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Session:

TVA Kingston Fly Ash Release: Environmental Studies in Progress

Abstract Title:

Kingston Ash Release — Potential Exposure Pathways and the Associated Environmental Investigations

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Abstract:

The release of fly ash at the Tennessee Valley Authority (TVA) Kingston Fossil Plant (KIF) on December 22, 2008 discharged approximately 5.4 million cubic yards of coal slurry into the adjacent aquatic and terrestrial systems. The initial response focused on public protection and stabilization of the released ash, but rapidly evolved to include comprehensive monitoring of ambient media and ecological receptors. Metals including arsenic and selenium are the primary constituents of potential concern for fly ash. The KIF is located on the Emory River near the confluence of the Clinch and Tennessee Rivers. This portion of the Tennessee River Valley is bounded by ridges and impounded by Watts Bar Dam. The reach of Watts Bar Reservoir at the KIF transitions from the upstream riverine reaches of the Emory River and the Clinch River to the more lacustrine conditions found in the impounded portions of the Clinch River and Emory River backwaters of Watts Bar Reservoir. This multi-use reservoir supports a diversity of aquatic and terrestrial wildlife. The size and complexity of the potentially affected ecosystems necessitates a comprehensive environmental sampling and monitoring program, which TVA has implemented in cooperation with numerous federal, state, and academic organizations. A Conceptual Site Model (CSM) was developed to summarize and illustrate the ecological receptors and potential exposure pathways associated with the Kingston fly ash release. The direct exposure pathways being evaluated at this site include exposures to ash as soil, as ash sediment, sediment pore water, groundwater discharging to surface water, surface water, and seasonally exposed sediment. Dietary exposures are also a concern for some ash-related metals, including arsenic and selenium. The ecological receptors for which bioaccumulation and food web pathways are being studied at this site include fish, benthos, emergent insects, piscivorous birds and mammals, aerial-feeding insectivores, herbivorous birds, omnivorous mammals, amphibians, reptiles, and others. The conceptual site model is used to organize and evaluate

the numerous field and laboratory studies being performed by TVA and others at the site, many of which presented in this special poster session.