

[DFIC] The Great Granite Dam Failure of 1900: The Story of the Early Years of Austin, Texas

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In the 1880s, the City of Austin was a sleepy, flood-prone town of 15,000 located along the Colorado River. City leaders yearned for a way to harness the potential of the river and create an industrial boom. In the early 1890s, the City gambled its future on such a project, a 60-foot-high, 1,200-foot long hydroelectric masonry dam across the river, one of the largest infrastructure projects of its kind ever constructed. Construction of this symbolic structure, which was made up of the same granite used to construct the nearby State Capitol building, was not without significant challenges, ranging from major design modifications to significant flooding to critical geologic issues along the dam foundation. Despite these challenges, construction of the dam was completed on May 4, 1893, and Lake MacDonald was formed. The City believed abundant growth was now imminent. However, the hydroelectric operations struggled from the beginning. Miscalculations about base flows in the river were significant. For multiple seasons, lake levels remained well below normal and lake storage was also quickly reduced by sediment accumulation. By 1898, these factors resulted in limited recreational use and a hydroelectric operation that could not support the industry the City so desperately desired and needed for growth. Within only a few years after construction, the dam was viewed as a failure. On a fateful day in April 1900, that sentiment would become a reality. Between April 5 and 7, the Austin area received over 17 inches of rain in 48 hours. In a matter of 10 hours on Saturday, April 7, river levels rose over 40 feet cresting at 11 feet over the dam's spillway. Crowds hurried to watch the torrid river. As they gathered, they heard a loud noise and watched a large section of the dam slide downstream. The resulting massive wall of water destroyed the powerhouse and inundated downstream areas. Very few warnings were provided and the resulting flood killed at least three dozen citizens. Austin was immediately devastated and took years to recover from this tragedy, the lessons of which helped mold the thriving city we know today. This presentation will explore the history of Austin Dam, from its inception through its failure and the City's subsequent recovery efforts. Focus will be paid to the factors contributing to the failure, both human and technical, and how we as the dam safety community can learn from this now 120-year old event.