



PROJECT BRIEF

Kentucky Lock and Dam Monitoring System

PROJECT PROFILE

CLIENT:
Tennessee Valley Authority (TVA)
U.S. Army Corps of Engineers

LOCATION:
Kentucky

VALUE:

- Real-time monitoring providing alerts on dam safety

SERVICES PROVIDED:

- Installation of robust monitoring system
- Providing real-time measure of lateral movement

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DEVELOPMENT OF MONITORING SYSTEM

The Army Corps awarded the instrumentation contract to Geocomp to develop and install an automated instrumentation system, and to monitor the lock over the 5-year project duration. Geocomp worked closely with the Army Corps to select the most suitable instrumentation components. The sensors installed included in-place inclinometers and tilt meters to measure lateral movements at the monolith and were connected to a wireless network of data loggers. Instruments were scanned once per minute and each reading compared to pre-defined alarm limits. Principals were notified within 5 minutes by telephone or email of the development of an alarm status. Routine monitoring data were recorded twice per day. Alarms and data collection were automatically processed by Geocomp’s *iSiteCentral*® web-based data collection and reporting system.



BACKGROUND

Kentucky Lock on the Tennessee River is the busiest lock on the river for both material passage and lock utilization. Previously, commercial shipping vessels were moved through the lock using a time consuming double-lift procedure resulting in an average wait time of over six hours. Construction of a new lock involved excavating soil behind the existing lock wall effectively removing the lateral earth support against the wall that counters the water pressure inside the lock basin, generating new stresses. The Tennessee Valley Authority (TVA) and US Army Corps of Engineers were concerned that a single monolith could shift or collapse if the excavation created an unstable situation, making the lock unusable. They decided that an extensive monitoring program was needed to control the construction and provide warning of unsafe conditions.