



FEMA

Water Storage Tank Seismic Retrofit

Mercer Island, WA - Mercer Island in Lake Washington is a busy community with a population of 22,000 and high median income. Located east of Seattle, it is accessed only by the Interstate 90 floating bridge. The islanders are totally dependant on two above-ground steel water reservoirs, four million gallon capacity each, as their main water source. This water supply is also essential for fire fighting.

The City of Mercer Island recognized that there was a potential life safety problem due to the fact that the island is in an earthquake hazard area. Should the tanks fail due to an earthquake, 12 homes, schools, a church and several public buildings situated downstream would be inundated. The Island would lose the primary water supply and the water flow would cover I-90, the main transportation corridor.

The City of Mercer Island applied for and was granted funding through the Hazard Mitigation Grant Program (HMGP) for seismic restraints and structural improvements of the reservoirs and pump station. The pump station pressurizes all the water through a system of pipes to deliver it to the upper end of the island. Because of this critical function, an automatic generator was installed and large pieces of equipment and cabinets were bracketed to the walls. The pump station was also completely structurally retrofitted. The project was completed in March 2000.

On February 28, 2001, a 6.8 magnitude earthquake struck the Puget Sound Region. Mercer Island sustained a great deal of shaking. Those located close to the reservoirs during the earthquake say that the water in the reservoirs "sloshed for an hour." The water tanks "rode" through the earthquake with minimal to no damage and performed the way the retrofit was designed. Power went out throughout the island but the automatic generator came on maintained the function of the pumps. Overall, the power was out for over six hours. Subsequent engineering inspection has determined that there is no threat of collapse. The timely mitigation project eliminated danger to the homes and structures as well as protecting the water supply. Minimally, the project saved over \$9 million in home replacement costs.



King County,
Washington



Quick Facts

Sector:

Public

Cost:

\$1,386,281.00 (Actual)

Primary Activity/Project:

Retrofitting, Structural

Primary Funding:

Hazard Mitigation Grant Program (HMGP)