

**FINDING OF NO SIGNIFICANT IMPACT**  
**TENNESSEE VALLEY AUTHORITY**  
**SELECTIVE NONCATALYTIC REDUCTION PROJECT**  
**JOHNSONVILLE FOSSIL PLANT - UNITS 1-4**

**Proposed Action and Need**

Nitrogen oxide, or NO<sub>x</sub>, is a compound of nitrogen and oxygen that is a byproduct of coal combustion. NO<sub>x</sub> is an air pollutant that contributes to the formation of acid rain and ground-level ozone. As part of its systemwide goal of reducing NO<sub>x</sub> emissions by over 78 percent, the Tennessee Valley Authority (TVA) is proposing to install selective noncatalytic reduction systems (SNCRs) on Units 2, 3, and 4, or any combination of these units, at the Johnsonville Fossil Plant (JOF). An SNCR system was installed previously on JOF Unit 1, and the SNCR systems for one or more of the other three units would be operational by 2009. The SNCR process involves the precise injection of a urea-water solution into the flue gas as it exits the boiler. In a series of chemical reactions, the urea reacts with NO<sub>x</sub> to form elemental nitrogen, carbon dioxide, and water vapor. TVA has prepared an Environmental Assessment (EA) that is incorporated by reference.

**Alternatives**

A No Action Alternative and an Action Alternative were developed. Under the No Action Alternative, TVA would continue to operate the SNCR system on Unit 1 through 2006, but would not install additional SNCR systems at JOF. At the end of 2006, SNCR operation would end, and most of the SNCR equipment would be left in place, as it would not affect normal unit or plant operation. However, the urea storage tank would likely be removed. Under this alternative, there would be no physical or operational changes at JOF.

Under the Action Alternative, TVA would install SNCR systems on Units 2, 3, and 4, or any combination of these units. Physical changes to the plant would be the installation of two urea storage tanks with a maximum capacity of 40,000 gallons each. Equipment for pumping, heating, recirculating, and metering the urea would also be installed.

**Impacts Assessment**

Under the No Action Alternative, the proposed SNCR system would not be installed and operated. Consequently, the proposed reductions of NO<sub>x</sub> emissions would not be realized. However, there would be no additional environmental effects from adopting this alternative. The balance of the discussion below deals with potential effects of adopting the Action Alternative.

Under the Action Alternative, NO<sub>x</sub> emissions from Units 1-4 would be reduced; thus, overall air quality would improve, and plume opacity would be reduced. Because NO<sub>x</sub> is a factor in ozone formation, reduced NO<sub>x</sub> emissions would reduce the amount of ground-level ozone. Because of ammonia slip, i.e., unreacted ammonia from the SNCR process, some ammonia may exit the stack. Ammonia is associated with the formation of particulate matter; therefore, emission of ammonia slip from the stack could cause a

slight increase in particulates. Construction-related effects to air quality would be minor and temporary.

Because construction Best Management Practices (BMPs) would be implemented, potential effects to surface water from construction-related actions would be minor and insignificant. Spill prevention measures would be employed to control the potential for spills of urea during tanker unloading and during regular operations. Ammonia slip could potentially affect water quality in that the ammonia is adsorbed by fly ash, which is subsequently collected and sluiced to the ash pond. Because ammonia is soluble, ammonia concentrations in the ash pond would increase. Also, periodic washing of the air preheaters to remove accumulated ammonium bisulfate would contribute to the ammonia loading of the ash pond. To prevent unnecessarily high loading, releases of air preheater wastewater would be staged. Because, ammonia concentrations at the outfall would be within the chronic criterion concentration and the criterion maximum concentration and would meet the standards of the National Pollutant Discharge Elimination System (NPDES), potential effects to surface water quality would be insignificant. Because seepage from the ash pond would enter the Tennessee River and because leachate seepage would be negligible, no significant effects to groundwater are expected.

The amount of construction debris is expected to be small, and its disposal is not expected to affect local landfill capacity. Bottom ash is not susceptible to ammonia contamination, but fly ash would be ammoniated. However, ammonia in the fly ash would be dissolved out by the sluice water or would be volatilized prior to off-site disposal.

Construction activities are not expected to affect aquatic life, as construction BMPs would be employed to prevent off-site movement of sediment. Because spill protection would be in place, the potential for adverse effects to aquatic life from spills would be minimal. As described above, mitigative measures would be taken to ensure that ammonia concentrations in the ash pond outfall would be at levels that would not adversely affect aquatic life. With these mitigation safeguards in place, there would be no effect to individuals or populations of the pink mucket, an endangered species.

Because the proposed action would be on the Johnsonville Plant site, no potential effects to common wildlife species or plants are expected. No federally listed or state-listed threatened or endangered plant species are known from the site; thus, there would be no effect to any listed plants. The proposed action would not affect ospreys, bald eagles, or gray bats.

Construction activities would not affect any wetlands. The ash pond provides some wetland functions; however, because it is a constructed water treatment system, it is not considered a jurisdictional wetland. Ammoniated wastewater would tend to fertilize vegetation within the ash pond, but operation of the SNCR is not expected to alter these functions significantly.

Any visual effects from construction of the SNCR would be temporary and insignificant. Operation is not expected to cause any adverse visual effects.

Because the nearest natural area (Camden Wildlife Management Area) is over a mile from JOF, no adverse effects to any natural areas or managed areas are expected.

A cultural resources survey concluded that no archaeological deposits or architectural resources were present within the project area. Thus, there would be effects to historic resources.

### **Mitigation**

The following measures, which are routine practice or required by regulations, would be implemented to reduce the potential for adverse environmental effects.

- Consistent with the JOF Integrated Pollution Prevention Plan, TVA would implement BMPs as necessary to control erosion and fugitive dust during construction, to stabilize disturbed areas after completion of construction, and to route surface runoff to existing treatment facilities that meet regulatory requirements.
- One of three options would be utilized to control spills and leaks from the urea storage tanks: (1) the tanks would be placed within secondary containment, (2) double-walled tanks with interstitial monitoring would be used, or (3) diversionary containment would be implemented.
- Appropriate BMPs would be used during the transfer of urea from tanker truck to the holding tank, and Department of Transportation requirements would be followed.
- The existing carbon dioxide system would be utilized to regulate the pH of the ash pond discharge to meet the NPDES permit limits for both pH and acute toxicity and to ensure that the effluent would not exceed the specific limits for ammonia.
- As part of TVA ongoing regular stack monitoring, stack plume opacity would continue to be assessed for compliance with applicable standards. To avoid ammonia slip from becoming a substantial contributing factor to opacity exceedances, if the need arises, ammonia feed rates would be adjusted appropriately.

The following actions would be taken to reduce the potential for adverse effects to surface water.

- A monitoring, sampling, and reporting plan would be developed and implemented (see Appendix D of the EA). This plan will specify responsible personnel, procedures for collecting water samples and fly ash samples, sampling locations, recording procedures, and notification procedures.

### **Public and Intergovernmental Review**

The Tennessee Historical Commission was contacted and concurred with TVA's determination that the project area contains no historic properties eligible for listing in the National Register of Historic Places. The U.S. Fish and Wildlife Service (USFWS) was consulted informally regarding potential effects to endangered mussels and was provided the opportunity to comment on the Draft EA.

## Conclusion and Findings

In a letter of May 17, 2006, the USFWS provided a “no effect” determination for the federally endangered gray bat. The USFWS also concluded that the project is “not likely to adversely affect” the federally endangered pink mucket mussel and that requirements of Section 7 of the Endangered Species Act are fulfilled. The Tennessee Historical Commission concurred with TVA’s finding that the project area contains no historic properties eligible for listing in the National Register of Historic Places. Therefore, the proposed action is in compliance with Section 106 of the National Historic Preservation Act. Because the project area is not in a floodplain and would not affect any floodplain, the proposed action is consistent with Executive Order 11988. Likewise, the project would not affect wetlands and is consistent with Executive Order 11990. The proposed action would not disproportionately affect any minority or economically disadvantaged groups.

Environmental Stewardship and Policy’s NEPA Services staff have reviewed the subject EA and determined that the potential environmental consequences of TVA’s proposed installation of SNCR systems at JOF have been addressed adequately in the EA. Based on the findings in the EA, including implementation of the required mitigation, TVA concludes that the proposed action is not a major federal action significantly affecting the quality of the environment. Accordingly, an Environmental Impact Statement is not required.

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Date Signed