



**TENNESSEE  
VALLEY  
AUTHORITY**

**TVA Responses to Submitted Questions  
On the Allen Restoration Project**

Memphis City Council  
August 3, 2021

## **TRANSPORTATION OF CCR**

**Q:** Who is TVA hiring to transport coal ash from Allen Fossil Plant to a potential landfill?

**A:** Safety is a core value at TVA. We know it is also important to the community because of the feedback and comments we received from residents and community leaders during the public engagement and review process we have conducted over the last few years. TVA listened and based on our shared objective to execute the safe removal of coal ash from the Allen site to a permanent, state-of-the-art lined landfill, we selected Republic Services, in Capleville, Tennessee, to transport and dispose of the CCR.

South Shelby Landfill sits on over 500 acres of land in Capleville, the industrial area in the southeast corner of Memphis. 27 acres of the South Shelby Landfill have been specifically designated for disposal of the CCR material.

Republic Services is the second largest provider of non-hazardous solid waste collection, transfer, disposal, recycling, and energy services in the nation. Republic Services is also a long-standing community partner in Memphis with a commitment to safety, the community, and the environment.

Additionally, both TVA and Republic Services are recognized as leaders in their respective industries, placing top priority on the safety of their workforce and the communities they serve. In 2020, both companies were listed on the elite Forbes America's Best Employers list by state.

**Q.** How is coal ash secured in a truck? Does TVA plan to use tarps?

**Q.** How is the ash contained?

**Q.** How is the ash transported?

**Q.** How do you keep the ash particles from becoming airborne if transporting on trucks?

**A.** Side-load truck trailers will be used to transport CCR from the site to the landfill. Although the moisture content of the CCR is maintained to reduce dust, to further reduce the potential for dust during transport, these trucks are designed to be

tightly covered with tarps, and the truck beds are impermeable. The electric sealed tarping will prevent material from dispersing during transit, and the side-load feature means that the drivers themselves will not need to interact with the material. These trucks will be dedicated to this project and will meet Tennessee and Federal DOT requirements including weight restrictions and traffic laws. Prior to leaving the site for the landfill, each truck will pass through an onsite truck-wash to remove materials from the exterior of the truck (including the tires). Additionally, TVA is paving the site haul route to minimize fugitive dust.



## **TVA TRANSPORT ACCIDENT RECORD**

**Q.** Has TVA ever had a transport accident?

**A.** Republic Services is responsible for transporting the CCR from the Allen site to the South Shelby Landfill in Capleville, Tennessee.

## **HEALTH AND SAFETY**

**Q.** How does TVA protect workers working directly with, close to, or transporting coal ash?

**A.** Safety is a core value at TVA. It drives every decision we make and is woven into every action we take. The safety of our employees and subcontractors are a top priority.

We implement a number of measures to ensure the safety of our workforce such as extensive planning, performing job safety analyses, employee and contractor training, providing proper protective equipment, maintaining equipment, routine inspections and monitoring, and providing multiple channels to report health and safety concerns.

Specifically to the Allen restoration project:

- At all times, including remedial action, TVA will require that activities be performed in accordance with applicable local, state, and federal health and safety laws and regulations, and TVA's procedures.
- TVA will use a third-party health and safety consultant to perform checks on a regular basis to confirm conformance and implement corrective measures if needed.
- TVA employees and contractors will be trained on the specific potential hazards of the project and appropriate practices to be used to mitigate these hazards.
- Proper personal protective equipment, suitable to the task being performed as outlined in the Health and Safety Plan, will be provided to onsite workers and its use will be enforced.
- Worker and equipment stations onsite will be used to keep clothing and equipment clean.
- Air quality monitoring will be performed during CCR removal in working areas and on workers to confirm adequate worker protection is in place relative to dust.

**Q.** What health conditions are associated with the ash?

**A.** Safety is a core value at TVA and the safety of our workers and the community are a top priority. TVA executes robust monitoring at all our sites to ensure we are protective of public health, our workforce, and the environment.

Coal ash is a non-hazardous byproduct of burning coal for electricity. The Environmental Protection Agency (EPA) regulates coal ash as a non-hazardous solid waste. Coal ash is maintained and managed on access-controlled industrial sites.

Coal ash contains many of the same naturally occurring constituents found in coal, rocks, and soil. These constituents are present in our surrounding environment.

### What's in coal ash?

Coal ash is largely derived from the **inorganic** (non-carbon-containing) minerals found in coal, such as quartz, feldspars, clays, and metal oxides, which are also found in soil and rock. Like soil, oxides of silicon, aluminum, iron, and calcium make up over 90% of coal ash.

The content of coal ash can vary, depending on the coal being burned and the combustion conditions. The average makeup of fly ash is shown in Figure 4.

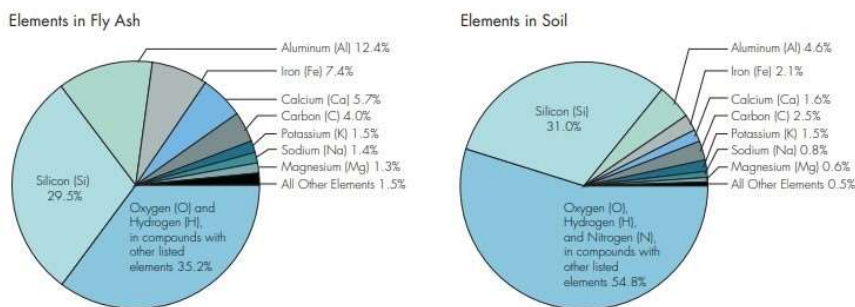


Figure 4. Comparison of composition of fly ash and soil, by element.

(Note: Oxygen, hydrogen, and nitrogen are present as part of compounds with other listed mineral elements. Their concentration was calculated rather than being measured.)

Source: Electric Power Research Institute (EPRI)

Some of these constituents may present health risks under certain conditions. Federal and state regulations provide public health protections through public drinking water and air quality standards.

TVA complies with federal and state regulations and requires the same of all contractors and their subcontractors.

TVA maintains a number of measures to ensure the safety of our workforce such as extensive planning, performing job safety analyses, employee and contractor training, providing proper protective equipment, maintaining equipment, and routine inspections and monitoring.

For the Allen restoration project, TVA has established a comprehensive air monitoring program to ensure safety of workers, including personnel air monitoring, work area air monitoring and perimeter air monitoring to confirm no air quality concerns for our neighbors. TVA also prepared a TDEC Ash Management Plan and established dust

control measures for use during the Allen restoration project as needed. TVA will have health and safety checks performed periodically to ensure proper respiratory protection used in accordance with health and safety plans.

## **TRAFFIC MANAGEMENT / AIR QUALITY / IMPACTS TO COMMUNITY**

**Q.** TVA's estimate is that approximately 120 truckloads of coal ash per day would be needed to transport it offsite – resulting in 240 truck trips per day along the haul route for over 8 years. What is the comprehensive traffic management plan TVA implements for transporting coal ash by truck?

**Q.** Is there a comprehensive traffic management plan for the trucks needed to bring in borrow materials? What will the impact be on air quality along possible haul routes?

**Q.** What is the long-term effect of air quality along the haul route after 8 years of truck trips.

**A.** TVA listened to community feedback and concerns related to the safe transport of coal ash from the retired Allen Fossil Plant to a permanent location for long-term storage and management. In an effort to understand any potential impact to the community, TVA conducted a traffic management study for the Allen restoration project.

This study helped inform plans for the traffic routes from the Allen site to the South Shelby Landfill in Capleville, Tennessee and the Tunica, Mississippi landfill.

The plan focuses on trucks entering and exiting the site and the haul routes the trucks would travel to reach the potential landfill and borrow site locations. Intersections were identified that could experience congestion, delays, and/or near misses or accidents in association with the Allen restoration project traffic. The majority of the potential congestion issues would be expected to occur during the AM and PM peak periods. To manage congestion issues, mitigation measures have been identified such as alternate routes which TVA can implement as needed. Should alternate routes be insufficient to address congestion associated with Allen traffic, additional mitigation measures such as intersection upgrades could be implemented through discussions with the city and department of transportation.

TVA also listened to community feedback throughout the public environmental review and comment process related to any potential air quality impacts associated with the Allen restoration project.

TVA will minimize any temporary localized increase in exposure to fugitive dust and exhaust along the haul routes with the use of proper Best Management Practices such as covered loads and watering unpaved haul roads. Also, trucks used to transport CCR would be maintained in good working condition and with current emission control technologies. These measures are addressed in the final Environmental Impact Statement (EIS).

**Q.** The current haul route from AFP to South Shelby Landfill is 19.3 miles. How many residents and businesses are on that haul route?

**A.** Based on the main route of 19.3 miles, we have estimated 72 businesses, 39 houses and 1 apartment complex with 36 units. The route largely avoids residential areas, utilizing primarily Interstate 55, State Route 175, and Malone through commercial and industrial areas.

**Q.** Timeline for trucks is estimated to be 8-9 year and rail around 15. Aside from cost, what are the risks and, or impact of waiting longer?

**A.** TVA evaluated the use of both rail and trucks for transport of the CCR. The assessment concluded that the use of railcars to transport the CCR offsite would require more time than using trucks, but TVA may consider using railcars in the future. If TVA elects to transport CCR offsite by rail, TVA would conduct further study on loading rates. TVA would also have to construct rail loading facilities at Allen.

The risks and impacts of using rail would be a longer period before the Allen restoration efforts could begin (due to the need to construct rail loading facilities and establish agreements for rail transport and disposal). It would be expected to take longer for cleanup to be completed and could prevent meeting CCR Rule completion deadlines. The Final Environmental Impact Statement (EIS) concluded that environmental impacts associated with public health and safety would be minor, though also marginally higher for rail as compared to truck transport due to increased rail traffic and greater distance travelled.

## REMEDIATION

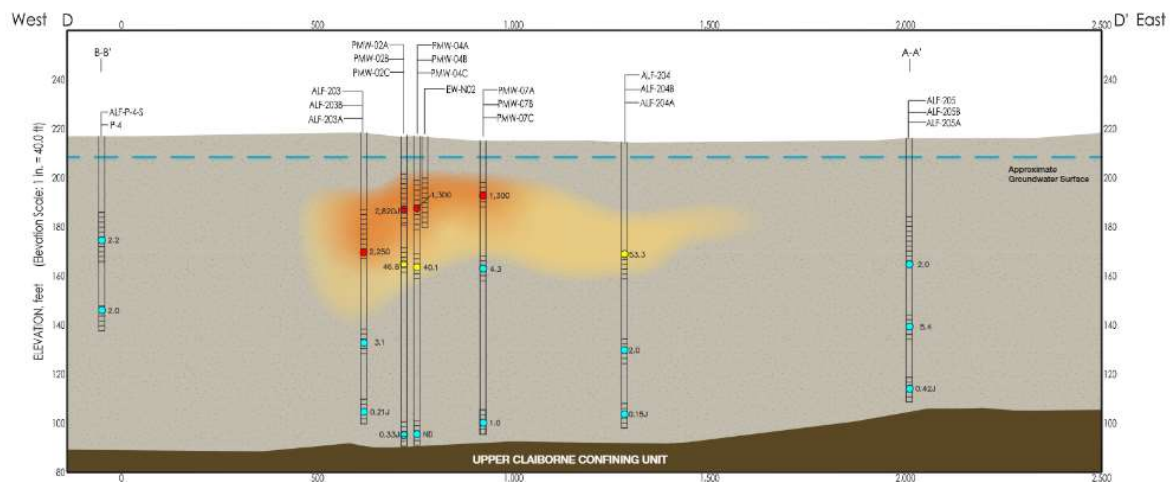
**Q.** Based on a TVA Remedial Investigation, arsenic in the groundwater was found in the upper portion of the Alluvial aquifer. Can you explain the significance of this?

**A.** The Memphis aquifer is a precious natural resource and TVA remains committed to its continued protection. Publicly available data shows that activities at the retired Allen Fossil Plant have not impacted the Memphis aquifer.

In 2017, during routine groundwater monitoring, TVA reported elevated levels of arsenic in groundwater in two areas near the East Ash Disposal Area. Arsenic is a natural element found in groundwater, soil, and rock in small concentrations. These groundwater areas are localized to the Allen site and do not extend off the property. TVA completed an investigation under the direction of TDEC to better understand groundwater conditions and determine next steps.

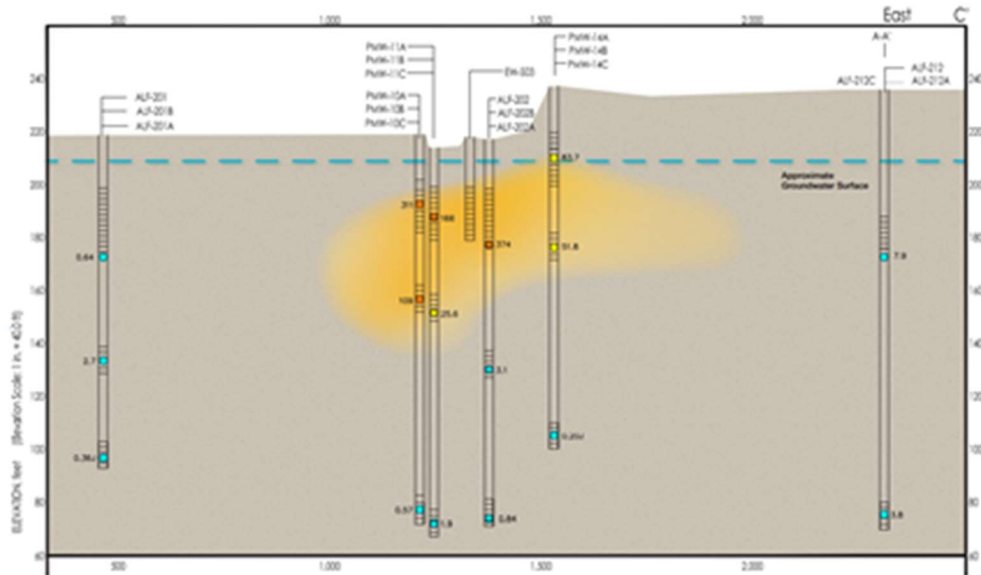
The investigation included a hydrogeologic study of the Alluvial aquifer, which is the layer of sand and gravel that lies beneath the Allen site. Under most of the East Ash Disposal Area, the Alluvial aquifer is underlain by a clay layer often called the “upper Claiborne Confining unit.” Below the clay layer is the Memphis aquifer.

### Cross section of East Ash Disposal – North Groundwater Area





**Cross section of East Ash Disposal – South Groundwater Area**



TVA confirmed that only the shallow portion of the Alluvial aquifer is impacted with arsenic at concentrations above drinking water standards. Arsenic was not detected above the drinking water standard in deep wells in the impacted groundwater areas, or in groundwater samples from the Memphis aquifer.

TVA regularly monitors 100 wells on the Allen site to help us understand groundwater conditions. We monitor and evaluate groundwater conditions every three months.



**Q.** What is the entire process for the ash removal?

**A.** The following process will be used to restore the site. Additional details are available in the Remedial Action Plan (RAP) and Remedial Design Report (RDR). Both documents are currently being reviewed by TDEC. Activities will be conducted in accordance with federal and state requirements.

- TVA will relocate the MLGW sewer that traverses the East Pond prior to CCR removal. The new sewer alignment will not interrupt service.
- TVA will stabilize residual ponded areas to provide safe working conditions and then remove CCR material, underlying impacted soil, and support structures within the impoundment footprints. This process includes removing and treating water from within the ponds.
- Specially designed heavy equipment will be used to excavate the CCR from the ponds and load it into the trucks for offsite disposal. All the trucks will pass through a truck-wash station prior to leaving the site.
- CCR removed from the CCR impoundments will be transported by truck to an offsite existing permitted landfill owned and operated by a third party. The landfills for this project include South Shelby Landfill, in Capleville, Tennessee, and Tunica Landfill (as a secondary option). The CCR will be placed in a designated section of the South Shelby Landfill.
- Following CCR material removal, the areas will be backfilled to grade with clean borrow material. Borrow material will be obtained from local properties in accordance with the conditions established in the Environmental Impact Statement.
- The site will be graded and seeded to facilitate future site redevelopment.

Groundwater Remediation:

- During and after CCR removal, TVA will extract groundwater from the north and south areas of shallow impacted groundwater at a total rate of approximately 130 gallons per minute.
- The water will be treated with an onsite groundwater treatment to meet the City of Memphis discharge permit requirements, and after confirmation the water will be discharged to the TE Maxson Wastewater Treatment Plant.

- The groundwater extraction system was designed to hydraulically control and remove areas of groundwater with elevated concentrations of arsenic. These areas are inclusive of locations where fluoride, lead, and other CCR- related constituents are present.
- The target cleanup goals for groundwater are drinking water standards (Maximum Contaminant Levels, or MCLs) or Regional Screening Levels (RSLs) when MCLs have not been established.
- After CCR removal, the groundwater extraction and treatment system will be re-evaluated and modified as necessary to safely speed the groundwater remediation process. The process will continue until the target cleanup goals are met.

## Groundwater Treatment Areas



**Q.** Is it possible for remediation before removal? Or remediation without removing the ash?

**A.** The Environmental Protection Agency (EPA) under multiple bipartisan administrations have determined there are two methods for closing an ash site that are equally protective of public health and the environment. One is to close by removing the ash and the other is to close without removing the coal ash depending on the unique characteristics of the site.

For the Allen site, we have made the right decision for this site based on the site-specific data, research, science, and community input and it demonstrates our steadfast commitment to our neighbors to protect precious natural resources and to repurpose the Allen site for the benefit of the community.

Our restoration plan includes dewatering the CCR, removing the CCR for disposal at a secure offsite landfill, backfilling with clean, compacted soil to support redevelopment of the property, and groundwater extraction/treatment. Several entities including TDEC, U.S. EPA, the Sierra Club, Protect our Aquifer, and SELC have stated they support TVA's remedial approach.

Additionally, TVA is operating under the terms of the Memorandum of Agreement with the City of Memphis, Shelby County, MLGW, and the Port Commission. TVA does not own the property where the coal ash is currently stored and does not own the coal ash material. The intent is to use the site for future economic development.

## **PERMITS**

**Q.** What, if any, permits are needed?

**A.** TVA has proactively been securing needed permits and obtaining approvals of plans, designs and certifications as listed below:

Permits (8):

- City of Memphis Industrial Wastewater Discharge Permit S-NO1-226 (pending; requires outfall installation for issuance)
- Shelby County Well Permit
- NPDES Construction Individual Permit
- NPDES Permit TN0005355
- NPDES Construction Individual Permit
- USACE Section 408 Permit

- USACE Section 404 Permit
- Special Waste Permits

Plans/Designs/Certifications (4):

- Drawdown and Dewatering Plan (Stantec, 2018a; Stantec, 2019c)
- City of Memphis Sewer Modification Design
- TDEC Ash Management Plan
- TDEC Aquatic Resource Alteration Permit (ARAP)/Section 401 Certification

**Q.** Has permission been granted to move from the current site to the proposed site?

**A.** TVA has secured all necessary permits and certifications. The only pending items are completion of the Record of Decision (ROD) by TDEC and approval of the Remedial Action Plan, which is being revised by TVA and will be issued to TDEC soon.

It is important to know that in 2016 TVA partnered with the City of Memphis, Shelby County, MLGW, and the Port Commission to safely manage the CCR at the Allen Fossil Plant because TVA does not own the property where the coal ash is currently stored on site and does not own the coal ash material. Under the terms of the Memorandum of Agreement (MOA), TVA manages the coal ash units and is handling the responsibility for complying with the federal CCR Rule and TDEC Order.

## **COMMUNICATION**

**Q.** When will you update us on projects in Memphis? Quarterly updates are needed.

**A.** Under the terms of the Memorandum of Agreement that TVA, the City of Memphis, Shelby County, MLGW, and the Port Commission signed in 2016, representatives from each of the respective parties meet quarterly for regular updates on the Allen restoration project. These meetings have taken place for the past five years and will continue throughout the project. Additionally, TVA will brief City Council on a quarterly basis and welcomes community leaders to visit our site. And, we are taking time to engage further with the people we serve through focused listening sessions, virtual community meetings, facility tours, and community feedback via website and email.

###