Due to several rulemakings that occurred from 1985 to 2002, which significantly amended the MC&A requirements, the above regulatory guides became outdated as they no longer cite the correct sections of the regulations. Accordingly, RG 5.28, RG 5.49, and RG 5.57 are being withdrawn concurrent with the issuance of RG 5.41, which provides the correct citations to the 10 CFR part 74 regulations.

NRC guidance on the MC&A requirements pertaining to shipments, receipts, and internal transfers of special nuclear material is also provided in the following NUREGs that were issued in conjunction with the 1985–2002 MC&A rulemakings:

- NUREG–1280, ''Standard Format and Content Acceptance Criteria for the Material Control and Accounting (MC&A) Reform Amendment,'' applicable to facilities using formula quantities of strategic special nuclear material (ADAMS Accession No. ML031340295).
- NUREG–1065, ''Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Facilities,'' applicable to fuel fabrication facilities using low-enriched uranium (ADAMS Accession No. ML031340288).
- NUREG/CR–5734, ''Recommendations to the NRC on Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Enrichment Facilities,'' applicable to uranium enrichment plants (ADAMS Accession No. ML15120A354).

RG 5.41 incorporates guidance from these NUREGs that relates to the monitoring of shipments, receipts, and internal transfers of SNM. In addition to providing guidance on these topics, the NUREGs listed above cover other MC&A requirements as well. Therefore, these NUREGs are not being withdrawn.

II. Additional Information

The draft of RG 5.41 was issued with a temporary identification of Draft Regulatory Guide, DG–5051, ''Shipping, Receiving, and Internal Transfer of Special Nuclear Material.'' The NRC published a notice of the availability of DG–5051 in the **Federal Register** on September 21, 2016 (81 FR 64955) for a 30-day public comment period. The public comment period closed on October 21, 2016. Public comments on DG–5051 and the staff responses to the public comments are available in ADAMS under Accession No. ML16348A218.

III. Congressional Review Act

This RG is a rule as defined in the Congressional Review Act (5 U.S.C. 801–808). However, the Office of Management and Budget has not found it to be a major rule as defined in the Congressional Review Act.

IV. Backfitting and Issue Finality

Issuance of RG 5.41 does not constitute backfitting as defined in 10 CFR 70.76. As discussed in the ''Implementation'' section of RG 5.41, the NRC has no current intention to impose this guidance on holders of 10 CFR part 70 licenses. Additionally, RG 5.41 incorporates relevant guidance from NUREG–1280, NUREG–1065, and NUREG/CR–5734 without making substantive changes to that guidance. RG 5.41 updates the outdated NRC guidance provided in RG 5.28, RG 5.49, and RG 5.57 by providing the correct citations to the existing 10 CFR part 74 regulations. Accordingly, the issuance of RG 5.41 does not constitute a ''new'' or ''different'' staff position within the definition of ''backfitting'' in 10 CFR 70.76.

Dated at Rockville, Maryland, this 25th day of May 2017.

For the Nuclear Regulatory Commission.

Thomas H. Boyce,

Chief, Regulatory Guidance and Generic Issues Branch, Division of Engineering, Office of Nuclear Regulatory Research.

[FR Doc. 2017–11224 Filed 5–30–17; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50–259, 50–260, and 50–296; NRC–2016–0244]

Tennessee Valley Authority; Browns Ferry Nuclear Plant, Units 1, 2, and 3

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of amendments to Renewed Facility Operating License Nos. DPR–33, DPR–52, and DPR–68 issued to Tennessee Valley Authority (TVA, the licensee) for operation of Browns Ferry Nuclear Plant, Units 1, 2, and 3 (BFN) located in Limestone County, Alabama. The proposed amendments would increase the maximum licensed thermal power level for each reactor from 3,458 megawatts thermal (MWt) to 3,952 MWt. This change, referred to as an extended power uprate (EPU), represents an increase of approximately 14.3 percent above the current licensed thermal power limit. The NRC is issuing a final environmental assessment (EA) and final finding of no significant impact (FONSI) associated with the proposed EPU.

DATES: The final EA and final FONSI are available on May 31, 2017.

ADDRESSES: Please refer to Docket ID NRC–2016–0244 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- *Federal Rulemaking Web Site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2016–0244. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.
- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''ADAMS Public Documents'' and then select ''Begin Web-based ADAMS Search.'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* For the convenience of the reader, the ADAMS accession numbers are provided in a table in the ''Availability of Documents'' section of this document.
- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Siva P. Lingam, telephone: 301–415–1564; email: *Siva.Lingam@nrc.gov;* or Briana Grange, telephone: 301–415–1042; email: *Briana.Grange@nrc.gov.* Both are staff members of the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

SUPPLEMENTARY INFORMATION:

I. Introduction

The NRC is considering issuance of amendments to Renewed Facility Operating License Nos. DPR–33, DPR–52, and DPR–68 issued to TVA for operation of BFN located in Limestone County, Alabama. TVA submitted its

license amendment request in accordance with section 50.90 of title 10 of the *Code of Federal Regulations* (10 CFR), by letter dated September 21, 2015 (TVA 2015a). TVA subsequently supplemented its application as described under ''Description of the Proposed Action'' in Section II of this document. If approved, the license amendments would increase the maximum thermal power level at each of the three BFN units from 3,458 MWt to 3,952 MWt.

Consistent with NRC Review Standard 001 (RS–001), Revision 0, ''Review Standard for Extended Power Uprates'' (NRC 2003), the NRC prepared a draft EA and draft FONSI, both of which were published the **Federal Register** (FR) on December 1, 2016, with a 30-day comment period (NRC 2016a; 81 FR 86732). The NRC did not receive any public comments on the draft EA or draft FONSI. This final EA has been prepared in accordance with 10 CFR 51.21.

The final EA includes revisions addressing two supplements to the EPU application submitted by TVA in letters dated January 20, 2017 (TVA 2017b), and February 3, 2017 (TVA 2017c). In the supplements, TVA proposed to install a static volt-ampere reactive (VAR) compensator (SVC) at the Limestone Substation in Limestone County, Alabama to address transmission system upgrades necessary to ensure transmission system stability at EPU power levels rather than installing capacitor banks at the Wilson Substation in Wilson County, Tennessee. The final EA has been updated to reflect these changes. No significant environmental impacts were identified associated with the SVC installation at the Limestone Station, and all other aspects of the proposed EPU and associated transmission system upgrades remain the same as described in the draft EA. Based on the results of the final EA contained in Section II of this document, the NRC did not identify any significant environmental impacts associated with the proposed amendments and has, therefore, prepared a final FONSI in accordance with 10 CFR 51.32 and 51.34(a) and is publishing the final FONSI in the **Federal Register** in accordance with 10 CFR 51.35.

II. Environmental Assessment

Plant Site and Environs

The BFN site encompasses 840 acres (ac) (340 hectares (ha)) of Federally owned land that is under the custody of TVA in Limestone County, Alabama. The site lies on the north shore of Wheeler Reservoir at Tennessee River Mile (TRM) 294 and is situated approximately 10 miles (mi) (16 kilometers [km]) south of Athens, Alabama, 10 mi (16 km) northwest of Decatur, Alabama, and 30 mi (48 km) west of Huntsville, Alabama.

Each of BFN's three nuclear units is a General Electric boiling-water reactor that produces steam to turn turbines to generate electricity. The BFN uses a once-through (open-cycle) condenser circulating water system with seven helper cooling towers to dissipate waste heat. Four of the original six cooling towers that serve BFN have undergone replacement, and TVA plans to replace the remaining two towers in fiscal years 2018 and 2019. Additionally, TVA constructed a seventh cooling tower in May 2012 (TVA 2017a).

Wheeler Reservoir serves as the source of water for condenser cooling and for most of BFN's auxiliary water systems. Pumps and related equipment to supply water to plant systems are housed in BFN's intake structure on Wheeler Reservoir. The reservoir is formed by Wheeler Dam, which is owned and operated by TVA, and it extends from Guntersville Dam at TRM 349.0 downstream to Wheeler Dam at TRM 274.9. Wheeler Reservoir has an area of 67,070 ac (27,140 ha) and a volume of 1,050,000 acre-feet (1,233 cubic meters) at its normal summer pool elevation of 556 feet (ft) (169 meters (m)) above mean sea level (TVA 2017a). Water temperature in Wheeler Reservoir naturally varies from around 35 degrees Fahrenheit (°F) (1.6 degrees Celsius (°C)) in January to 88 to 90 °F (31 to 32 °C) in July and August, and temperature patterns near BFN are typically well mixed or exhibit weak thermal stratification (TVA 2017a).

The Alabama Department of Environmental Management (ADEM) establishes beneficial uses of waters of the State and has classified the majority of the reservoir for use as a public water supply, for recreational use, and as a fish and wildlife resource. The reservoir is currently included on the State of Alabama's Federal Water Pollution Control Act (*i.e.,* Clean Water Act (CWA)) of 1972, as amended, Section 303(d) list of impaired waters as partially supporting its designated uses due to excess nutrients from agricultural sources. Section 303(d) of the CWA requires States to identify all ''impaired'' waters for which effluent limitations and pollution control activities are not sufficient to attain water quality standards. The Section 303(d) list includes those water bodies for which the State is required to develop total maximum pollutant loads (limits) to achieve future compliance with water quality standards and designated uses (ADEM 2016; TVA 2016a).

The BFN intake structure draws water from Wheeler Reservoir at TRM 294.3. The intake forebay includes a 20-feet (6-meters)-high gate structure that can be raised or lowered depending on the operational requirements of the plant. The flow velocity through the openings varies depending on the gate position. When the gates are in a full open position and the plant is operating in either open or helper modes, the average flow velocity through the openings is about 0.2 meters per second (m/s) (0.6 feet per second (fps)) for the operation of one unit, 0.34 m/s (1.1 fps) for the operation of two units, and 0.52 m/s (1.7 fps) for the operation of all three units assuming a water withdrawal rate of approximately 734,000 gallons per minute (gpm) (46.3 cubic meters per second (m^3/s)) per unit, for a total withdrawal of about 2,202,000 gpm (4,906 cubic feet per second (cfs); 138.6 m^3/s) of water for all three units (NRC 2005; TVA 2016b). The BFN's total per-unit condenser circulating water system flow is generally higher than the original design values due to system upgrades that included the refit of the condensers with larger diameter and lower resistance tubes (NRC 2005; TVA 2016a, 2017a).

The TVA maintains a Certificate of Use (Certificate No. 1058.0, issued December 5, 2005) for its surface water withdrawals. The Alabama Department of Economic and Community Affairs, Office of Water Resources issues this certificate to register large water users (*i.e.,* those with a water withdrawal capacity of 100,000 gallons per day (380 cubic meters)) within the State. The TVA periodically notifies the Office of Water Resources of facility data updates and submits annual water use reports for BFN as specified under the Certificate of Use as part of TVA's efforts to voluntarily cooperate with the State of Alabama's water management programs. The TVA most recently submitted an application to renew BFN's Certificate of Use in September 2015. Based on the staff's review of BFN water use reports submitted by TVA to the State for the period of 2011 through 2015, BFN's total water withdrawals from Wheeler Reservoir have averaged 1,848,000 gpm (4,117 cfs; 116.3 m^3/s). For 2015, BFN's total surface water withdrawal rate averaged 1,991,200 gpm (4,437 cfs; 125 m^3/s) (TVA 2016a).

Once withdrawn water has passed through the condensers for cooling, it is discharged back to Wheeler Reservoir via three large submerged diffuser pipes.

The pipes range in diameter from 5.2 to 6.2 m (17 to 20.5 ft) and are perforated to maximize mixing into the water column. Water exits the pipes through 7,800 individual 5-centimeter (2-inch) ports. This straight-through flow path is called ''open mode.'' As originally designed, the maximum thermal discharge back to the reservoir from the once-through condenser circulating water system operated in open mode is 25 °F (13.9 °C) above the intake temperature (NRC 2005). Some of the heated water can also be directed through cooling towers to reduce its temperature, as necessary to comply with State environmental regulations and BFN's ADEM-issued National Pollutant Discharge Elimination System (NPDES) Permit No. AL0022080 (ADEM 2012), in what is called ''helper mode.'' The plant design also allows for a closed mode of operation in which water from the cooling towers is recycled directly back to the intake structure without discharge to the reservoir. However, TVA has not used this mode for many years due to the difficulty in maintaining temperature limits in the summer months (NRC 2005).

To operate BFN, TVA must comply with the CWA, including associated requirements imposed by the State as part of the NPDES permitting system under CWA Section 402. The BFN NPDES permit (ADEM 2012) specifies that at the downstream end of the mixing zone, which lies 2,400 ft (732 m) downstream of the diffusers, operation of the plant shall not cause the:

- Measured 1-hour average temperature to exceed 93 °F (33.9 °C),
- measured daily average temperature to exceed 90 °F (32.2 °C), or
- measured daily average temperature rise relative to ambient to exceed 10 °F (5.6 °C).

In cases where the daily average ambient temperature of the Tennessee River as measured 3.8 mi (6.1 km) upstream of BFN exceeds 90 °F (32.2 °C), the daily average downstream temperature may equal, but not exceed, the upstream value. In connection with such a scenario, if the daily average upstream ambient river temperature begins to cool at a rate of 0.5 °F (0.3 °C) or more per day, the downstream temperature is allowed to exceed the upstream value for that day.

When plant operating conditions create a river temperature approaching one of the NPDES limits specified above, TVA shifts BFN from open mode to helper mode. The three units can be placed in helper mode individually or collectively. Thus, the amount of water diverted to the cooling towers in helper mode depends on the amount of cooling needed for the plant to remain in compliance with the NPDES permit limits. If helper mode operation is not sufficient to avoid the river temperature approaching the NPDES permit limits, TVA reduces (*i.e.,* derates) the thermal power of one or more of the units to maintain regulatory compliance (TVA 2017a).

In support of this license amendment request, TVA performed hydrothermal modeling to evaluate the potential thermal impacts of BFN circulating water discharges to Wheeler Reservoir under EPU conditions. The TVA first modeled the impacts of BFN operations at the current licensed thermal power level (*i.e.,* 105 percent of the original licensed thermal power, or 3,458 MWt). This established the base case for assessing the incremental thermal impacts on receiving waters of BFN operations at 120 percent of the original licensed thermal power under the proposed EPU. These results of TVA's modeling are described later in this EA under ''Cooling Tower Operation and Thermal Discharge.''

Under current operations and based on river flow, meteorological, and ambient river temperature data for the 6-year period 2007 through 2012, the modeling results indicate that the temperature of water exiting the diffusers and entering Wheeler Reservoir is an average of 86.9 °F (30.5 °C) during warm summer conditions. The river temperature at the NPDES compliance depth at the downstream end of the mixing zone is an average of 70.8 °F (21.6 °C) with a 1-hour average temperature maximum of 92.1 °F (33.4 °C) and a daily average temperature maximum of 89.4 °F (31.9 °C). On average, TVA operates the cooling towers 66 days per year. TVA derates BFN approximately 1 in every 6 summers for a maximum of 185 hours in order to maintain compliance with the NPDES permit (TVA 2016a). More recently, for the period 2011 through 2015, TVA operated BFN's cooling towers an average of 73 days per year and had incurred derates during two of the years (2011 and 2015) (TVA 2016a).

The BFN site, plant operations, and environs are described in greater detail in Chapter 2 of the NRC's June 2005 NUREG–1437, Supplement 21, Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Browns Ferry Nuclear Plant, Units 1, 2, and 3—Final Report (herein referred to as ''BFN FSEIS'') (NRC 2005). Updated information that pertains to the plant site and environs and that is relevant to the assessment of the environmental impacts of the proposed EPU is included throughout this draft EA, as appropriate.

Power Uprate History

The BFN units were originally licensed to operate in 1973 (Unit 1), 1974 (Unit 2), and 1976 (Unit 3) at 3,293 MWt per unit. In 1997, TVA submitted a license amendment request to the NRC for a stretch power uprate (SPU) to increase the thermal output of Units 2 and 3 by 5 percent (to 3,458 MWt per unit). The NRC prepared an EA and FONSI for the SPU, which was published in the FR on September 1, 1998 (NRC 1998, 63 FR 46491), and the NRC subsequently issued the amendments later that month.

In June 2004, TVA submitted license amendment requests for uprates at all three units (TVA 2004a, 2004b). The TVA requested a 15 percent EPU at Units 2 and 3 and a 20 percent EPU at Unit 1 such that if the proposed EPU was granted, each unit would operate at 3,952 MWt (120 percent of the original licensed power level). In September 2006, TVA submitted a supplement to the EPU application that requested interim operation of Unit 1 at 3,458 MWt (the Units 2 and 3 SPU power level) (TVA 2006). The NRC prepared a draft EA and FONSI, which were published for public comment in the **Federal Register** on November 6, 2006 (NRC 2006b, 71 FR 65009). The draft EA and FONSI addressed the impacts of operating all three BFN units at EPU levels. The NRC received comments from TVA and the U.S. Fish and Wildlife Service (FWS), which the staff addressed in the NRC's final EA and FONSI dated February 12, 2007 (NRC 2007a, 72 FR 6612). The NRC issued an amendment approving the SPU for Unit 1 in March 2007 (NRC 2007b); the staff's 2007 final EPU EA was used to support the SPU. Subsequently, in September 2014, TVA withdrew the 2004 EPU license amendment requests and stated that it would submit a new, consolidated EPU request by October 2015 (TVA 2014a).

Separately, on May 4, 2006, the NRC approved TVA's application for renewal of the BFN operating licenses for an additional 20-year period (NRC 2006a). As part of its environmental review of the license renewal application, the NRC issued the BFN FSEIS (NRC 2005). In the BFN FSEIS, the NRC staff analyzed the environmental impacts of license renewal, the environmental impacts of alternatives to license renewal, and mitigation measures available for reducing or avoiding any adverse impacts. Although the NRC did not evaluate impacts associated specifically with the then-pending EPU

in the BFN FSEIS, it performed an evaluation of the impacts of license renewal assuming that all three BFN units would operate at the EPU level of 3,952 MWt during the 20-year period of extended operations.

Description of the Proposed Action

The proposed action is the NRC's issuance of amendments to the BFN operating licenses that would increase the maximum licensed thermal power level for each reactor from 3,458 MWt to 3,952 MWt. This change, referred to as an EPU, represents an increase of approximately 14.3 percent above the current licensed thermal power level and would result in BFN operating at 120 percent of the original licensed thermal power level (3,293 MWt). The proposed action is in accordance with TVA's application dated September 21, 2015 (TVA 2015a) as supplemented by numerous letters, including seven letters that affected the EA, dated November 13, 2015 (TVA 2015b), December 15, 2015 (TVA 2015c), December 18, 2015 (TVA 2015d), April 22, 2016 (TVA 2016a), May 27, 2016 (TVA 2016b), January 20, 2017 (TVA 2017b), and February 3, 2017 (TVA 2017c). A full list of TVA's EPU application supplements may be found in the NRC staff's safety evaluation and **Federal Register** notice regarding the EPU request, which will be issued with the license amendment, if granted.

Plant Modifications and Upgrades

An EPU usually requires significant modifications to major balance-of-plant equipment. The proposed EPU for BFN would require the modifications described in Attachment 47 to the licensee's application entitled ''List and Status of Plant Modifications, Revision 1'' (TVA 2017d), which include replacement of the steam dryers, replacement of the high pressure turbine rotors, replacement of reactor feedwater pumps, installation of higher capacity condensate booster pumps and motors, modifications to the condensate demineralizer system, modifications to the feedwater heaters, and upgrade of miscellaneous instrumentation, setpoint changes, and software modifications.

All onsite modifications associated with the proposed action would be within the existing structures, buildings, and fenced equipment yards. All deliveries of materials to support EPU-related modifications and upgrades would be by truck, and equipment and materials would be temporarily stored in existing storage buildings and laydown areas. The TVA anticipates no changes in existing onsite land uses or disturbance of previously undisturbed onsite land (TVA 2017a).

According to TVA's current schedule, modifications and upgrades related to the proposed EPU would be completed at Unit 1 during the fall 2018 refueling outage, at Unit 2 during the spring 2019 outage, and at Unit 3 during the spring 2018 outage. If the NRC approves the proposed EPU, TVA would begin operating each unit at the uprated power level following these outages.

Cooling Tower Operation and Thermal Discharge

Operating BFN at the EPU power level of 3,952 MWt per unit would increase the steam flow to the plant's steam turbines, which would in turn increase the amount of waste heat that must be dissipated. The TVA would increase its use of the cooling towers (*i.e.,* operate in helper mode) to dissipate some of this additional heat; the remaining heat would be discharged to Wheeler Reservoir. If helper mode operation were to be insufficient to keep the reservoir temperatures within BFN's NPDES permit limits, TVA would reduce (*i.e.,* derate) the thermal power of one or more of the units to maintain regulatory compliance, a practice which TVA currently employs at BFN as necessary. Currently, TVA personnel examine forecast conditions for up to a week or more into the future and determine when and for how long TVA might need to operate BFN in helper mode operation and/or derate the BFN units to ensure compliance with the NPDES permit. The TVA would maintain this process under EPU conditions.

The TVA simulated possible future discharge scenarios under EPU conditions using river flows and meteorological data for the 6-year period 2007 through 2012. This period included the warmest summer of record (2010) as well as periods of extreme drought conditions (2007 and 2008). For years with warm summers, TVA predicts that the temperature of water exiting the diffusers and entering Wheeler Reservoir (assuming all BFN units are operating at the full EPU power level) would be 2.6 °F (1.4 °C) warmer on average than current operations. The river temperature at the NPDES compliance depth at the downstream end of the mixing zone would be 0.6 °F (0.3 °C) warmer on average. The TVA predicts that it would operate the cooling towers in helper mode an additional 22 days per year on average (88 days total) and that the most extreme years could result in an additional 39 days per year of cooling tower helper mode operation (121 days total).

Transmission System Upgrades

The EPU would require several upgrades to the transmission system and the BFN main generator excitation system to ensure transmission system stability at EPU power levels. The TVA performed a Revised Interconnection System Impact Study in January 2017, which determined that the EPU would require the following transmission upgrades: (1) Replacement of six 500-kilovolt (kV) breaker failure relays, (2) installation of a minimum of 764 megavolt-ampere reactive (MVAR) of reactive compensation in five locations throughout the TVA transmission system, and (3) modification of the excitation system of all three BFN main generators (TVA 2017e, 2017f). These upgrades are described in more detail in the following subsections.

Breaker Failure Relay Replacements

The TVA would replace the 500-kV breaker failure relays at BFN for breakers 5204, 5208, 5254, 5258, 5274, and 5278 to mitigate potential transmission system issues resulting from specific fault events on the transmission system. The relays are located in panels in the relay room inside the BFN control building, and physical work would be limited to this area. The TVA would complete the breaker failure relay replacements prior to spring 2018 (TVA 2017c, 2017d).

MVAR Reactive Compensation

The TVA would install a minimum of 764 MVAR of reactive compensation in five locations throughout TVA service area to address MVAR deficiencies associated with the additional power generation that would occur at EPU power levels. The reactive compensation would consist of an SVC installation at one substation and multiple capacitor bank installations at four separate substations. The SVC installation would address both the MVAR deficiency and transient stability issues and would be installed at the Limestone 500-kV Substation in Limestone County, Alabama. The TVA would install capacitor banks at the Clayton Village 161-kV Substation in Oktibbeha County, Mississippi; the Holly Springs 161-kV Substation in Marshall County, Mississippi; the Corinth 161-kV Substation in Alcorn County, Mississippi; and the East Point 500-kV Substation (161-kV line) in Cullman County, Alabama. The SVC installation and the Holly Springs and Corinth capacitor bank installations would require expansion of the existing

substation footprints and additional land grading and clearing. The remaining two capacitor bank installations (Clayton Village and East Point substations) would be within existing substation boundaries. The TVA expects to disturb approximately 25 ac (10 ha) of previously disturbed TVA-owned land for the SVC installation at the Limestone Substation. The TVA expects to purchase approximately 2.5 ac (1 ha) of land and disturb 2.25 ac (0.9 ha) of land for the Holly Springs Substation expansion. For the Corinth Substation expansion, TVA would purchase 3.5 ac (1.4 ha) of land and disturb 3 ac (1.2 ha) of land. The TVA would complete the SVC and capacitor bank installations by spring 2020, although TVA's transmission system operator does not preclude BFN from operating at EPU levels during the capacitor bank installations (TVA 2017a, 2017c, 2017d, 2017e).

BFN Main Generator Excitation System Modifications

The TVA would modify the BFN main generator Alterrex excitation system for all three units with a bus-fed static excitation system consisting of a 3-phase power potential transformer, an automatic voltage regulator, and a power section. Physical work to complete these modifications would be performed within existing BFN structures and would not involve any previously undisturbed land. The TVA is in the preliminary phase of the design change notice development for these modifications; therefore, TVA has not yet developed a specific timeline for implementation of the main generator excitation system modifications. However, TVA projects that these upgrades would be completed by 2020 (Unit 1), 2021 (Unit 2), and 2020 (Unit 3) (TVA 2017c, 2017d).

The Need for the Proposed Action

As stated by the licensee in its application, the proposed action would allow TVA to meet the increasing power demand forecasted in TVA service area. The TVA estimates that energy consumption in this area will increase at a compound annual growth rate of 1.2 percent until 2020 with additional moderate growth continuing after 2020.

Environmental Impacts of the Proposed Action

This section addresses the radiological and non-radiological impacts of the proposed EPU. Separate from this EA, the NRC staff is evaluating the potential radiological consequences of an accident that may result from the proposed action. The EPU would not be approved unless the NRC staff's safety analysis determines that the radiological doses under EPU postulated accident conditions are within the regulatory limits found in 10 CFR 50.67. Accordingly, the NRC staff concludes that the radiological impacts of accidents following the EPU would not be significant. The results of the NRC staff's safety analysis will be documented in a safety evaluation, which will be issued with the license amendment package approving the license amendment, if granted.

Radiological Impacts

Radioactive Gaseous and Liquid Effluents and Solid Waste

The BFN's waste treatment systems collect, process, recycle, and dispose of gaseous, liquid, and solid wastes that contain radioactive material in a safe and controlled manner within the NRC and U.S. Environmental Protection Agency (EPA) radiation safety standards. As discussed below, although there may be a small increase in the volume of radioactive waste and spent fuel, the proposed EPU would not result in changes in the operation or design of equipment in the gaseous, liquid, or solid waste systems.

Radioactive Gaseous Effluents

The Gaseous Waste Management System manages radioactive gases generated during the nuclear fission process. Radioactive gaseous wastes are principally activation gases and fission product radioactive noble gases resulting from process operations. The licensee's evaluation submitted as part of TVA's EPU application determined that implementation of the proposed EPU would not significantly increase the inventory of carrier gases normally processed in the Gaseous Waste Management System since plant system functions are not changing and the volume inputs remain the same. The analysis showed that the proposed EPU would result in an increase in radioiodines by approximately 5 percent and an increase in particulates by approximately 13 percent. The expected increase in tritium is linear with the proposed power level increase and is, therefore, estimated to increase by approximately 15 percent (TVA 2017a).

The licensee's evaluation (TVA 2017a) concluded that the proposed EPU would not change the radioactive gaseous waste system's design function and reliability to safely control and process waste. The projected gaseous release following implementation of the EPU would remain bounded by the values given in the BFN FSEIS. The existing equipment and plant procedures that control radioactive releases to the environment would continue to be used to maintain radioactive gaseous releases within the dose limits of 10 CFR 20.1302 and the as low as is reasonably achievable (ALARA) dose objectives in Appendix I to 10 CFR part 50. The NRC staff reviewed the last five years of effluent release data from BFN (TVA 2012, 2013, 2014b, 2015e, 2016c) and found the reported doses from gaseous effluents to be less than 1 percent of the allowable limits for current operations. Therefore, the NRC staff concludes that the increase in offsite dose due to gaseous effluent release following implementation of the EPU would not be significant.

Radioactive Liquid Effluents

The Liquid Waste Management System collects, processes, and prepares radioactive liquid waste for disposal. During normal operation, the liquid effluent treatment systems process and control the release of liquid radioactive effluents to the environment such that the doses to individuals offsite are maintained within the limits of 10 CFR part 20 and 10 CFR part 50, appendix I. The Liquid Waste Management System is designed to process the waste and then recycle it within the plant as condensate, reprocess it through the radioactive waste system for further purification, or discharge it to the environment as liquid radioactive waste effluent in accordance with State and Federal regulations. The licensee's evaluation (TVA 2017a) shows that implementation of the proposed EPU would increase the volume of liquid waste effluents by approximately 3.44 percent due to increased flow in the condensate demineralizers requiring more frequent backwashes. The current Liquid Waste Management System would be able to process the 3.44 percent increase in the total volume of liquid radioactive waste without any modifications. The licensee's evaluation determined that implementation of the proposed EPU would result in an increase in reactor coolant inventory of radioiodines of approximately 5 percent and an increase in radionuclides with long half-lives of approximately 13 percent. The expected increase in tritium is linear with the proposed power level increase and is, therefore, estimated to increase by 15 percent (TVA 2017a).

Since the composition of the radioactive material in the waste and the volume of radioactive material processed through the system are not expected to significantly change, the

current design and operation of the Liquid Waste Management System would accommodate the effects of the proposed EPU. The projected liquid effluent release following the EPU would remain bounded by the values given in the BFN FSEIS. The existing equipment and plant procedures that control radioactive releases to the environment would continue to be used to maintain radioactive liquid releases within the dose limits of 10 CFR 20.1302 and ALARA dose standards in appendix I to 10 CFR part 50. The NRC staff reviewed the last 5 years of effluent release data from BFN (TVA 2012, 2013, 2014b, 2015e, 2016c) and found the reported doses from liquid effluents to be less than 1 percent of the allowable limits for current operations. Therefore, the NRC staff concludes that there would not be a significant environmental impact from the additional volume of liquid radioactive waste generated following EPU implementation.

Solid Low-Level Radioactive Waste

Radioactive solid wastes at BFN include solids from reactor coolant systems, solids in contact with liquids or gases from reactor coolant systems, and solids used in support of reactor coolant systems operation. The licensee evaluated the potential effects of the proposed EPU on the Solid Waste Management System. The low-level radioactive waste (LLRW) consists of resins, filters and evaporator bottoms, dry active waste, irradiated components, and other waste (combined packages). The majority of BFN solid LLRW is shipped offsite as dry active waste. This LLRW is generated from outages, special projects and normal BFN operations. Normal operations at BFN are also a contributor to solid LLRW shipments due to system cleanup activities. This is due to resins from six waste phase separators and three reactor water cleanup phase separators. The licensee states (TVA 2017a) that BFN has approximately 29 spent resin shipments per year. The licensee's evaluation determined that implementation of the proposed EPU would result in an increase in activity of the solid wastes proportionate to an increase of 5 to 13 percent in the activity of long-lived radionuclides in the reactor coolant. The results of the licensee's evaluation also determined that the proposed EPU would result in a 15 percent increase in the total volume of solid waste generated for shipment offsite.

Since the composition and volume of the radioactive material in the solid wastes are not expected to significantly change, they can be handled by the current Solid Waste Management System without modification. The equipment is designed and operated to process the waste into a form that minimizes potential harm to the workers and the environment. Waste processing areas are monitored for radiation, and there are safety features to ensure worker doses are maintained within regulatory limits. The proposed EPU would not generate a new type of waste or create a new waste stream. Therefore, the NRC staff concludes that the impact from the proposed EPU on the management of radioactive solid waste would not be significant.

Occupational Radiation Dose at EPU Conditions

The licensee states (TVA 2017a) that in-plant radiation sources are expected to increase approximately linearly with the proposed increase in core power level of approximately 15 percent. To protect the workers, the BFN Radiation Protection Program monitors radiation levels throughout the plant to establish appropriate work controls, training, temporary shielding, and protective equipment requirements to minimize worker doses and to ensure that worker doses are within the limits of 10 CFR 20.1201.

Plant shielding is designed to provide for personnel access to the plant to perform maintenance and carry out operational duties with minimal personnel exposures. In-plant radiation levels and associated doses are controlled by the BFN Radiation Protection Program to ensure that internal and external radiation exposures to station personnel, and the general population exposure level, would be ALARA, as required by 10 CFR part 20. Access to radiation areas is strictly controlled by existing Radiation Protection Program procedures. Furthermore, TVA states that its policy is to maintain occupational doses to individuals and the sum of dose equivalents received by all exposed workers ALARA.

Based on the above, the NRC staff concludes that the proposed EPU is not expected to significantly affect radiation levels within BFN and, therefore, there would not be a significant radiological impact to the workers.

Offsite Doses at EPU Conditions

The primary sources of offsite dose to members of the public from BFN are radioactive gaseous releases, liquid effluents, and skyshine from Nitrogen-16 (N-16). As previously discussed, operation under proposed EPU conditions would not change the radioactive waste management systems' abilities to perform their intended functions. Also, there would be no change to the radiation monitoring system and procedures used to control the release of radioactive effluents in accordance with NRC radiation protection standards in 10 CFR part 20 and appendix I to 10 CFR part 50.

The licensee states (TVA 2016a) that the contribution of radiation shine from the implementation of the proposed EPU from N-16 would increase linearly with the EPU. The licensee estimates that this increase could result in offsite doses up to 32 percent greater than current operating levels. However, since current offsite doses due to N-16 skyshine are on average less than 1 millirem, doses would still be well within the 10 CFR 20.1301 and 40 CFR part 190 dose limits to members of the public following implementation of the proposed EPU. Further, any increase in radiation would be monitored at the on-site environmental thermoluminescent dosimeter stations at BFN to make sure offsite doses would remain in regulatory compliance (TVA 2017a).

Based on the above, the NRC staff concludes that the impact of offsite radiation dose to members of the public at EPU conditions would continue to be within the NRC and EPA regulatory limits and would not be significant.

Spent Nuclear Fuel

Spent fuel from BFN is stored in the plant's spent fuel pool and in dry casks in the independent spent fuel storage installation (ISFSI). The licensee estimates that the impact on spent fuel storage from operating at EPU conditions would increase the number of dry storage casks necessary for storage by approximately 19 percent. The licensee also states that the current ISFSI storage pad is projected to be filled on or before 2022 prior to being loaded with EPU fuel. An additional storage pad is anticipated to be required even if no EPU is approved. Since BFN's initial ISFSI plans included sufficient room for any necessary ISFSI expansion, the additional dry casks necessary for spent fuel storage at EPU levels can be safely accommodated on site and, therefore, would not have any significant environmental impact (TVA 2017a).

Approval of the proposed EPU would not increase the maximum fuel enrichment above 5 percent by weight uranium-235. The average fuel assembly discharge burnup for the proposed EPU is not expected to exceed the maximum fuel rod burnup limit of 62,000 megawatt days per metric ton of uranium. The licensee's fuel reload design goals would maintain the fuel

cycles within the limits bounded by the impacts analyzed in 10 CFR part 51, Table S–3, ''Table of Uranium Fuel Cycle Environmental Data,'' and Table S–4, ''Environmental Impact of Transportation of Fuel and Waste to and from One Light Water-Cooled Nuclear Power Reactor,'' as supplemented by the findings documented in Section 6.3, ''Transportation,'' Table 9.1, ''Summary of findings on NEPA [National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 *et seq.*)] issues for license renewal of nuclear power plants'' in NRC (1999). Therefore, the NRC staff concludes that the environmental impacts of the EPU would remain bounded by the impacts in Tables S–3 and S–4, and would not be significant.

Postulated Accident Doses

As a result of implementation of the proposed EPU, there would be an increase in the source term used in the evaluation of some of the postulated accidents in the BFN FSEIS. The inventory of radionuclides in the reactor core is dependent upon power level; therefore, the core inventory of radionuclides could increase by as much as approximately 15 percent. The concentration of radionuclides in the reactor coolant may also increase by as much as approximately 15 percent; however, this concentration is limited by the BFN Technical Specifications. Therefore, the reactor coolant concentration of radionuclides would not be expected to increase significantly. This coolant concentration is part of the source term considered in some of the postulated accident analyses. Some of the radioactive waste streams and storage systems evaluated for postulated accidents may contain slightly higher quantities of radionuclides (TVA 2017a).

In 2002, TVA requested license amendments to allow the use of Alternate Source Term (AST) methodology for design basis accident analyses for BFN. The TVA conducted full-scope AST analyses, which considered the core isotopic values for the current and future vendor products under EPU conditions. The TVA concluded that the calculated post-accident offsite doses for the EPU using AST methodologies meet all the applicable acceptance criteria of 10 CFR 50.67 and NRC Regulatory Guide 1.183, ''Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors'' (NRC 2000). The NRC approved BFN's AST license amendments in a letter to TVA dated September 27, 2004 (NRC 2004b).

The NRC staff is reviewing the licensee's analyses for EPU operations to verify the acceptability of the licensee's calculated doses under accident conditions. The results of the NRC staff's analyses will be presented in the safety evaluation to be issued with the license amendment, if approved, and the EPU would not be approved by NRC unless the NRC staff's independent review of dose calculations under postulated accident conditions determines that doses are within the regulatory limits found in 10 CFR 50.67. Therefore, the NRC staff concludes that the EPU would not significantly increase the consequences of accidents and would not result in a significant increase in the radiological environmental impact of BFN from postulated accidents.

Radiological Impacts Summary

The proposed EPU would not significantly increase the consequences of accidents, would not result in a significant increase in occupational or public radiation exposure, and would not result in significant additional fuel cycle environmental impacts. Accordingly, the NRC staff concludes that there would be no significant radiological environmental impacts associated with the proposed action.

Non-Radiological Impacts

Land Use Impacts

The potential impacts associated with land use for the proposed action include effects from onsite EPU-related modifications and upgrades that would take place between spring 2018 and spring 2019 and impacts of the transmission system upgrades previously described in the ''Description of the Proposed Action'' section of this document.

The onsite plant modifications and upgrades would occur within existing structures, buildings, and fenced equipment yards and would use existing parking lots, road access, lay-down areas, offices, workshops, warehouses, and restrooms in previously developed areas of the BFN site. Thus, existing onsite land uses would not be affected by onsite plant modifications and upgrades (TVA 2017a).

Regarding transmission system upgrades, the breaker failure relay replacements and BFN main generator excitation system modifications would occur within existing BFN structures and would not involve any previously undisturbed land. The MVAR reactive compensation, consisting of SVC and capacitor bank installations, would occur at five offsite locations throughout TVA service area as described previously. Two of the capacitor bank installations would be within existing substation boundaries and would, therefore, not affect any previously undisturbed land or alter existing land uses (TVA 2017e). The remaining two capacitor bank installations and the SVC installation would require expansion of the existing substation footprints and would require additional grading and clearing (TVA 2017e, 2017f). The TVA expects that the expansions would disturb 2.25 ac (0.9 ha), 3 ac (1.2 ha), and 25 ac (10 ha) of land at the Holly Springs, Corinth, and Limestone substations, respectively (TVA 2017e, 2017f). The affected land currently contains terrestrial habitat or other semi-maintained natural areas, but none of the three land parcels contain wetlands, ecologically sensitive or important habitats, prime or unique farmland, scenic areas, wildlife management areas, recreational areas, greenways, or trails. The TVA would implement Best Management Practices (BMPs) to minimize the duration of soil exposure during clearing, grading, and construction (TVA 2017e, 2017f). The TVA would also revegetate and mulch the disturbed areas as soon as practicable after each disturbance (TVA 2017e, 2017f). The NRC staff did not identify any significant environmental impacts related to altering land uses within the relatively small parcels of land required for the SVC and capacitor bank installations.

Following the necessary plant modifications and transmission system upgrades, operation of BFN at the EPU power level would not affect onsite or offsite land uses.

The NRC staff concludes that the proposed EPU would not result in significant impacts on onsite or offsite land use.

Visual Resource Impacts

No residential homes occur within foreground viewing distance of the BFN site to the north and east. A small residential development located to the northwest and another residential development located across Wheeler Reservoir to the southwest have at least partial views of the BFN site. Additionally, the site can be seen from the Mallard Creek public use area directly across the reservoir. Two earthen berms lie adjacent to the cooling tower complex that block views of the northern and eastern plant areas. The berms, as well as portions of the cooling tower complex, are visible to motorists traveling on Shaw Road (TVA 2016a).

Plant modifications and upgrades associated with the proposed EPU are

unlikely to result in additional visual resource impacts beyond those already occurring from ongoing operation of BFN for several reasons. First, the BFN site is already an industrial-use site. Therefore, the short-term, intensified use of the site that would be required to implement EPU-related modifications and upgrades is unlikely to be noticeable to members of the public within the site's viewshed. Second, TVA would implement all EPU-related modifications and upgrades during scheduled refueling outages when additional machinery and heightened activity would already be occurring on the site. Accordingly, the NRC staff does not expect that EPU-related modifications and upgrades would result in significant impacts to visual resources.

Regarding transmission system upgrades, the breaker failure relay replacements and BFN main generator excitation system modifications would occur within existing BFN structures and thus would not result in visual impacts. The SVC and capacitor bank installations would result in short-term visual impacts at the three sites for which substation expansion would be required. However, these areas are industrial-use sites, and use of machinery and equipment for ongoing maintenance and upgrades is common.

Following the necessary plant modifications and transmission system upgrades, operation of BFN at the EPU power level would not significantly affect visual resources. The TVA estimates that the EPU would require cooling tower operation 22 more days per year on average, which would increase the number of days in which a plume would be visible. However, given that the cooling towers are already operated intermittently, the additional use of the cooling towers following the EPU would not result in significantly different visual impacts than those experienced during current operations.

The NRC staff concludes that the temporary visual impacts during implementation of EPU modifications and upgrades at the BFN site, and near substations affected by the SVC and capacitor bank installations, would be minor and of short duration, and would not result in significant impacts to visual resources. The additional cooling tower operation following implementation of the EPU would also result in minor and insignificant visual impacts.

Air Quality Impacts

Onsite non-radioactive air emissions from BFN result primarily from operation of the emergency diesel generators. Emissions occur when these generators are tested or are used to supply backup power. The TVA (2016a) does not anticipate an increase in use of the emergency diesel generators as a result of the proposed EPU, nor is it planning to increase the frequency or duration of the emergency diesel generator surveillance testing. Additionally, TVA (2017a) maintains a Synthetic Minor Source Air Operating Permit for its diesel generators, issued and enforced by the ADEM, and TVA would continue to comply with the requirements of this permit under EPU conditions. Accordingly, the NRC staff does not expect that onsite emission sources attributable to the EPU would result in significant impacts to air quality.

Offsite non-radioactive emissions related to the proposed EPU would result primarily from personal vehicles of EPU-related workforce members driving to and from the site and from work vehicles delivering supplies and equipment to the site. The TVA (2017a) estimates that of the additional workers that would be present on the site during each of the refueling outages, 80 to 120 workers or less would be dedicated to implementing EPU-related modifications and upgrades. The TVA (2016a) generally ramps up outage staffing two to three weeks prior to the outage start and ramps down staffing beginning 21 to 28 days from the start of the outage. Major equipment and materials to support the EPU-related modifications and upgrades would be transported to the site well before the start of each outage period, and smaller EPU supplies will be delivered on trucks that routinely supply similar tools and materials to support BFN operations (TVA 2017a). The SVC and capacitor bank installations associated with the proposed EPU would result in additional minor air quality impacts from construction vehicle emissions and fugitive dust from ground disturbance and vehicle travel on unpaved roads (TVA 2017e, 2017f). These impacts would be temporary and controlled through TVA's BMPs (TVA 2017e, 2017f).

Following the necessary plant modifications and transmission system upgrades, operation at EPU levels would result in no additional air emissions as compared to operations at the current licensed power levels.

The NRC staff concludes that the temporary increase in air emissions during implementation of EPU modifications and upgrades and SVC and capacitor bank installations would be minor and of short duration, and would not result in significant impacts to air quality.

Noise Impacts

The potential noise impacts related to the proposed action would be primarily confined to those resulting from the use of construction equipment and machinery during the EPU outage periods. However, implementation of EPU-related modifications and upgrades during these periods is unlikely to result in additional noise impacts beyond those already occurring from ongoing operation because the BFN site is already an industrial-use site and because TVA would implement all EPU-related modifications and upgrades during scheduled refueling outages when additional machinery and heightened activity would already be occurring on the site. Accordingly, the NRC staff does not expect that EPU-related modifications and upgrades would result in significant noise impacts.

Regarding transmission system upgrades, the breaker failure relay replacements and BFN main generator excitation system modifications would occur within existing BFN structures, and would, therefore, not result in noise impacts. The SVC and capacitor bank installations would result in short-term and temporary noise impacts associated with construction equipment and machinery use at the three sites for which substation expansion would be required. However, these areas are industrial-use sites, and periodic noise impacts associated with ongoing maintenance and upgrades are common.

Following the EPU outages, operation of BFN at EPU levels would result in an average of 22 additional days per year of cooling tower operation, which would slightly increase the duration for which residents nearest the BFN site would experience cooling tower-related noise during the warmer months. The NRC staff reviewed information submitted by TVA (2017a) regarding an environmental sound pressure level assessment performed at the BFN site in 2012. The assessment found that background noise levels without cooling tower operation was 59.7 decibels A-weighted scale (dBA), and that the noise levels with operation of six of the seven cooling towers was 61.9 dBA, an increase of 2.2 dBA. The TVA compared this level with the Federal Interagency Committee on Noise's (FICON) recommendation that a 3-dBA increase in noise indicates a possible impact and the need for further analysis. Based on this criterion, TVA determined that the noise level emitted by operation of the cooling towers is acceptable.

Additionally, TVA (2016a) is planning to conduct additional sound monitoring following the replacement of Cooling Towers 1 and 2, which are scheduled for replacement in fiscal years 2018 and FY 2019. The TVA will continue to meet FICON guidelines by working with the cooling tower vendor to ensure noise attenuating features, such as low-noise fans, lower speed fans, and sound attenuators, are incorporated as required to meet the guidelines. In the event that TVA (2016a) finds that the resulting noise levels exceed the FICON guidelines, TVA would develop and implement additional acoustical mitigation, such as modifications to fans and motors or the installation of barriers. The TVA will also continue to comply with Occupational Safety and Health Administration (OSHA) regulations to protect worker health onsite.

The NRC staff concludes that the implementation of EPU modifications and upgrades, the capacitor bank installations, and additional operation of the cooling towers following implementation of the EPU would not result in significant noise impacts. Additionally, TVA would continue to comply with FICON guidelines and OSHA regulations regarding noise impacts, which would further ensure that future cooling tower operation would not result in significant impacts on the acoustic environment and human health.

Water Resources Impacts

As previously described, EPU-related modifications at BFN to include replacement and upgrades of plant equipment would occur within existing structures, buildings, and fenced equipment yards. The TVA does not expect any impact on previously undisturbed land at the BFN site. Any ground-disturbing activity would be subject to BFN's BMP Plan, which TVA must maintain as a condition of the BFN NPDES permit (ADEM 2012). The TVA must implement and maintain the BMP Plan to prevent or minimize the potential for the release of pollutants in site runoff, spills, and leaks to waters of the State from site activities and operational areas. Consequently, the NRC staff concludes that onsite EPU activities at BFN would have no significant effect on surface water runoff and no impact on surface water or groundwater quality.

Implementation of the EPU would also require upgrades to TVA's transmission system, including installation of a minimum of 764 MVAR reactive compensation, consisting of an SVC installation and four capacitor bank installations at five sites throughout TVA service area (see ''MVAR Reactive Compensation'' under ''Description of the Proposed Action''). At two of the substations (Clayton Village and East Point substations), new equipment installation would take place outdoors but within the confines of existing substation enclosures with ground disturbance limited to previously disturbed areas. As appropriate, TVA would use standard BMPs to minimize any potential impacts to surface water and groundwater. The TVA's BMPs address preventive measures such as use of proper containment, treatment, and disposal of wastewaters, stormwater runoff, wastes, and other potential pollutants. The BMPs would also address soil erosion and sediment control and prevention and response to spills and leaks from construction equipment that could potentially runoff or infiltrate to underlying groundwater. After installation, the SVC and capacitor banks would result in no industrial wastewater discharges (TVA 2017e, 2017f). Therefore, there would be no operational impact on water resources.

The SVC and capacitor installation work at three substations (Holly Springs and Corinth in Mississippi and Limestone in Alabama) would require expansion of the existing substation footprints and additional grading and clearing. Projected new ground disturbance for these substation expansions would range from approximately 2.25 ac (0.9 ha) of land for the Holly Springs, Mississippi Substation to 25 ac (10 ha) at the Limestone, Alabama Substation. The substation expansion projects would have no impact on perennial surface water features. At the Holly Springs substation, TVA identified an ephemeral stream that may lie within the expansion footprint. The TVA also identified three wet weather conveyances or ephemeral streams that may lie within the expansion footprint of the Limestone Substation. A review of site-specific information submitted by TVA for the expansion of the Limestone Substation, including available mapping information and photography, indicates that the three features may be headwater tributaries to nearby Limestone Creek. The information also suggests that the three surface water features have likely been channelized and or otherwise altered due to historic agricultural activity in the area. Regardless, adherence by TVA to project specifications and application of appropriate BMPs would ensure that there would be no impacts to offsite hydrologic features or conditions, including Limestone Creek near the Limestone Substation. Further, TVA would avoid any karst features (*e.g.,* springs and sinkholes) that may lie in the expansion area for the Limestone Substation during construction. The TVA would conduct all construction activities in accordance with standard BMPs as previously described and would perform specific work elements as further discussed below (TVA 2017e, 2017f).

To support substation expansion work, water would be required for such uses as potable and sanitary use by the construction workforce and for concrete production, equipment washdown, dust suppression, and soil compaction. The NRC staff assumes that the modest volumes of water needed would be supplied from local sources and transported to the work sites. Use of portable sanitary facilities, typically serviced offsite by a commercial contractor, would serve to reduce the volume of water required to meet the sanitary needs of the construction workforce.

The TVA would obtain any necessary construction fill material from an approved borrow pit, and TVA would place any spoils generated from site grading, trenching, or other excavation work in a permitted spoil area on the substation property, or the material would be spread or graded across the site. Areas disturbed by construction work and equipment installation would be stabilized by applying new gravel or resurfacing the disturbed areas (TVA 2017e, 2017f). Consequently, following the completion of construction, disturbed areas would lie within the expanded substation footprint and would otherwise be overlain by equipment or hard surfaces, would not be subject to long-term soil erosion, and would have little potential to impact surface water or groundwater resources.

The expansion projects at all three substations would also be subject to various permits and approvals, which TVA would obtain. Construction stormwater runoff from land disturbing activities of 1 ac (0.4 ha) or more is subject to regulation in accordance with Section 402 of the CWA. Section 402 establishes the NPDES permit program. Mississippi and Alabama administer these regulatory requirements through State NPDES general permits. Specifically, State construction stormwater general permits will be required for construction activities at the Holly Springs, Corinth, and Limestone substations. For NPDES general permits, permit holders must also develop and implement a Stormwater Pollution Prevention Plan to

ensure the proper design and maintenance of stormwater and soil erosion BMPs to prevent sediment and other pollutants in stormwater discharges and ensure compliance with State water quality standards.

Based on the foregoing, the NRC staff finds that the transmission system upgrades and associated substation expansion projects would have negligible direct impacts on water resources and would otherwise be conducted in accordance with TVA standard BMPs to minimize environmental impacts. The TVA's construction activities would also be subject to regulation under NPDES general permits for stormwater discharges associated with construction activity. Accordingly, the NRC staff concludes that EPU-related transmission system upgrades would not result in significant impacts on surface water or groundwater resources.

The EPU implementation at BFN would result in operational changes with implications for environmental conditions. As further detailed under ''Plant Site and Environs'' of this EA, BFN withdraws surface water from Wheeler Reservoir to supply water for condenser cooling and other in-plant uses. Total water withdrawals by BFN have averaged 1,848,000 gpm (4,117 cfs; 116.3 m/s) over the last 5 years, although the average withdrawal rate in 2015 exceeded the average rate (TVA 2016a). The BFN uses a once-through circulating water system for condenser cooling aided by periodic operation of helper cooling towers. Normally, during once-through (open cycle) operation, BFN returns nearly all of the water it withdraws back to the reservoir, albeit at a higher temperature, through three, submerged diffuser pipes. When necessary throughout the course of the year, BFN's return condenser cooling water is routed through one or more of the helper cooling towers based on the level of cooling needed so that the resulting discharge to the river meets thermal limits as stipulated in TVA's NPDES permit. The TVA may also derate one or more BFN generating units in order to ensure compliance with NPDES thermal limits, as previously described (TVA 2017a).

Following implementation of the EPU, TVA predicts that BFN would need to operate helper cooling towers an additional 22 days per year on average (for a total of 88 days per year) to maintain compliance with NPDES thermal limits, as compared to a projected average of 66 days per year at current power levels (TVA 2016a, 2017a). When helper cooling towers are used, a portion of the water passing through the towers is consumptively used (lost) due to evaporation and cooling tower drift. The results of TVA's hydrothermal modeling, as previously described, indicate that approximately 3 percent of the cooling water flow passed through the helper towers is consumptively used (TVA 2017a). Thus, for an additional 22 days per year on average, BFN's cooling water return flows to Wheeler Reservoir would be reduced by approximately 3 percent following the proposed EPU as compared to current operations. This is a negligible percentage of the total volume of water passing through Wheeler Reservoir and of the volume of water that is otherwise diverted by TVA to meet BFN cooling and other in-plant needs (TVA 2017a).

Operations at EPU power levels would not require any modifications to BFN's circulating water system, residual heat removal service water system, emergency equipment cooling water system, raw cooling water, or raw water systems. Therefore, TVA expects no changes in the volume of water that would be withdrawn from Wheeler Reservoir during operations (TVA 2016a). The EPU operations would result in an increase in the temperature of the condenser cooling water discharged to Wheeler Reservoir. The TVA's hydrothermal modeling predicts that the average temperature of the return discharge through BFN's submerged diffusers would be 2.6 °F (1.4 °C) warmer than under current operations and that the average temperature at the downstream edge of the mixing zone prescribed by BFN's NPDES permit would increase by 0.6 °F (0.3 °C). Nevertheless, these thermal changes would continue to meet BFN's NPDES permit limits, including temperature change limitations within the prescribed mixing zone (TVA 2016a, 2017a). In addition, there would also be no change in the use of cooling water treatment chemicals or other changes in the quality of other effluents discharged to Wheeler Reservoir in conjunction with implementation of the EPU (TVA 2016a).

In summary, implementation of the EPU at BFN and associated operational changes would not affect water availability or impair ambient surface water or groundwater quality. The NRC staff concludes that the proposed EPU would not result in significant impacts on water resources.

Terrestrial Resource Impacts

The BFN site's natural areas include riparian areas, upland forests, and wetlands that have formed on previously disturbed land cleared prior to BFN construction. Onsite plant modifications and upgrades would not disturb these areas because the EPU-related modifications and upgrades would not involve any new construction outside of the existing facility footprint, as previously described under ''Land Use Impacts.'' For this reason, sediment transport and erosion are also not a concern. The modifications and upgrades would result in additional noise and lighting, which could disturb wildlife. However, such impacts would be similar to and indistinguishable from what nearby wildlife already experience during normal operations because the upgrades and modifications would take place during regularly scheduled outages, which are already periods of heightened site activity.

Regarding transmission system upgrades, the breaker failure relay replacements and BFN main generator excitation system modifications would occur within existing BFN structures and would not involve any previously undisturbed land. These upgrades would result in no impacts on terrestrial resources. The SVC and MVAR capacitor bank installations would occur at five offsite locations throughout the TVA service area as described previously. The SVC installation and two of the four capacitor bank installations would require expansion of the existing substation footprints and additional grading and clearing, as described in the ''Land Use Impacts'' section. The affected land currently contains terrestrial habitat or other semi-maintained natural areas, and TVA (2017e, 2017f) reports that all three areas are likely to contain primarily non-native, invasive botanicals. None of the three land parcels contain wetlands, ecologically sensitive or important habitats, prime or unique farmland, scenic areas, wildlife management areas, recreational areas, greenways, or trails. The TVA (2017e, 2017f) also reports that no bird colonies or aggregations of migratory birds have been documented within 3 mi (4.8 km) of the substation footprints. The TVA would implement BMPs to minimize the duration of soil exposure during clearing, grading, and construction (TVA 2017e, 2017f). The TVA would also revegetate and mulch the disturbed areas as soon as practicable after each disturbance, and TVA's landscaping BMPs require revegetation with native plants or non-invasive species (TVA 2017e, 2017f). The NRC staff did not identify any significant environmental impacts to terrestrial resources related to altering land uses within the parcels of land

required for the SVC and capacitor bank installations.

Following the necessary plant modifications and transmission system upgrades, operation at EPU levels would result in no additional or different impacts on terrestrial resources as compared to operations at the current licensed power levels. The NRC assessed the impacts of continued operation of BFN through the period of extended operation in the BFN FSEIS (NRC 2005) and determined that impacts on terrestrial resources would be small (*i.e.,* effects would not be detectable or would be so minor that they would neither destabilize nor noticeably alter any important attribute of the resource).

The NRC staff concludes that the temporary noise and lighting during implementation of EPU modifications and upgrades and small areas of land disturbance associated with the SVC and MVAR capacitor bank installations would be minor and would not result in significant impacts to terrestrial resources.

Aquatic Resource Impacts

Aquatic habitats associated with the site include Wheeler Reservoir and 14 related tributaries, of which Elk River, located 10 mi (16 km) downstream of BFN, is the largest. Onsite plant modifications and upgrades would not affect aquatic resources because EPU-related modifications and upgrades would not involve any new construction outside existing facility footprints and would not result in sedimentation or erosion or any other disturbances that would otherwise affect aquatic habitats.

Regarding transmission system upgrades, the breaker failure relay replacements and BFN main generator excitation system modifications would occur within existing BFN structures and would, therefore, not affect aquatic resources. Although the SVC installation and two of the four MVAR capacitor bank installations would require expansion of existing substation footprints as described previously, TVA (2017e, 2017f) reports that the expansions would not affect the flow, channels, or banks of any nearby streams. As described previously in the ''Water Resource Impacts'' section, the substation expansions would have negligible direct impacts on water resources, and TVA would implement BMPs, as appropriate, and would be subject to regulation under NPDES general permits during any construction activities. Accordingly, the NRC staff did not identify any significant environmental impacts related to aquatic resources with respect to transmission system upgrades.

Following the necessary plant modifications and transmission system upgrades, operation at EPU levels would result in additional thermal discharge to Wheeler Reservoir. As described in the ''Cooling Tower Operation and Thermal Discharge'' and ''Water Resources Impacts'' sections of this document, TVA predicts that the temperature of water entering Wheeler Reservoir would be 2.6 °F (1.4 °C) warmer on average than current operations and that the river temperature at the NPDES compliance depth at the downstream end of the mixing zone would be 0.6 °F (0.3 °C) warmer on average. In the BFN FSEIS, the NRC (2005) evaluated the potential impacts of thermal discharges in Section 4.1.4, ''Heat Shock,'' assuming continued operation at EPU power levels. The NRC (2005) found that the BFN thermal mixing zone constitutes a small percentage of the Wheeler Reservoir surface area, that the maximum temperatures at the edge of the mixing zone do not exceed the upper thermal limits for common aquatic species, and that continued compliance with the facility's NPDES permit would ensure that impacts to aquatic biota are minimized. Since the time the NRC staff performed its license renewal review, the ADEM has issued a renewed BFN NPDES permit. The CWA requires the EPA or States, where delegated, to set thermal discharge variances such that compliance with the NPDES permit assures the protection and propagation of a balanced, indigenous community of shellfish, fish, and wildlife in and on the body of water into which the discharge is made, taking into account the cumulative impact of a facility's thermal discharge together with all other significant impacts on the species affected. Under the proposed action, TVA would remain subject to the limitations set forth in the renewed BFN NPDES permit. The NRC staff finds it reasonable to conclude that TVA's continued compliance with, and the State's continued enforcement of, the BFN NPDES permit would ensure that Wheeler Reservoir aquatic resources are protected.

Regarding impingement and entrainment, in Sections 4.1.2 and 4.1.3 of the BFN FSEIS, the NRC (2005) determined that impingement and entrainment during the period of extended operation would be small. The proposed EPU would not increase the volume or rate of water withdrawal from Wheeler Reservoir and no modifications to the current cooling system design would be required. Thus, the NRC staff finds that the proposed EPU would not change the rate of impingement or entrainment of fish, shellfish, or other aquatic organisms compared to current operations.

Regarding chemical effluents, the types and amounts of effluents would not change under the proposed EPU, and effluent discharges to Wheeler Reservoir would continue to be regulated by the ADEM under the facility's NPDES permit. Thus, the NRC staff concludes that compared to current operations, the proposed EPU would not change the type or concentration of chemical effluents that could impact aquatic resources.

The NRC staff concludes that onsite plant modifications and transmission system upgrades associated with the proposed EPU would not affect aquatic resources. Although operation at EPU levels would increase thermal effluent to Wheeler Reservoir, the NRC staff concludes that any resulting impacts on aquatic resources would not be significant because thermal discharges would remain within the limits imposed by the BFN NPDES permit.

Special Status Species and Habitats Impacts

The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (ESA) was enacted to protect and recover imperiled species and the ecosystems on which they depend. Under Section 7 of the ESA, Federal agencies must consult with the FWS or the National Marine Fisheries Service, as appropriate, to ensure that actions the agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species (collectively referred to as ''listed species'') or result in the destruction or adverse modification of critical habitat. This section of the EA describes the ESA action area; considers whether and what listed species or critical habitats may occur in the action area; evaluates the potential effects of the proposed EPU on species in the action area; and makes effect determinations for the identified species.

Concerning listed species and critical habitats that could be affected by the offsite transmission system modifications and upgrades, TVA, as a Federal agency, would be required to conduct ESA Section 7 consultation with the FWS, if necessary, to address any potential impacts that may result from the upgrades prior to undertaking any related work. The NRC has no authority over power transmission systems and no role in permitting any modifications and upgrades to those systems that TVA might undertake.

During its NEPA review associated with the transmission system modifications and upgrades, TVA (2017e, 2017f) determined that no Federally listed species or critical habitats occur near the three substations that would be expanded (Limestone, Holly Springs, and Corinth) and concluded that the expansions would have no effect on Federally listed species and critical habitats. As such, TVA determined that consultation with the FWS for the transmission system modifications and upgrades would not be required. However, if at any point prior to undertaking or during the modifications and upgrades, TVA determines that any listed species are present and that its actions may affect those species, the ESA would require TVA to consult with the FWS. Such consultation, if it occurs, would be between TVA and FWS and would not involve the NRC.

Action Area

The implementing regulations for Section 7(a)(2) of the ESA define ''action area'' as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area effectively bounds the analysis of listed species and critical habitats because only species that occur within the action area may be affected by the Federal action.

For the purposes of this ESA analysis, the NRC staff considers the action area for the proposed BFN EPU to be the full bank width of Wheeler Reservoir from the point of water withdrawal downstream to the edge of the mixing zone, which lies 2,400 ft (732 m) downstream of the diffusers. The NRC staff expects all direct and indirect effects of the proposed action to be contained within this area. The NRC staff recognizes that while the action area is stationary, Federally listed species can move in and out of the action area. For instance, a migratory fish species could occur in the action area seasonally as it travels up and down the river past BFN.

The NRC staff does not consider areas affected by the transmission system modifications and upgrades to be part of the action area because TVA, as a Federal agency, would be responsible for consulting with the FWS if TVA were to identity any impacts on Federally listed species or critical habitats that could result from its actions in these areas. The NRC does not have any authority or permitting role related to the transmission system modifications and upgrades and would not be involved in such a consultation, if it were to occur. However, as described above, TVA concluded that the expansions would have no effect on Federally listed species and critical habitats and that consultation with the FWS would not be required. Accordingly, based on the information provided by TVA, the NRC staff concludes that the EPU-related substation modifications and upgrades would not affect any listed species or critical habitats.

Listed Species and Critical Habitats

To determine what Federally listed species and designated critical habitats may occur in the action area, the NRC staff obtained an official species list from the FWS, reviewed information in TVA's EPU application, and considered relevant scientific literature pertaining to species distribution and occurrences, as available. First, to obtain an official species list, the NRC staff conducted a search using the FWS's Environmental Conservation Online System (ECOS) Information for Planning and Conservation (IPaC) system. The resulting species list (FWS 2017) identifies six endangered or threatened species that may occur in the action area (see Table 1). This species list contains less species than the number considered by the NRC staff in the draft version of this EA; footnote (a) in Table 1 explains the staff's basis for reducing the number of species it evaluates in this final EA. No candidate species, proposed species, or proposed or designated critical habitats occur in the action area (FWS 2017).

TABLE 1—FEDERALLY LISTED SPECIES WITH THE POTENTIAL TO OCCUR IN THE BFN EPU ACTION AREA

Species [a]	Common name	Federal status [b]	Known to occur in the vicinity of BFN? [c]
Mammals:			
Myotis grisescens	gray bat	FE	—
Myotis sodalis	Indiana bat	FE	—
Myotis septentrionalis	northern long-eared bat	FT	—
Freshwater Mussels:			
Epioblasma triquetra	snuffbox	FE	—
Lampsilis abrupta	pink mucket	FE	Y
Pleurobema plenum	rough pigtoe	FE	Y

[a] In the draft version of this EA, the NRC (2016a) staff considered 31 listed and candidate terrestrial and aquatic species based on information from the FWS's (2016) ECOS IPaC system. Following issuance of the draft EA, the NRC staff obtained an updated species list (FWS 2017), which contained the six listed species identified in this table. The reduced number of species is a reflection of updates and refinements to the FWS's ECOS IPaC system that now allows users to obtain more site-specific information on listed species distributions near proposed projects. All six species identified in this table appeared in the original list of species (FWS 2016) and were considered by the staff during the development of the draft EA. The updated species list (FWS 2017) does not contain any new species not previously considered by the staff and does not contain any information that would otherwise affect the NRC staff's original ''no effect'' finding for Federally listed species and critical habitats documented in the draft EA.

[b] FE = Federally endangered under the ESA; FT = Federally threatened under the ESA.

[c] Y = yes; — = no. Occurrence information is based on species identified in TVA's (2017a) supplemental environmental report submitted as part of its EPU application as occurring within tributaries to Wheeler Reservoir, within a 10-mi (16-km) radius of BFN, or within the Tennessee River between River Mile 274.9 and 310.7.

Sources: FWS 2017; TVA 2017a.

Second, the NRC staff reviewed information on listed species contained in TVA's EPU application. Since the 1970s, TVA has maintained a Natural Heritage Database that includes data on sensitive species and habitats, including Federally listed species and critical habitats, in TVA's power service area. The TVA's EPU application includes relevant information from its database on listed species and critical habitats that may be affected by the proposed EPU. Finally, the NRC staff searched available scientific literature to determine species distributions and the potential for listed species to occur in the action area. The results of the staff's

review is described below for the species identified in Table 1.

The TVA (2017a) has no records indicating the occurrence of any of the three species of bats identified in Table 1 within 10 mi (16 km) of the BFN site. Section 5.1 of the NRC's (2004a) biological assessment for license renewal states that the BFN site does not provide suitable habitat for Federally listed bats. Additionally, the NRC staff did not identify any ecological studies, reports, or other information that would indicate that any of the three bat species may be present within the action area. Therefore, the NRC staff concludes that the gray (*Myotis grisescens*), Indiana (*M. sodalis*), and northern long-eared (*M. septentrionalis*) bats are unlikely to occur in the action area.

Regarding the three species of freshwater mussels identified in Table 1, TVA (2017a) reports that two of the species—pink mucket (*Lampsilis abrupta*) and rough pigtoe (*Pleurobema plenum*)—have been recorded as occurring within tributaries to Wheeler Reservoir or within the Tennessee River between River Mile 274.9 and 310.7. These species occur in sand, gravel, and cobble substrates in large river habitats within the Tennessee River system. Both species are now extremely rare and are primarily found in unimpounded tributary rivers and in more riverine reaches of the main stem Tennessee River (TVA 2017a). Most of the remaining large river habitat in Wheeler Reservoir occurs upstream of the BFN action area. Section 5.2 of the NRC's (2004a) biological assessment for license renewal describes Tennessee River collection records for the two species, which date back to the late 1990s. Pink mucket and rough pigtoe were collected near Hobbs Island, which lies over 64 km (40 mi) upstream of BFN, in 1998 (Yokely 1998). The TVA (2017a) reports no more recent occurrence records of these two species. Additionally, TVA (2017a) reports no occurrence records of the third freshwater mussel species, snuffbox (*Epioblasma triquetra*). The NRC staff did not identify any ecological studies, reports, or other information suggesting that populations of any of these species exist in the BFN action area or within Wheeler Reservoir as a whole. The NRC staff, therefore, concludes that snuffbox, pink mucket, and rough pigtoe are unlikely to occur in the action area.

Impact Assessment

As described under ''Terrestrial Resource Impacts,'' the NRC staff determined that the proposed EPU would not have significant impacts on the terrestrial environment. This conclusion was made, in part, because the proposed EPU would not disturb any natural areas, including riparian areas, upland forests, and wetlands, and because any temporary noise and lighting that wildlife might experience during implementation of EPU-related modifications and upgrades would be similar to and indistinguishable from what nearby wildlife already experience during BFN operations. As described under ''Aquatic Resource Impacts,'' although operation at EPU levels would result in additional thermal discharge to Wheeler Reservoir, any resulting impacts on aquatic resources would not be significant because thermal discharges would remain within the limits imposed by the BFN NPDES permit. Further, because no Federally listed species occur in the action area, no Federally listed species would experience even these insignificant effects.

ESA Effect Determinations

Based on the foregoing discussion, the NRC staff concludes that the proposed EPU would have *no effect* on the gray bat, Indiana bat, northern long-eared bat, snuffbox, pink mucket, and rough pigtoe. Federal agencies are not required to consult with the FWS if they determine that an action will not affect listed species or critical habitats (FWS 2013). Thus, no consultation is required for the proposed EPU, and the NRC staff considers its obligations under the ESA to be fulfilled for the proposed action.

Historic and Cultural Resource Impacts

The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*), requires Federal agencies to consider the effects of their undertakings on historic properties, and the proposed EPU is an undertaking that could potentially affect historic properties. Historic properties are defined as resources eligible for listing in the National Register of Historic Places (NRHP). The criteria for eligibility are listed in 36 CFR 60.4 and include (1) association with significant events in history; (2) association with the lives of persons significant in the past; (3) embodiment of distinctive characteristics of type, period, or construction; and (4) sites or places that have yielded, or are likely to yield, important information.

According to the BFN FSEIS (NRC 2005), the only significant cultural resources in the proximity of BFN are Site 1Li535 and the Cox Cemetery, which was moved to accommodate original construction of the plant. TVA (2016a) researched current historic property records and found nothing new within 3 mi (4.8 km) of the plant. As described under ''Description of the Proposed Action,'' all onsite modifications associated with the proposed action would be within existing structures, buildings, and fenced equipment yards, and TVA anticipates no disturbance of previously undisturbed onsite land. Thus, historic and cultural resources would not be affected by onsite power plant modifications and upgrades at BFN.

Regarding transmission system upgrades, Tennessee Valley Archaeological Research (TVAR) and the University of Alabama's Office of Archaeological Research (OAR) performed Phase I Cultural Surveys to determine if the expansion of the Holly Springs, Corinth, and Limestone substations would affect any historic or cultural resources. The TVAR's and OAR's findings are summarized below.

During its Phase I Cultural Resource Survey for the Holly Springs Substation (Karpynec et al. 2016b), TVAR revisited two NRHP-listed historic districts, the Depot-Compress Historic District and the East Holly Springs Historic District, within the survey radius. The TVAR determined that the historic districts are outside the viewshed of the proposed substation expansion. During the survey, TVAR also identified 14 potentially historic properties, none of which were found to be eligible for listing on the NRHP due to their lack of architectural and historic significance. The TVAR concluded that no historic properties would be affected by the Holly Springs Substation expansion.

During its Phase I Cultural Resource Survey for the Corinth Substation (Karpynec et al. 2016b), TVAR identified 13 properties within the area of potential effect, none of which were determined to be eligible for listing on the NRHP due to their lack of architectural distinction and loss of integrity caused by modern alterations or damage. The TVAR concluded that no historic properties would be affected by the Corinth Substation expansion.

During the Phase I Cultural Resource Survey for the Limestone Substation (Watkins 2017), OAR did not identify any properties within the area of potential effect. OAR identified two properties within a 0.5-mi (0.8-km) radius of the area of potential effect that could be visually impacted by the Limestone Substation SVC installation, neither of which were found to be eligible for listing on the NRHP due to integrity and historical significance issues. OAR concluded that no historic properties would be affected by the Limestone Substation SVC installation.

Following power plant modifications and substation upgrades, operation of BFN at EPU power levels would have no effect on existing historic and cultural resources. Further, TVA has procedures in place to ensure that BFN operations would continue to protect historic and cultural resources, and the proposed action would not change such procedures (NRC 2005). Therefore, the NRC staff concludes that EPU-related power plant modifications and substation upgrades would not result in significant impacts to historic and cultural resources.

Socioeconomic Impacts

Potential socioeconomic impacts from the proposed EPU include increased demand for short-term housing, public services, and increased traffic due to the temporary increase in the size of the workforce required to implement the EPU at BFN and upgrade affected substations. The proposed EPU also could generate increased tax revenues for the State and surrounding counties due to increased ''book'' value of BFN and increased power generation.

During outages, the workforce at BFN increases by 800 to 1,200 workers for an average of 1,000 additional workers onsite. Normally, outage workers begin to arrive at BFN 2 to 3 weeks prior to the start of the outage, and the total number of onsite workers peaks at about the 3rd day of the 21- to 28-day outage. The EPU outage for each unit would last 35 days or less (TVA 2016a). Once EPU-related plant modifications have been completed, the size of the workforce at BFN would return to pre-EPU levels approximately 1 week after the end of the outage with no significant increases during future outages. The size of the operations workforce would be unaffected by the proposed EPU.

Most of the EPU plant modification workers are expected to relocate temporarily to the Huntsville metropolitan area during outages, resulting in short-term increased demands for public services and housing. Because plant modification work would be temporary, most workers would stay in available rental homes, apartments, mobile homes, and camper-trailers.

The additional number of outage workers and truck material and equipment deliveries needed to support EPU-related power plant modifications could cause short-term level-of-service impacts (restricted traffic flow and higher incident rates) on secondary roads in the immediate vicinity of BFN. However, only small traffic delays are anticipated during the outages.

The TVA currently makes payments in lieu of taxes to states and counties in which BFN operations occur and on properties previously subjected to state and local taxation. The TVA pays a percentage of its gross power revenues to such states and counties. Only a very small share of TVA payment is paid directly to counties; most is paid to the states, which use their own formulas for redistribution of some or all of the payments to local governments to fund their respective operating budgets. In general, half of TVA payment is apportioned based on power sales and half is apportioned based on the ''book'' value of TVA property. Therefore, for a capital improvement project such as the EPU, the in-lieu-of-tax payments are affected in two ways: (1) As power sales increase, the total amount of the in-lieu-of-tax payment to be distributed increases, and (2) the increased ''book'' value of BFN causes a greater proportion of the total payment to be allocated to Limestone County. The state's general fund, as well as all of the counties in Alabama that receive TVA in-lieu-of-tax distributions from the State of Alabama, benefit under this method of distribution (TVA 2017a). Therefore, the amount of future payments in lieu of property taxes paid by TVA could be affected by the increased value of BFN as a result of the EPU and associated increased power generation.

Due to the short duration of EPU-related plant modification and substation upgrade activities, there would be little or no noticeable effect on tax revenues generated by additional workers temporarily residing in Limestone County and elsewhere. In addition, there would be little or no noticeable increased demand for housing and public services or level-of-service traffic impacts beyond what is experienced during normal refueling outages at BFN. Therefore, the NRC staff concludes that there would be no significant socioeconomic impacts from EPU-related plant modifications, substation upgrades, and power plant operations under EPU conditions.

Environmental Justice Impacts

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from activities associated with the proposed EPU at BFN. Such effects may include human health, biological, cultural, economic, or social impacts. Minority and low-income populations are subsets of the general public residing in the vicinity of BFN, and all are exposed to the same health and environmental effects generated from activities at BFN.

Minority Populations in the Vicinity of the BFN

According to the 2010 Census, an estimated 22 percent of the total population (approximately 978,000 individuals) residing within a 50-mile radius of BFN identified themselves as a minority (MCDC 2016). The largest minority populations were Black or African American (approximately 135,000 persons or 14 percent), followed by Hispanic, Latino, or Spanish origin of any race (approximately 44,000 persons or 4.5 percent). According to the U.S. Census Bureau's (USCB's) 2010 Census, about 21 percent of the Limestone County population identified themselves as minorities, with Black or African Americans comprising the largest minority population (approximately 13 percent) (USCB 2016). According to the USCB's 2015 American Community Survey 1-Year Estimates, the minority population of Limestone County, as a percent of the total population, had increased to about 23 percent with Black or African Americans comprising 14 percent of the total county population (USCB 2016).

Low-Income Populations in the Vicinity of BFN

According to the USCB's 2010–2014 American Community Survey 5-Year Estimates, approximately 32,000 families and 154,000 individuals (12 and 16 percent, respectively) residing within a 50-mile radius of BFN were identified as living below the Federal poverty threshold (MCDC 2016). The 2014 Federal poverty threshold was $24,230 for a family of four (USCB 2016).

According to the USCB's 2015 American Community Survey 1-Year Estimates, the median household income for Alabama was $44,765, while 14 percent of families and 18.5 percent of the state population were found to be living below the Federal poverty threshold (USCB 2016). Limestone County had a higher median household income average ($55,009) and a lower percentage of families (12 percent) and persons (15 percent) living below the poverty level, respectively (USCB 2016).

Impact Analysis

Potential impacts to minority and low-income populations would consist of environmental and socioeconomic effects (*e.g.,* noise, dust, traffic, employment, and housing impacts) and radiological effects.

Noise and dust impacts would be temporary and limited to onsite activities. Minority and low-income populations residing along site access roads could experience increased commuter vehicle traffic during shift changes. Increased demand for inexpensive rental housing during the EPU-related plant modifications could disproportionately affect low-income populations; however, due to the short duration of the EPU-related work and the availability of housing, impacts to minority and low-income populations would be of short duration and limited. According to 2015 American Community Survey 1-Year Estimates, there were approximately 4,016 vacant housing units in Limestone County (USCB 2016). Radiation doses from plant operations after implementation of the EPU are expected to continue to remain well below regulatory limits.

Based on this information and the analysis of human health and environmental impacts presented in this EA, the NRC staff concludes that the proposed EPU would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing in the vicinity of BFN.

Cumulative Impacts

The Council on Environmental Quality defines cumulative impacts under NEPA as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7). Cumulative impacts may result when the environmental effects associated with the proposed action are overlaid or added to temporary or permanent effects associated with other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. For the purposes of this cumulative analysis, past actions are related to the resource conditions when BFN was licensed and constructed; present actions are related to the resource conditions during current operations; and future actions are those that are reasonably foreseeable through the expiration of BFN's renewed facility operating licenses (*i.e.,* through 2033, 2034, and 2036 for Units 1, 2, and 3, respectively).

In Section 4.8 of the BFN FSEIS (NRC 2005), the NRC staff assessed the cumulative impacts related to continued operation of BFN through the license renewal term assuming operation of BFN at EPU levels. In its analysis, the NRC (2005) considered changes and modifications to the Tennessee River; current and future water quality; current and future competing water uses, including public supply, industrial water supply, irrigation, and thermoelectric power generation; the radiological environment; future socioeconomic impacts; historic and cultural resources; and cumulative impacts to Federally endangered and threatened species. The NRC (2005) determined that the contribution of BFN continued operations at EPU levels to past, present, and reasonably foreseeable future actions would not be detectable or would be so minor as to not destabilize or noticeably alter any important attribute of the resources.

Because the proposed EPU would neither change nor result in significant impacts to the radiological environment, onsite or offsite land uses, visual resources, air quality, noise, terrestrial resources, special status species and habitats, historical and cultural resources, socioeconomic conditions, or environmental justice populations, the NRC concludes that implementation of the proposed action would not incrementally contribute to cumulative impacts to these resources. Regarding water resources and aquatic resources, although the proposed EPU would result in more thermal effluent, discharges would remain within the limits set forth in the current BFN NPDES permit, and no other facilities discharge thermal effluent within the BFN mixing zone that would exacerbate thermal effects. As described above, the NRC (2005) determined that cumulative impacts to these resources would not be detectable or would be so minor as to not destabilize or noticeably alter any important attribute of the resources. Accordingly, the NRC staff finds that cumulative impacts on water resources and aquatic resources under the proposed action would not be significant.

Additionally, for those resources identified as potentially impacted by activities associated with the proposed EPU (*i.e.,* water resources and aquatic resources), the NRC staff also considered current resource trends and conditions, including the potential impacts of climate change. The NRC staff considered the U.S. Global Change Research Program's (USGCRP's) most recent compilation of the state of knowledge relative to global climate change effects (USGCRP 2009, 2014). The effects of climate change on water and aquatic resources are discussed below.

Water Resources

Predicted changes in the timing, intensity, and distribution of precipitation would be likely to result in changes in surface water runoff affecting water availability across the Southeastern United States. Specifically, while average precipitation during the fall has increased by 30 percent since about 1900, summer and winter precipitation has declined by about 10 percent across the eastern portion of the region, including eastern Tennessee (USGCRP 2009). A continuation of this trend coupled with predicted higher temperatures during all seasons (particularly the summer months), would reduce groundwater recharge during the winter, produce less runoff and lower stream flows during the spring, and potentially lower groundwater base flow to rivers during the drier portions of the year (when stream flows are already lower). As cited by the USGCRP, the loss of moisture from soils because of higher temperatures along with evapotranspiration from vegetation is likely to increase the frequency, duration, and intensity of droughts across the region into the future (USGCRP 2009, USGCRP 2014).

Changes in runoff in a watershed along with reduced stream flows and higher air temperatures all contribute to an increase in the ambient temperature of receiving waters. Annual runoff and river-flow are projected to decline in the Southeast region (USGCRP 2014). Land use changes, particularly those involving the conversion of natural areas to impervious surface, exacerbate these effects. These factors combine to affect the availability of water throughout a watershed, such as that of the Tennessee River, for aquatic life, recreation, and industrial uses. While changes in projected precipitation for the Southeast region are uncertain, the USGCRP has a reasonable expectation that there will be reduced water availability due to the increased evaporative losses from rising temperatures alone (USGCRP 2014). Nevertheless, when considering that the Tennessee River System and associated reservoirs are closely operated, managed, and regulated for multiple uses which include thermoelectric power generation, the incremental contribution of the proposed EPU on climate change impacts is not significant.

Aquatic Resources

The potential effects of climate change described above for water resources, whether from natural cycles

or man-made activities, could result in changes that would affect aquatic resources in the Tennessee River. Increased air temperatures could result in higher water temperatures in the Tennessee River reservoirs. For instance, TVA found that a 1 °F (0.5 °C) increase in air temperature resulted in an average water temperature increase between 0.25 °F and 0.5 °F (0.14 °C and 0.28 °C) in the Chickamauga Reservoir (NRC 2015). Higher water temperatures would increase the potential for thermal effects on aquatic biota and, along with altered river flows, could exacerbate existing environmental stressors, such as excess nutrients and lowered dissolved oxygen associated with eutrophication. Even slight changes could alter the structure of aquatic communities. Invasions of non-native species that thrive under a wide range of environmental conditions could further disrupt the current structure and function of aquatic communities (NRC 2015). Nevertheless, when considering that the Tennessee River System and associated reservoirs are closely operated, managed, and regulated for multiple uses that include thermoelectric power generation, the incremental contribution of the proposed EPU on climate change impacts is not significant.

Alternatives to the Proposed Action

As an alternative to the proposed action, the NRC staff considered denial of the proposed license amendments (*i.e.,* the ''no-action'' alternative). Denial of the application would result in no change in current environmental conditions or impacts. However, if the EPU were not approved, other agencies and electric power organizations might be required to pursue other means of providing electric generation capacity, such as fossil fuel or alternative fuel power generation, to offset future demand. Construction and operation of such generating facilities could result in air quality, land use, ecological, and waste management impacts significantly greater than those identified for the proposed EPU.

Alternative Use of Resources

The action does not involve the use of any different resources than those previously considered for current operations, as described in NUREG–1437, Supplement 21, Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Browns Ferry Station, Units 1, 2, and 3—Final Report (NRC 2005).

Agencies and Persons Consulted

The NRC staff did not enter into consultation with any other Federal or State agency regarding the environmental impacts of the proposed action. However, on October 6, 2016, the NRC notified the Alabama State official, Mr. David Walter, Director of Alabama Office of Radiation Control of the proposed amendments, requesting his comments by October 13, 2016. The State official provided no comments. The NRC (2016b) also sent copies of the draft EA to the EPA, FWS, and Alabama Department of Environmental Management. The NRC received no comments from these agencies.

III. Finding of No Significant Impact

The NRC is considering issuing amendments for Renewed Facility Operating License Nos. DPR–33, DPR–52, and DPR–68, issued to TVA for operation of BFN to increase the maximum licensed thermal power level for each of the three BFN reactor units from 3,458 MWt to 3,952 MWt.

On the basis of the EA included in Section II above and incorporated by reference in this finding, the NRC concludes that the proposed action would not have significant effects on the quality of the human environment. The NRC's evaluation considered information provided in the licensee's application and associated supplements as well as the NRC's independent review of other relevant environmental documents. Section IV below lists the environmental documents related to the proposed action and includes information on the availability of these documents. Based on its findings, the NRC has decided not to prepare an environmental impact statement for the proposed action.

IV. Availability of Documents

The following table identifies the references cited in this document and related to the NRC's FONSI. Documents with an ADAMS accession number are available for public inspection online through ADAMS at *http://www.nrc.gov/reading-rm/adams.html* or in person at the NRC's PDR as previously described.

Document	ADAMS Accession No., FRN, or URL reference
Alabama Department of Environmental Management. National Pollutant Discharge Elimination System Permit No. AL0022080, Tennessee Valley Authority, Browns Ferry Nuclear Plant. Dated July 3, 2012. (ADEM 2012).	ML16159A040
Alabama Department of Environmental Management. Alabama's Draft 2016 § 303(d) List Fact Sheet. Dated February 7, 2016. (ADEM 2016).	ML16259A186
Karpynec T, Rosenwinkel H, Weaver M, Wright K, and Crook E. A Phase I Cultural Resources Surveys of Tennessee Valley Authority's Corinth and Holly Springs Substation Expansions in Alcorn and Marshall Counties, Mississippi. Dated May 2016. (Karpynec et al. 2016).	ML16197A563
Missouri Census Data Center. Circular Area Profiles (CAPS), 2010 Census Summary File 1, Aggregated Census Block Group Hispanic or Latino and Race data and 2010–2014 American Community Survey (ACS) data, Summary of aggregated Census Tract data in a 50-mile (80-kilometer) radius around BFN (Latitude = 34.703889355505075, Longitude = −87.11862504482272). Accessed September 2016. (MCDC 2016).	*http://mcdc.missouri.edu/websas/caps10c.html*
Tennessee Valley Authority. Browns Ferry Nuclear Plant Units 2 and 3—Proposed Technical Specifications Change TS–418—Request for License Amendment Extended Power Uprate (EPU) Operation. Dated June 25, 2004. (TVA 2004a).	ML041840301
Tennessee Valley Authority. Browns Ferry Nuclear Plant Unit 1—Proposed Technical Specifications Change TS–431—Request for License Amendment—Extended Power Uprate (EPU) Operation. Dated June 28, 2004. (TVA 2004b).	ML042800186
Tennessee Valley Authority. Browns Ferry Nuclear Plant—Unit 1—Technical Specifications Change TS–431, Supplement 1—Extended Power Uprate (EPU). Dated September 22, 2006. (TVA 2006).	ML062680459
Tennessee Valley Authority. Browns Ferry Nuclear Plant, Unit 1, 2, and 3—Annual Radioactive Effluent Release Report—2011 Dated April 30, 2012 (TVA 2012).	ML12123A017
Tennessee Valley Authority. Browns Ferry Nuclear Plant, Unit 1, 2, and 3—Annual Radioactive Effluent Release Report—2012 Dated April 30, 2013 (TVA 2013).	ML13126A100

Document	ADAMS Accession No., FRN, or URL reference
Tennessee Valley Authority. Technical Specifications Changes TS–431 and TS–418—Extended Power Uprate (EPU)—Withdrawal of Requests and Update to EPU Plans and Schedules. Dated September 18, 2014. (TVA 2014a).	ML14265A487
Tennessee Valley Authority. Browns Ferry Nuclear Plant, Unit 1, 2, and 3—Annual Radioactive Effluent Release Report—2013 Dated April 30, 2014 (TVA 2014b).	ML14122A344
Tennessee Valley Authority. Proposed Technical Specifications Change TS–505—Request for License Amendments—Extended Power Uprate, Cover Letter. Dated September 21, 2015. (TVA 2015a).	ML15282A152
Tennessee Valley Authority. Proposed Technical Specification Change TS–505—Request for License Amendments—Extended Power Uprate—Supplemental Information. Dated November 13, 2015. (TVA 2015b).	ML15317A361
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 2, MICROBURN–B2 Information. Dated December 15, 2015. (TVA 2015c).	ML15351A113
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 3, Interconnection System Impact Study Information. Dated December 18, 2015. (TVA 2015d).	ML15355A413
Tennessee Valley Authority. Browns Ferry Nuclear Plant, Unit 1, 2, and 3—Annual Radioactive Effluent Release Report—2014 Dated April 30, 2015 (TVA 2015e).	ML15120A283
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 13, Responses to Requests for Additional Information. Dated April 22, 2016. (TVA 2016a).	ML16159A040
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 18, Responses to Requests for Additional Information and Updates Associated with Interconnection System Impact Study Modifications. Dated May 27, 2016. (TVA 2016b).	ML16197A563
Tennessee Valley Authority. Browns Ferry Nuclear Plant, Unit 1, 2, and 3—Annual Radioactive Effluent Release Report—2015 Dated April 30, 2016 (TVA 2016c).	ML16123A149
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate, BFN EPU LAR, Attachment 42, Supplemental Environmental Report, Revision 2. Enclosure 2. Dated February 3, 2017. (TVA 2017a).	ML17034A562
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 36, Transmission System Update—Safety Aspects Dated January 20, 2017. (TVA 2017b).	ML17023A199
Tennessee Valley Authority. Proposed Technical Specifications (TS) Change TS–505—Request for License Amendments—Extended Power Uprate (EPU)—Supplement 36, Transmission System Update—Environmental Aspects Dated February 3, 2017. (TVA 2017c).	ML17034A562
Tennessee Valley Authority. BFN EPU LAR, Attachment 47, List and Status of Plant Modifications, Revision 4 (Enclosure 7). Dated January 20, 2017. (TVA 2017d).	ML17023A200
Tennessee Valley Authority. Browns Ferry Nuclear Plant, RERP–RAI–GE–2 Response, Attachment 1, Revision 1: Supplemental Environmental Information for Transmission System and BFN Main Generator Upgrades (Excluding Limestone Substation. Dated February 3, 2017. (TVA 2017e).	ML17034A562
Tennessee Valley Authority. Browns Ferry Nuclear Plant, RERP–RAI–GE–2 Response, Attachment 2: Supplemental Environmental Information for Limestone Substation Static VAR Compensator Construction. Dated January 2017. (TVA 2017f).	ML17034A562
U.S. Census Bureau. American FactFinder, Table DP–1, ''Profile of General Population and Housing Characteristics: 2010, 2010 Census Summary File 1'' for Limestone County, Alabama; American FactFinder, Table DP05, ''ACS Demographic and Housing Estimates, 2015 American Community Survey 1-Year Estimates'' for Limestone County, Alabama; and Table DP03—''Selected Economic Characteristics, 2015 American Community Survey 1-Year Estimates'' for Alabama and Limestone County, and Table B25002—''Occupancy Status, 2015 American Community Survey 1-Year Estimates'' for Limestone County, Alabama. Accessed September 2016. (USCB 2016).	*http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t*
U.S. Fish and Wildlife Service. Endangered Species Consultations Frequently Asked Questions. Dated July 15, 2013. (FWS 2013).	ML16120A505
U.S. Fish and Wildlife Service. Updated List of Threatened and Endangered Species That May Occur in Your Proposed Project Location for Browns Ferry EPU. Dated February 1, 2016. (FWS 2016).	ML16032A044
U.S. Fish and Wildlife Service. List of Threatened and Endangered Species That May Occur in Your Proposed Project Location, and/or May Be Affected by Your Proposed Project. Dated March 30, 2017. (FWS 2017).	ML17089A314
U.S. Global Change Research Program. Global Climate Change Impacts in the United States. Dated June 2009. (USGCRP 2009).	ML100580077
U.S. Global Change Research Program. Climate Change Impacts in the United States: The Third National Climate Assessment. Dated May 2014. (USGCRP 2014).	ML14129A233
U.S. Nuclear Regulatory Commission. Browns Ferry Nuclear Plant, Units 2 and 3—Environmental Assessment Regarding Power Uprate. Dated September 1, 1998. (NRC 1998).	63 FR 46491
U.S. Nuclear Regulatory Commission. Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG–1437, Volume 1, Addendum 1). Dated August 1999. (NRC 1999).	ML040690720
U.S. Nuclear Regulatory Commission. Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors (Regulatory Guide 1.183). Dated July 2000. (NRC 2000).	ML003716792
U.S. Nuclear Regulatory Commission. Review Standard for Extended Power Uprates (RS–001). Revision 0. Dated December 2003. (NRC 2003).	ML033640024
U.S. Nuclear Regulatory Commission. Biological Assessment, Browns Ferry Nuclear Power Plant, License Renewal Review, Limestone County, Alabama. Dated October 2004. (NRC 2004a).	ML042990348

Document	ADAMS Accession No., FRN, or URL reference
U.S. Nuclear Regulatory Commission Browns Ferry Nuclear Plant, Units 1, 2, and 3—Issuance of Amendments Regarding Full-Scope Implementation of Alternative Source Term. September 27, 2004. (NRC 2004b).	ML042730028
U.S. Nuclear Regulatory Commission. Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Browns Ferry Plant, Units 1, 2, and 3—Final Report (NUREG–1437, Supplement 21). Dated June 30, 2005. (NRC 2005).	ML051730443
U.S. Nuclear Regulatory Commission. Issuance of Renewed Facility Operating License Nos. DPR–33, DPR–52, and DPR–68 for Browns Ferry Nuclear Plant, Units 1, 2, and 3. Dated May 4, 2006. (NRC 2006a).	ML060970332
U.S. Nuclear Regulatory Commission. Browns Ferry Nuclear Plant, Units 1, 2, and 3—Draft Environmental Assessment and Finding of No Significant Impact Related to the Proposed Extended Power Uprate. Dated November 6, 2006. (NRC 2006b).	71 FR 65009
U.S. Nuclear Regulatory Commission. Browns Ferry Nuclear Plant, Units 1, 2, and 3—Final Environmental Assessment and Finding of No Significant Impact Related to the Proposed Extended Power Uprate. Dated February 12, 2007. (NRC 2007a).	72 FR 6612
U.S. Nuclear Regulatory Commission. Browns Ferry Nuclear Plant, Unit 1—Issuance of Amendment Regarding Five Percent Uprate. Dated March 6, 2007. (NRC 2007b).	ML063350404
U.S. Nuclear Regulatory Commission. Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Sequoyah Nuclear Plant, Unit 1 and 2 —Final Report (NUREG–1437, Supplement 53). Dated March 2015. (NRC 2015).	ML15075A438
U.S. Nuclear Regulatory Commission. Tennessee Valley Authority; Browns Ferry Nuclear Plant, Units 1, 2, and 3; Draft environmental assessment and draft finding of no significant impact; request for comments. Dated December 1, 2016. (NRC 2016a).	81 FR 86732
U.S. Nuclear Regulatory Commission. Issuance of Browns Ferry Nuclear Plant, Units 1, 2, and 3—Draft Environmental Assessment and Finding of No Significant Impact Related to the Proposed Extended Power Uprate. Dated November 21, 2016. (NRC 2016b).	ML16287A525
Watkins JH. A Cultural Resource Survey of the Proposed Limestone Substation Station VAR Compensator Site in Limestone County, Alabama. Dated January 2017.	ML17034A562
Yokely P Jr. Mussel Study near Hobbs Island on the Tennessee River for Butler Basin Marina. Dated April 1998. (Yokely 1998).	ML042800176

Dated at Rockville, Maryland, this 22nd day of May 2017.

For The Nuclear Regulatory Commission.

Benjamin G. Beasley,

Chief, Plant Licensing Branch II–2, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.

[FR Doc. 2017–11184 Filed 5–30–17; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[NRC–2016–0264]

Information Collection: Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada

AGENCY: Nuclear Regulatory Commission.

ACTION: Renewal of existing information collection; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) invites public comment on the renewal of Office of Management and Budget (OMB) approval for an existing collection of information. The information collection is entitled, ''Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada.''

DATES: Submit comments by July 31, 2017. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods:

• *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2016–0264. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *Carol.Gallagher@nrc.gov.* For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

• *Mail comments to:* David Cullison, Office of the Chief Information Officer, Mail Stop: O–4F00, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

For additional direction on obtaining information and submitting comments, see ''Obtaining Information and Submitting Comments'' in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: David Cullison, Office of the Chief Information Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–2084; email: *Infocollects.Resource@nrc.gov.*

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID NRC–2016–0264 when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

• *Federal Rulemaking Web site:* Go to *http://www.regulations.gov* and search for Docket ID NRC–2016–0264.

• *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at *http://www.nrc.gov/reading-rm/adams.html.* To begin the search, select ''*ADAMS Public Documents*'' and then select ''*Begin Web-based ADAMS Search.*'' For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1–800–397–4209, 301–415–4737, or by email to *pdr.resource@nrc.gov.* The draft supporting statement is available in ADAMS under Accession No. ML17031A048.

• *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

• *NRC's Clearance Officer:* A copy of the collection of information and related