

**TESTIMONY OF STAN MEIBURG  
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BEFORE THE  
SUBCOMMITTEE ON WATER RESOURCES AND THE ENVIRONMENT  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
U.S. HOUSE OF REPRESENTATIVES**

**December 9, 2009**

Madam Chairwoman and members of the Subcommittee, thank you for the opportunity to provide testimony on the U.S. Environmental Protection Agency's (EPA's) role in the response and clean up of the release of coal ash from the Tennessee Valley Authority (TVA) Kingston Fossil Plant (KIF or Site) in Harriman, Roane County, Tennessee. My testimony will provide background on the incident and immediate EPA actions, the status of the time-critical removal and proposed non-time critical removal clean up activities at the Site, and EPA's oversight of the selection process for the Arrowhead Landfill in Perry County, Alabama, as the disposal site for coal ash being managed under the time-critical removal action.

**The Coal Ash Release and Response Actions**

On Monday, December 22, 2008, at 1:00 a.m., a containment dike enclosing a portion of a Class II landfill impoundment at KIF failed, releasing an estimated 5.4 million cubic yards (CY) of coal ash, to the Emory and Clinch Rivers and surrounding areas. Ultimately, the ash flow extended northward approximately 3,200 feet beyond the limits of the ash pond over the Swan Pond Creek flood plain and into the Emory River, a part of the Watts Bar Reservoir. The released ash extended over approximately 300 acres of land outside the impoundment and generated a surge of water and ash that destroyed three homes, disrupted electrical power,

ruptured a natural gas line in a neighborhood located adjacent to KIF, covered railway tracks and roadways, and necessitated the evacuation of a nearby neighborhood. An estimated three million CY of the coal ash entered the Emory River and adjacent tributaries.

EPA deployed an On-Scene Coordinator (OSC) to the Site shortly after learning of the incident. EPA joined TVA, the Tennessee Department of Environment and Conservation (TDEC), and other state and local agencies in a coordinated response (i.e., Unified Command in the National Incident Management System). EPA served as the lead federal agency throughout the emergency phase of the response and provided oversight and technical advice to TVA. Lead federal agency designation transitioned to TVA as the emergency phase moved to the recovery phase of the response action. Subsequently, on May 11, 2009, EPA entered into an Administrative Order and Agreement on Consent (AOC) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), pursuant to which TVA is performing the response action with EPA oversight

### **Environmental Monitoring and Sampling**

Since the release occurred, EPA (staff and contractors), TDEC, and TVA have been involved in extensive sampling and monitoring of the air, ash, surface water, and drinking water to evaluate possible public health and environmental threats. Results are posted at [www.epakingstontva.com](http://www.epakingstontva.com) and also on the TDEC and TVA websites.

Sampling results for coal ash contaminated residential soil showed arsenic, cobalt, iron, and thallium levels above the residential Superfund soil screening values, as well as average

arsenic levels in the coal ash and coal ash contaminated residential soil above EPA's Residential Removal Action Levels (RAL). RALs are used to trigger time-critical removal actions while soil screening values are used as a point of departure for EPA to investigate and/or remediate a release. TVA has relocated residents and purchased properties that were either impacted by removal processes or that had ash directly deposited on them.

Coal ash sampling results also indicate that it contains small amounts of naturally-occurring radioactive material, notably the element radium. The concentrations of radioactive materials within the ash are below the CERCLA risk range and below state and federal Applicable or Relevant and Appropriate Requirements (ARARs). These levels do not require management of the ash as a low-level radioactive waste.

A summary of other sampling results appears below:

- Sampling of untreated river water from the main channel of the Emory River showed some elevated metals just after the release and again after a January storm event, including arsenic, cadmium, chromium, and lead. Plant effluent discharging to the Clinch River has consistently met state aquatic water quality criteria for metals;
- Some exceedances of drinking water and aquatic life water quality standards (primarily for arsenic and selenium) have been detected in areas such as the northern embayment, the stilling pond, and in the dredge plume. These are areas that are on-site or are otherwise heavily impacted by the release and are closed to the public. As noted in other portions of the testimony, there have been no exceedances of state aquatic water quality standards in the Emory, Clinch, or Tennessee rivers that are

open to the public, except for slightly elevated levels detected in the first few days following the release. The monitoring plan and analytical data can be found on the TDEC and EPA websites at <http://tennessee.gov/environment/kingston> and <http://www.epakingstontva.com>;

- Sampling of treated water at the municipal water treatment plants (WTPs) have consistently shown that the relevant standards, or Maximum Contaminant Levels (MCLs), for drinking water are not being exceeded. The monitoring plan and data is on the TDEC website at <http://tennessee.gov/environment/kingston>;
- Sampling of private residential wells near the Site detected no contaminants above MCLs; and
- Air sampling and monitoring at the Site (with more than 140,000 air samples and/or real-time readings collected) show that particulate levels are below National Ambient Air Quality Standards for all parameters tested. Air monitoring also is performed to assess air quality conditions for workers whose assigned tasks involve direct contact or close proximity to the coal ash. The sampling results (with more than 3,800 samples collected) show no exceedances of current, established occupational exposure limits. EPA has performed a detailed audit of TVA's air monitoring program twice since entering into the AOC. The purpose of the audits was to provide an independent assessment of performance to ensure data quality and adherence to performance objectives. During the first audit, EPA found that all monitoring sites were well-maintained and met applicable siting requirements, and all recommendations relative to improvement of the monitoring regime were implemented by TVA. The results of the first audit are online at

[www.epakingstontva.com](http://www.epakingstontva.com). The results of the second audit will be available online in December 2009.

### **Oversight of Clean Up Activities**

On January 12, 2009, the Commissioner of TDEC issued an order to TVA that among other things required TVA to submit a Corrective Action Plan (CAP) for addressing the clean up of the coal ash release and to conduct a root cause analysis to determine the cause of the dike failure. In addition, on February 4, 2009, EPA Region 4 and TDEC sent a letter to TVA notifying TVA that, pursuant to Executive Order 12088, EPA considers the coal ash release to be an unpermitted discharge of a pollutant under the Clean Water Act. The letter also directed TVA to provide copies of all plans, reports, work proposals and other submittals to EPA and TDEC simultaneously. EPA and TDEC coordinated reviews and approvals of the submittals within their respective authorities.

TDEC and EPA approved TVA's Phase One Dredging Plan on March 19, 2009. The Phase One Dredging Plan addressed removal of coal ash from the main channel of the Emory River. In conjunction with the pilot dredging operations, TDEC and EPA required TVA to develop an extensive monitoring and sampling plan to detect any releases that might occur during the dredging operation and prevent additional harm to human health or the environment.

On May 11, 2009, EPA and TVA entered into an AOC. Under the AOC, clean up, assessment, and restoration activities take place through time-critical and non-time critical removal actions which will be implemented by TVA and overseen by EPA. Components of

these actions take place in parallel. An EPA Region 4 OSC and a Remedial Project Manager (RPM) have been assigned to coordinate and oversee the time-critical and non-time critical actions, respectively. To the extent that additional clean up activity is needed beyond the anticipated removal work, the AOC commits TVA to perform all additional response activity.

EPA's objectives under this AOC are to make sure that the clean up is comprehensive, is based upon sound scientific and ecological principles, moves as quickly as possible, is fully transparent to the public, especially the local community, and meets all federal and state environmental standards.

The EPA/TVA AOC does not replace the TDEC Order, which remains in effect. We have an exceptional working relationship with the State of Tennessee, and are committed to continuing in that vein. As there are provisions of the TDEC Order and the AOC that overlap and which are unique to each agency's regulatory authority and responsibility, EPA and TDEC are working to prevent duplication of efforts and give clear direction to TVA in terms of state and federal authority and responsibility. The AOC memorializes the relationship between EPA and TVA, where EPA executes oversight through the use of its OSC and RPM in approving work plans, conducting audits, and generally participating in day-to-day site management activities. TDEC has assigned a staff member to coordinate directly with the OSC on a day-to-day basis. Numerous other reviews and consults occur between EPA, TDEC, the Bureau of Reclamation, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the U.S. Coast Guard.

## **Time-Critical Removal Action**

EPA estimates that approximately three million of the 5.4 million cubic yards of coal ash released from the failed dredge cell entered the Emory River. A primary objective of the time-critical phase of the removal is to recover and manage the major portion of the coal ash in the Emory River to help minimize the potential for flooding and the downstream migration of the coal ash. The time-critical removal action is coordinated through and overseen by an EPA OSC who is present at the Site on a full time basis. Additionally, multiple EPA programs are involved in review of environmental data, work plans, and Site operations.

Since entering into the AOC, TVA has increased coal ash removal operations east of Dike 2 from an average of about 2,500 CY/day to the current rate of removal of approximately 15,000 CY/day. This dramatic increase in productivity was accomplished through the application of additional resources and improved dredging techniques, including the use of two mechanical dredging barges, three large capacity hydraulic dredges, and direct mechanical excavation where possible. To date, slightly less than 2 million CY of coal ash have been dredged or excavated from the area east of Dike 2. At the current pace, removal operations east of Dike 2 under the time-critical phase of the clean up are anticipated to be completed in May 2010. The non-time critical removal will evaluate the impacts of residual ash that remains in the river after time-critical operations are completed.

There are several challenges to sustaining the desired removal target of 15,000 CY/day pace of dredging operations at the Site, including: ash recovery efficiency; wet ash materials handling; limited on-site storage capacity, and the pace of loading and shipping. TVA has

committed to addressing these obstacles by implementing improvements that should help sustain efforts to remove the ash as quickly as possible from the Emory River.

Under the TDEC Order and the AOC, TVA was required to perform a detailed analysis of off-site disposal options for coal ash removed from the Emory River east of Dike 2; there is limited temporary storage capacity on-site. Off-site disposal is necessary to maintain the pace of dredging operations as there is currently no on-site facility for disposal which meets the requirements of the AOC.

A request for proposals was issued by TVA in February 2009 to identify potential off-site disposal facilities. Approximately 25 proposals were submitted for consideration. Analysis of the submittals included a review of experience, methodologies for waste handling, containment processes, quantities of ash that could be managed, qualifications of the facility relative to compliance with CERCLA Off-Site Rule, landfill technical standards, cost, and schedules. Consideration also was given to the companies' performance during a coal ash loading test in early May 2009. The Arrowhead Landfill, located near the community of Uniontown, in Perry County, Alabama, was identified by TVA as the best facility to receive the coal ash transported off-site during the time-critical removal action.

EPA conducted a thorough review of TVA's options analysis to ensure that potential risks to the community, especially any vulnerable populations, were addressed. EPA met with the Alabama Department of Environmental Management (ADEM) and local leaders to discuss operation and oversight of the landfill, visited the landfill, and attended a public meeting held on



June 24, 2009, to listen and respond to community questions and concerns. Elected community leaders actively supported the Arrowhead Landfill as a potential site for disposal of the coal ash. After Arrowhead Landfill began receiving the recovered coal ash from TVA Kingston, a second public meeting was held in Uniontown on September 16, 2009, to inform the community of the status of disposal operations and listen and respond to any further community questions and concerns. A third public meeting is planned for January 2010.

The Arrowhead facility is a Subtitle D landfill that fully meets or exceeds the requirements of the AOC and is permitted by ADEM. It has a composite liner system consisting of two feet of compacted clay and a high-density geomembrane liner, a leachate collection system, groundwater monitoring, and closure and post-closure care provisions. The landfill has more than 10 million CY of storage capacity to accommodate the estimated three million CY of ash to be taken off the Site. Additionally, and importantly, the Arrowhead Landfill is served directly by the Norfolk Southern rail line thereby allowing for rail transport of the coal ash as opposed to trucking. Rail transport helps reduce traffic congestion and the risk of accidents, reduces air impacts, is considered more fuel efficient than trucking, and decreases the need for road repair that would be necessary if trucks were used to transport the coal ash.

On July 2, 2009, EPA approved TVA's selection of the Arrowhead Landfill. Transport of coal ash from the Site to the facility began on July 2, 2009, and as of November 24, 2009, more than 744,000 CY of coal ash have been safely transported to the landfill for final disposal. All rail cars leaving the Site are lined and the coal ash is completely covered to ensure that it is not released to the air during transport to Perry County. Further, the coal ash in the rail cars is kept moist to prevent the release of fugitive dust when the material is transferred to trucks at the

landfill. Arrowhead Landfill conducts regular air monitoring at the rail spur where coal ash is unloaded and at the disposal cell in the landfill to ensure that coal ash handling methods and dust suppression are adequate. Oversight of landfill operations and permit compliance is performed by ADEM as part of the State's authorized Resource Conservation and Recovery Act (RCRA) program.

An additional component of the AOC required TVA to perform a stability analysis on Dikes D, C and 2 which were not associated with the ash release. The primary purpose of stabilizing existing dikes on-site was to ensure there were no further failures or releases from the remaining impoundments. As a result of this investigation, Dike C was found to have significant safety deficiencies when compared to Federal Dam Safety Guidelines. As part of the time-critical removal action a multimillion-dollar construction repair will take place over the next year which will address safety deficiencies when compared to these guidelines.

### **Non-Time Critical Removal Activities**

Non-time critical removal actions are a means under CERCLA to address situations involving the release or threatened release of hazardous substances or contaminants into the environment when there is planning time of at least six months prior to the initiation of site activities. Aspects of the coal ash release and clean up being addressed under the non time-critical removal include residual coal ash remaining in the Emory River after completion of time-critical removal, coal ash released to embayments west of an on-site structure known as Dike 2, restoration activities, and investigation of human health and ecologic risks and impacts. An EPA Region 4 RPM has been assigned to coordinate and oversee the planning and implementation of non-time critical removal activities. Alternatives for achieving the objectives of the non-time

critical removal are identified and evaluated through an Engineering Evaluation/Cost Analysis (EE/CA). Under the terms of the AOC, TVA submitted a draft work plan on August 10, 2009, which provides an outline to address the following non-time critical removal action objectives:

- Implement a comprehensive environmental sampling and analysis program;
- Conduct quantitative human health/ecological risk assessments;
- Develop and evaluate a range of clean up alternatives to address any unacceptable risks posed by the Site;
- Implement selected removal action via an action memorandum after public comment period; and
- Conduct a Jurisdictional Assessment in compliance with §404(b) of the Clean Water Act.

This draft work plan was issued for public comment on October 21, 2009. The initial 30 day public comment period was extended for an additional 30 days, ending on December 20, 2009. Following the work plan, TVA is scheduled to issue a draft EE/CA report presenting a range of response alternatives for the removal of coal ash west of Dike 2. EPA expects the final EE/CA to be issued for public comment in January 2010, along with the accompanying Administrative Record, in accordance with provisions in the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan (NCP). Once public comments have been addressed, TVA will submit to EPA by April 2010 an action memorandum that responds to public comments and describes the selected response actions under the non-time critical removal. Following EPA's approval of the action memorandum, TVA will submit a work plan for implementation of the selected response actions.

An EE/CA Technical Work Group (Work Group) has been formed and has held three meetings to begin preparations for the non-time critical activities. The Work Group consists of representatives from EPA, TVA, TDEC, the U.S. Fish and Wildlife Service and Department of Interior, the Tennessee Department of Health, and the Tennessee Wildlife and Resources Agency. It is the aim of the Work Group to have the EE/CA ready for implementation when the time-critical removal nears completion in order to continue work without a break in operations.

### **Community Involvement Activities at the Site**

EPA made a commitment to the Kingston-Roane County community assuring them that they would be kept well informed and fully aware of all activities related to Site clean up. EPA has kept that commitment by providing a full time Community Involvement Coordinator (CIC) at a local Outreach Center at the Site. The OSC and CIC have been instrumental in assisting the community in understanding the CERCLA/Superfund process through educational presentations, providing briefings to key community members, assisting in public meetings and availability sessions, and providing Site tours. A real-time website is available to provide information about the time critical removal action, fact sheets, advisories, progress photos and other information.

The CIC also assisted TVA in the development of its Technical Assistance Plan (TAP) program. The TAP is required by the AOC and provides the Community Advisory Group (CAG) with \$50,000 to procure the services of an independent technical advisor. A CAG is made up of representatives of diverse community interests. Its purpose is to provide a public forum for community members to present and discuss their needs and concerns related to the

Superfund decision-making process. It offers EPA a unique opportunity to hear and consider community preferences for Site clean up and remediation.

On November 23, 2009, TVA and the Roane County CAG entered into an agreement which allowed for the transfer of the TAP funds from TVA to the CAG. The technical advisor (TA) will be available to the community to interpret technical information and assist the community with commenting on future work plans. Until the CAG can procure a TA, EPA Region 4 has provided the CAG with an interim TA through EPA's Technical Assistance Services to Communities (TASC) program. The interim TA has worked with the CAG since November 2009.

The Roane County CAG, officially formed on July 23, 2009, will serve as a public forum for community members to present and discuss their needs and concerns to EPA, TVA, TDEC and other stakeholders about the coal ash clean up process. The CIC has attended all CAG meetings to provide information and address any community concerns. Additionally, EPA holds monthly public availability sessions and quarterly public meetings. Three public meetings and one availability session have been held in the Kingston community. Region 4 has committed to having the CIC at the Site full time for the duration of the project in order to ensure that the community concerns and needs are met throughout the clean up process.

Our community involvement activities have not been confined to the Kingston area. As I indicated previously, during evaluation of TVA's off-site disposal analysis, EPA met with community leaders in Perry County and attended a public meeting on June 24, 2009 to listen and

respond to community questions and concerns. A second public meeting was held on September 16, 2009 to inform the community of the status of disposal operations and hear and respond to community questions and concerns. The September 16, 2009 event also was attended by representatives from ADEM, the Arrowhead Landfill, and local community leaders. A third public meeting is planned for January 2010.

## **Conclusion**

EPA recognizes that the coal ash release in Kingston was a devastating event for the community. EPA will continue to use its authorities and expertise to provide oversight and technical assistance efforts to protect human health and the environment during the clean up of this catastrophic release and promote the restoration of the surrounding ecosystem.