Geocomp
Trusted to help mitigate risk

PROJECT BRIEF

TVA Power Plants
CCR Seismic Assessments

PROJECT PROFILE

CLIENT:
Tennessee Valley Authority (TVA)

LOCATION:
Chattanooga, TN

VALUE:

- Developed and implemented a Best Practices approach to obtain predictions of the most likely performance rather than conservative estimates
- Geocomp's Best Practices approach has saved TVA more than $100 million in potential remediation and closure costs to date
- Keeping these fossil plants open has provided millions of homes with power

SERVICES PROVIDED:

- Advanced engineering assessments to evaluate seismic stability of CCR disposed facilities across coal-fired power plants

"Using Best Practices aimed at eliminating inherent over-conservatism in conventional methods, Geocomp has demonstrated that critical CCR disposal facilities meet EPA requirements for seismic stability."

SEISMIC ANALYSIS AND ADVANCED ENGINEERING ASSESSMENTS OF STABILITY

Geocomp continues to develop and perform enhanced seismic assessments of TVA's CCR facilities. Using Best Practices aimed at eliminating inherent over-conservatism in conventional methods, Geocomp has demonstrated that critical CCR disposal facilities (Shawnee, Allen, Cumberland, Johnsville, Gallatin, Paradise, Bull Run) meet the EPA requirements for seismic stability. The Best Practices approach includes realistic assessments of in-situ pore pressures based on field measurements with piezometer strings so that the correct effective stresses are used in analyses. This factor alone could improve seismic stability by 30% or more. Next, the determination of appropriate earthquake induced shear stresses using a 2D nonlinear dynamic ground amplification analyses. Finally, the selection of pseudo-static coefficients corresponding to a displacement level within the tolerance of the analyzed facility.

BACKGROUND

The Tennessee Valley Authority is the largest public power utility in the United States, operating ten coal-fired power plants. In 2015, the United States Environmental Protection Agency (EPA) put into effect national regulations and requirements for the safe disposal of coal combustion residuals (CCR), which included the requirement that a qualified engineer demonstrate that each CCR impoundment and landfill have adequate structural stability for both static and seismic loads. If determined that the impoundments do not meet the minimum factors of safety required by EPA, TVA will need to either close or remediate these facilities at a considerable cost.