A SEISMIC ASSESSMENT OF AN EXISTING WATER TREATMENT PLANT AND AN EXISTING WASTE WATER RECLAMATION PLANT, SALT LAKE CITY, UTAH

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Salt Lake City, Utah, is located in the intermountain seismic belt and has known faults running through the city. The most notable of these faults is the Wasatch Fault. This normal fault has created the Wasatch Mountain range which runs along the eastern edge of the Salt Lake valley. The fault is segmented and runs in a north-south direction for two thirds of the length of the state. Figure 1 shows the identified faults in the Salt Lake area. Geologic trenching studies have revealed that periodically the Salt Lake segment will move up to 15 feet of vertical displacement per event. The recurrence interval for the Salt Lake City segment is in the range of 1,000 to 3,000 years, whereas the recurrence interval for the fault as a whole is in the range of 400 years. The Wasatch Fault and other known faults represent a significant seismic hazard that Salt Lake City has recognized. Figure 2 contains a descriptive summary of the soils in the general location of the site.

As part of a study to assess the seismic vulnerability of the city facilities that have been determined to be essential, the main culinary water treatment plan and the main waste water treatment plant have been evaluated. "Essential" facilities are "those structures or buildings which must be safe and usable for emergency purposes after an earthquake in order to preserve the health and safety of the general public" (International Conference of Building Officials, 1985). This paper is a summary of the findings of a portion of the overall study.

WATER RECLAMATION PLANT

The water reclamation plant for Salt Lake City was designed in 1960 and various small structures have been incorporated into the plant during the intervening years. The plant treats approximately 40 million gallons of waste water on an average day and produces over 4,000 dry tons of solids for disposal each year. The plant was evaluated for its existing seismic vulnerability. There are 35 various types of structures at the plant that were evaluated. These have been numbered as shown in Figures 3 and 4. Each of these 35 structures is a distinct structure or of a distinct structure type. The structures are listed in Table 1, which contains a summary of the structural system of each facility.