable impacts to aquatic resources in the Savannah River. DNR agrees with NRC that mitigation measures should include reduced use of river water for cooling in such a scenario. The 10-year-long drought across the southeast has caused reservoirs to drop to historic lows. The Tennessee Valley Authority reactor in Browns Ferry, Alabama was shut down on August 16 because ambient water temperatures were too high to both cool the reactors and still meet temperature standards in the discharge. Lake Norman in North Carolina, which is used to provide cooling water to McGuire Nuclear Station, is currently down to an elevation of 93.7 feet, just 1 foot above permitted minimum elevation. A Low Flow Contingency Plan identifying alternative sources of cooling water and/or details of what operational modifications will be utilized during low and extreme low flows should be required of the Licensee and become a part of the license.

The draft SEIS does not adequately describe potential impacts to groundwater reserves and aquifers during low and very low flow conditions. Page 2-22 of the draft SEIS states groundwater levels in the area of withdrawal well MU-1 have lowered  $\pm$  15 feet between 1971 and 2006. NRC performed an independent review of the groundwater modeling conducted by the applicant and concluded the rate of drawdown after 10 years of operation, including the planned expansion, was  $\pm$  1.9 ft, and remained constant at 1.9 ft for the term of the license (page 4-41). This assumes a constant rate of withdrawal of 1.05 mgd for Units 1 and 2, although it is unclear how this rate changes with the addition of Units 3 and 4. Because the rate is constant and small, NRC concluded that effects to groundwater resources would be expected to be small. However, these assumptions do not address effects of extended drought or the ability of groundwater resources to recover after an extended drought. Groundwater monitoring of contaminants for the VEGP site only have been conducted since 2007 (page 2-34) clearly indicating potential for groundwater contamination cannot, at this time, be adequately assessed. The contingency plan recommended above also should address potential impacts to groundwater reserves and aquifers.

#### **2.2.5. Aquatic Resources**

Three federal and state protected aquatic species are supported by the Savannah River: the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) and the state listed species robust redhorse (*Moxostoma robustum*) and Savannah Lilliput (*Toxolasma pullus*). The river also is home to a host of important game and South Carolina Priority Conservation fish species (South Carolina Comprehensive Wildlife Conservation Strategy, 2005). The potential impact to habitat quality and availability for these species during very low flows should be studied and the results submitted for review by resource agencies.

Mr. Justin Leous  
Vogtle Electric Generating Plant, Units 1 and 2  
License Renewal Application Review  
August 1, 2008

#### **4.8.1.2 Water Quality Impacts**

Water quality degradation is an additional concern, which would be exacerbated by reduced flow during drought. The draft SEIS discusses increases in tritium concentrations near the VEGP during 2006 due to outages and suggests reduced water volume in the river may have contributed in the increase (page 2-29). Elevated concentrations of Cs-137 and Sr-90 also were detected in fish tissue samples taken from fish adjacent to the Savannah River Site (SRS), and some Cs-137 burden may have been contributed by VEGP. The draft SEIS concludes both the VEGP as well as SRS contribute to increased levels of radionuclide burden in the Savannah River, with VEGP currently contributing as much as 10 % (page 2-30 and 2-31).

The NRC review of quarterly NPDES permits revealed exceedences of other pollutants from VEGP including petrochemicals, total suspended solids and residual chlorine (page 2-31). NRC performed modeling of the thermal plume extent using a 5° F temperature difference as a standard to evaluate additional thermal burden of Units 3 and 4 (page 4-53). However, other factors involved in thermal degradation are important, such as initial ambient water temperature, time duration of the thermal plume and effects on dissolved oxygen. It is not known whether these factors were considered in the NRC analysis.

DNR is concerned the draft SEIS minimizes potential water quality impacts associated with proposed plant expansion. Supplementary information on potential water quality impacts, particularly during low and very low flow conditions is needed to adequately assess potential water quality impacts to the Savannah River.

#### **Conclusion**

Consumptive water loss during very low flows and attendant potential adverse impacts to water quality and aquatic resources are not addressed satisfactorily in the draft SEIS. DNR is cognizant of the need to develop and maintain cleaner energy alternatives as compared to use of fossil fuel electrical generation technology. This agency is committed to working with SNC, NRC and resource agencies during the relicensing process to attain a mutually agreeable outcome that provides a safer and reliable source of energy for generation of electricity. These alternatives also must protect important natural resources of the Savannah River. DNR respectfully requests continued consultation with respect to all proposed project modifications and development of mitigation alternatives.

If you have any questions regarding the recommendations provided, please feel free to contact me at (803) 734-4199.

Sincerely,

*Vivianne Vejdani*

Vivianne Vejdani,  
Environmental Coordinator,  
Wildlife and Freshwater Fisheries Division

c: Breck Carmichael  
Bob Perry  
Scott Harder