From: Madelyn Nagel
Sent: Wednesday, July 30, 2025 6:30 PM
To: ClinchRiver-CPEnvDocsPEm Resource
Subject: CRN Site CP Environmental Requests for Confirmatory Information
Attachments: CRN Site CP Environmental Requests for Confirmatory Information.pdf

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Hearing Identifier: ClinchRiver_CPEnvDocs_Public
Email Number: 17

Mail Envelope Properties (DM6PR09MB55601558D0DEE2E55C8447A0EC24A)

Subject: CRN Site CP Environmental Requests for Confirmatory Information
Sent Date: 7/30/2025 6:29:53 PM
Received Date: 7/30/2025 6:29:56 PM
From: Madelyn Nagel

Created By: Madelyn.Nagel@nrc.gov

Recipients:
"ClinchRiver-CPEnvDocsPEm Resource" <ClinchRiver-CPEnvDocsPEm.Resource@nrc.gov>
Tracking Status: None

Post Office: DM6PR09MB5560.namprd09.prod.outlook.com

Files	**Size**	**Date & Time**	
MESSAGE	216	7/30/2025 6:29:56 PM	
CRN Site CP Environmental Requests for Confirmatory Information.pdf			253899

Options
Priority: Normal
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:

Requests for Confirmation of Information

Clinch River Nuclear Site Environmental Review

Docket No. 50-615

EPID L-2025-LNE-0000

The topic will be listed first along with a sequential RCI number followed by the requested information.

General

RCI-GEN-01

The Tennessee Valley Authority's (TVA) Clinch River Nuclear (CRN) Site Construction Permit (CP) Environmental Report (ER) Tables 1.5-2 and 1.5-3 listed authorizations required for building activities and operation activities, respectively. Please confirm that the following statements are accurate.

1. As of July 2025, TVA has not applied for any permits, approvals, and authorizations listed in Tables 1.5-2 and 1.5-3, except for the CRN Site Early Site Permit (which was issued to TVA from NRC on December 19, 2019) and the CRN Site CP for CRN Unit 1 (CRN-1).
2. The applications for permits, approvals, and authorizations that TVA would require to build CRN-1 will be submitted when plant and facility design reaches maturity. Timelines for different applications may differ.
3. TVA's applications for permits, approvals, and authorizations would specify the selected alternative for plant facilities for which more than one alternative is currently being considered (e.g., makeup water intake structure).
4. Under the Department of the Army and TVA Memorandum of Understanding (Contract No. TV-63835A), TVA does not need a Section 10 permit. Depending on in-water work needed, TVA may need to obtain a CWA Section 404 permit from the USACE. TVA would obtain and comply with all future permits related to in-water building activities.

RCI-GEN-02

Several CRN-1 project elements are (1) located on lands that are managed by the U.S. Department of Energy (DOE), (2) under the jurisdiction of the U.S. Army Corps of Engineers (USACE), and (3) at a yet-to-be determined location within the identified area of disturbance on the CRN Site. Please confirm that the following statements are accurate.

1. As of July 2025, TVA has not determined if a new interchange at the intersection of Bear Creek Road and TN-58 is needed to support building activities for CRN-1.
    a. If TVA determines that work needs to be at this intersection, several factors will need to be considered including land ownership, existing contamination, transportation agreements, and cultural resources.
    b. Work at the intersection would require agreement between the City of Oak Ridge, Tennessee Department of Transportation, DOE, and TVA.

c. Any work to be performed at the intersection would be designed to avoid existing wetlands, contamination, and cultural resources to the extent practical, or would be mitigated as appropriate.

2. As of July 2025, the design of the CRN-1 161-kV transmission line is not complete but is expected to be completed in mid-2026 or later.
   a. TVA intends the CRN-1 161-kV transmission line to tie into the existing 161-kV Kingston Fossil Plant – Bethel Valley Hydroelectric Plant #2 transmission line at the CRN-1 switchyard.
   b. While the switchyard is being built, there may be a need to install a temporary substation.
   c. An easement or a lease would be obtained for any work on the CRN-1 transmission line that would involve DOE-managed lands.
   d. No timeline is available yet for obtaining an easement or a lease from DOE.
   e. TVA conducted cultural resources surveys on TVA-managed lands and under an agreement with DOE on DOE-managed lands. TVA also consulted with the Tennessee State Historic Preservation Office on DOE's behalf.
   f. TVA's Programmatic EIS and CRN-1 Supplement to the Programmatic EIS provide NEPA coverage.
3. As of July 2025, TVA has not selected a preferred design for the makeup water intake structure.
   a. Tunneling into the Clinch River arm of the Watts Bar Reservoir would be needed if the submerged offshore intake structure design is used.
   b. To cover the needs of NRC and USACE NHPA Section 106 consultations, NRC and USACE intend to use an area of potential effects (APE) that extends into the Watts Bar reservoir near the proposed CRN-1 intake and discharge locations. Near the proposed intake, the whole width of the Clinch River Arm of the Watts Bar Reservoir is navigable.
4. TVA would not need to construct an Independent Spent Fuel Storage Installation (ISFSI) for several years. TVA has not selected a location for the ISFSI but expects that it would be located in a previously disturbed area near CRN-1. While TVA expects the ISFSI to be located in a previously disturbed area near CRN-1, the location could change in the future.

New and Significant Information Review Process

RCI-NS-01

With respect to TVA's new and significant information review process, please confirm that the following statements are accurate.

1. New information found during the preparation of the CP ER was evaluated by TVA's SMEs who relied on their expert judgment to determine if new information was confirmatory (i.e., consistent with past characterization of the affected environment) or notable (i.e., significantly different or distinguishable from past characterization of the affected environment).

2. For certain resource areas, TVA's SMEs compared seasonal trends, ranges of environmental variables, and derived environmental characteristics (e.g., groundwater gradients and velocities) with those available during the ESP proceedings.
3. For certain resource areas, TVA performed site-specific investigation to characterize differences in the affected environment since the ESP EIS (e.g., a survey of aquatic ecology of the Watts Bar Reservoir found that new information related to aquatic biota and non-native species were notably different than the characterization during the ESP proceedings).
4. TVA presented a four-step data review process in the ER (ER Figure 1.8-1). In the third step of the data review process, TVA used all new information (both confirmatory and notable new information) to assess if impacts assessed during the ESP proceedings may change.

RCI-NS-02

With respect to TVA's process for assessing the reasonably foreseeable actions in conjunction with CRN-1, please confirm that the following statement is accurate.

1. For assessing reasonably foreseeable actions for various resource areas, TVA used the concept of geographical area of interest (GAI). GAI is defined as the area where other actions occur that could potentially have impact on a given resource. Therefore, GAI may be different for different resources.

Site Layout

RCI-SL-1

Please confirm that NLCD 2021 was used for land cover classification.

RCI-SL-2

Please confirm the discharge location is at Clinch River Mile (CRM) 15.55. Please confirm the intake location is at CRM 17.9.

RCI-SL-3

Please confirm that the construction of the intake structure will permanently remove the 5-acre cedar glade habitat found in the 2021 vegetation survey.

Aquatic Ecology

RCI-AE-1

Please confirm that during sampling in 2022 several macrophytes were found in the area where the intake is planned to be constructed including coontail, water star-grass, and the State-listed Nuttall's waterweed, no macrophytes were located in the area where the discharge is planned.

RCI-AE-2

Please confirm that in April and May 2023, researchers sampled STR08 (a tributary of STR09) to identify any impacts to ESA-listed species within the new 161 kHz transmission ROW,

specifically the valley flame crayfish (*Cambarus deweesae*). They did not sample the connected streams STR09 (upper reaches of grassy creek) or STR17, which also lie within the new 161 kHz transmission ROW. Although they did not detect any listed species during sampling, they collected three crayfish (*Cambarus cf. striatus, Cabarus bartonii cavatus*, and *Cambarus cf. dubius*) and two fish (*Semotilus atromaculatus* and *Rhinichthys obtusus*).

RCI-AE-3

Please confirm that for construction activities at the CRN Site, BMPs for in-water construction work will be developed on a case-by-case basis in accordance with issued permits.

RCI-AE-4

Please confirm the following information related to the construction of the intake structure (alternative 1), the design is 316(b) compliant, the site disturbance footprint for the intake is less than 0.5 acres, the excavation will take place in two phases with phase 2 including the removal of the shoreline material (less than 350 cy) to complete the channel connection into the river.

RCI-AE-5

Please confirm the following information related to the construction of the intake structure (alternative 2), the design is 316(b) compliant, an approximately 55 ft by 20 ft cofferdam would be built along the bank for a period of about 6 months to allow installation of intake screens, the site disturbance footprint for the intake is less than 10,000 sf onshore and approximately 1,100 sf of river, and approximately 100 sf of river bottom will be dredged for the intake screens removing about 1300 cy of material.

RCI-AE-6

Please confirm the following information related to the construction of the discharge structure, the dredge material removed from the river bank to the diffusers to install the discharge line is less than 2,272 cy of which approximately 491 cy is from the river bottom, the rip rap cover is 32 ft wide and 4 ft deep and will extend from the shoreline to the end of the diffusers, a cofferdam will be constructed to allow the excavation along the river bank to occur in a dry condition but river bottom will be dredged to create a trench approximately 22 ft wide and 20 inches deep for the horizontal piping, and the top of the diffuser piping will be approximately 2 ft above the river bottom.

RCI-AE-7

Please confirm that the average river depth in the reach of the Clinch River where CRN-1 will be located is between 17 (winter) and 22 (summer) feet.

Geology

RCI-GEO-1

Please confirm that no evidence of hypogenic karst was observed during the most recent geotechnical investigation completed at the site.

Historic and Cultural Resources

RCI-HC-1

Please confirm the following statements.

1. TVA has no current plans for construction or modification of the TN-58 and Bear Creek Road interchange area. If future project designs require construction or modification, TVA will follow the stipulations of their 2016 and 2019 programmatic agreements for protection and mitigation of historic properties.
2. Land ownership for the current BTA is being transferred from DOE to TVA. TVA plans to widen the access road to the BTA and clear vegetation to support the proposed project; there is no planned or anticipated work within or immediately adjacent to the Clinch River waterway or at the BTA itself. Therefore, there will be no potential construction activities that may (or would) impact historic properties in this portion of the Clinch River Nuclear Site.

RCI-HC-2

Please confirm the following statement. If TVA selects to obtain borrow material from an existing State-permitted offsite quarry (Midway Quarry), that means there would be no new construction at the selected quarry to accommodate TVA's request for fill material, thus it would not require NHPA Section 106 compliance for TVA.

RCI-HC-3

Please confirm the following statements.

1. TVA plans to build a 161-kV transmission line that will cross Bear Creek Road and connect to the existing Kingston FP-Bethel Valley #2 161 kV transmission line located on DOE owned and managed property.
2. While the final design will not be completed until mid-2026 or later, construction of the transmission line on TVA property will follow requirements stipulated in the 2016 and 2019 programmatic agreements for protection and mitigation of historic properties.
3. DOE is independently responsible for applicable environmental compliance on its property at a future date, including Section 106 consultation, depending on TVA's final design and agreement with DOE for construction and operation. Furthermore, TVA conducted consultation for DOE regarding the identification of historic properties within the transmission line corridor in 2021.

RCI-HC-4

Please confirm the following statement. TVA currently anticipates siting and building a future independent spent fuel storage installation (ISFSI) within the footprint of the Clinch River Nuclear Site area (i.e., permanently disturbed area) identified within Figure 2.1-2 of the environmental report. TVA would adhere to stipulations in the 2016 and 2019 programmatic agreements when building the future ISFSI.

RCI-HC-5

Please confirm that if planned building activities at the Clinch River Site impact (or adversely effect) historic properties with the area of potential effects, TVA plans to consult with all affiliated Indian Tribes that have historic interest to the proposed project area. Consultation would not be limited to the Indian Tribes who are signatories to the 2016 and 2019 programmatic agreements.

RCI-HC-6

Please confirm the following statements.

1. TVA has updated ER Figure 4.5-1 to include updates to the National Register of Historic Places eligibility status of archaeological sites within the area of potential effects and proposed tree clearing areas to facilitate widening of the access road to the barge landing area within the BTA. TVA would amend the PA when site design is finalized.
2. TVA plans to widen the access road to the barge landing area within the BTA which may include tree removal – the bounds for those impacts are discussed in the ER. TVA staff confirmed that ER Figure 4.5-1 (in the non-public ER), titled "Potentially NRHP-Eligible and NRHP-Eligible Archaeological Sites within the CRN-1 Disturbance Area" includes the proposed tree clearing activities/area within the "Permanent"/"CRN Impact Type" designated area.

Land Use

RCI-LUTE-1

Please confirm that the following statements are correct. If USACE and TDEC jurisdictional wetlands require mitigation, TVA's current preference is mitigation banking credits from a mitigation bank within the Clinch River watershed. Due to the FERC regulations regarding danger trees, the 161-kV transmission line will not be screened and would only be visible to the public on Bear Creek Road.

RCI-LU-1

Please confirm that no timber will be harvested in the 161-kV transmission corridor and a plan will be developed with the contractor for the final disposal of the cleared trees.

RCI-LU-2

Please confirm that the potential onsite quarry will be 40-ac of permanent disturbance and that includes parking areas, utilities, and stockpile areas associated with this quarry. Please confirm that the access road and utilities for the quarry will be in the areas identified as permanently disturbed.

RCI-LU-3

Please confirm that in the future, the Watts Bar Reservoir Land Management Plan will be modified to reclassify the CRN Site as a power asset from Zone 2-project operations. The strip along the reservoir shoreline and Grassy Creek HPA will still be designated as Zone 3-Sensitive Resource Management.

RCI-LU-4

Please confirm that the following statement is correct. Department of Energy (DOE) is in the process of transferring the barge landing parcel (including the access road from the barge landing area to the Site Access Road) to TVA by the end of calendar year 2025.

Meteorology

RCI-MET-01

Please confirm that TVA is planning to install and operate a single cooling tower for CRN-1. Confirm the following parameters that were used as inputs in the SACTI cooling tower plume model and output parameter from the particulate emissions study:

Parameter	Value
Tower height	58.03 feet
Number of fan cells	18
Water circulation rate	280,000 gallon/min
Drift Rate	0.001 percent of water circulation rate is equivalent to 177 grams/sec
Total Dissolved Solids (TDS)	5,000 ppm
Drift droplet size distribution	Same as ESP ER (Table 5.3-3, ADAMS No. ML19030A428)
Particulate Emissions[a]	30.68 ton/year

[a] Calculated using the following equation based on Reisman & Frisbie (2002) (ADAMS No. ML12325A097): PM = Water circulation rate * Drift rate * TDS

RCI-MET-02

Please confirm that:

1. stationary sources during operations of CRN-1 will include two standby diesel generators, a diesel driven fire pump, and a security diesel generator;
2. the auxiliary and gas turbines are precluded from the revised design; and
3. the following are estimated emissions from operations of the stationary sources.

Estimated Annual Emissions from Operation of Stationary Sources at CRN-1

Equipment	Number of Equipment	Engine Rating	Operating Hours Per Year	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	CO_2	VOC
Standby Diesel Generator	2	3150 kW	42 (total for both engines)	26,460	26,460	1,108,674	463,050	653,173	93,349,310	9,071

Diesel drive fire pump	1	500 hp	60	4,500	4,500	90,000	78,000	108,862	15,785,019	1,814
Security Diesel Generator	1	100 kW	34	1,010	1,020	22,440	17,000	16,329	2,394,968	272
Total (g/yr)				**31,980**	**31,890**	**1,221,114**	**558,050**	**778,364**	**111,529,297**	**11,157**
Total (US ton/yr)				**0.04**	**0.04**	**1.35**	**0.62**	**0.86**	**122.95**	**0.012**

RCI-MET-03

Please confirm the following estimated greenhouse emissions and assumptions for CRN-1:

CRN-1 Greenhouse Gas Emissions Estimates (metric tons of carbon dioxide equivalents) for Construction and Decommissioning Equipment[a]

Equipment[b]	Preconstruction/Construction[c]	Decommissioning[d]
Earthwork and Dewatering	12,000	6,000
Batch Plant operations	2,550	1,275
Concrete	4,050	2,025
Lifting and Rigging	1,680	840
Shop Fabrication	300	150
Warehouse operations	420	210
Equipment Maintenance	10,000	5,000
Total	**31,000**	**16,000**

[a] Estimated by scaling the generic emissions for a 1000 MWe reactor provided in Table A-1 of COL/ESP-ISG-026 Appendix A (ADAMS No. ML14100A157).
[b] Emissions from construction equipment estimated by using a 30% scaling factor based on reactor size, with the exception of earthwork/dewatering and equipment maintenance for which no scaling factor was applied and for concrete and batch plant operations for which a 75% scaling factor was used based on power block footprint.
[c] Estimated GHG emissions for preconstruction/construction based on hours of equipment usage over a 7-year period.
[d] Decommissioning emissions based on equipment usage over a 10-year period

CRN-1 Estimated Workforce Vehicle Emissions (metric tons of carbon dioxide equivalents)

	Preconstruction/Construction	Operation	Decommissioning

Workforce Vehicle Emissions[a]	13,000	41,000	2,400

[a] Emissions estimated by applying a 30 percent scaling actor based on reactor size of CRN-1 (300 MW) to total emissions for a 1000 MWe reactor provided in COL/ESP-ISG-026 Appendix A, Table A-2 (ADAMS ML14100A157).

RCI-MET-04

Please confirm that if an onsite quarry is developed:

1. the quarry will utilize a rock crusher that is subject to a Non-Title V operation permit to regulate emissions and TVA will acquire this permit and comply with all permit requirements to limit and mitigate air emissions from the onsite quarry,
2. new haul roads will be constructed to accommodate the increase in vehicular activities associated with the quarry, and
3. approximately 70-80 truck deliveries per day travelling within the CRN site will be needed to deliver 1,400 tons of material per day.

RCI-MET-05

Please confirm the following outputs from the SACTI model for the CRN-1 cooling tower design:

1. SACTI simulations showed no fogging and icing conditions at any distance from the cooling tower with onsite meteorological data.
2. Maximum seasonal salt deposition would occur during the winter with a maximum salt deposition of 479.95 kg/km^2-month at 100 meters, 354.5 kg/km^2-month at 200 meters, and 37.1 kg/km^2-month at 1000 meters from the tower in the ENE direction.
3. Plume length frequency from the cooling tower would be more than 300 m for approximately 0.14 percent or less of the time for any wind direction.
4. Largest visible plumes occur in the winter with a maximum length of 2.6 miles (4,209 meters) in the SW direction and 2.5 miles (3,968 meters) in the NE direction.

Nonradiological Health

RCI-NRH-1

Please confirm that blasting for the optional quarry is estimated to happen over a two-year time period and the closest sensitive noise receptor is 0.19 miles away at a residence on Blackburn Lane.

RCI-NRH-2

Please confirm that the blasting frequency for the optional onsite quarry is 1 to 2 times per week to establish the quarry pit.

RCI-NRH-3

Please confirm that the nearest noise receptor is approximately 1,860 ft from the cooling towers.

RCI-NRH-4

Please confirm that the maximum expected noise level from the operation of the cooling towers is 70 dBA at 1,000 feet and that the noise from the cooling tower is expected to attenuate to 64.6 dBA at the closest sensitive receptor.

RCI-NRH-5

Please confirm that for construction, the distance to the nearest sensitive noise receptor is approximately 750 feet, with expected noise levels attenuating to 77.5 dBA.

RCI-NRH-6

Please confirm that the 2024 traffic assessment, which compared the 2022 TDOT Crash Report data to the 2013 data from the AECOM study, showed the crash report data to be similar between the two time periods.

Socioeconomics/Cost Benefit

RCI-SOC-1

Please confirm that the overnight capital cost is the same as what was discussed in ER Rev 0, Section 4.4.3.1: $6,000 to $10,000 per kW(e), $1.8-$3.0 billion in total.

RCI-BC-1

Please confirm that the indirect and induced workforce income is $45.5 million ($64.4 million *0.706) during the construction period, resulting in a total labor income of $109.9 million.

RCI-BC-2

Please confirm that $18.9 million income is paid annually to operation workers ($18.5 million for operations plus $0.46 million for outages) and an additional $16.6 million in labor income is generated in the ROI through the multiplier effect; for a net impact of $35.5 million in labor income annually during operation.

Alternatives

RCI-ALT-1

Please confirm that a 735 ft (above sea level) reservoir elevation is maintained as per TVA Operating Guide.

Terrestrial Ecology

RCI-TE-1

Please confirm that the following statements are correct. The forest in the offsite 161-kV transmission line corridor will be converted to approximately 21.7 ac herbaceous vegetation or scrub/shrub habitat and 2.9 emergent/herbaceous wetlands. The forest in the on-site transmission corridor will have 4.2 ac of woody wetlands converted to emergent/herbaceous wetlands, and 79.2 ac of forest will be converted to scrub/shrub or herbaceous vegetation.

RCI-TE-2

Please confirm that the following statements are correct. Currently only danger trees (trees that are close enough to electric conductors to pose substantial risk of electric shock, fire, or power outages) are removed from the transmission line rights-of-way (ROWs) to comply with NERC requirements. If the Sherwood injunction is lifted, comprehensive vegetation management of the ROW as outlined in the Programmatic Vegetation Management Environmental Impact Statement and the tiered Environmental Assessment: Transmission System Routine Periodic Vegetation Management Fiscal Year 2025 and 2026 will be conducted.

RCI-TE-3

Please confirm that the following statements are correct. Inclusion of the new transmission corridor within the Grassy Creek Habit Protection Area (HPA) allows for further monitoring and research of the habitats and species, as well as adaptive management practices. There are multiple post-construction sustainability measures that TVA may implement including removal of invasive species, restoring the remanent cedar glade habitats onsite, improving host plants and foraging habitat for pollinators.

Water Resources (Groundwater)

RCI-GW-1

Please confirm that the following statements regarding the potential on-site quarry are correct.

1. Prior to construction, a detailed historical records evaluation and an intrusive ground investigation will be conducted to determine potential sources of contamination in the area of the proposed quarry and adjacent lands that may be disturbed during construction and operation.
2. Groundwater monitoring will be conducted prior to and during the construction of the potential quarry.
3. Stormwater management practices will be used to prevent runoff from entering the quarry pit.
4. The pit will not accumulate standing water during any phase of project (construction, operation, decommissioning), and therefore a permanent dewatering mechanism will be in place to manage water ingress.
5. All discharges from dewatering activities will be controlled in a manner according to the terms of the NPDES permit, which would be obtained prior to construction activities.
6. A nearby quarry, Midway Quarry, confirmed in discussions with TVA that they are able to support quarry dewatering with a single, 125-horsepower pump rated for 1,000 GPM during daylight operations.
7. A groundwater monitoring network and plan would be in place during plant operation which would include the area surrounding the proposed quarry, and would adhere to industry standards (e.g., NEI 07-07).

RCI-GW-2

Please confirm that any future wells that are not utilized for groundwater monitoring will be sealed and abandoned in accordance with TDEC regulations to prevent potential pathways for contamination.

RCI-GW-3

Section 4.2.3.2 of the NRC ESP FEIS notes that three abandoned wells used for groundwater monitoring characterization for the CRBRP could provide potential pathways for transport of contaminants to groundwater. Please confirm that since the publication of the NRC ESP FEIS, TVA completed the abandonment of 4 CRBRP wells in accordance with TDEC, Division of Water Resources regulations.

Water Resources (Surface Water)

RCI-SW-1

Please confirm that the bathymetry data was collected by Seaside Engineering and Surveying in July 2022. Please confirm that the resolution of the bathymetry data was 1.5 meter.

RCI-SW-2

Please confirm that USDA/NRCS 1-meter bare earth DEM (Metadata date 04/12/2023) was used in terrain slope analysis.

RCI-SW-3

Please confirm that the drainage area delineation was obtained from USGS StreamStats.

RCI-SW-4

Please confirm that the stream designation/classification followed the "Guidance for Making Hydrologic Determinations" by TDEC.

RCI-SW-5

Please confirm that the 2023 FEMA 100-year flood map was used to determine floodplain encroachment.

RCI-SW-6

Please confirm that the higher reservoir surface temperature as seen on ER Figure 2.3-5 is naturally occurring. TVA would obtain and comply with all future permits related discharge to surface waters.