

## ClinchRiverESPEISCEm Resource

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**From:** Sid Jones <Sid.Jones@tn.gov>  
**Sent:** Monday, June 05, 2017 4:33 PM  
**To:** ClinchRiverESPEIS  
**Subject:** [External\_Sender] Comments on EIS scoping

I have a few comments on the scoping for the EIS on the Clinch River Small Modular Reactor site. I do not live near the site or own property near the site, but I have worked intermittently on problems with radioactive waste management and groundwater monitoring in the Oak Ridge area for many years.

My first concern comes both from my involvement with attempts to resolve a number of issues with on-site management of low level radioactive waste in Oak Ridge and an awareness of the difficulties encountered in attempts made to date to manage transuranic waste, high level radioactive waste, and spent nuclear fuel. There have been decades of work toward establishing an adequate disposal facility for high level radioactive waste and spent nuclear fuel in the United States, yet little progress has been made toward consensus of how and where this material can be safely disposed for the duration of the hazard. Until some significant steps toward resolution of the waste disposal issues have been made, expansion of nuclear power seems unwise.

My second concern comes from participation in design of groundwater monitoring systems and groundwater tracing studies in East Tennessee over several decades. Because of the statistical nature of radioactive emissions and the counting techniques typically used for analysis of radionuclides, detection monitoring systems for releases of radioactive substances into groundwater may yield ambiguous results.

The scoping document, which contains much general background information on geology and hydrogeology, indicates that the site hydrogeology will be complicated due to extensive fracturing and to dissolution (karst) processes. I have been on the site, and believe the scoping document presents a fair assessment of the geology and hydrogeology of the site. My experience has been that adequate groundwater monitoring for a release at such sites requires more sampling, both spatially and temporally, than at sites without such extensive altering of primary bedrock permeability. While TVA has reactors on karst sites, they were permitted before it was so well understood that, on these sites, it is very difficult to adequately predict either direction or velocity of groundwater flow.

At the proposed site, one monitoring well has already been contaminated with volatile organics. TVA and TDEC sampling of well 422L at the site indicated non-aqueous phase diesel range organics. This obviously adds a further complication to the question of site monitorability. Presumably, TVA would need to remediate or isolate this contamination before attempting to monitor groundwater on the site.

Finally, there are other potential sources of radioactive contamination nearby. The Clinch River has received significant discharges of radioisotopes during legacy operations at Department of Energy Oak Ridge facilities. River sediments retain significant concentrations of radionuclides, and low levels of some radioactive isotopes persist in river water. Air emissions of radioactive substances occurred near the site, possibly increasing the levels of radioactivity in soils.

My third concern about the site is related to the potential for flooding of the buried portions of the planned reactor(s) should groundwater channeling through karst conduits increase the groundwater flux into the excavation made to contain the reactor(s) due to soil piping or bedrock collapse. While there is currently little indication that such channels are well developed on the site, quarry operations and construction projects in East Tennessee frequently change groundwater hydraulics in ways that negatively impact (or even stop) operations.

Thank you for soliciting public input and providing a number of convenient ways to send public comment.

Sid Jones, PhD, PE, PG

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