TESTIMONY OF MATHY STANISLAUS
ASSISTANT ADMINISTRATOR
OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE
U.S. ENVIRONMENTAL PROTECTION AGENCY
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COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
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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) in Harriman, Roane County, Tennessee. My testimony will provide a brief background on the incident and immediate EPA actions, current and planned actions to ensure that the ash removal and disposal is conducted in a manner that protects public health and the environment, and an update on the Agency's assessment efforts regarding the structural integrity of coal ash impoundments.

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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 (CYs) 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 Wattts 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.

Shortly after learning of the release, EPA deployed an On-Scene Coordinator (OSC) to the site of the coal ash release. 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 will perform the response action with EPA oversight

Environmental Monitoring and Sampling

Since the breach, 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 public health and environmental threats. Results are posted at www.epakingstontva.gov and also on the TDEC and TVA websites.

As noted in EPA's previous testimony before the Subcommittee, 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 take any action 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 on them.

Coal ash sampling results also indicate that it contains small amounts of naturally occurring radioactive material, notably the element radium. However, the concentrations of radioactive materials within the ash are below the Superfund 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 is below:

- sampling at multiple locations along the Clinch and Emory Rivers detected heavy metals, but concentrations were below applicable limits;
- sampling of untreated river water showed some elevated metals just after the release and again after a January storm event, including arsenic, cadmium, chromium, and lead. Subsequent sampling showed metals concentrations below drinking water limits;
- sampling of municipal water intakes at the Kingston, Cumberland, and Rockwood water treatment plants (WTPs) did not exceed any Maximum Contaminant Levels (MCLs) for drinking water;

- sampling of private residential wells near the site detected no contaminants above MCLs; and
- air sampling and monitoring at the TVA site (with more than 60,000 air samples collected) show that particulate levels are below National Ambient Air Quality Standards for all parameters tested. Air monitoring is also being 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 3,000 samples collected) show no exceedances of current, established occupational exposure limits.

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 ash spill 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 Kingston spill to be an unpermitted discharge of a pollutant under the Clean Water Act. In order to meet the requirements of both the TDEC Commissioner's Order (TDEC Order) and Executive Order 12088, and to ensure the most efficient and expeditious collaboration between the three agencies, the letter 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 our 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 dredging operations, TDEC and EPA required TVA to develop an extensive monitoring and sampling plan to monitor 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, cleanup, 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, and I will discuss the status of non-time critical removal activities later in my testimony. 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 cleanup activity is needed beyond the anticipated removal work, the AOC commits TVA to perform all additional response activity.

Our objectives under this enforceable 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. Our working relationship with the State of Tennessee has been exceptional, and we are committed to continue in that vein. As there are provisions of the TDEC Order and the AOC which 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.

Time-Critical Removal Action

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. To date, more than approximately 550,000 CY of coal ash have been dredged or excavated from the area east of Dike 2.

Since entering into the AOC, over a nine week period, TVA increased ash removal operations east of Dike 2 from approximately less than 1,000 CY/day to the current rate of removal at approximately 10,000 CY/day. This has been accomplished through the addition of improved dredging techniques, two mechanical dredging barges, an additional hydraulic dredge, and wet excavation techniques. Larger hydraulic dredges are expected to be operational at the site (replacing the smaller, current dredges) in August. Mechanical dredging will continue to remove debris obstacles and wet excavation techniques will be employed for near shore material. The recovered ash is dewatered and transported to specially constructed on-site temporary storage cells prior to off-site disposal. Currently, there is capacity at KIF for temporary storage of approximately 1.5 million CY of recovered coal ash.

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. Off-site

disposal is necessary to maintain the pace of dredging operations given that there is currently no on-site facility for disposal which meets the requirements of the AOC. TVA began this process in late February 2009 by issuing a request for proposal (RFP) to identify potential off-site disposal facilities for consideration. After reviewing about 25 proposals, three sites accessible by rail and four sites accessible by truck were identified as being immediately available for ash disposal.

Of the three facilities served by rail that answered the RFP, the Arrowhead Landfill located 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. The Arrowhead facility is a Subtitle D landfill that fully meets the requirements of the AOC and is permitted by the Alabama Department of Environmental Management (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, the Arrowhead Landfill is served directly by the Norfolk Southern rail line which helps reduce traffic congestion, reduce air impacts, is considered more fuel efficient, and decreases the need for road repair that would be necessary if trucks were used to transport the coal ash.

Prior to approving the Arrowhead Landfill as the disposal site for the coal ash, EPA met with ADEM to discuss the landfill, visited the landfill itself, and met with local leaders and members of the surrounding community to review the disposal plan and answer questions.

Elected community leaders actively supported the Arrowhead Landfill as a potential site for disposal of the coal ash.

On July 2, 2009, EPA approved TVA's selection of the Arrowhead Landfill, which meets the CERLA Off-site Rule Transport of coal ash from KIF to the facility began on July 2, 2009, and as of July 15, 2009, eight shipments totaling more than 60,000 tons of coal ash have been transported to the landfill for final disposal.

Non Time-Critical Removal Activities

Non time-critical removal actions are a means under Superfund 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 KIF coal ash release and cleanup being addressed under the non time-critical removal include residual coal ash remaining in the Emory River after completion of time-critical dredging, coal ash released to embayments west of an on-site structure known as Dike #2, restoration activities, investigation of human health and ecologic risks, and natural resource impacts. As I noted earlier, 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 is to submit to EPA a draft work plan for performing one or more EE/CAs within 90 days of the May 11, 2009, effective date of the AOC. The work plan will detail the activities

to be performed in developing the EE/CA, including the media to be investigated, data quality objectives, and the methodologies for human health and ecological risk assessments. Following completion of the work to be performed under the work plan, TVA will submit a draft EE/CA report for EPA review and approval. Upon issuance of a final EE/CA, TVA will make the EE/CA and the accompanying Administrative Record available for public comment 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 an Action Memorandum that responds to public comments and describes the selected response actions under the non time-critical removal. Following EPA 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 formed and held two 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.

Impoundment Structural Integrity Assessments

As noted in previous testimony provided to the Subcommittee, the failure of the ash impoundment at TVA's KIF in December 2008 highlighted the issue of impoundment stability. As a result, EPA began a major effort to assess the stability of those impoundments and other

management units which contain wet-handled coal combustion residuals (CCRs). Our assessment has three phases: information gathering through an information request letter; site visits or independent assessments of other state or federal regulatory agency inspection reports; and final reports and appropriate follow up.

EPA is making progress with our assessment of these impoundments. Currently, we are finalizing our review of the responses to the CERCLA 104(e) letters that were sent. Overall, the assessment responses from more than 200 facilities identified more than 500 management units. We expect to post that information to the EPA website within the next 6-8 weeks. In the meantime, EPA staff and contractors are in the field conducting on-site visits and inspections of those management units reported as being "high" or "significant" hazard potential while also reviewing any current dam safety reports available from the States or the facilities. A hazard potential rating, which EPA is using to screen facilities for visits and inspections, is not related to the stability of the management unit or impoundment, but to the potential for and extent of harm likely to occur should the impoundment fail. If our assessments, which do include a study of whether each particular high or significant hazard impoundment is stable, indicate that corrective measures are needed, EPA will work with facility owners and operators, and our state partners to ensure that these measures are taken. In addition, EPA expects to prepare a report for each of the units assessed and make those reports available to the public. Our goal is to complete all of the assessments for dams with high and significant hazard potential ratings this year. We will continue to share information about our assessment efforts as they progress.

The components of EPA's impoundment assessments are based on the scope of work that was prepared before the TVA Kingston root cause analysis was completed. EPA staff who are managing our dam integrity assessments have reviewed the TVA Kingston root cause analysis. The issues it raises are the kinds of issues and concerns EPA's contractors are looking for in the field when assessing the units in which CCRs are being managed. The study confirms our initial understanding that it is important to have the dam designed by a Professional Engineer, geotechnical studies should be conducted, and the construction should be under the design and supervision of a registered Professional Engineer.

In addition, EPA continues to evaluate CCR disposal practices at coal-fired power plants to determine if these facilities are in compliance with existing federal environmental laws and will take enforcement action, where appropriate, to address violations.

Conclusion

EPA recognizes that the coal ash release in Kingston was a devastating event for the community and that many of its members are dealing with very difficult changes in their daily lives, their homes, and their property. EPA will use its authorities and expertise to continue 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. During the response efforts, EPA will continue its regulatory development process and its management unit assessment efforts and will continue to keep the Committee informed on progress related to these efforts.