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ENVIRONMENTAL ASSESSMENT

WATTS BAR FOSSIL PLANT BARGE UNLOADING CRANE AND CONVEYOR BELT SYSTEM REMOVAL

Rhea County, Tennessee

TENNESSEE VALLEY AUTHORITY

SEPTEMBER 2007

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The Proposed Decision and Need

The crane and the conveyor belt system associated with the coal barge unloading facilities of the former Watts Bar Fossil Plant (WBF) are no longer needed. The crane, if allowed to remain on site, could deteriorate into a safety hazard. For this reason, TVA proposes to remove the crane and either transfer it to another entity for reuse or recycle its component parts. Similarly, the deteriorated coal conveyor belt system is a potential safety hazard, which TVA proposes to disassemble and remove. WBF, because of its age and historical significance to TVA, is eligible for listing on the National Register of Historic Places (NRHP), and the crane and conveyor are components of this historic property. This environmental assessment (EA) assesses the potential impacts of removing the crane and conveyor.

Background

WBF, originally named Watts Bar Steam Plant, was the first coal-fired power plant built by TVA. WBF was constructed in stages between 1940 and 1945. The first two units (Units A and B) were constructed between 1940 and 1942 and went into commercial electric power production in 1942. Unit C construction began in 1941, with commercial power generation in 1943. Unit D began commercial power generation in 1945 (TVA 1949). The plant operated until 1957 and was then shut down until 1970. The plant was operated from 1970 to 1982, then again placed in extended shutdown mode. In 1996, TVA prepared an EA on the proposed sale of boiler slag stockpiled at the WBF site (TVA 1996) and subsequently began marketing and removing the boiler slag. Economic analyses indicated no positive benefit to TVA for returning WBF to service, so TVA terminated the air permits for the plant in 1997. In 1998, TVA prepared an EA on a proposal to use the WBF condenser cooling water intake structure, existing water supply lines, and a new water supply line to transfer water to supplement the Watts Bar Nuclear Plant (WBN) cooling water system (TVA 1998).

Other Environmental Reviews and Documentation

The existing regional environment of WBF has been described in a series of National Environmental Policy Act (NEPA) documents beginning with the 1972 environmental statement for WBN (TVA 1972) and most recently in the final supplemental environmental impact statement (FSEIS) for the completion and operation of WBN Unit 2 (TVA 2007). Table 1 lists environmental reviews relating to WBF.

Table 1. Environmental Reviews Related to TVA Watts Bar Fossil Plant

Type of Review	Title	Result	Summary/Relevance for this Review
EIS	<i>Final Environmental Statement - Watts Bar Nuclear Plant Units 1 and 2 (TVA 1972)</i>	ROD	Includes description of affected environment in the area near the time WBF was last operating
EA	<i>Final Environmental Assessment - Watts Bar Fossil Plant Slag Marketing (TVA 1996)</i>	FONSI	Detailed description of slag storage area of WBF
EA	<i>Watts Bar Nuclear Plant Supplemental Condenser Cooling Water Project Environmental Assessment (TVA 1998)</i>	FONSI	Detailed description of former WBF water intake and cooling water systems
SEIS	<i>Completion and Operation of Watts Bar Nuclear Plant Unit 2, Rhea County, Tennessee, Final Supplemental Environmental Impact Statement (TVA 2007)</i>	Pending ROD	Includes updated detailed description of affected environment in the vicinity
CE	<i>Watts Bar Fossil (WBF) - Dredged Material for WBF Slag Disposal Area Closure</i>		
CE	<i>WBFSLAG - Watts Bar Slag Area Closure Plan</i>		
CE	<i>Watts Bar Fossil Plant Slag Disposal Area Closure - Geotechnical Exploration</i>		

- CE = Categorical Exclusion
- EA = Environmental Assessment
- EIS = Environmental Impact Statement
- FONSI = Finding of No Significant Impact
- ROD = Record of Decision
- SEIS = Supplemental Environmental Impact Statement

Alternatives and Comparison

The alternatives considered are the No Action Alternative and proposed Action Alternative of removing the barge unloading crane and disassembling and removing the barge unloading conveyor belt system. Under the No Action Alternative, the equipment would be allowed to continue deteriorating. Debris falling from the conveyor belt system could be blown by the wind into the nearby switchyard where it would present a safety risk and a potential threat to power system reliability. The crane would continue to deteriorate and could eventually present a risk of toppling.

Under the Action Alternative, this equipment would be removed so that potential safety hazards would be eliminated. The crane would either be transferred to an appropriate customer for refurbishment and reuse or disassembled and sold for scrap metal or some

suitable combination of these two disposal methods. The conveyor belt system would be disassembled, suitable parts recycled as scrap metal, and the remaining parts sent to a permitted solid waste landfill. Since WBF is eligible for inclusion on the NRHP, TVA has entered into a memorandum of agreement (MOA) with the Tennessee State Historic Preservation Officer (SHPO) to conduct data recovery that would preserve the important features of this equipment for posterity. The MOA specifies commitments for collecting this information and compiling it in reports that include photo documentation. This MOA appears in Appendix A.

Due to the lack of economic incentive to restore and restart WBF, alternatives such as restoration and reuse of the barge unloading crane and the conveyor belt system at their original locations are not financially feasible. Without an operating power plant to provide operating and maintenance funds, TVA has no source of funding for maintaining the conveyor belt system and the crane. TVA is actively pursuing potential customers who might consider restoring and reusing the crane in another location.

Affected Environment and Evaluation of Impacts

WBF is located southwest of Watts Bar Dam, and is adjacent to and north of WBN. The plant site is adjacent to the Chickamauga Reservoir of the Tennessee River. Figure 1 illustrates the plant site layout and the barge unloading conveyor system. Structure 1 located within the figure is associated with WBN. As previously discussed, the environment surrounding WBF has been described in detail in the FSEIS for completion of WBN Unit 2 (TVA 2007). The WBF site is an industrial site that has been subjected to extensive disturbance. The industrial character of the site does not contribute to the scenic beauty of the area.

Under the No Action Alternative, the barge unloading crane and conveyor belt system would continue to deteriorate and become a greater blight on the scenic integrity of the area. Under the Action Alternative, this equipment would be removed, so some minimal improvement in the appearance of the plant site would be achieved. Removal of the crane or its parts by truck would create a transient and temporary impact on traffic, but this would be difficult to distinguish from existing movements of heavy equipment, mobile homes, and modular housing, already occurring under the No Action Alternative. Similarly, the socioeconomic impact on the community of the workers needed to disassemble the conveyor belt system and, if necessary, the crane would be temporary and insignificant.

Four mussel species federally listed as endangered, dromedary pearly mussel (*Dromus dromas*), pink mucket (*Lampsilis abrupta*), rough pigtoe (*Pleurobema plenum*), and fanshell (*Cyprogenia stegaria*), occur in mussel beds in the vicinity of WBF. To protect these beds, the state has established a mussel sanctuary below the dam from Tennessee River Mile (TRM) 520 to TRM 529.9. The snail darter (*Percina tanasi*), federally listed as threatened, is also known to occur occasionally in this reach of the Tennessee River. The majority of the snail darter population in the area is confined to Sewee Creek, which enters the river at TRM 524.6. The larvae of snail darters are pelagic and can drift substantial distances (miles) during early life stages. Spawning of snail darters has not been documented in the main stem of the Tennessee River downstream of Watts Bar Dam, and no snail darter larvae have been collected during entrainment sampling. Two mussel species considered sensitive by the State of Tennessee, pyramid pigtoe (*Pleurobema rubrum*) and Tennessee clubshell (*Pleurobema oviforme*), and one state-listed as threatened fish species, blue sucker (*Cyprinus elongatus*), are also known from this reach of the Tennessee River.

Under the No Action Alternative, the conveyor belt system would continue to deteriorate increasing the risk of parts of the conveyor belt system detaching and being blown into the river by the wind. Under the Action Alternative, no construction activities would occur in the reservoir, and all construction activities would be subject to appropriate best management practices (BMPs) to ensure that there are no impacts to surface water quality. Therefore, there would be no effect on federally or state-listed aquatic animals or their habitats in the vicinity of WBF.



Figure 1. Site Map – Watts Bar Fossil Plant and Barge Unloading System

No occurrences of federally or state-listed plant species and wetlands are known on or immediately adjacent to the area to be disturbed under the proposed Action Alternative. Therefore, there would be no impacts to sensitive plant species or wetlands.

Small numbers (less than 500) of gray bats (*Myotis grisescens*) continue to roost in a cave approximately 3.3 miles from the project. Bald eagles (*Haliaeetus leucocephalus*) nest on Chickamauga and Watts Bar reservoirs approximately 1.8 and 4.7 miles, respectively, from

the project site. Gray bats and bald eagles forage over the Tennessee River in the vicinity. Several heron colonies have been reported from the vicinity since the late 1980s. Many of these colonies were destroyed during recent pine beetle (*Dendroctonus frontalis*) infestations. The closest active colony is located 4 miles north of WBF. Hellbenders (*Cryptobranchus alleganiensis*), listed as in need of management by the State of Tennessee, have been reported from the upper reaches of Sewee Creek, approximately 2.5 miles from the project site. The species may continue to inhabit streams in the vicinity. The Action Alternative would not result in impacts to any federally or state-listed as threatened or endangered species of terrestrial animals or their habitats. No suitable habitat for gray bats or bald eagles exists on or adjacent to the project site. The Action Alternative would not result in impacts to bald eagles and gray bats in the region.

Under the No Action Alternative, no impacts on air resources would occur. Under the Action Alternative, use of BMPs, such as spraying water for dust suppression, would make impacts of the disassembly and removal on air quality insignificant.

Because of its age and significance as the first coal-fired power plant built by TVA, WBF, as previously mentioned, is eligible for listing on the NRHP. The barge unloading crane and conveyor belt system are components of this site and contributing elements to its eligibility as a historic property. Their removal under the Action Alternative would adversely impact the historic property.

Initially, coal was brought in by rail car and truck. By October 7, 1944, the barge unloading facility was put into operation. The large, electrically powered crane with a bucket would unload coal from barges into a hopper. Unloading rates, averaging 150 tons per hour and nearly 200 tons per hour at peak were possible. The crane is mounted on a 21-foot-high frame that moved 16 feet back and forth on rails. The boom of the crane has a 69.5-foot horizontal movement for its reach into the coal barge. The unloading coal hopper is approximately 44 feet tall. Coal was dropped to the conveyor belt and moved to the central coal hopper building. The conveyor belt was carried on a steel support for 590 feet before entering the conveyor tunnel. The tunnel extends another 683 feet to the hopper building where it joins the coal brought in by rail car. From the hopper building, coal was moved by conveyor up an approximately 65-foot inclined truss bridge to the utility building. Then the coal was conveyed approximately 260 feet up an inclined truss bridge to the upper level of the powerhouse for feeding to the boilers.

Conveyor systems and cranes have extensive application in many industrial facilities. Of conventional design, this Watts Bar barge unloading crane and conveyor system was a key component in providing coal for the powerhouse. It is also a visual element making the connection between barges on the water and the powerhouse.

TVA would mitigate this adverse impact on the historic property by carrying out a treatment plan consisting of avoiding impacts to other components of the historic property and documenting the crane and conveyor through archival research, historic and recent photography, and other measures. This treatment plan is described in an MOA between TVA and the Tennessee SHPO. With implementation of the treatment plan, the impacts to the WBF historic property would be insignificant, and TVA would comply with Section 106 of the National Historic Preservation Act (NHPA).

Cumulative Impacts

The only affected resource is the historic WBF Plant in its capacity as a historic site. The MOA with the Tennessee SHPO commits TVA to the avoidance, to the fullest extent practicable, of the historic features of WBF, other than the barge unloading crane and the associated conveyor system, that make it eligible for the NRHP. As to the crane and the conveyor system, the MOA requires proper documentation of this equipment prior to its removal. At present, the potential for other aging equipment at the plant to create a need for additional disassembly or demolition projects is unknown. Several historic features of the WBF Plant would still be retained even after removal of the crane and conveyor system, helping maintain the plant's eligibility for the NRHP.

Mitigation Measures

TVA would ensure, to the fullest extent practicable, that all contributing elements to WBF that make it eligible for listing on the NRHP are avoided by any activities associated with the Action Alternative. Every consideration to avoid adversely affecting historic properties would be assessed and acted upon if practicable. The crane and the conveyor belt system would be documented as described in the MOA between TVA and the Tennessee SHPO.

Preferred Alternative

TVA's preferred alternative is the Action Alternative of removing the barge unloading crane and the conveyor belt system.

TVA Preparers

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Agencies and Others Consulted

Richard G. Tune, Deputy State Historic Preservation Officer, Tennessee Historical Commission (Preparation of MOA)

References

- Tennessee Valley Authority. 1949. *The Watts Bar Steam Plant: A Comprehensive Report on the Planning, Design, Construction, and Initial Operation of the Watts Bar Steam Plant, Technical Report No. 8*. Washington, D.C.: United States Government Printing Office.
- . 1972. *Final Environmental Statement - Watts Bar Nuclear Plant Units 1 and 2*. Chattanooga, Tenn.: Office of Health and Environmental Science.
- . 1996. *Final Environmental Assessment - Watts Bar Fossil Plant Slag Marketing*. TVA/FHP/EM-96/12. Knoxville, Tenn.: Tennessee Valley Authority.
- . 1998. *Watts Bar Nuclear Plant Supplemental Condenser Cooling Water Project Environmental Assessment and Finding of No Significant Impact*. Knoxville, Tenn.: Tennessee Valley Authority.
- . 2007. *Categorical Exclusion 15104 – Watts Bar Fossil (WBF) – Dredged Material for WBF Slag Disposal Area Closure*.
- . 2007. *Categorical Exclusion 14152 – WBFSLAG – Watts Bar Slag Area Closure Plan*.
- . 2007. *Categorical Exclusion 13802 – Watts Bar Fossil Plant Slag Disposal Area Closure – Geotechnical Exploration*.
- . 2007. *Completion and Operation of Watts Bar Nuclear Plant Unit 2, Rhea County, Tennessee, Final Supplemental Environmental Impact Statement*. Knoxville, Tenn.: Tennessee Valley Authority.

Attachment

Appendix A – Memorandum of Agreement Between the Tennessee Valley Authority and the Tennessee State Historic Preservation Office for the Removal of the Barge Unloading Crane and Associated Conveyor System at the Watts Bar Fossil Plant in Rhea County, Tennessee, Pursuant to 36 CFR Part 800

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Appendix A – Memorandum of Agreement

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MEMORANDUM OF AGREEMENT
BETWEEN THE TENNESSEE VALLEY AUTHORITY AND
THE TENNESSEE STATE HISTORIC PRESERVATION OFFICE
FOR THE REMOVEAL OF THE BARGE UNLOADING CRANE AND
ASSOCIATED CONVEYOR SYSTEM AT THE WATTS BAR FOSSIL PLANT IN
RHEA COUNTY, TENNESSEE
PURSUANT TO 36 CFR PART 800

WHEREAS, the Tennessee Valley Authority (TVA) proposes to remove the barge unloading crane and associated conveyor system at the Watts Bar Fossil Plant in Rhea County, Tennessee (Undertaking); and

WHEREAS the Watts Bar Fossil Plant is a historic property eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, TVA, in consultation with the Tennessee State Historic Preservation Officer (SHPO), has determined that the area of potential effects (APE) for this undertaking is the boundary of the Watts Bar Fossil Plant; and

WHEREAS, TVA, in consultation with the SHPO, has determined that the undertaking will adversely affect the Watts Bar Fossil Plant; and

WHEREAS, TVA has determined that there are no feasible alternatives to the undertaking that would not have an adverse effect on the Watts Bar Fossil Plant;

NOW THEREFORE, TVA and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations to satisfy TVA's obligations under Section 106 of the National Historic Preservation Act (NHPA). The TVA Federal Preservation Officer, or the designee thereof, shall act for TVA in all matters concerning the administration of this Agreement.

STIPULATIONS

TVA, in consultation with the SHPO, shall ensure that the following stipulations are implemented before the commencement of the Undertaking.

1. TREATMENT PLAN AND IMPLEMENTATION

TVA shall ensure that a plan for the treatment of historic properties adversely affected by the proposed undertaking ("Treatment Plan") is developed and executed in consultation with the SHPO. The Treatment Plan will be developed and executed before the commencement of any physical activities associated with this Undertaking. The

Treatment Plan will delineate a procedure for determining the most appropriate methods of avoiding, minimizing, or resolving adverse effects on historic properties. Development and implementation of Treatment Measures will be conducted as follows:

a. AVOIDANCE:

TVA shall ensure, to the fullest extent practicable, that all contributing elements to the Watts Bar Fossil Plant that make it eligible for listing in the NRHP are avoided by any activities associated with the Undertaking that could affect the characteristics of a contributing element that qualify it for listing in the NRHP. Every consideration to avoid adversely affecting historic properties will be assessed and acted upon if practicable.

b. DOCUMENTATION:

In consultation with the SHPO, the barge unloading crane and associated conveyor system will be documented before it is removed.

TVA shall submit a written report of the documentation to the SHPO for review and comments. The documentation shall include, at a minimum:

1. the site plan of the Watts Bar Fossil Plant;
2. digital photographs in 5" X 7" format printed on acid free paper documenting properties that will be destroyed including the barge unloading crane, the hopper and the conveyor system delivering the coal to the powerhouse;
3. a CD of these digital photographs;
4. historic photographs of the plant including the crane and the conveyor system;
5. a proposed schedule for the submission of progress reports to TVA and the SHPO.

4. REPORTS

TVA shall ensure that all investigations undertaken for compliance with this agreement are recorded in formal written reports that meet the Secretary of Interior's Standards and Guidelines for Identification (48 FR 44720-23) and the Tennessee SHPO Standards and Guidelines for Architectural and Archaeological Resources Management Studies. The SHPO shall be afforded thirty (30) days to review and comment on any reports submitted as compliance with this agreement.

5. TIMETABLE FOR COMPLIANCE

- a. TVA shall ensure that Stipulations 1-3 of this agreement are met before commencement of any activities associated with the Undertaking. If the Undertaking is to be completed in phases, the stipulations of this agreement may be satisfied independently for each phase.
- b. Throughout this agreement, unless otherwise stated, the SHPO shall have thirty (30) days to review and comment on all reports concerning investigations of historic properties and proposed documentation plans provided by TVA. TVA will supply copies of the final reports and documentation plans to the signatories.

6. ADMINISTRATIVE CONDITIONS

- a. If Stipulations 1 to 5 have not been implemented within five (5) years from the date of this agreement's execution, this agreement shall be considered null and void, unless the signatories have agreed in writing, as provided in Paragraph 6.b. below, to an extension for carrying out its terms. Upon the agreement's becoming null and void, TVA and SHPO will resume consultation pursuant to 36 CFR Part 800.
- b. If the implementation of Stipulations 1 to 5 has not commenced within 4 (four) years from the date of this agreement's execution, TVA and SHPO shall review the agreement to determine whether the agreement should be extended. If an extension is deemed necessary, TVA and SHPO will consult in accordance with 36 CFR Part 800.6(c) to make appropriate revisions to the agreement.
- c. The signatories to this agreement may agree to amend the terms of the agreement. Such amendment shall be effective upon the signatures of all signatories to this agreement, and the amendment shall be appended to the agreement as an attachment.
- d. Should any signatory object within thirty (30) days after receipt of any plans, specifications, contracts, or other documents provided for review pursuant to this agreement, TVA shall consult with the objecting party to resolve the objection.
- e. If any signatory to this agreement determines that the terms of the agreement cannot be or are not being carried out, the signatories shall consult to seek an amendment to the agreement. If the agreement is not amended, then any signatory may terminate the agreement. If the agreement is so terminated, TVA shall ensure that historic properties within the area of potential effects for the undertaking are protected in accordance with Section 106 of the National Historic Preservation Act until such time that TVA may enter into a new agreement document with the signatories or request the comments of the Council pursuant to 36 CFR Part 800.7(a).

Execution of this Agreement by TVA and the SHPO, and implementation of its terms evidence that TVA has taken into account the effects of the Undertaking on historic properties, and that TVA has complied with its obligations under Section 106 of the National Historic Preservation Act.

SIGNATORIES

TENNESSEE VALLEY AUTHORITY

By: Bridgette Ellis
[Bridgette Ellis, Senior Vice President, OE&R]

Date: 6-15-07

THE TENNESSEE STATE HISTORIC PRESERVATION OFFICER

By: Richard G. Tune
[Richard G. Tune, Deputy State Historic Preservation Officer]

Date: 6/18/07