

**NUCLEAR REGULATORY COMMISSION**

**[Docket Nos. 50-321 and 50-366; NRC-201X-XXXX]**

**Edwin I. Hatch Nuclear Plant, Unit Nos. 1 and 2**

**Environmental Assessment and Finding of No Significant Impact Related to the  
Proposed License Amendment to Revise the Minimum Water  
Level in the Plant Service Water System Pump Well**

**AGENCY:** Nuclear Regulatory Commission

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

**FOR FURTHER INFORMATION CONTACT:** Robert E. Martin, Senior Project Manager, Licensing Branch II-1, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Rockville, Maryland, 20852. Telephone: (301) 415-1493; fax number: (301) 415-2102; e-mail: [Robert.Martin@nrc.gov](mailto:Robert.Martin@nrc.gov).

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- **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.

## **SUPPLEMENTARY INFORMATION:**

### **I. Introduction**

The U.S. Nuclear Regulatory Commission (NRC) is considering issuing an amendment for Renewed Facility Operating License Nos. DPR-57 and NPF-5, issued to Southern Nuclear Operating Company, (SNC, the licensee) for operation of the Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2, located in Appling County, Georgia, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.90. Therefore, as required by 10 CFR 51.21, the NRC staff performed an environmental assessment to document its findings. SNC previously submitted its license amendment request by letter dated December 15, 2011 (ADAMS Accession No. ML113500108) and subsequently withdrew it by letter dated April 20, 2012 (ADAMS Accession No. ML12122A113). Based on information provided in SNC's resubmittal, dated July 5, 2012 (ADAMS Accession No. ML13015A089), SNC's response to NRC's request for additional information, dated October 10, 2012 (ADAMS Accession No.

ML12284A299), and the NRC staff's independent review of references, the NRC did not identify any significant environmental impacts associated with the proposed license amendment:

Based on the results of the environmental assessment documented herein, the NRC is issuing this Finding of No Significant Impact (FONSI), in accordance with 10 CFR 51.32, for the proposed license amendment.

## **II. Environmental Assessment**

### *Plant Site and Environs:*

The HNP is located in Appling County, Georgia, southeast of where U.S. Highway 1 crosses the Altamaha River, in a rural part of the state. It is located approximately 11 miles (mi) (18 kilometers [km]) north of Baxley, Georgia; 20 mi (32 km) south of Vidalia, Georgia; 98 mi (160 km) southeast of Macon, Georgia; 73 mi (120 km) northwest of Brunswick, Georgia; and 67 mi (107 km) southwest of Savannah, Georgia. The HNP site totals approximately 2,240 acres (ac) (910 hectares [ha]). The plant has two boiling-water reactors with steam-electric turbines manufactured by General Electric Company. Following the approval and completion of the latest extended power uprate in 2003, HPN, Units 1 and 2, have an electrical power output of 935 and 950 megawatts-electric (MW[e]), respectively (ADAMS Accession Nos. ML032671231 and ML032691360). HNP uses a closed-loop, cooling tower system for main condenser cooling that withdraws makeup water from and discharges to the Altamaha River via shoreline intake and offshore discharge structures.

### *Identification of the Proposed Action:*

The proposed action would amend Appendix A of HNP's Renewed Facility Operating Licenses in order to revise the minimum water level referenced in Technical Specification (TS)

Surveillance Requirement (SR) 3.7.2.1 associated with the Limiting Condition for Operation (LCO) for the plant service water (PSW) system and ultimate heat sink (UHS). Specifically, SNC proposes a TS change to revise the minimum water level in the PSW pump well, as required by SR 3.7.2.1, from 60.7 feet (ft) (18.5 meters [m]) to 60.5 ft (18.4 m) mean sea level. As stated by SNC, the proposed TS change does not result in or require any physical changes to HNP systems, structures, and components, including those intended for the prevention of accidents. The license amendment would allow the licensee to avoid the potential for plant shutdown due to low river levels by demonstrating that sufficient water levels exist at the revised level to operate the plant safely. The licensee proposes to implement the proposed operational changes within 60 days of NRC's issuing the requested amendment.

*The Need for the Proposed Action:*

The proposed action is needed to provide SNC with additional operational flexibility during periods of low river levels to avoid a plant shutdown, while providing sufficient availability of water to support post-accident cooling requirements for a 30-day period.

*Environmental Impacts of the Proposed Action:*

As part of the original licensing process for HNP, Units 1 and 2, the NRC published Final Environmental Statements (FES) for Hatch, Units 1 and 2, in October 1972 and a separate FES for Unit 2 in March 1978. The FESs project potential environmental impacts associated with the operation of HNP over its initial operating period. In 2001, the NRC evaluated the environmental impacts of operating HNP for an additional 20 years beyond the original operating license and predicted that the environmental impacts of license renewal were small. The NRC's evaluation of ongoing operational impacts under the renewed license is presented in the Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Final Report (NUREG-1437, Supplement 4) dated

May 2001 (ADAMS Accession No. ML011420018). This document is the primary source of information presented in this environmental assessment, unless otherwise referenced.

The NRC staff considered information from SNC's license amendment request, the licensee's response to NRC staff's request for additional information, and NUREG-1437, Supplement 4 in preparing this environmental assessment. In its license amendment application, SNC states that the proposed TS change would not result in or require any physical changes to HNP systems, structures, and components, including those intended for the prevention of accidents. Further, the proposed license amendment involves a TS change that would only result in changes in procedural and operational aspects undertaken by HNP personnel for monitoring and maintaining the minimum water level in the PSW pump well. Thus, HNP's workforce would not change, and the regular operations workforce would otherwise be unaffected by the proposed action. Based on the above and the available information reviewed by the staff, the NRC concludes that no significant impact on land use and visual resources, geologic environment, air quality and noise, historic and cultural resources, socioeconomic conditions including environmental justice, or waste generation and management activities would occur near HNP from granting the proposed license amendment. Therefore, operational impacts on these resources are not further discussed in this environmental assessment for the purposes of evaluating SNC's proposed license amendment. NUREG-1437, Supplement 4 previously assessed the environmental impacts of continued operations of HNP, Units 1 and 2.

As identified in the evaluation performed by the licensee in support of its application, implementation of the TS change in the minimum water level in the PSW pump well to 60.5 ft (18.4 m) mean sea level for normal cooling water withdrawals would result in associated operational and receiving water changes. These include the following: (1) an altered discharge plume mixing zone, (2) altered discharge dilution for liquid radwaste discharges, and (3) an

increased through-screen velocity at the river intake traveling screens, with an increased percentage of the river diverted through the plant. With regard to the proposed lowering of the minimum water level in the PSW pump well and associated receiving water changes, the sections below evaluate and describe the aspects and potential impacts on the environment and on specific resource conditions that could result from implementation of the proposed license amendment.

The details of the NRC staff's safety evaluation will be separately provided in the license amendment package issued to approve the license amendment, if granted.

Non-radiological Impacts:

Surface Water Resources:

The Altamaha River is the major source of water for HNP. The Altamaha River is approximately 500 ft (150 m) wide and a maximum of 30 ft (9 m) deep at HNP. The shoreline of the Altamaha River near HNP and immediately downstream for several miles is characterized by steep bluffs, floodplain forests, and sandbars. The river remains relatively undisturbed and has no major channelization, dredging, or major reservoirs. The U.S. Geological Survey (USGS) maintains a stream gaging station (Number 02225000, Altamaha River near Baxley, GA) on the right bank of the river about 400 ft (121 m) downstream from the U.S. Highway 1 bridge, approximately 530 ft (160 m) upstream from HNP. Based on 63 years of record, the average annual flow rate at this station is 10,820 cubic feet per second (cfs) (305.6 cubic meters per second [ $\text{m}^3/\text{s}$ ]). Highest monthly flows normally occur in March and lowest monthly flows normally occur in September. The single day low flow (minimum daily mean flow) recorded to date at this gage occurred on September 19, 2011, with a discharge of 1,140 cfs ( $32.2 \text{ m}^3/\text{s}$ ).

Water is withdrawn from the river to provide cooling for certain once-through loads and makeup water to the cooling towers. SNC is permitted (Georgia Department of Natural

Resources [GADNR] Permit 001-0690-01, expiration date April 7, 2020) to withdraw a monthly average of up to 85 million gallons per day (mgd) (322,000 cubic meters per day [ $\text{m}^3/\text{d}$ ]), with a maximum 24-hour rate of up to 103.6 mgd (392,200  $\text{m}^3/\text{d}$ ). As a condition of this permit, SNC is required to monitor and report withdrawals. As documented in NUREG-1437, Supplement 4, HNP reported surface water withdraws averaging 57 mgd (216,000  $\text{m}^3/\text{d}$ ). Based on the most recent reported withdrawals for the period 2007 to 2011, HNP withdraws an annual average of 56.7 mgd (214,600  $\text{m}^3/\text{d}$ ) of water, an equivalent withdraw rate of 87.7 cfs (2.48  $\text{m}^3/\text{s}$ ). HNP's annual average withdrawal rate is approximately 0.8 percent of the annual average flow of the Altamaha River and about 7.7 percent of the historic single day low flow, as discussed above. As also documented in NUREG-1437, Supplement 4, approximately 58 percent of the water withdrawn by HNP for all uses is consumptively used in HNP's cooling towers and by other processes, with the balance (about 42 percent) discharged back to the river.

Additionally, as part of its application for the proposed TS change, SNC submitted a discharge rating calculation and rating table, which shows the discharge of the Altamaha River at specific river elevations as adjusted for the water elevation at the PSW pump well (inside the HNP intake). The analysis performed by SNC indicates that continued surface water withdrawals at the proposed PSW well minimum water level of 60.5 ft (18.4 m), and equating to a river low flow of 718 cfs (20.3  $\text{m}^3/\text{s}$ ), would provide sufficient water supply to meet HNP's 30-day TS requirements for safe-shutdown cooling under extended low river flow conditions. SNC's analysis further shows that sufficient water would be available at a minimum water level of 60.0 ft (18.3 m), reflecting a river low flow of 517 cfs (14.6  $\text{m}^3/\text{s}$ ). As also documented in the licensee's application (ADAMS Accession No. ML13015A089), SNC enlisted the USGS to perform an independent review of SNC's flow rating calculation. As documented in correspondence to SNC dated March 2, 2009, the USGS found SNC's calculations and methods to predict stream flow over extended low flow conditions on the Altamaha River to be

“conservative and satisfactory” to address SNC’s objective of verifying sufficient water supply at low river flows. USGS performed a low-flow probability analysis of the river stage-discharge relationship for the referenced gaging station, as adjusted for the elevation drop between USGS gage elevation and the HNP intake. Using a calculated low flow with a 0.002 non-exceedance probability (a flow with an annual probability of about 1 in 500) which is equivalent to 1,104 cfs (31.2 m<sup>3</sup>/s), the USGS analysis yielded a conservative (bounding-case) surface water level elevation at HNP’s intake of 61.02 ft (18.6 m). This level would be above the proposed PSW well minimum water level of 60.5 ft (18.4 m). It is noted that USGS calculated its 500-year recurrence low flow value using daily low flow statistics for the period of 1972 to 2008. Up to that time, the minimum daily mean flow observed was 1,330 cfs (37.6 m<sup>3</sup>/s) on September 29, 2008, until the observed record daily mean low flow on September 19, 2011, at 1,140 cfs (32.2 m<sup>3</sup>/s).

Nevertheless, SNC’s analyses for its license amendment request demonstrate that the proposed operational change could support continued surface water withdrawals with sufficient margin, under low flow conditions, at a river level that is 0.2 ft (0.06 m) lower than evaluated in NUREG-1437, Supplement 4. The staff’s analysis presented in NUREG-1437, Supplement 4 documented average annual surface water elevation fluctuations of about 9 ft (2.7 m) for the same one-month period over a period of 22 years and further concluded that surface water use conflicts from HNP’s consumptive water use were small. While the proposed TS change would lower the minimum water level in the PSW pump well at which surface water would continue to be withdrawn for HNP operations, no increase in the volume of surface water withdrawn would occur, and no modification to HNP’s state-issued surface water withdrawal permit is required (ADAMS Accession No. ML12284A299). Based on the above, the NRC staff concludes that the impacts of this operational change would have no significant incremental impact on the surface water hydrology of the Altamaha River.



HNP is operated under a National Pollutant Discharge Elimination System (NPDES) permit (No. GA0004120), issued by the Georgia Environmental Protection Division, which permits the discharge of combined process wastewaters including cooling tower blowdown to the Altamaha River. The NPDES permit expired on June 30, 2012, but has been administratively continued by the State and remains valid and in effect, since SNC submitted an NPDES renewal application over 180 days before permit expiration (ADAMS Accession No. ML12284A299).

As described in NUREG-1437, Supplement 4, HNP's combined discharge structure consists of two, submerged discharge lines that extend approximately 120 ft (37 m) out from the south shore at an elevation of 54 ft (17 m) mean sea level. The point of discharge is 1,260 ft (380 m) downriver from the intake structure and approximately 4 ft (1.2 m) below the surface when the river is at low water (see NUREG-1437, Supplement 4). The permit sets effluent limits for several other parameters (e.g., oil and grease, total suspended solids, and metals) but the point of compliance is specified at internal outfalls and prior to mixing and discharge through the combined discharge structure. The permit does not impose a maximum temperature limit on the combined river discharge but does require weekly temperature monitoring at the point of mixing and quarterly reporting of discharge temperatures to the State of Georgia. The permit further stipulates compliance with NRC requirements relative to radiological constituents. The water quality of the Altamaha River on which the HNP is located is also subject to regulation in accordance with Georgia's Water Use Classifications and Water Quality Standards (Chapter 391-3-6-.03 of the State's Rules and Regulations). For all waters in the State of Georgia, except where more stringent criteria apply, receiving water temperatures are not to exceed 90 degrees Fahrenheit (°F) (32 degrees Centigrade [°C]) and the temperature of receiving waters is not to be increased more than 5 °F (2.8 °C) above the intake temperature.

In support of its application, SNC performed a computer modeling study using CORMIX (version 5.0) and associated river bottom survey to evaluate the potential environmental impacts of operating HNP at the proposed minimum water level of 60.5 ft (18.4 m). In summary, this modeling incorporated ambient river temperature conditions for summer and winter and utilized historical river and HNP discharge flow rates. Based on the modeling performed including incorporation of an assumed ambient river temperature of 97 °F (36 °C), the projected discharge plume temperature difference from ambient was calculated to be 2.5 °F (1.4 °C) or less at a distance of 140 ft (42.7 m) downstream from the point of discharge. The modeling results obtained by SNC indicate that State and Federal ambient water quality criteria and discharge standards would continue to be satisfied with respect to HNP's discharges to the Altamaha River. Consequently, the NRC staff concludes that the impacts of this operational change would have no significant incremental impact on the surface water quality and thermal characteristics of the Altamaha River. Granting the proposed license amendment is not expected to cause impacts significantly greater than current operations. Therefore, there would be no significant adverse surface water resource impacts following implementation of the proposed operational change.

Groundwater Resources:

The alluvial (unconfined) aquifer at the site is primarily south of the Altamaha River within the facility boundary, and consists of approximately 55 ft (17 m) of poorly sorted sand, gravel, and clay. The alluvial aquifer contains groundwater under water table conditions. Clayey soils dominate in the upper portion of the aquifer. These high-clay-content soils locally form a discontinuous, relatively impermeable zone. Recharge to the alluvial aquifer is by the infiltration of precipitation through and around the leaky clay zones. Limited recharge is also provided by the Altamaha River during high stages and by the minor confined aquifer of the

Hawthorn Formation, to which the alluvium is hydraulically connected. The upper, alluvial aquifer and the minor confined aquifer are hydraulically separated from the underlying artesian (Floridan) aquifer from which HNP's supply wells withdraw groundwater for plant use. Within the immediate vicinity of the site, the primary use of groundwater is for domestic needs, with a limited amount for livestock. Most domestic wells are screened within the unconfined aquifer. As evaluated in NUREG-1437, Supplement 4, the staff determined that the consumptive use of surface water by HNP operations is estimated to lower the river elevation by 0.08 ft (0.02 m) during low-flow conditions. It was concluded that the consumptive use would not appreciably alter the potentiometric gradient in the alluvial aquifer and that the resulting impact on groundwater is small.

The withdrawal of surface water at a river level that is 0.2 ft (0.06 m) lower than the current minimum water level in the PSW pump well would have a negligible impact on groundwater resources. This is because the proposed change would not be expected to substantially affect the contribution of groundwater base flow from the alluvial aquifer to the Altamaha River, or the availability of groundwater for other users. Granting the proposed license amendment is not expected to cause impacts significantly greater than current operations. Therefore, there would be no significant adverse groundwater resource impacts from lowering the minimum water level in the PSW pump well as proposed by SNC.

#### Aquatic Resources:

The Altamaha River is formed by the confluence of the Ocmulgee and Oconee Rivers, which drain the Piedmont Region, and flows about 153 mi (246 km) to the Atlantic Ocean near Darien, Georgia. The drainage area is about 2,850 mi<sup>2</sup> (7,380 km<sup>2</sup>), and lies entirely in the State of Georgia. The main stem of the river is confined to the Coastal Plain Physiographic Province, has no dams, and supports a healthy aquatic ecosystem.

The fish fauna is diverse and includes 93 species belonging to 25 different families. Common resident taxa include members of the catfish family (Ictaluridae), such as channel catfish and flathead catfish; and members of the sunfish family (Centrarchidae), including redbreast sunfish (*Lepomis auritus*), bluegill (*L. macrochirus*), redear sunfish (*L. microlophus*), black crappie (*Pomoxis nigromaculatus*), and largemouth bass (*Micropterus salmoides*); minnows (Cyprinidae); and suckers (Catostomidae). Flathead catfish are not endemic, but were introduced in the 1970s, and their increase has resulted in a decrease in populations of some native species, such as bullhead catfishes (*Ictalurus* spp.) and redbreast sunfish. The fish community seasonally includes anadromous herring (Clupeidae) and sturgeon (Acipenseridae) species that ascend rivers from the sea to breed, including American shad (*Alosa sapidissima*), hickory shad (*A. mediocris*), blueback herring (*A. aestivalis*), and both shortnose (*Acipenser brevirostum*) and Atlantic sturgeon (*A. oxyrinchus*).

Other aquatic invertebrates include cottonmouth or water moccasin (*Agkistrodon piscivorus*); water snakes (*Nerodia* spp.); turtles, including softshell turtles (*Apalone* spp.) and river cooter (*Pseudemys concinna*); American alligator (*Alligator mississippiensis*); frogs; salamanders; and mammals, such as West Indian manatee (*Trichechus manatus*), muskrat (*Ondatra zibethicus*), river otter (*Lontra canadensis*), and beaver (*Castor canadensis*). Common aquatic invertebrates include the aquatic life stages of insects such as caddisflies, mayflies, stoneflies, dragonflies, damselflies, hellgrammites, beetles, midges, and black flies. Aquatic invertebrates also include freshwater mussels (*Elliptio* spp.) and the Asian clam corbicula (*Corbicula fluminea*), which is an invasive, non-native species. In addition to Federally protected species, which are also protected by Georgia and are addressed below, Appling County has one State-protected aquatic species: a freshwater mussel (*Alasmidonta arcuata*, Altamaha arc mussel). Asian clam populations have been increasing and may adversely affect the rare, native freshwater mussels by ingestion and displacement of juveniles.

HNP has two nuclear units that use a closed-loop evaporative cooling system that withdraws from and discharges to the Altamaha River through a shoreline intake and offshore discharge structures at river mile [RM] 112 (river kilometer (RKm) 180), slightly southeast of the U.S. Highway 1 crossing of the Altamaha River. Water withdrawn for the river at the single intake structure is used to replace evaporation and to dilute the buildup of dissolved solids in the closed cycle system. Trash racks remove large debris, and vertical traveling screens with a  $\frac{3}{8}$ -in. (1-cm) mesh remove smaller material.

The proposed license amendment would not affect the rate of water withdrawal or discharge, but would slightly affect the intake velocity, and would also affect the ratio of water withdrawn and discharged in relation to the river flow. The change in HNP's use of Altamaha River water for cooling and other purposes can affect aquatic resources through impingement of fish on intake screens, entrainment of smaller fish and invertebrates with the intake water, and discharge of heated wastewater. Only these effects are addressed here as specific to the proposed license amendment; other operational effects are addressed in NRC's NUREG-1437, Supplement 4.

Fish impingement rates are low, and SNC estimated that from 1975 through 1980 total fish impingement ranged from 146 to 438 fish per year. Entrainment rates of small fish and invertebrates are also low. SNC estimates that the hydraulic entrainment would be about 11 percent of the river flow passing the plant under minimum flow conditions without the proposed license amendment and about 11.5 percent with the license amendment. With much of the heat produced by SNC transferred to the atmosphere through evaporation by the closed-loop cooling system, the discharge of heated wastewater is minimal. In support of its discharge permit for the State of Georgia, SNC modeled the thermal discharge under ambient river temperature conditions for summer and winter and historical river and HNP discharge flow rates. The calculated temperature difference between the discharge plume and ambient river temperature

was 2.5 °F (1.4 °C) or less at a distance of 140 ft (42.7 m) downstream from the point of discharge, with a plume surface area of 0.05 ac (0.02 ha) and a plume cross-sectional area 3 percent of the river cross-section. The State of Georgia, not the NRC, regulates the effects of the cooling water intake and discharge, and the NRC relies on the State to protect aquatic resources. Considering the above information, the NRC staff concludes that proposed license amendment would have no significant effects on aquatic resources.

#### Terrestrial Resources:

Like other Coastal Plain rivers and streams, the Altamaha River meanders across a broad floodplain that has both steep bluff-like features and wide swampy regions. Most of the river flows through mixed forest where evergreen oaks, laurel species, and magnolia are common. Riparian plants found along the river and in forested wetlands include swamp black gum (*Nyssa sylvatica*), water tupelo (*N. aquatica*), bald cypress (*Taxodium distichum*), water hickory (*Carya aquatica*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and oaks (*Quercus* spp.). The lower reaches flow through interior swamps and coastal marshes.

In addition to Federally protected species, which are also protected by Georgia and are addressed below, Appling County has several State-protected terrestrial species. Georgia-protected animals include three birds (*Aimophila aestivalis*, Bachman's sparrow; *Elanoides forficatus*, swallow-tailed kite; and *Haliaeetus leucocephalus*, bald eagle) and a mammal (*Corynorhinus rafinesquii*, Rafinesque's big-eared bat). Six Georgia-protected plant species also occur in Appling County: *Carex dasycarpa*, velvet sedge; *Marshallia ramosa*, pineland Barbara buttons; *Penstemon dissectus*, cutleaf beardtongue; *Sarracenia flava*, yellow flytrap; *Sarracenia minor* var. *minor*, hooded pitcherplant; and *Sideroxylon macrocarpum*, Ochoopee bumelia.

The proposed license amendment will not affect terrestrial habitats and so will have no adverse effects on terrestrial species or habitats.

Federally Protected Species:

Under Section 7 of the Endangered Species Act of 1973, as amended (ESA), Federal agencies, in consultation with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) (as appropriate), must insure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. On August 31, 2000, the NRC submitted a biological assessment to NMFS regarding the effects of SNC's then-proposed license renewal for HNP on the shortnose sturgeon and concluded that license renewal may affect, but is not likely to adversely affect, the shortnose sturgeon (ADAMS Accession No. ML003746456). The NRC and NMFS then began consultation under ESA Section 7. The NMFS requested that NRC modify the biological assessment to include the effects of periodic maintenance dredging near the intake structure. In July 2004, NRC submitted to NMFS a revised biological assessment that included more recent information and examined the effects of periodic dredging and that concluded that the HNP may affect, but is not likely to adversely affect the shortnose sturgeon and that the effects would be discountable (ADAMS Accession No. ML041910254). In August 2005, NMFS concurred with the conclusion of the biological assessment (ADAMS Accession No. ML052640354). Detailed information on the effects of HNP operations on shortnose sturgeon can be found in the referenced biological assessment and concurrence documents.

In February 2012, the NRC asked the FWS to identify Federally listed species near HNP as part of reviewing SNC's proposed license amendment. The FWS identified the four species shown in the following table as potentially occurring near HNP.

**Table of Federally Listed Species Occurring in Toombs County, Georgia**

<b>Common Name</b>	<b>Scientific Name</b>	<b>ESA Status<sup>(a)</sup></b>
<b>Aquatic Invertebrates</b>		
Altamaha spiny mussel	<i>Elliptio spinosa</i>	E, H
<b>Reptiles</b>		
eastern indigo snake	<i>Drymarchon corais couperi</i>	T
gopher tortoise	<i>Gopherus polyphemus</i>	C
<b>Fish</b>		
shortnose sturgeon	<i>Acipenser brevirostrum</i>	E
<sup>(a)</sup> C = Candidate, E = Endangered, T = Threatened, H = Critical Habitat designated.		
Source: U.S. Fish and Wildlife Service (ADAMS Accession No. ML13063A517).		

Two of the four listed species, the gopher tortoise and eastern indigo snake, are terrestrial, and the proposed license amendment would have no adverse effect on these species because SNC proposes no modifications to the terrestrial environment.

The mechanisms by which HNP might adversely affect shortnose sturgeon include entraining eggs and early larvae, impinging juveniles and adults, discharging heated effluent that results in physiological or behavioral changes, and affecting prey and other biotic or abiotic constituents of the habitat. Regarding entrainment, the 2004 revised biological assessment found that “[b]oth the design of the plant (location, shoreline intake, closed cycle cooling) and the behavioral characteristics of juvenile and adult shortnose sturgeon lead to the conclusion that impingement of healthy adult and juvenile fish unlikely.” For impingement, it found that “[t]he design and location of the plant (shoreline intake on the opposite side of the thalweg, closed cycle cooling, and the plant not located in any known spawning areas) and the lack of a



confirmed upstream spawning grounds leads the staff to conclude that the site has a very low potential for entrainment of shortnose sturgeon larvae.” Regarding the thermal effluent, it found that “...thermal modeling of the discharge demonstrated that thermal blockage of the river will not occur” and that “[t]he area of temperature rise in the river of a few degrees is limited to a small area just below the outfall even during low flow conditions” so that “...thermal discharges from the plant will not adversely affect the migration of shortnose sturgeon in the Altamaha River.” The relatively small and infrequent increase in intake velocity that may result from the proposed change in the minimum water level in the PSW pump well should not alter the conclusions regarding entrainment or impingement. The characteristics of the thermal effluent during extreme low river flow would change, but SNC reports that the effluent should still comply with the NPDES-permitted limits authorized and monitored by the State of Georgia to protect aquatic resources, including shortnose sturgeon.

Because the license amendment would not change the effects of HNP on shortnose sturgeon, the NRC’s 2004 biological assessment conclusion, with which FWS concurred in 2005, would not change: the operation of HNP may affect, but is not likely to adversely affect, the shortnose sturgeon and any effects would be discountable.

The FWS also identified one aquatic invertebrate as listed and possibly occurring near the plant: the endangered Altamaha spiny mussel, for which FWS also designated critical habitat in the Altamaha River. The FWS listed the Altamaha spiny mussel on October 11, 2011 (76 FR 62939), well after the NRC’s 2000 biological assessment for license renewal and its subsequent consultation with NMFS regarding the shortnose sturgeon. The NRC had not considered the potential effects of operation of HNP on the mussel prior to this license amendment request.

In August 2013, the NRC sent a biological assessment for the Altamaha spiny mussel to FWS and requested concurrence with its findings (ADAMS Accession No. ML13193A366). The

biological assessment made the following conclusions. The Altamaha spiny mussel has historically been found in the main stem of the Altamaha River and its larger tributaries. HNP lies close to the center of its present range. Although FWS has designated critical habitat above and below HNP, critical habitat does not include the Altamaha River near HNP. The NRC staff examined several sources of stress associated with the operation of HNP that the FWS listing announcement suggested might affect the species. The staff found that the potential effects of dredging and sediment contamination, entrainment and impingement of host fish species, trophic interactions, and habitat fragmentation are insignificant or discountable. The staff also found no adverse effects to critical habitat. The staff concluded that the present and future operation of HNP may affect, but is not likely to adversely affect, Altamaha spiny mussel and that the present and future operation of HNP would have no effect on Altamaha spiny mussel critical habitat. On December 10, 2013, the FWS concurred with NRC's biological assessment and stated that the requirements of Section 7 of the ESA have been satisfied (ADAMS Accession No. ML14006A295).

Radiological Impacts:

In its license amendment application, SNC states that the proposed TS change would not result in or require any physical changes to HNP systems, structures, and components, including those intended for the prevention of accidents. The proposed action to revise the minimum water level in the PSW pump well would not have a significant adverse effect on the probability of an accident occurring or result in an increased radiological hazard beyond those analyzed in the licensee's Updated Final Safety Analysis Report. There will be no change to radiation levels or the types or quantities of radioactive effluents (gaseous or liquid) that affect radiation exposures to plant workers and members of the public. No changes or different types of radiological impacts are expected as a result of the proposed action. Therefore, the

radiological impacts of granting the license amendment would be negligible and would not have a significant adverse effect on the environment.

Cumulative Impacts:

The NRC considered potential cumulative impacts on the environment resulting from the incremental impact of the proposed license amendment when added to other past, present, and reasonably foreseeable future actions. For the purposes of this analysis, past actions are related to the resource conditions when HNP, Units 1 and 2, and were 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 end of HNP's current license renewal term and which may be likely to affect the same resources as those considered for the proposed license amendment.

The NRC has not identified any reasonably foreseeable actions within the context of the scope of this environmental assessment. Nevertheless, the proposed operational change to lower the minimum water level in the PSW pump well for normal cooling water withdrawals does not result in or require any physical changes to HNP systems, structures, and components. For the resource areas potentially affected by the proposed operational changes (i.e., surface water and groundwater resources, aquatic resources, terrestrial resources, and threatened and endangered species), the contributions of ongoing actions within a region to cumulative impacts are regulated and monitored through a permitting or other regulatory consultation or certification processes (e.g., 401 certification, and NPDES and 404 permits under the Clean Water Act) under State or Federal authority. In these cases, the cumulative impacts are managed as long as the actions are in compliance with their respective permits and conditions of certification. The proposed license amendment entails no increase in water use or effluents requiring modification of HNP's state-issued surface water withdrawal permit or its NPDES permit that

regulates the discharge of combined process wastewaters to the Altamaha River and their potential nonradiological and radiological effects on water quality and aquatic resources. Thus, there are no incremental contributions to cumulative impacts with respect to these attributes of the proposed action.

The staff also conducted a review of terrestrial and aquatic resources, including threatened and endangered species, that could be impacted by the proposed license amendment. NRC staff prepared a biological assessment for the Federally endangered Altamaha spiny mussel, as previously described. The staff found that proposed operational changes at HNP may affect, but are not likely to adversely affect the species. The biological assessment was submitted to the U.S. FWS in accordance with consultation requirements under Section 7 of the ESA. In December 2013, the FWS concurred with the staff's biological assessment and findings and concluded that the requirements of Section 7 of the ESA had been satisfied, thus concluding Section 7 informal consultation.

Based on the above, the staff concludes that cumulative impacts would not be significant from implementation of the proposed license amendment.

Alternatives to the Proposed Action:

As an alternative to the proposed action, the NRC staff considered denial of the proposed license amendment (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. However, denial would result in reduced operational flexibility.

Alternative Use of Resources:

The action does not involve the use of any different resources than those previously considered in NUREG-1437, Supplement 4 prepared for license renewal of HNP.

Agencies and Persons Consulted:

In accordance with its stated policy, on February 19, 2014, the staff notified the Georgia State official, Mr. Chuck Mueller, of the Georgia Department of Natural Resources, regarding the environmental impact of the proposed action. The State official had no comments.

Additionally, the staff contacted the FWS in August 2013 as part of soliciting comments and obtaining concurrence on the staff's biological assessment for the Altamaha spiny mussel, as part of informal Section 7 consultation under the Endangered Species Act. The FWS's comments and findings with respect to the proposed action have been noted and are further discussed under the sections for Federally Protected Species and Cumulative Impacts in this environmental assessment.

**III. Finding of No Significant Impact**

The U.S. Nuclear Regulatory Commission (NRC) is considering issuing an amendment for Renewed Facility Operating License Nos. DPR-57 and NPF-5, issued to Southern Nuclear Operating Company (SNC) for operation of the Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2, to revise the minimum water level referenced in the Technical Specification (TS) associated with the Limiting Condition for Operation for the plant service water (PSW) system and ultimate heat sink. The TS change would revise the minimum water level in the PSW pump well from 60.7 feet (ft) (18.5 meters [m]) to 60.5 ft (18.4 m) mean sea level.

On the basis of the environmental assessment included in Section II above and incorporated by reference in this finding, the NRC concludes that the proposed action will not have significant effects on the quality of the human environment. The proposed action has no significant impacts on surface water or ground water resources, no significant effect on aquatic resources, and no adverse effects on terrestrial species or habitat. In addition, the action is not likely to adversely affect any endangered species or affect a critical habitat, and the radiological

and cumulative impacts are either negligible or are not significant. Accordingly, the NRC decided not to prepare an environmental impact statement for the proposed action.

The environmental documents related to this finding and listed below are available for public inspection and may be inspected online through the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>. You may also inspect these documents at the NRC's Public Document Room as discussed in "NRC Agencywide Documents Access and Management System (ADAMS)" above.

Related documents include the following: SNC's December 15, 2011 license amendment request (ADAMS Accession No. ML113500108); SNC's subsequent withdrawal of the request by letter dated April 20, 2012 (ADAMS Accession No. ML12122A113); SNC's resubmittal of the amendment request dated July 5, 2012 (ADAMS Accession No. ML13015A089); SNC's response to NRC's request for additional information dated October 10, 2012 (ADAMS Accession No. ML12284A299); the NRC's May 2001 evaluation of ongoing operational impacts under the renewed license presented in the Generic Environmental Impact Statement for License Renewal of Nuclear Plants: Regarding Edwin I. Hatch Nuclear Plant, Units 1 and 2 – Final Report (NUREG-1437, Supplement 4; ADAMS Accession No. ML011420018); NRC's August 31, 2000 biological assessment regarding the effects of SNC's then-proposed license renewal for HNP on the shortnose sturgeon (ADAMS Accession No. ML003746456); NRC's revised biological assessment of July 2004 (ADAMS Accession No. ML041910254); NMFS's concurrence with the conclusion of that biological assessment in August 2005 (ADAMS Accession No. ML052640354); the NRC's August 2013 biological assessment for the Altamaha spiny mussel (ADAMS Accession No. ML13193A366); and FWS's concurrence with the conclusion in that biological assessment (ADAMS Accession No. ML14006A295).

For further details with respect to the proposed action, see the licensee's application letters dated July 5 and October 10, 2012 (ADAMS Accession Nos. ML13015A089 and ML12284A299).

Dated at Rockville, Maryland, this 24<sup>th</sup> day of February 2014.

For the Nuclear Regulatory Commission.



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