



FEMA

Seismic Mitigation of Water System Protecting the Public Water Supply

Shelby County, TN - Shelby County is located within the impact area of the New Madrid fault system. At the University of Memphis' Center for Earthquake Research and Information, they have reported a 40 to 60 percent probability of a New Madrid Seismic Zone earthquake in the magnitude of 6.0 to 6.3 within the next 15 years. Memphis Light, Gas and Water (MLGW) own and operate the water supply system for Shelby County, excluding the incorporated towns other than Memphis and certain private wells. The need to protect and maintain stability of the water supply system for the entire Shelby County area was significant.

The MLGW has initiated a seismic retrofit project to protect its Davis Water Pumping Station (located in southeast Memphis), and to enhance the survivability of the connections between the water distribution lines in 55 (one-third) of the city's production wells. MLGW withdraws water from aquifers of approximately 170 independent wells.

Retrofit plans included reinforcing and anchoring masonry walls; strengthening steel frames; improving the connection of concrete wall and roof, securing anchorage of pipes and valves, and bracing of pipelines; bracing of treatment and control equipment; and protecting an overhead crane.

The estimated cost to replace the pumping station in the event of a large earthquake is over \$17 million. Additionally, each day the station is not in service costs \$1.4 million. The total projected savings is \$112 million. Increasing the capability of water well connectors to withstand a 6.5 to 7.5 magnitude earthquake, at a cost of \$9,280 per connector, prevents an estimated loss of \$188,000 per day for each connector damaged.



Shelby County,
Tennessee



Quick Facts

Sector:

Public

Cost:

\$968,800.00 (Actual)

Primary Activity/Project:

Retrofitting, Structural

Primary Funding:

Hazard Mitigation Grant Program (HMGP)