

Finite-Difference Method Three-Dimensional Model for Seepage Analysis Through Fordyce Dam

SAMUEL LEE¹, TAKESHI YAMASHITA¹

¹*FERC*

A finite-difference method (FDM) three-dimensional model was developed for analyzing the seepage through Fordyce Dam. A finite-element method (FEM) two-dimensional analysis of seepage through the dam under-predicts seepage fluxes by a factor of 5 when established hydraulic conductivity values are used for the rock materials. The FDM three-dimensional model provides similar seepage fluxes to the FEM two-dimensional model, when identical conditions are compared. The FDM three-dimensional model was used to explore various alternatives that could be the cause of the observed seepage fluxes, followed by analyses that can guide field monitoring activities to reduce the uncertainty between these alternatives.