Requests for Supplementary Information and Observations

Site Safety Analysis Report

1. General

RSI

1.1 All non-copyright references should be provided by the applicant (e.g., reports and documents that are not publically available).

This information is needed to determine compliance with Title 10 of the *Code of Federal Regulations* (CFR), Section 52.17, "Contents of applications; technical information," and 10 CFR 100.23, "Geologic and seismic siting criteria."

2. Geologic Characterization Information

RSI

2.1 SSAR Section 2.5.1.2.4.2.4 does not adequately characterize the Chestnut Ridge Fault, a recently identified tectonic fault within 0.6 miles of the site (Lemiszki et al, 2013). The applicant assumed the age of this fault is old, emplaced during the foreland fold-thrust belt Valley and Ridge deformation related to the Alleghanian orogeny and therefore not a potentially significant seismic or surface deformation hazard. However, the applicant did not provide sufficient data or information in the SSAR to support age estimates or extent. The Lemiszki et al 2013 report cited was not submitted and is unavailable to staff for independent review.

Additional characterization of the Chestnut Ridge is necessary to demonstrate that this fault does not represent potentially significant seismic or surface deformation hazards at the site including:

a. A complete discussion of Lemiszki et al's (2013) basis for a fault interpretation,

b. Details on structural style and kinematics that clearly relate this fault to Alleghanian orogeny or more recent tectonism,

c. Results of a field review of Quaternary alluvial deposits and river terraces overlying fault that demonstrate deformation, or not, and

d. Appropriate maps and cross-sections (based on borehole data) to illustrate the final interpretation.

This information is needed to determine compliance with 10 CFR 100.23.

2.2 SSAR Section 2.5.1.2.4.3.4 states that a shear fracture zone was identified in 37 boreholes during the Clinch River Breeder Reactor (CRBR) site investigation and 15 boreholes from the current early site permit (ESP) investigation. A surface

exposure in the northeastern portion of the site was described and mapped in the CRBR PSAR (Reference 2.5.1-238). Based on CRBR PSAR, the ESP SSAR characterizes this feature as "a zone of interbed slippage characterized by a combination of slickensides, calcite veins that are severely warped or brecciated" and that styolites truncate calcite filled fractures and the shear fracture zone fabric. Finally, the SSAR states that Foreman and Dunne (SSAR Ref 2.5.3-19) and Lemiszki (SSAR Ref 2.5.1-215) also identified mesoscopic shear zones that offset extensional fractures within the site vicinity. The applicant concludes that the shear fracture zone developed during Alleghanian Valley and Ridge shortening. However, the SSAR does not include sufficient information to support the applicant's conclusion.

Provide additional characterization and analysis of the Shear Fracture Zone at the site location to demonstrate that this zone does not represent a potentially significant hazard for surface deformation at the site.

a. Include maps and cross-sections to illustrate location, geometry and stratigraphic position.

b. Provide conceptual model or illustration to clarify cross-cutting relationships between all structural elements that are mentioned in the SSAR. Address how the latest styolites might be related to Cenozoic compressional stress directions.

c. Clarify with greater detail how this feature should be considered analogous to Foreman and Dunne's (SSAR ref 2.5.3-19) or Lemiszki's (SSAR Ref 2.5.1-215) features.

d. Assess any cross-cutting relationship with Quaternary age river terraces and alluvium/colluvium stratigraphic units that overly or are in contact with the shear fracture zone.

e. Provide an assessment for the best estimate of the age of the Shear Fracture Zones in support of your conclusion of Alleghanian age.

This information is needed to determine compliance with 10 CFR 100.23

2.3 The Eastern Tennessee Seismic Zone (ETSZ) has the second highest rate of small (i.e., M<5) earthquakes in the eastern United States. In SSAR Section 2.5.1 the applicant states that recent research has been published describing possible paleoseismic evidence for large magnitude ETSZ paleo-earthquakes near Douglas Reservoir, approximately 80 km (50 mi) east of the CRN Site. SSAR Section 2.5.3.1.2 states that while a seismic origin for many of the observed features in these studies cannot be definitively confirmed or ruled out, there are multiple alternative hypotheses that can explain their origin (e.g., pedogenic processes, karst collapse, slope failure). The staff notes that the basis for these alternatives are not discussed. In SSAR Section 2.5.2, the applicant indicated that to establish whether these proposed paleoseismic features support the presence of an RLME source they conducted field work and a SSHAC Level 2 assessment.

Provide additional characterization and analysis of the ETSZ to demonstrate that it does not represent a potentially significant seismic hazard for the site, including:

a. Results of the field work and re-excavated trenches in the ETSZ that were completed by the applicant.

b. Discussion of the bases of alternative hypotheses.

c. Detailed documentation on the Senior Seismic Hazard Analysis Committee (SSHAC) Level 2 study, including how alternative data and interpretations were considered in the seismic hazard analysis.

This information is needed to determine compliance with 10 CFR 100.23.

3. Vibratory Ground Motion

RSI

3.1 SSAR does not provide adequate technical bases for key physical parameters used in the site response calculations. Supplemental information is needed for:

a. Descriptions of the 1D versus 2D site response comparisons. Results of the 2D calculations are not directly compared with the 1D result that were used to calculate the site ground motion response spectra (GMRS). Supplemental information is needed to justify the use of the 1D site response in the site-specific seismic hazard analysis.

b. Assumptions used in determining key site-response parameters, such as the shear wave velocity profiles, degradation curves, and their uncertainties, lack sufficient technical justifications. For example, the 1-D site velocity profiles are based on a number of down hole shear-wave velocity profiles. However, these profiles have not been adjusted to account for geology given the significant dip of rock layers in the subsurface.

c. A generalized regional geologic cross-section was used to define the deeper velocity structure beneath the site. Supplemental information, including the evaluation of data uncertainties, is needed to support the use of the generalized information for a site-specific seismic hazards analysis.

d. Kappa, a site response parameter, calculations are incompletely described. Significant information gaps exist in the SSAR regarding how kappa values were obtained at the site and bases for the assumptions used in estimating kappa values. Supplemental information, including an evaluation of uncertainties, is needed to support the estimated site kappa value used for the site-specific seismic hazards analysis. SSAR section 2.5.4 refers to section 2.5.2 to provide details about the kappa studies used to determine appropriate kappa values. However, section 2.5.2 similarly provides a pointer to section 2.5.4.

This information is needed to determine compliance with 10 CFR 100.23.

3.2 Input parameters used in the Probabilistic Seismic Hazard Analysis (PSHA) sensitivity study conducted for the ETSZ are incompletely justified. Additional information is needed to justify use of these parameters, including a description of the SSHAC process used in determining the input parameters.

This information is needed to determine compliance with 10 CFR 100.23.

4. Surface Deformation

RSI

4.1 SSAR Section 2.5.1.2.5.1 discusses "Karst Hazards" of the Clinch River site vicinity and area. The applicant evaluated the potential for epigenic karst development, and concluded that subsurface dissolution is most intense near the surface and decreases steadily with depth and small numbers of cavities occur below the water table. Staff notes that the Clinch River site and its vicinity could be susceptible to hypogenic karst development. If hypogenic dissolution has acted at the site, there could be significant voids below the expected 660 ft elevation limit. Therefore, the applicant's conceptual model for karst development needs to be supplemented to account for hypogenic karst development processes. Recent scientific literature on deep phreatic karst development provide current theoretical approaches to hypogenic karst (deep karst) processes in the Valley and Ridge Province of Virginia.

Please assess the potential for hypogenic karst development and the significance for surface and sub-foundation deformation at the Clinch River site.

This information is needed to determine compliance with 10 CFR 100.23.

5. Stability of Subsurface Materials and Foundation

RSI

5.1 In SSAR 2.5.4.1.4 "Karst Features," the applicant described the karst features at the site. It stated that cavities are present in each of the stratigraphic units at the site and these cavities range in height from less than a foot (ft) to about 17 ft. However, the maximum size and distribution of karst features at the site has not been sufficiently described to allow the staff assess the potential impact of karst features on suitability of the site. Supplemental information is needed regarding:

a. the size (both in vertical and horizontal directions) and spatial distribution of subsurface voids at the site, and;

b. the applicant's evaluation of whether the voids within the sub-foundation area (zone of influence) are large enough to affect the stability of foundations and structures during the life time of a planned nuclear power plant.

This information is needed to determine compliance with 10 CFR 100.23.

Observations

5.1 SSAR Figures 2.5.2-56 and 2.5.4.26 illustrate shear modulus reduction and damping curves that are inconsistent with the values described in the text. Please clarify the discrepancy.

5.2 SSAR Figure 2.5.1-30 is a simple cross section of the site based on borehole data from CRBRP + CRN ESP. Neither the Chestnut ridge fault nor the Shear Fracture zone is located on this x-section. Please revise the figure to indicate the locations of the Chestnut ridge fault and the Shear Fracture zone.

5.3 SSAR Figures 2.5.1-34 and 2.5.1-35 (geologic map and associated cross-section) do not identify by citation whose work this is or what data supports the interpretation. Please add proper citation(s) and provide further details about the supporting data.

5.4 SSAR Figure 2.5.1-35 is described in the text as an 'older interpretation' to show geometry of Chestnut Ridge fault. However, SSAR Figure 2.5.1-63, an alternative and presumably newer geologic cross section, does not include the Chestnut Ridge fault. Please explain the basis for the old and the new interpretations.

5.5 SSAR Figure 2.5.1-62 is a geologic map that indicates location of cross section A-A'. SSAR Figure 2.5.1-63 (sheet 1 and 2) should be consistent in terms of map unit colors and symbols. Staff cannot compare the geologic map (Figure 2.5.1-62) with associated cross section, because map is very faint with illegible symbology. Please provide corrected and higher quality resolution figures.

5.6 SSAR Figure 2.5.3-3, Sheet 1, shows Clinch River terraces overlying Copper Creek fault. The position of the cross section line does not reveal how Clinch River terraces overly Copper Creek fault. Please provide further details and/or updated figure.

5.7 SSAR Figure 2.5.3-4 shows longitudinal profiles of Quaternary terraces on Clinch River. The positions of White Oak Mountain fault, Chestnut Ridge fault and the three intersections of Copper Creek fault along the Clinch River are not located correctly on this profile. They seem to be out of order or flipped. Cooper Creek fault should be in the upstream position. Also, there are no data points for the straight line representing the Clinch River. Please explain your rationale for why you chose to make the river profile a straight line rather than a more typical graded stream profile showing nick points/zones? Forcing all the terraces into a straight line with a linear regression and then comparing the resulting slopes to determine (lack of) deformation is a first order approximation considering the variance in terrace elevations within a category. The slope of terrace Qpt 2 stands out more different than any of the others. Please explain how this fits or doesn't fit with your conclusion that this is 'permissible'.

5.8 SSAR Subsection 2.5.3 does not follow NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," (SRP) Rev. 5 published in July 2014 for this subsection of the SSAR. While the topics in the older SRP Rev. 4 might be considered similar to the new Rev. 5, there are important differences in the specific SRP acceptance criteria established to meet the relevant requirements of the NRC regulations (e.g., 10 CFR 100.23(c) and 10 CFR 100.23(d)(2)). The nonconformance with the current version of SRP might result in additional requests for additional information and might impact the review schedule for this subsection of the SSAR. Please review the acceptance criteria in SRP 2.5.3 (NUREG-0800 Rev 5) and evaluate if your SSAR contains all the pertinent information.

6. Radiation Protection and Accident Consequences

RSI

6.1 Provide the basis for deriving the plant parameter envelope (PPE) annual normal liquid and gaseous radioactive effluent releases (PPE normal source terms) described in SSAR Sections 2.0, 11.2.3, and 11.3.3.

SSAR Section 1.11 identifies the four small modular reactor (SMR) design technologies used to create a surrogate plant as defined in Nuclear Energy Institute (NEI) 10-01, "Industry Guideline for Developing a Plant Parameter Envelope in Support of an Early Site Permit." SSAR Section 2.0, Tables 2.0-6 and 2.0-4 presents the PPE normal source terms.

In SSAR Section 1.11, there is no supporting information or reference to explain how the PPE normal source terms associated with the site were derived. Without sufficient information to understand how the PPE normal source terms are derived, the NRC staff is not able to verify the annual normal liquid and gaseous radioactive effluent releases and the subsequent calculated effluent doses to members of the public from normal operations including anticipated operational occurrences (AOOs). NEI 10-01 provides a method acceptable to the NRC staff to derive the maximum PPE source terms and provide guidance on what information should be submitted in the application.

The PPE normal source terms are key parameters in the conceptual model used to assess the bounded annual normal liquid and gaseous radioactive effluent releases and the subsequent calculated effluent doses to members of the public from normal operations including AOOs. The PPE normal source terms impact SSAR Section 11.2.3, Tables 11.2-4, 11.2-5, 11.2-6, 11.2-7, 11.2-8, and 11.2-9; and Section 11.3.3, Tables 11.3-2, 11.3-3, 11.3-4, and 11.3-5.

The NRC staff discussed this information need on the PPE normal source terms for the annual liquid and gaseous radioactive effluent releases and effluent doses during the August 2015 readiness review, and on May 19 and June 3, 2016, during the acceptance review.

This information is needed to determine compliance with 10 CFR 20.1301; 10 CFR 20.1302; 10 CFR 20, Appendix B, Table 2, Column 2, and Note 4; 10 CFR 50, Appendix I; and 10 CFR 52.17(a)(1)(ii).

6.2 Provide the non-industry standard code and quality documentation used to calculate the maximum daughter activities for the accidental liquid radwaste release source term described in SSAR Section 2.4.13.5.2.

SSAR Section 2.4.13.5.2 describes the estimation of initial radionuclide source term concentrations for the postulated accidental release of liquid effluents to ground and surface waters in which peak activity was determined by "simulating [radioactive] decay of the source term inventory at various time steps ranging from 0 to 50 years for relevant radionuclides to capture the maximum activity of daughter products." SSAR Section 2.0, Table 2.0-5 presents the accidental liquid radwaste release source term.

The applicant used a non-industry standard code to develop the accidental liquid radwaste release source term. Submittal of the non-industry standard code will allow the NRC staff to efficiently use the same non-industry standard code to confirm that the code is calculating the maximum activity of daughter products correctly. If the code is not submitted, the NRC staff will need to perform independent analysis to confirm the adequacy of the accidental liquid radwaste release source term.

The accidental liquid radwaste release source term is a key parameter in the conceptual model to assess the effects of radionuclide transport in ground and surface waters, and the postulated liquid effluent dose to members of the public (calculated as 93 millirem (mrem) total effective dose equivalent (TEDE) compared to the dose limit of 100 mrem TEDE). The accidental liquid radwaste release source term impacts SSAR Section 2.0, Tables 2.4.13-1, 2.4.13-2, and Table 2.4.13-5.

The NRC staff discussed this information need on the non-industry standard code to calculate the maximum daughter activities for the accidental liquid radwaste release source term during the August 2015 readiness review, and on May 19 and June 3, 2016, during the acceptance review.

This information is needed to determine compliance with 10 CFR 20.1301; 10 CFR 20.1302; and 10 CFR 20, Appendix B, Table 2, Column 2, and Note.

7. Meteorology

RSI

7.1 As described in SSAR Subsection 2.3.2, the CRN Site is surrounded by complex terrain which influences the local wind patterns; consequently, adjustment factors for terrain confinement and recirculation effects on annual average dispersion concentrations at boundary locations were considered for the steady state straight-

line XOQDOQ atmospheric dispersion model. The approach used for the CRN Site analysis involved a comparison of estimated long-term atmospheric dispersion (X/Q) values between the U.S. Environmental Protection Agency non-steady-state puff dispersion model CALPUFF and the XOQDOQ model at the EAB and LPZ. This comparison concluded that the XOQDOQ model does not underestimate the annual average X/Q values, and no nonlinear adjustment factors would be applied to the annual average X/Q and D/Q values at the CRN Site.

In order to assist the NRC staff in its review of the comparison between the CALPUFF and XOQDOQ modeling results, provide an electronic copy of the CALMET and CALPUFF input and output files in native format, as well as a description of any assumptions that were made.

10 CFR 20, Subpart D requires that the SSAR demonstrate that the proposed plant will be in compliance with dose limits for individual members of the public. NUREG-0800, Section 2.3.5 sets forth the staff's review procedures concerning the atmospheric dispersion and deposition models used to calculate concentrations in air and amount of material deposited as a result of routine releases of radioactive material to the atmosphere.

8. Hydrology

RSI

8.1 Section 2.4.3 of the SSAR provides description of hydraulic and hydrological models developed to analyze the impact of a probable maximum flood on the site. Additional information is needed to determine that the models were developed with sufficient margin based on adequate simulations for surface runoff, tributary inflows, discharges of national inventory of dams, and flood routing in the Tennessee River and its tributaries, as well as reasonable considerations for reservoir operation rules, model setup, HEC-RAS model error corrections, and wind wave effects. Base on this information the staff will also be able to determine that the modeling adequately estimate the probable maximum flood elevation at the site.

Provide electronic copies of the HEC-RAS, HEC-HMS, and other relevant input in native format and output files used for the analysis of flooding in streams and rivers reported in SSAR Section 2.4.3, as well as descriptions of any assumptions that were made.

Regulatory basis: 10 CFR 52.17(a)(1)(vi), 10 CFR 100.21(d), and guidance NUREG 0800, Section 2.4.3.

8.2 Section 2.4.4 of the SSAR provides description of hydraulic and hydrological models developed to analyze the impact of potential dam failure on the site, including hydrologic, seismic and sunny dam failures. Additional information is needed to determine that the models were appropriately developed with sufficient

margin based on conservative assumptions of hydrometeorological, geological, and seismic characteristics of dams in the river main stem and tributaries; consideration of flood control reservoirs at full pool level, or conservative assumption of coincident flow rates and water surface elevations at the dams. Based on this information the staff will also be able to determine that the models were adequately routed to the proposed plant site to conservatively estimate the most severe flood water surface elevation that may affect SSC important to safety.

Please provide electronic copies of the HEC-RAS, HEC-HMS, and other relevant input in native format and output files used for the dam failure analyses reported in SSAR Section 2.4.4 for hydrologic, seismic, and sunny-day failures, as well as descriptions of any assumptions that were made.

Regulatory basis: 10 CFR 52.17(a)(1)(vi), 10 CFR 100.23(d)(3), and guidance NUREG-0800, Section 2.4.4.

8.3 Section 2.4.12 provides identification of the aquifers, types of onsite groundwater use, sources of recharge, present withdrawals and known and likely future withdrawals, flow rates, travel time, gradients, and other properties that affect movement of accidental contaminants. Staff needs additional information to evaluate the aquifer parameter and groundwater flow system characterization.

8.4 Section 2.4.13, the hydrogeological characteristics are evaluated to describe the effects of accidental releases of radioactive liquid effluents in ground and surface waters on existing uses, and known and likely future uses of ground and surface water resources. The source term is determined from a postulated release from a single tank outside of containment following the guidance provided in Branch Technical Position (BTP) 11-6, "Postulated Radioactive Releases Due to Liquid-containing Tank Failures." The source term from a postulated accidental releases are reviewed under SRP Section 11.2, "Liquid Waste Management System." Staff needs additional information to evaluate the adequacy of the radionuclide source term, the characterization of the hydrogeologic characteristics used in the transport analysis and the calculations used for the transport analysis.

1. Please submit on the docket associated electronic input/output files used to characterize the radionuclide transport, including how existing and likely future surface and groundwater users effects these parameters groundwater gradients, flow directions and velocities and, decay calculations for potential radionuclide pathways in the groundwater system under accidental conditions.

2. The Health Physics staff will review the CRNS proposed radionuclide distributions and concentrations assumed for the postulated failure of a tank and its components using the information presented by the applicant. The staff will evaluate the basis and assumptions used in developing the source term, radionuclide distributions and concentrations to ensure that the highest potential radioactive material inventory is selected among the expected types of liquid and wet waste streams processed by plant systems. The

radionuclide inventory for the CRN tank and its components are assumed to fail and is based on a conservative estimate of an 80 percent release of the tank capacity and components.

Based on the information in the SSAR, no reference, basis or assumptions for the source term was provided. Please provide the CRNS references, basis, and assumptions for developing the source term, radionuclide concentrations, and distributions to ensure that the highest potential radioactive material inventory was selected. This RSI requests similar source term information as that requested from the Health Physics staff related to SSAR Section 2.4.13.5.2.

Additionally, making calculation packages associated with the characterization of the radionuclide transport available in the electronic reading room will facilitate the staff's review of the Clinch River Nuclear Site (CRNS) flow and transport calculations and associated site characteristics.

Regulatory basis: 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 2, 10 CFR 100.20(c)(3), , 10 CFR 20.1301 with guidance provided by BTP 11-6 and ISG -013, 10 CFR 20, Appendix B, Table 2, Column 2, and 10 CFR 52.17(a)(1).

Environmental Report

9. Site Selection

Basis for the RSIs of this section

In its Environmental Report (ER), the applicant is required to identify alternatives to the proposed action, address the environmental impacts of the alternatives, and compare them to the impacts of the proposed action (10 CFR 51.45(b)(3) and 10 CFR 51.45 (c)).

The Environmental Standard Review Plan (ESRP, NUREG-1555), Section 9.3, directs the staff to review the process that was used by the applicant to select the proposed site, as described in the environmental report (ER). Among other things, ESRP 9.3 directs the staff to collect the following information related to the site selection process:

- selection procedures for the ROI [region of interest], candidate areas, potential sites, candidate sites, and proposed site (from the ER).

- factors considered at each level of the selection process, parameters by which these factors were measured, and criteria used to define levels of quality (e.g., numerical limits or decision standards) (from the ER).

- criteria used to screen potential sites to arrive at candidate sites (from the ER).

- methodologies used in the candidate site comparison process, including (when used) factors such as (1) importance factors, (2) preference functions, (3) utility

functions, (4) weighting factors, (5) ranking scales, (6) scoring schemes, (7) rating systems, and (8) sensitivity analyses (from the ER).

ESRP 9.3 directs the staff to analyze the applicant's site selection process and procedures. It goes on to state that the "overall goal of the review is to understand the applicant's site-selection methodology so that an eventual evaluation can be made of the reasonableness and capability of this process to identify candidate sites that are among the best that can reasonably be found in the ROI." It goes on to state that "reviewer's evaluation of the individual elements of the applicant's site-selection process should include consideration of both the process (i.e., methodology) used by the applicant and the reasonableness of the product (e.g., potential sites) identified by that process."

In addition, Interim Staff Guidance COL/ESP-ISG-026, *Environmental Issues Associated with New Reactors*, provides additional guidance regarding the site selection process, and the use of cumulative impacts as part of the process.

RSI

9.1 The screening process summarized in the ER and described in somewhat more detail in the Siting Study, progresses from the ROI through the assessment of Candidate Areas and Preliminary Potential Sites and declares that both exclusionary and acceptability criteria were applied. However, the ER and the Siting Study do not sufficiently define the actual criteria that were applied. Please explicitly define each exclusionary and avoidance criterion applied at each step of the screening process from ROI to candidate sites so that the screening results may be independently assessed so the staff can reach a conclusion on the reasonableness of the applicant's site selection process. To the maximum extent possible screening criteria should be objective and not subjective; specifically:

a. Define in detail any exclusionary criterion that was derived from two of TVA's project objectives of

(1) to narrow the ROI to areas in "close proximity" to TVA's six federal customers as preliminary Candidate areas.

(2) Include in this response how TVA has defined "close proximity." Also clarify whether more than one exclusionary criterion was applied during this step in the screening process.

b. Define in detail the screening criteria that were derived from the ER Section 9.3.1 listed criteria for assessing "preliminary candidate area suitability":

i. Sufficient acreage available to incrementally construct two or more SMRs.

ii. Proximity to a Federal installation.

iii. Proximity to a water source.

iv. Proximity to transmission lines.

v. Proximity to existing transportation infrastructure.

Also clarify why these same criteria are not listed in the Siting Study for the evaluation of Candidate Areas and how, or if, they were applied. If they were not applied, please provide the screening criteria used to assess preliminary candidate area suitability.

c. Define in detail the avoidance screening criteria that were derived from the safety conditions listed in ER Section 9.3.3 for Candidate Area evaluation and clarify how and why these differ from those listed previously in ER section 9.3.1 for the evaluation of Candidate Areas. Listed safety considerations included:

- Geology/Seismology,
- Atmospheric Dispersion,
- Exclusion Area and Low-Population Zone,
- Population,
- Emergency Planning,
- Security Plans,
- Hydrology, and
- Industrial, Military, and Transportation Facilities.

d. Please provide the basis for the scoring of each of the Candidate Areas that resulted from the application of the one to three scaling of each of the criterion provided in the Siting Study Table 3.2-1. As written, the text of the Siting Study Section 3.0 speaks to the characteristics of each Candidate Area without providing the logic between such features and TVA's scoring values. Clarify how the application of scaled avoidance criterion resulted in the elimination of two of the six Candidate Areas. Also clarify the term "exclusionary criteria." The ER texts states that exclusionary criteria such as seismic exceedance were applied, although no such "exclusionary criterion" is listed.

e. Define the ER section 9.3.3.1 exclusionary and avoidance criteria that were applied in a two-step process to identify Preliminary Potential Sites within the four Candidate Areas. ER criteria are listed as:

- availability of land,
- proximity to a water source,
- proximity to sensitive resources such as wetlands and historic sites,
- proximity to transmission lines,
- proximity to existing transportation infrastructure, and
- obvious topographic concerns.

Additionally Section 4.0 the Siting Study lists a second set of undefined criteria that were applied to Preliminary Potential sites. These include:

- presence of wetlands,
- known historic sites,
- land cover, and
- existing land uses.

Please define these criteria.

f. Provide sufficient information for each Preliminary Potential Site that was eliminated so that the rational provided in Siting Study Table 4.0-1 for elimination of Preliminary Potential Sites can be independently confirmed. The Siting Study merely lists the undefined screening criteria and provides a table of results without identifying the characteristics of each site for each criterion. For example, since no sites were eliminated for the presence of wetlands or historic sites, does such imply that there are no such features present? Additionally, ORR site 1, and Redstone 16, 17, 18, and 19, and Columbus 24 were eliminated based on potential problems that might result from flooding. But no flooding criterion is listed in the ER or the Siting Study for the evaluation of Preliminary Potential Sites and mapping of flood zones for these sites is not provided.

9.2 The process for evaluation of Potential Sites includes for most criteria multiple bulleted “sub-criteria” which assess various aspects of the sites . Please explain why these sub-criteria were combined rather than scored separately. Also please explain how a site was scored if the scoring for the multiple sub-criteria had differing scoring values. Taking Hydrology as an example – a site could have no flood issues (score of 5), insufficient water (score of 1), but water of outstanding quality (score of 4 or 5). In such a case, what would be the score for Hydrology? Please also address why each sub-criterion element was not characterized and scored for

each Potential Site. For example, distance from viable water is a sub-criterion of Hydrology, less than 1 mi to greater than 3 mi, however some Potential Site descriptions do not characterize or score the distance from the water sources.

Additionally, some sub-criteria use qualitative terms such as small, moderate, or large, or marginally adequate vs adequate, instead of quantitative terms such a less than 1 mi or greater than 3 mi. Please provide the basis for such distinctions for evaluating the sites. For example, is a large potential for flooding 1 in 100 years, and moderate 1 in 500 years and a small potential 1 in 1000 years?

9.3 Some "scored" criteria used in evaluating the Potential Sites had been used previously as exclusionary criteria in identifying the Preliminary Potential Sites. For example:

a. In the Siting Study Table 4.0-1, sites were eliminated for having less than 120 available acres, yet such a condition in a Potential Site is scored a "1" under Land Use for "insufficient total area available for siting the project". Please clarify why, if the exclusionary criterion of 120 acres was applied universally during the screening of Preliminary Potential Sites, there could be any Potential Sites without sufficient area for the project?

b. Also in the Siting Study Table 4.0-1, Preliminary Potential Sites were eliminated because of flooding concerns. However, such a condition is only a score of 1 for screening the Potential Sites. Why, if an exclusionary criterion of flooding potential was applied universally during the screening of Preliminary Potential Sites, could there be any Potential Sites with flooding potential?

9.4 The staff identified multiple issues with the analysis of cumulative impacts for the alternative sites. The approach used in the ER is not consistent with NRC guidance in COL/ESP-ISG-026 ((Attachments 6 and 4) or recent environmental impact statements (EIS). See, for example, the evaluation of cumulative impacts for the alternative sites in NUREG-2168, Section 9.3. The key issues are:

a. The cumulative impacts evaluations for the alternative sites in the ER are presented based on an almost exclusively qualitative basis. Very little data is used to back up the assertions and conclusions. For example, there is no quantitative information provided that summarizes and compares the environmental impacts (wetlands, floodplains, streams, sensitive land uses) of the candidate sites. There should be quantification (using reconnaissance level information) of impacts to resources such as aquatic ecology (i.e., streams, open waters) based on conceptual site boundaries, plant footprints (e.g., amount of dredging required for water intake/discharge facilities and barge docking facilities). As another example, there should be quantification of land use and terrestrial impacts that includes corridors for linear facilities (access roads, rail spur, water pipeline routes, transmission line corridor to nearest substation). Please provide a quantitative cumulative impact information commensurate with the level of knowledge and analyses for an alternative site.

b. The introductory text for cumulative impacts indicates that the cumulative impacts for CRN and the two ORR alternative sites would all be the same because they're located close together. But Table 9.3-2 indicates that the

impacts of the project at the ORR 2 and 8 sites to, for example, Terrestrial Ecology are MODERATE, while the cumulative impacts are shown as SMALL. First, such a result doesn't make sense as a whole. The cumulative impacts cannot be less than the project's incremental impacts. There are similar issues related to cumulative impacts for land use, water use and quality, and aquatic, and historic and cultural. Second, there doesn't appear to be a basis to say all of these sites will have the same cumulative impacts. Please justify any assumptions regarding the equivalency of the cumulative impacts across the sites.

c. Another issue related to cumulative impacts is the discussion of multiple cumulative impacts for the same resource. For example, for surface water use there is a discussion of the "cumulative impacts" for Limestone County. But cumulative impacts relate to a resource (water) and not to a County. Please address cumulative impacts for each affected resource in terms of a single impact determination for the resource as a whole.

9.5 Proximity to wetlands was listed as a criterion for the evaluation of Preliminary Potential Sites, although it was not discussed at all under the Preliminary Potential Site evaluations in Section 4 of the Siting Study. Please address such an omission and clarify under what criterion wetland avoidance was assessed for the Potential Sites. If a plant is eventually licensed, the U.S. Army Corps of Engineers will require that wetlands be avoided if at all possible. Thus wetland avoidance is a key consideration in the screening process.

9.6 The basis for the selection of the Clinch River site is unclear. The first bullet in Section 9.3.6 of the ER states that none of the alternative sites is environmentally preferable. But there is no clear comparison of the sites in the ER. Table 9.3-6 presents what are referred to as "incremental cumulative impacts," an undefined term that the staff does not recognize, especially because cumulative impacts are, by definition, not incremental. Please explain the contents of this table, including a discussion of why a plain reading of this table would indicate that the Redstone 12 site is environmentally preferable to the proposed site. In addition, provide the staff with a table and text that compares the cumulative impacts at the proposed and alternative sites and provides a basis for the selection of the proposed site.

Observations

In addition to the overarching process questions above, the staff has a number of observations regarding specific aspects of the ER and the Siting Study, as follows:

9.1 Clarify why there are Potential Candidate sites outside of the Candidate Area Boundaries mapped on ER figure 9.3-4, e.g. ORR Nos. 3, 7, and 9 as mapped on Siting Study figure 4.0-1.

9.2 As discussed in Section 3 of the Siting Study, the criteria associated with Atmospheric Dispersion, Emergency Planning, and Security Plans are so general and non-discriminatory among the sites as to provide no value to the screening of Candidate Areas. Please provide the rational for their inclusion.

9.3 For the assessment of population density, the criterion evaluated the population within a 20-mile circle around each Candidate Area and Potential Site, however the area of the 20-mile circle provided in parentheticals differs for each site, and is very different from a simple calculation of the area of a circle with a 20-mile radius. Please clarify why there is variability in the area of a 20-mile circle used in the population density calculations.

9.4 The discussion of impacts to aquatic species in the siting study appears to be focused on impacts that physically would occur on the sites. There doesn't appear to be a discussion of potential impacts in the cooling water source – entrainment, impingement, dredging and other in-water work. This issue continues in the ER. For example, the ER indicates there are a number of endangered aquatic species that could occur near Redstone. It indicates none would be expected on Site 12. But it never discusses the potential impacts to such species in Wheeler Reservoir from the plant (e.g., building and operating the intake and discharge). Please explain the basis for the conclusion regarding impacts to such aquatic species.

9.5 The discussion of land use impacts in the ER does not appear to include any discussion of the impacts of associated linear facilities (roads, rail lines, pipelines, transmission lines) that will be necessary to build and operate the project at each site. Please provide estimates of the acreages and land use in the areas that would be affected at each facility.

9.6 The discussion in the ER of surface water and associated impacts appears to be superficial, apparently relying on the discussion of such impacts for the CRN site in preceding chapters. For example, ORR Site 8 straddles the Melton Hill Dam, and the intake would be in Melton Lake (unlike the proposed site). This could potentially make a difference. In addition, the discussion of water impacts is equally brief for the Redstone site, which is not addressed in preceding chapters and is only addressed in Chapter 9. The discussion of groundwater use and quality lacks any details. There is no discussion of current conditions and how they might change in the future. The staff requests additional information regarding whether there might be relevant characteristics of the sites that were not reported (e.g., onsite/offsite water bodies affected by construction, proximity to other water users, use of intake and discharge areas for recreation or navigation, differences in hydrogeology, and differences in effects of discharge on receiving water body).

9.7 For non-radiological health, there is no discussion of traffic accidents. While traffic issues for ORR Site 2 may be similar to those for the proposed site, based on location, the same is not true for ORR Site 8 or for Redstone Site 12.

9.8 The Socioeconomics section in the ER appears to be missing a subsection discussing economy and tax revenue impacts of the project. There is such a section under cumulative impacts. There is also no discussion of the demographics around the Redstone Site 12.

9.9 There is a mention in the cumulative text of TVA in-lieu tax payments. Such payments were not mentioned previously, perhaps because the tax section is missing for the direct impacts at the Redstone site. Such payments are simply mentioned, with no indication of expected magnitude in order to put them in context. It isn't clear whether the applicant assumes that impacts would be similar to those at

the proposed site. But Redstone is in a different state. So the applicant would have to provide a basis for such an assumption. Further explanation is needed to support a conclusion.

9.10 The ER discusses in general terms the transportation around the alternative sites. But for the roads, there is no discussion of road level of service, how the addition of the workforce will affect those roads, or any mitigation. There is a traffic study for the Clinch River site, and perhaps it could be extended to Site 2. But Site 8 is in a different location, and Redstone is completely separate. There is also no information provided regarding how access to these sites would be arranged. For example, would the large construction workforce use the existing Redstone Arsenal gates, or would a new gate be needed? Where would the road(s) to the site be built? What are the implications of the answers to those question for traffic?

9.11 The conclusion in the ER for transportation indicates that the incremental impact from construction and operation would be SMALL. But the text on 9.3-34 indicates the incremental impacts are MODERATE for the ORR sites, or SMALL to MODERATE for the Redstone Site 12. Please address this apparent discrepancy.

9.12 The concluding statement for environmental justice (EJ) is given with no real technical basis provided. The preceding text indicates where populations of interest are located. But it doesn't discuss pathways by which such populations might be affected or explain how the conclusion was reached. Provide the basis for the conclusion regarding EJ.

9.13 The regulations at 10 CFR 51.50(b)(4) states that each environmental report must identify the procedures for reporting and keeping records of environmental data, and any conditions and monitoring requirements for protecting the non-aquatic environment, proposed for possible inclusion in the license as environmental conditions in accordance with § 50.36b of this chapter. Chapter 6, Environmental Measurements and Monitoring Programs discusses monitoring programs but does not discuss the conditions for protecting non-aquatic environment proposed for possible inclusion as a license condition. While an ESP does not permit NRC authorized construction, it does resolve issues, including the information specified in 10 CFR 51.50(b)(4), and they remain resolved at the COL stage absent new and significant information. The COL applicant does not have to send in terms and conditions to protect the environment because the regulations assume it was done in the ESP. Not addressing the information specified in 10 CFR 51.50(b)(4) in the ESP environmental report, as required by the regulations, could cause the an unresolved issue if TVA submits a COLA that references the ESP (see 10 CFR 51.50(c)(1)(v)).

This information is needed to comply with 10 CFR 51.50(b)(4).

10. Terrestrial Ecology

Observations

10.1 Provide information on the nature and magnitude of potential impacts to important species and habitats and wetlands in the transmission line corridor segments that would be affected by reconductoring, uprating, and rebuilding, and to wetlands in the Barge Traffic Area (BTA).

The Endangered Species Act of 1973, as amended (ESA) requires that Federal agencies consider potential impacts to federally listed species and critical habitat. The CWA requires that federal agencies consider potential impacts to jurisdictional wetlands. The NRC ESRP Section 4.3.1 directs the staff to evaluate potential impacts to important species and habitats and wetlands in its EISs. ER Table 2.4.1-7 generically identifies important species and habitats and wetlands in the transmission line corridor segments that would be affected by reconductoring, uprating, and rebuilding. ER Section 4.3.1.6 states that these resources would not be noticeably affected by these temporary activities because BMPs would be employed. The ER offers no explanation of how and where these activities would be conducted in relation to the locations of important species and habitats and wetlands in the affected corridor segments, nor does it elaborate on which BMPs would be employed and how these would render potential impacts unnoticeable. ER Section 4.3.1.2 indicates that whether five wetlands in the BTA would be affected would be determined based on the facility design selected at the combined license application (COLA) stage.

This information is needed for agency compliance with the National Environmental Policy Act of 1970, as amended (NEPA), the ESA, and ESRP 4.3.1.

10.2 Provide information for wetlands in the transmission line corridor segments that would be affected by reconductoring, uprating, and rebuilding. The level of wetland information provided should be commensurate with potential impacts. For example, providing wetland location, area, and type from the National Wetlands Inventory may be sufficient to evaluate and conclude negligible impacts (when such information is juxtaposed with the footprints for reconductoring, uprating, and rebuilding). However, permanent or temporary filling of one or more wetlands may require more site-specific information.

The NRC RG 4.11 directs applicants to provide applicants to provide appropriate wetland information commensurate with potential impacts. The NRC ESRP Section 2.4.1 directs the staff to provide baseline wetland information in its EISs. Baseline wetland characterization information for wetlands on the CRN site and in the Barge Traffic Area is provided in ER Sections 2.4.1.2.1 and 2.4.1.2.2, respectively. However, similar information is not provided in the ER for wetlands in the transmission line corridor segments that would be affected by reconductoring, uprating, and rebuilding.

This information is needed for agency compliance with NEPA and ESRP 2.4.1.

10.3 Provide more definitive information on the need offsite borrow materials; 2) where borrow materials, if needed, would be obtained; and 3) whether the footprint of existing borrow areas would need to be expanded or whether new borrow areas would need to be opened (and thus potentially cause impacts).

The NRC ESRP Section 4.3.1 directs the staff to evaluate potential impacts to up land habitats in its EISs, including those affected by newly established or expanded existing borrow areas. TH ER Section 2.9 identified nine borrow areas on Federal lands (ER Figure 2.2-8) for possible acquisition of burrow materials, and stated that these borrow areas may not still be available at the time of construction, in which case new borrow areas may need to be selected.

This information is needed for agency compliance with NEPA and ESRP 4.3.1.

11. Aquatic Ecology

Observations

11.1 Some of the Clinch River sampling is over 5 years old. Applicant should provide a justification that this data is still relevant by comparing current sampling in the region and how biodiversity and abundance of aquatic resources have not significantly changed over the last 5 years.

This information is needed to determine compliance with 10 CFR 51.45(b)(1).

11.2 Applicant has not provided confirmation of interaction with U.S. Fish and Wildlife Service or Tennessee Department of Environment and Conservation concerning the presence of protected species in the geographic area of interest.

This information is needed to determine compliance with 10 CFR 51.45(d).

11.3 Applicant should provide mitigation measures that would be required by either the U.S. Army Corps of Engineers or Tennessee Department of Environment and Conservation to minimize unavoidable impacts to loss of aquatic resources (e.g., onsite streams, ponds, wet-weather conveyances, in-reservoir aquatic and benthic habitats).

This information is needed to determine compliance with 10 CFR 51.45(d).

11.4 Barge area refurbishment is not well defined, although pile driving analysis for air noise levels is provided in Table 3.9-2. Applicant should provide an assessment of impacts to aquatic resources from pile driving.

This information is needed to determine compliance with 10 CFR 51.45(b)(1).

11.5 The ER explains that under the definitions in 40 CFR 125.83, the Watts Bar Reservoir would be considered a lake or reservoir, because it has a residence time greater than 7 days. Although the applicant states in its ER that it will comply with the Clean Water Act 316 (b) regulations to protect aquatic life and that alteration of thermal stratification patterns are not expected to be significant, the applicant does not provide a specific explanation of how the proposed intake structure would meet the reservoir criteria in 40 CFR 125.84(b)(3)(ii). The applicant states that thermal stratification patterns would not be significant, but there is no justification for that determination other than stating that weak thermal stratification was documented in the CRN Site sampling reach because the daily water releases from Melton Hill Dam resulted in sufficient flow velocities to periodically mix the water column.

This information is needed to determine compliance with 10 CFR 51.45(d).

12. Cumulative Radiological Health

RSI

12.1 The staff requires that supplemental information be provided and included in a revised ER to TVA's Clinch River ESP application ER regarding the cumulative radiological health impacts with an appropriate cumulative environmental impact finding. This cumulative analysis should clearly discuss contributions from nearby U.S. Department of Energy nuclear facilities, whether operational or undergoing some form of decommissioning, restoration, or cleanup, as well as other nearby facilities that may use radiological materials such as hospitals. Reference documents that were applied for reaching an environmental impact finding should also be included as part of the response to the request for supplemental information.

TVA's Clinch River ESP application ER does not present the cumulative radiological health impacts from past, present, and reasonably foreseeable future radiological releases from the various nearby nuclear facilities, such as the U.S. Department of Energy facilities on the Oak Ridge Reservation. While the ER does present what radionuclides that have been released into surface and groundwater by past operations of the Oak Ridge Reservation, a discussion of the potential cumulative radiological health impacts from all pathways, including airborne, with a finding from all of these releases when combined with CRN impacts is not provided.

Basis for the RSI

In August 2014, the NRC issued interim staff guidance (ISG), designated as COL/ESP-ISP-026 concerning environmental issues associated with new reactors. In Attachment 4 of this ISG (ADAMS Accession No. ML14100A454), the staff outlined the need for cumulative analysis of the environmental impacts for the proposed new reactor action. The guidance in Attachment 4 of COL/ESP-ISP-026 is generally applicable to all the resource areas, such as for radiological health impacts. The purpose of this guidance is to clarify the cumulative analysis at the proposed site for new reactor Environmental Impact Statements (EIS). This guidance directs the staff's cumulative impacts analysis associated with the proposed project when considered in the context of other past, present, and reasonably foreseeable future actions. This guidance addressed identifying the time frame of the analysis, the geographic area of interest, the baseline for the analysis and other actions that could contribute to the cumulative impact.

The NRC staff has assessed cumulative impacts regarding radiological health impacts in all EISs since the earliest new reactor EISs (i.e., NUREG-1817, Environmental Impact Statement for an ESP at the Grand Gulf ESP Site," Final Report, published April 2006, see Chapter 7, Cumulative Impacts, Section 7.8, Radiological Impacts of Normal Operation). This information has included dose contributions to members of the public from NRC licensed as well as non-NRC licensed nuclear facilities that may be nearby (e.g., NUREG-1872, "Final Environmental Impact Statement for an Early Site Permit (ESP) at the Vogtle Electric Generating Plant Site," Final Report, published August 2008). This issue and the staff's need to review this information were discussed at the readiness review.

13. Transportation to and from Alternative Sites

RSI

13.1 The staff requires that supplemental information be provided for the transportation of radioactive material to and from the alternative sites. This supplemental information should address an analysis of the proposed means of transporting radioactive materials to and from alternative sites as well as consideration and treatment of transportation accidents involving radioactive materials. This information was not provided in the application. See below for more details.

Basis for the RSI

Section 3.8, Transportation of Radioactive Materials, and Section 5.7.2, Transportation of Radioactive Materials, of NUREG-1555, the environmental standard review plan (ESRP), directs the staff's review and analysis of the proposed means of transporting radioactive materials. The scope of the review directed by this section of the ESRP is limited to those design and operational parameters specified in 10 CFR 51.52(a).

Section 7.4, Transportation Accidents, of the ESRP directs the consideration and treatment of the assessment of transportation accidents involving radioactive materials. The scope of the review directed by this plan will be governed by the level of compliance of the proposed project with the criteria provided in 10 CFR 51.52(a).

When the criteria of 10 CFR 51.52(a) are not met, 10 CFR 51.52(b) specifies a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport. This detailed analysis shall indicate that the values determined represent the contribution of such effects to the environmental costs of licensing the reactor to the level necessary that would supplement the impact data of Table S-4.

Section 9.3, Alternative Sites, of the ESRP directs the analysis and evaluation of alternatives to the applicant's proposed site for the construction and operation of a nuclear power plant. The environmental review of alternative sites can potentially include all major aspects of environmental impacts of construction and operation, economic costs, and safety considerations. Impacts related to the transportation of radioactive material to and from the sites should be considered in comparing the proposed and alternative sites. The staff typically includes this information in Section 6.2 of its environmental impact statements for new reactors.

14. Alternative System Designs

RSI

14.1 Provide a description of circulating water system alternatives and an evaluation of their environmental impacts in accordance with the direction provided in the Environmental Standard Review Plan (ESRP, NUREG-1555), Section 9.4.2. Specifically, provide the following supplemental information:

a. Alternatives to the proposed intake system and their environmental impacts;

b. Alternatives to the proposed water supply and their environmental impacts; and

c. A comparison of the environmental impacts of the alternatives to the impacts of the proposed circulating water system.

ER 9.4.2.2.1 states that there are no viable alternatives for the general location of the proposed intake structure and that any alternative intake configurations would result in increased costs and environmental impacts. However, insufficient information is provided for the staff to use as a basis for the evaluation of alternate intake system impacts, or, a comparison of the impacts of alternate systems to the impacts of the proposed intake system. A more thorough description of alternatives is necessary (e.g., intake system alternatives consistent with NUREG-1555, Section 9.4.2, that may be feasible could include an intake on Melton Hill reservoir or the use of a Ranney well system) and an evaluation of environmental impacts, as compared to the impacts of the proposed intake.

ER 9.4.2.2.3 states that no alternative water sources were evaluated because the proposed supply is readily available and can be used without adverse impacts to other users. However, NUREG-1555, Section 9.4.2, directs that even when no adverse impacts have been identified for the proposed system, alternative circulating water systems must be evaluated in the depth necessary to judge their environmental equivalence. Examples of water supply alternatives consistent with NUREG-1555, Section 9.4.2, that may be feasible could include sources such as groundwater or the City of Oak Ridge. Compare the impacts of the alternative water supplies to the impacts of the proposed water supply.

Basis for the RSI

The acceptance criteria specified in NUREG-1555, Section 9.4.2, refer to the requirements of 10 CFR 51.45 to include in the Environmental Report a consideration of alternatives to the proposed action. With respect to alternatives to the proposed circulating water system, NUREG-1555, Section 9.4.2, provides for the consideration of alternatives to the intake system, discharge system, water supply, and water treatment. Alternatives to the intake system and the water supply have not been sufficiently described and evaluated in the ER.

15. Historic and Cultural Resources

RSI

15.1 Provide a discussion of the potential for historic and cultural resource impacts from the modifications to Melton Hill Dam. Modifications to the dam were discussed in Section 3.4.2.5 of the ER, but were not included in the historic and cultural resource section and do not appear to be included in the Section 106 Area of Potential Effect (APE). The dam is over 50 years old and should be evaluated to determine if it is a historic property.

15.2 This information is needed to determine the extent of the APE for the Clinch River SMR project per 36 CFR § 800.16(d). The APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

15.3 The ER states that TVA has executed a Programmatic Agreement (PA) (Reference 2.5.3-20) with the Tennessee State Historic Preservation Office (SHPO) to avoid, minimize, and mitigate potential effects to historic properties. The PA is not included in the ER, nor is any related consultation correspondence.

This document is needed to document if measures described in Tables 4.6-1 and 5.10-1 are all inclusive of agreed upon measures listed in the PA (pursuant to 36 CFR § 800.14(b)(3) and documented in ESRP Sections 2.5.3 and 4.1.3. The PA addresses the management of historic and cultural resources affected by the Clinch River SMR Project and how TVA will comply with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA). The staff is requesting that a copy of the PA be submitted to the docket along with related consultation correspondence. The staff will review the information and upon acceptance, the staff will develop the NRC Section 106 plan and initiate Section 106 consultation with the SHPO and Tribes for the NRC undertaking. This information from TVA will inform the NRC Section 106 consultation path forward.

15.4 Provide redacted versions of all cultural resource reports that are currently available in the reading room. If possible, keep these documents in the reading room up to the site audit in order for the staff to develop its draft EIS sections and initiate its Section 106 consultation efforts. These documents contain information needed to support both the NEPA and NHPA reviews. The redacted documents must be submitted to the docket one month prior to the site audit.

This information is needed for the staff to describe the affected environment (cultural background/land use history site and surrounding region) in Chapter 2 of the EIS; provides information relating to the physical extent of the surveys; descriptions and rationale of survey techniques used; the qualifications of the surveyors as per ESRP Section 2.5.3 and guidance in U.S. National Park Service Bulletins 15 and 24. It is also needed for the staff to fulfill the requirements of NEPA (40 CFR § 1502.15) and the Section 106 regulations at 36 CFR § 800.4 and 36 CFR § 800.16(d), and the National Register regulations at 36 CFR 60. Additionally, this information is required so the staff can proceed toward Section 106 consultations with the SHPO and Tribes.