

## ClinchRiverESPHFNPEm Resource

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**From:** Fetter, Allen  
**Sent:** Thursday, April 13, 2017 8:40 AM  
**To:** Schiele, Raymond Joseph  
**Cc:** Vokoun, Patricia; Dozier, Tamsen; Sutton, Mallecia; ClinchRiverESPEnvNPEm Resource  
**Subject:** FW: Draft Environmental Information Needs for Cultural Resources, Rad Health, and Terrestrial Ecology  
**Attachments:** Draft Info Needs for CR RH TE.docx

[More draft info needs for environmental...](#)

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**From:** Vokoun, Patricia  
**Sent:** Thursday, April 13, 2017 1:17 AM  
**To:** Fetter, Allen  
**Cc:** Dozier, Tamsen  
**Subject:** Draft Environmental Information Needs for Cultural Resources, Rad Health, and Terrestrial Ecology

Hi, Ray,

The draft Environmental Information Needs for Cultural Resources, Rad Health, and Terrestrial Ecology are attached.

In recognition of the potential for cross over with Safety information requests, especially for Rad Health, our specialists and PMs continue to collaborate extensively. We are postured to take advantage of information provided at safety audits that could affect environmental information needs.

Please let us know if TVA would like clarification for any environmental info needs or if TVA would like to share any related information prior to the face to face audit to expedite resolution.

Thank you and have a great day,

Patricia Vokoun, P.E.  
Project Manager  
U.S. NRC, Office of New Reactors  
Environmental Projects Branch 1  
301-415-3470  
571.212.3554 c



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**Mail Envelope Properties** (Allen.Fetter@nrc.gov20170413083900)

**Subject:** FW: Draft Environmental Information Needs for Cultural Resources, Rad Health,  
and Terrestrial Ecology  
**Sent Date:** 4/13/2017 8:39:46 AM  
**Received Date:** 4/13/2017 8:39:00 AM  
**From:** Fetter, Allen

**Created By:** Allen.Fetter@nrc.gov

**Recipients:**

"Vokoun, Patricia" <Patricia.Vokoun@nrc.gov>

Tracking Status: None

"Dozier, Tamsen" <Tamsen.Dozier@nrc.gov>

Tracking Status: None

"Sutton, Mallecia" <Mallecia.Sutton@nrc.gov>

Tracking Status: None

"ClinchRiverESPEnvNPEnvResource" <ClinchRiverESPEnvNPEnvResource@nrc.gov>

Tracking Status: None

"Schiele, Raymond Joseph" <rjschiele@tva.gov>

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Files	Size	Date & Time
MESSAGE	1073	4/13/2017 8:39:00 AM
Draft Info Needs for CR RH TE.docx		38743
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**Priority:** Standard

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**Recipients Received:**

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**CLINCH RIVER EARLY SITE PERMIT**  
**CULTURAL RESOURCES, RADIOLOGICAL HEALTH AND TERRESTRIAL ECOLOGY INFORMATION NEEDS**

<b>Info Needs #</b>	<b>Info Needed</b>	<b>SME Name</b>	<b>ER Section</b>
CR-01	Provide a knowledgeable TVA archaeologist to discuss the historic and cultural resources located within the onsite and offsite archaeological and architectural APEs, as described in Section 2.5.3 of the ER and in the Programmatic Agreement (PA). Staff would also like to discuss potential impacts to historic and cultural resources from the proposed action as they are currently understood and as described in Sections 4.1.7 and 5.1.3 of the ER. Be prepared to discuss associated NHPA Section 106 consultation activities conducted by TVA. The staff would also like to discuss additional offsite areas that have not been addressed in the ER or the PA (e.g., transmission lines, borrow pit areas, and other areas) to understand the process TVA will use for assessing impacts to historic and cultural resources for these areas. NRC staff will be meeting with TN SHPO and may have follow-on questions for TVA.	J. Davis, E. Kennedy	2.5.3, 4.1.7 and 5.1.3
CR-02	The Programmatic Agreement (PA) provides a process for adjusting the undertaking and the APE. Provide a knowledgeable expert who can discuss the process TVA will implement to keep NRC informed of updates concerning its Section 106 consultation specifically changes in the undertaking, modifications to the APE, updated and ongoing correspondence with SHPO and Tribes, historic and cultural resource updates such as the Melton Hill NRHP paperwork. Copies of any updated documentation, not previously submitted to NRC, should be made available for review during the site audit. This includes, but it not limited to, correspondence with consulting parties, any changes to the APE, maps and cultural resource investigations.	J. Davis, E. Kennedy	4.1.3 and TVA PA
CR-03	Please make available copies of the following reports and references for review during the site audit: <ul style="list-style-type: none"> <li>• Appendix E of the PA (Reed et. al 2011)</li> <li>• Complete TRC 2011 architectural resources letter report (Karpynec 2011) referenced and enclosed in TVA's May 20, 2015 letter to Tennessee Historical Commission. A management summary consisting of the first three pages of this report were provided to the staff.</li> <li>• Reference 2.5.3-67. Tennessee Valley Authority, "Clinch River Small Modular Reactors Project, APE</li> </ul>	J. Davis, E. Kennedy	2.5.3, 4.1.3, and TVA PA

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	<p>Expansion to Include Melton Hill Dam, Roane County, Tennessee," August 18, 2016.</p> <ul style="list-style-type: none"> <li>Schroedl 1990 <i>Archaeological Research at 40RE107, 40RE108, and 40RE124</i>. University of Tennessee Department of Anthropology Report of Investigations 49 and Tennessee Valley Authority Publications in Anthropology 53.</li> </ul>		
CR-04	<p>TVA's May 20, 2015, letter to the Tennessee Historical Commission (referenced in Appendix A of the ER, pages A47-54), describes a desk top and field study completed to identify architectural resources located within the architectural APE. Provide a knowledgeable expert to discuss the methods and results of this study.</p> <ul style="list-style-type: none"> <li>Did TVA notify or engage interested persons as part of this study and make the documentation available to the public? According to Tennessee Historical Commission's May 27, 2015 response to TVA (referenced in Appendix A of the ER page A-55), the Tennessee Historical Commission states that TVA should do this.</li> <li>Did TVA conduct a records search of the TN Historical Commission files to confirm if previously identified architectural resources are located within the architectural APE?</li> <li>Confirm if Resource 1 and 2 are the same as 40RE1439 (Smith Place), located on the Tennessee Historical Commission above-ground resources viewer.</li> <li>Will the historic roads described in Section 2.5.3.5 of the ER be evaluated formally as part of the architectural resources analysis and incorporated into the PA?</li> <li>Clarify why an architectural APE was defined only as a half mile around land clearing areas and not around the archaeological APE for both the CRN site and the barge area.</li> </ul>	J. Davis, E. Kennedy	2.5.3, 4.1.3, Appendix A
CR-05	<p>TVA has executed a PA for the Clinch River SMR project which addresses TVA's NHPA Section 106 responsibilities for the CRN ESP. Provide a knowledgeable expert to discuss the following:</p> <ul style="list-style-type: none"> <li>The PA does not cover operational impacts. Does TVA have operational procedures in place such as inadvertent discovery plans or management plans</li> </ul>	J. Davis, E. Kennedy	4.1.3 and 5.1.3

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	<p>to avoid impacts to historic and cultural resources during operation? If so, please make available a copy of plans or procedures for review during the site audit.</p> <ul style="list-style-type: none"> <li>The Hensley Cemetery (40RE588), determined ineligible, is located in the archaeological APE but is not included in the PA as a site recommended for avoidance. Provide a knowledge expert to describe any additional procedures TVA may have in place to protect impacts to the Hensley Cemetery during construction and operation.</li> </ul>		
CR-06	<p>Pursuant to NEPA, as a federal land managing agency, TVA has the responsibility to comply with other federal cultural resource protection laws such as AIRFA, ARPA, AHPA, NAGPRA and NHPA Section 106 and 110 during the course of operation of the CRN. Provide a knowledgeable expert to discuss the following:</p> <ul style="list-style-type: none"> <li>Clarify current location disposition of human remains associated with archeological site 40RE124 and any plans for inventory and repatriation under NAGPRA. Make available a copy of NAGPRA procedures during the site audit.</li> <li>Clarify current location and curation of archaeological artifacts associated with archaeological sites located on the CRN Site. Clarify if TVA has procedures in place regarding curation of artifacts recovered during past and present archaeological investigations. Make available a copy of curation procedures during the site audit.</li> <li>Make available a copy of ARPA procedures (e.g. archaeological site protection, looting prevention, public education) during the site audit.</li> <li>Make available a copy of NHPA compliance procedures during the site audit.</li> </ul>	J. Davis, E. Kennedy	4.1.3 and 5.1.3
CR-07	<p>Provide a knowledgeable expert to discuss historic and cultural resource investigations and any historic and cultural resources located on the alternative sites at Oak Ridge. Make available copies of the architectural and archaeological resource survey reports referenced in Johnson 2016 that have not been previously provided.</p>	J. Davis, E. Kennedy	9.3.5.2.7

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<b>Info Needs #</b>	<b>Info Needed</b>	<b>SME Name</b>	<b>ER Section</b>
RH-01	Make available a knowledgeable expert to describe the liquid and gaseous radioactive waste-management and effluent-control systems, including sources of liquid and gaseous waste material, principal release points for radioactive materials to the environment, and identification of direct radiation sources.	M. Smith, E. Hickey	3.5
RH-02	To help the NRC staff understand the basis for the normal liquid and gaseous effluent source terms, make available a knowledgeable expert to discuss the basis for the source term given in ER Tables 3.5-1 to 3.5-5 (and expanded upon in the Supplement CNL-16-191 Attachment 2) including: 1) basis for lowering activity of certain radionuclides when deemed overly conservative; 2) maximum number of units and power assumed in source term generation for each of the four SMR technologies considered; and 3) basis for increasing the liquid effluents from one vendor by 10 percent.	M. Smith, E. Hickey	4.5.3.2
RH-03	Make available a knowledgeable expert to clarify whether construction workers are considered members of the public or radiation workers, because there appears to be conflicting information in Sections 4.5.2.1 and 4.5.5. Section 4.5.2.1 states: <i>"Personnel installing additional NuScale reactor units after the initial units start up are not considered construction workers for the purpose of this analysis."</i> Section 4.5.5 states: <i>"Therefore, for the purposes of radiation protection, the CRN Site construction workers are considered to be members of the general public."</i>	M. Smith, E. Hickey	4.5.2.1 and 4.5.5
RH-04	Make available a knowledgeable expert to discuss the basis for the assumptions related to computation of direct doses to the construction workers, including assumed distances, operating reactor configurations, and shielding.	M. Smith, E. Hickey	4.5.3.1
RH-05	To help the NRC staff understand the basis for the selected input values in GASPARG, make available a knowledgeable expert to discuss the basis for the various input parameters used in GASPARG in computing construction worker dose. Also provide any sources of information outside of NRC RG 1.109 that support the basis for GASPARG input parameters.	M. Smith, E. Hickey	4.5.3.2

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RH-06	To help the NRC staff understand the basis for the selected input values in GASPARD and LADTAP in computing public doses, make available a knowledgeable expert to discuss the basis for the various input parameters used in computing doses to the public including why ingestion of goat's milk was not considered. Also provide a list of any sources of information outside of NRC RG 1.109 that support the basis for GASPARD and LADTAP input parameters.	M. Smith, E. Hickey	5.4.2.1 and 5.4.2.2
RH-07	Provide what the present and known future locations are from which a person can obtain aquatic food, drinking water, and nearest present and future Clinch River shoreline locations for recreational use.	M. Smith, E. Hickey	5.4.2.1
RH-08	Provide a knowledgeable expert to explain which X/Q values from Table 2.7.6-10 were applied in the computation of Table 5.4-10 doses and whether the entire plume was assumed to deplete in the determination of ground deposition for the computation of external doses.	M. Smith, E. Hickey	5.4.3
RH-09	Make available a knowledgeable expert to discuss the dose results to each of the public receptors and discuss the population doses.	M. Smith, E. Hickey	5.4.3
RH-10	Make available a knowledgeable expert to discuss the status and plans for a Radiological Environmental Monitoring Program (REMP).	M. Smith, E. Hickey	6.2
RH-11	Organize a brief driving tour (1-2 hours) for up to four individuals to visit areas of interest to radiation health specialists, for example, the maximally exposed individual (MEI) location and other assumed receptor locations at least 5 mi from the site (i.e., nearest residence, milk animals if in 5 mi, meat animal, vegetable gardens larger than 50 sq m), nearby water recreational areas, and proposed locations for environmental radiation monitors.	M. Smith, E. Hickey	5.4.2.1 and 5.4.2.2
RH-12	Make available a knowledgeable expert to discuss impacts from facilities that could contribute to radiological cumulative impacts including: 1) what type of facility "American Nuclear Corporation" operates; 2) which facilities did not respond to DOE's request for information regarding the potential radiation doses to the public from their operations; 3) distinctions made in CNL-16-171 between ORR facilities; and 4) details in CNL-16-171 Table 4.7-1.	M. Smith, E. Hickey	7.8

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TE-01	Provide GIS layers used to create ER Figures 2.4.1-1 and 4.3-1. Provide habitat layers for the BTA, as they do not appear in ER Figure 4.3-1.	J. Becker, P. Doub	2.4.1, 2.2
TE-02	Provide a knowledgeable terrestrial resources expert to discuss TVA's planning assumptions for uprating, reconductoring, and rebuilding offsite transmission lines, and available information on important species and habitats from TVA's Natural Heritage Database. The expert should be prepared to discuss any need for additional clearing or widening of rights-of-way, possible effects on wetlands or other waterways within or adjacent to rights-of-way, and possible effects on plants and wildlife using affected right-of-way lands.	J. Becker, P. Doub	2.4.1.6, 3.7.3.8, related TE supplemental information
TE-03	Provide a copy of TVA's document titled <i>A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Transmission Construction and Maintenance Activities</i> .	J. Becker, P. Doub	2.4.1.6
TE-04	Provide a knowledgeable terrestrial resources expert who can discuss the timing of botanical surveys on the CRN Site and BTA. Also provide, if available, the possible prior plant surveys in the BTA that were alluded to in ER Section 2.4.1.1 on page 2.4.1-4.	J. Becker, P. Doub	2.4.1.1 (page 2.4.1-4)
TE-05	Provide a knowledgeable expert who can discuss the following statement made in the results section of the CRN terrestrial animal study on page 22, "Although studies on use of [bat] habitat during summer are few (but currently underway)..." Provide information on any bat studies on or offsite referred to by the above statement (in addition the two TVA studies on the CRN Site and the BTA).	J. Becker, P. Doub	2.4.1.1, CRN terrestrial animal study (page 22)
TE-06	Provide a knowledgeable expert who can discuss the status of TVA's correspondence with the U.S. Army Corps of Engineers (USACE) and TVA's eventual plans for obtaining a USACE jurisdictional determination and submitting a joint permit application for wetland impacts. The staff understands that such plans may not be developed in detail until an application is made for a COL.	J. Becker, P. Doub	2.4.1.2 (Table 2.4.1-3)



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TE-07	ER Section 2.4.1.6 states that "Federally or state-listed plant species are not known to occur in the terrestrial communities within this ROW." This refers to the approximate 5 mi length where a 69 kV underground line would be installed within the existing 500 kV right-of-way (ROW) between the CRN Site and the Bethel Valley Substation. There is no reference for this statement. Provide a knowledgeable expert who can provide a reference for the absence (or alternatively presence) of important species and/or habitats and wetlands in this 500 kV ROW.	J. Becker, P. Doub	2.4.1.6
TE-08	Provide a knowledgeable expert who can discuss the status of TVA's correspondence with U.S. Fish and Wildlife Service (FWS) regarding Federally listed important species and habitats, TDEC – Division of Natural Heritage, and Tennessee Wildlife Resources Agency regarding State-listed important species and habitats. Provide any correspondence to or from these agencies.	J. Becker, P. Doub	2.4.1.5
TE-09	The 2006 Oak Ridge Reservation document titled "Physical Characteristics and Natural Resources" (by Patricia Dreyer Parr and Joan F. Hughes) identifies a large area in the northeast portion of the CRN Site as having a very high biological significance ranking (BSR-2) (Figure 12 in the document) and as providing confirmed and potential habitat for rare plants and wildlife (Figure 13 in the document). Provide a knowledgeable expert who can discuss and map this area.	J. Becker, P. Doub	2.4.1.3
TE-10	ER Section 4.3.1.1 generically speaks to TVA's construction BMPs but provide no reference for these, nor does it describe them in detail. Identify and briefly describe each specific BMP and provide the reference for TVA's construction BMPs.	J. Becker, P. Doub	4.3.1
TE-11	Provide a copy of the report of the offsite bat study TVA was involved in and which was underway during pre-application meetings with the NRC. This study was investigating the potential effects of human disturbance on summer roosting gray bats. If the report is unavailable because the study is still ongoing, provide a knowledgeable expert who can discuss the study's status and the future availability of the report.	J. Becker, P. Doub	none

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TE-12	ER Section 2.4.1.6 states, "The new 161-kV ROW overlaps areas to be cleared for facility construction except for approximately 1200 ft at the southern end of the new ROW." It appears in ER Figures 3.7-1 and 4.3-1 that the southern 1,200 ft of disturbance for the new 161 kV ROW may not have been accounted for. Provide a knowledgeable expert who can confirm whether the disturbance footprint of the southern 1,200 ft of the new 161 kV ROW is accounted for in Table 4.3-1.	J. Becker, P. Doub	2.4.1.6
TE-13	Expand ER Table 4.3-1 to quantify permanent and temporary land area disturbances by habitat type for the BTA and for the footprint of disturbance for the underground transmission line to the Bethel Valley Substation. Although Page 4.3-5 of the ER states that there are no wetlands present along the route for the underground transmission line, topography suggests the possible presence of multiple small streams and associated wetlands in swales along the route.	J. Becker, P. Doub	4.3.1
TE-14	ER Section 3.7.1 indicates expansion of the 161 kV Bethel Valley Substation to receive 69 kV underground transmission line. The substation expansion is not accounted for in the terrestrial ecology impacts in ER Section 4.3.1. Provide a knowledgeable expert who can discuss the 161 kV Bethel Valley Substation expansion and any associated terrestrial ecology impacts.	J. Becker, P. Doub	3.7.1 and 4.3.1
TE-15	ER Sections 2.4.1.6 and 3.7.3.7 do not describe the specific upland and wetland habitats affected offsite by building the 69-kV underground line within the existing 500 kV corridor from the CRN Site to the Bethel Valley Substation. Provide the affected acreage for each upland and wetland habitat affected. If a wetland delineation is not available, other wetland data sources may be suitable for the NRC staff's review	J. Becker, P. Doub	2.4.1.6 and 3.7.3.7
TE-16	ER Section 3.6.2 indicates the CRN Site currently has a stormwater-management system consisting of stormwater-runoff/collection ponds and piping, and that this system is to be modified to support the CRN SMR Project. Stormwater will be managed in accordance with a site-specific Stormwater Pollution Prevention Plan (SWPPP), which will be developed and may use existing ponds and include one or more	J. Becker, P. Doub	3.6.2

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	new ponds. Provide a knowledgeable expert who can discuss TVA's plan for a SWPPP and how this may affect wetlands, streams, uplands, etc.		
TE-17	ER Section 4.3.1.2 indicates potential impacts to wetlands in the BTA and postpones quantification of impacts to the COL stage. Provide a knowledgeable expert to discuss any additional information on wetland impacts in the BTA.	J. Becker, P. Doub	4.3.1.2
TE-18	Provide the Seasonal and Annual Cooling Tower Impact (SACTI) report.	J. Becker, P. Doub	5.3.3.1
TE-19	ER Section 5.3.3.1.3 and Table 5.3-5 indicate that damaging levels of salt deposition occur out to 200 to 300 m west of the cooling towers, within which natural vegetation (forest and herbaceous) occurs. Provide a figure of salt deposition isopleths depicting where salt deposition drops to below damaging levels (1,000 kg/km <sup>2</sup> /mo), overlay that information on site vegetation, and derive area estimates of affected habitat types.	J. Becker, P. Doub	5.3.3.1.3
TE-20	ER Section 6.5.1.2 indicates additional monitoring of terrestrial plant and animal communities during construction and preoperational phases is not proposed. However, it also states that TVA would repeat field studies performed during the site-preparation monitoring program for the period following construction in order to collect at least 1 year of preoperational and/or operational data for comparison to the baseline data. Provide a knowledge expert that can resolve this apparent contradiction and discuss planned preoperational/operational monitoring.	J. Becker, P. Doub	6.5.1.2
TE-21	ER Section 4.3.1.6 states that relocation of the 161 kV onsite transmission line is likely to displace an osprey nest that has been built on a tower in this area. ER Section 6.5.1.2 calls for monitoring the nest if active during construction. Provide a knowledgeable expert to discuss how monitoring comports with Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds (cited in ER Section 6.5.1.2 in	J. Becker, P. Doub	4.3.1.6 and 6.5.1.2

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	support of monitoring the osprey nest) given that the nest will be displaced.		
TE-22	ER Section 9.3.5 describes terrestrial resources generically across large spatial scales without providing site-specific information on habitat presence or disturbance at each alternative site. TVA provided in its December 15, 2016 "Submittal of Supplemental Information Related to Site Selection in Support of the Early Site Permit Application for Clinch River Nuclear Site" figures which depict some infrastructure associated with the alternative sites, ORR Site 2 (Figure 9.3-6), ORR Site 8 (Figure 9.3-7), and Redstone Arsenal (Figure 9.3-8). These figures depict potential cooling water connectors at all 3 alternative sites, and a potential offsite transmission line at Redstone Arsenal. Provide a knowledgeable expert who can discuss whether these figures depict all major offsite appurtenances that would be needed (e.g., to connect to the local electric grid and satisfy heavy-haul needs [e.g., roads, railway, barge]) and that would be required by local site conditions if the SMR project from the CRN Site were to be located there. Once all offsite appurtenances have been identified, overlay the footprint of each alternative site on habitat types and calculate anticipated acreages for upland and wetland habitats that would be disturbed at each site.	J. Becker, P. Doub	9.3.5
TE-23	Provide a knowledgeable expert to discuss how the terrestrial ecology criteria fit into the site-selection process.	J. Becker, P. Doub	9.3
TE-24	The 2006 Oak Ridge Reservation document titled "Physical Characteristics and Natural Resources" (by Patricia Dreyer Parr and Joan F. Hughes) identifies a large area in the northeast portion of the CRN Site as having a very high biological significance ranking (BSR-2) (Figure 12 in the document) and as providing confirmed and potential habitat for rare plants and wildlife (Figure 13 in the document). Provide a knowledgeable expert who can discuss these	J. Becker, P. Doub	none

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	designations relative to the identified area on the CRN Site.		

