# Headwaters: The Early History of Austin's Water and Electric Utilities

In our technologically advanced and complicated times, there is a tendency for people to long for the simplicity of a bygone era. While there is much to admire in the fortitude and hard work of people living in past generations, this nostalgia will only get you so far. It frequently overlooks the extreme conditions and physical exhaustion inhabitants of those times endured.

Take water for instance. Each gallon weighs over 8 pounds. Imagine drawing 50 gallons up from a well 50 feet deep, then walking it back to a farmhouse 100 yards away with heavy containers draped over your (bent) shoulders, just so you can take a bath. If it is too cold, you will also have to cut wood so you can heat it first. You won't be able to pursue either of these onerous tasks at night very easily, as the only meager light might be from a smokey, hard-to-control lamp fueled with kerosene, or in an even earlier era, whale or plant oil.

Austin's municipal water and electric utilities have been in existence since 1895. Today, about 2,700 employees at these institutions provide service for almost a million people.[1] The water system provides about 50 billion gallons annually through 3,674 miles of water mains, enough to wash 1.5 billion pounds of clothes, supply almost 7 billion gallons of hot water, flush 618,000 household toilets a total of 1.7 billion times, fill 31,000 swimming pools, supply 34,000 fire hydrants, and irrigate as much as 144 square miles of turf and landscape.[2]

The electric system supplies almost 13 billion kilowatt hours of electricity through 9,000 miles of power lines, enough to light, cool, and partially heat 31 square miles of enclosed buildings.[3] The air conditioning these buildings use during the summer is equivalent to 1.6 million tons of ice per day. The power supplies over 678,000 computers and 27 million light bulbs and lamps.

Most of us take these resources for granted. Some have never even looked up to think about how things were ever different. This story is an attempt to understand the early history of how Austin's water and electric systems were developed. Austin would have never been able to support anything remotely close to its current population without these utility systems, nor would its economy be what it is today without water and power for its industries.

## The Ghost of Noah Cross

During this story's research, I regularly reflected on the classic 1974 movie "Chinatown." The drama was loosely based on the real story of how the power structure of Los Angeles stole agricultural water from the Owens Valley to ensure supply for increasing population growth. In one of the classic Good vs. Evil dialogues of American cinema, Jake Gittes, a private detective played by Jack Nicholson, confronts the mastermind behind the water theft, Noah Cross. Cross, a rich man "capable of anything" including murder and rape, is played by John Huston.

John Dolley

*Jack Nicholson and John Huston face off in the classic movie about water in American cities – "Chinatown"*

Jake Gittes: How much are you worth?
Noah Cross: I have no idea. How much do you want?
Jake Gittes: I just wanna know what you're worth. More than 10 million?
Noah Cross: Oh my, yes!
Jake Gittes: Why are you doing it? How much better can you eat?! What could you buy that you can't already *afford*?!
Noah Cross: The future, Mr. Gittes! The future.

The history of Austin's utilities is quite colorful. It includes a street-fight between two City Council Members that resulted in a murder charge; one of the first large hydroelectric projects in the country, and a struggle against a utility monopoly accused of strangling the city's future. Austin is not the only major city with a story to tell. However, this is where we live, and it is a compelling example with which to view both human nature and the growth of American cities in general.

## A Frontier Town

The contrast between Austin's wealth and infrastructure in the first part of the 21st century and its origins is as wide as the Colorado at flood stage. Shortly after its founding in 1839, only 856 people lived in the city.[1] It was a tiny town with dirt streets, no water or sewer system, and no electricity. Indians were seen on its outskirts. Bear and bison inhabited the countryside surrounding it. It was common for men to carry unconcealed guns for protection. By 1882, when gunfighter Ben Thompson served as its marshal, Austin's population had grown to only 11,000.

Prior to 1886, the only lighting not created by candles and oil lamps was from a primitive gas-light utility that gasified lignite coal and pine knots to run through buried pipes, and hitching horses to gas street lamps was prohibited.

Water was supplied from rainwater and onsite wells, or hauled in wagons up from the river in barrels. Hauled water and rainwater were generally used for drinking because well water had a higher lime content. One of the earlier water delivery mechanisms was a "travois," a wood-frame in a triangle shape used for horse hauling, similar to the way Plains Indians hauled their possessions. It was nicknamed 'The Austin Lizard," with barrels going for 25¢.

Hauling was common until water supply infrastructure began in the 1870s. Wells were still in widespread use into the 20th century, with as many as 500 in use as late as 1913.

Most of these onsite wells in Austin east of the Balcones escarpment (and its hard bedrock) were shallow, generally no more than 35 feet deep. Well creation in rocky areas used explosives. These charges were rather primitive before the advent of dynamite in 1866. They were generally made from gunpowder and employed powder fuses for ignition. Because of this, they were hard to control, sometimes exploded prematurely, and made well drilling a hazardous profession.

These wells did not go away after they were abandoned. Some were the cause of accidents when children and pets unwarily fell into them. Others, such as the deep wells at the State Capitol, were archeological curiosities when they were observed near buildings or excavated by happenstance.

Austin's first successful deep artesian well was at the first State Capitol Building, where work took place between 1858 and 1861. It first employed horses and then steam power for the boring. Mineral water was struck at a depth of 323 feet. It had a saline taste and a sulfur smell. Attempts were made to drill deeper, but this was stymied at 1,160 feet when the drilling rods became lodged.

The first Capitol Building burned in 1881, and the new building was built over the well, which had long since fallen into disrepair and disuse. However, in 1890 two new artesian wells were drilled next to each other in front of the new building. The second reached a depth of 1,554 feet and had a flow of 60 gallons per minute (the flow of 5 modern homes). The water had saline and sulfur characteristics similar to the original well.

Other artesian well sites included the Austin State Hospital (two wells drilled in 1897 and 1899); the Driskill Hotel (1900); the Austin Natatorium (1898, near 5th Street and San Jacinto); St. Edwards University (1893); the Norwood House (1929, near Riverside and IH-35, now the site of Norwood Park); and Stacy Pool (1932, in the Travis Heights neighborhood). The Stacy Pool well is still in use. Water from several of these deep wells carried a temperature of 100° F or warmer. The wells from Norwood, Stacy, and the Capitol provided emergency drinking water when floods temporarily knocked out Austin's water system in the 1930s.

*Replica of one of the cast-iron fountains supplying water from 19th century wells drilled at the state Capitol*

Sewage was handled though cesspools and outhouses. Given their proximity to water wells, groundwater contamination was a frequent occurrence, and their noxious odors were a nuisance.

As Austin grew and densified, its citizens wanted a reliable source of clean water not subject to the floods and droughts typical of the local climate.

Public health advocates were also concerned about the lack of water for sanitary sewers. As late as 1917, Austin's death rate from typhoid fever, a disease spread through contaminated water, was 250% higher than the national average. Advocates for Austin's growth were also clamoring for sewers; they were concerned that this lack of infrastructure did not fit the image of a modern city.

## Austin's Private Water Utility

A huge amount of Austin's property was owned by state government (and after 1883, the University of Texas), so it was exempt from property taxes. There was also a dearth of major industry in the city that could supply jobs and whose taxes could support government services.

Austin had to balance its desire for water and wastewater with its tenuous economic conditions. Since it could not initially afford to build its own water and wastewater infrastructure, it granted the privilege to private companies.

The City Water Company, owned by principals outside of Austin, was chartered in 1875 and placed in operation in 1876. It was granted a 25-year franchise in 1877. In 1882, City Water Company diversified to provide electric lighting as well. Its first efforts provided power for 1,600 lights, primarily for residences. The company expanded its role to street lighting and electricity for motor power in 1887, which would largely curtail further expansion of gas street lamps in Austin. There were other small competing electric utilities that tried to establish themselves, but by 1888, the (renamed) Austin Water, Light and Power Company was the town's main provider of water and electricity.

At about this point, a long and bitter struggle began between "the Water Company," as it came to be known, and the people of Austin. This would last most of the next generation.

## Nalle

No history of utility development in Austin can ignore the influence of Joseph Nalle. He was one of the wealthiest, most opinionated, and most contentious figures of Austin's late 19th century development.

Born in Virginia in 1843, Nalle was a captain in the Confederate Army before moving to Austin in 1869. He worked for a local lumber dealer before establishing his own lumberyard no later than 1877. It was about this time that he was elected as an Alderman of the Austin City Council.

This author has participated in Austin politics for over 35 years. I have seen a lot of controversial issues and a lot of angry people. Some of them had strong egos, wills, and convictions. In the heat of emotions, at certain times, some of them might have loosely been described as mad enough to kill. But let it be said that Joseph Nalle was one of the only Austin elected officials to have ever done so.

It was late on the morning of March 13, 1878 that Nalle and another Alderman, Thomas Markley, were in the editorial room of the newspaper office of the *Daily Democratic Statesman*. They fell into a heated argument about funding of a public market, which Nalle supported and Markley opposed. According to slightly varying accounts of witnesses quoted in the *Statesman*, the following is a close representation of conversations and events that occurred.

The two men were seated 3 feet across a desk from each other when Markley angrily accused Nalle of conspiring with the Mayor "to get that $10,000 out of the City." Nalle denied it.

Markley continued "You know you have and I can prove it. You have attempted to get this up for the purpose of robbing the people of this city!"

Nalle replied "That's a damn lie!" and threw an inkstand at Markley, then a pair of eight-inch long shears. He started to pick up a chair when he was pushed back by a bystander to prevent further mayhem.

At this point, another "pro-market" Alderman, Radcliff Platt, started agitating "Hit him! Kill him!" Platt attempted to attack Markley and apparently drew a small amount of blood, probably a scratch. Markley struck him back.

Both of them calmed down. Markley said he didn't want to fight Platt because he was an old man, but asked Nalle to go outside and "settle it." Nalle instead walked to another room in the building, probably encouraged by another bystander trying to keep the two apart.

As he was leaving, Markley warned "I will see you at another time or place."

Photo # PICB 10786, Austin History Center, Austin Public Library

*Austin Mayor Joseph Nalle*

Nalle retorted "You can see me at any time." After the confrontation, Nalle was heard comparing his fellow Alderman to a bull terrier.

Markley made amends with Platt, and they shook hands before parting.

About 2 o'clock the same day, Nalle was headed back to the *Statesman* office to check on the printing status of the public market ordinance that he had argued with Markley about earlier. (The *Statesman* was the printer for City government.) On the way there, he saw Markley in front of Frank and Jule's Palace Saloon (at the present day location of the east side of the 600 block of Congress Avenue) with two other men. Markley observed Nalle approaching him.

Markley dared, "Are you as good a man as you was a while ago?"

Nalle answered, "I am." Then Markley reportedly threw his hands around Nalle's shoulders, and they began struggling. The fight lasted no longer than a minute, during which Nalle pulled a knife from his waistband and stabbed Markley near the heart three times, twisting and pushing it for lethal effect. (Witnesses described it as a dirk knife [short dagger] or Bowie knife.)

Markley staggered into the saloon and fell on his back, with a man holding Markley's head attempting to comfort him as he died. Nalle wiped the blood on his knife on his

pant's leg and inserted it back in its sheath.

Immediately after the altercation, Nalle coolly walked to the marshal's office to turn himself in, stopping to have a conversation with the Mayor who he ran into on the way. Nalle told the marshal he was defending himself against a stronger and heavier man.

After considerable testimony in a preliminary investigation over the course of about 2 weeks, Nalle was arraigned for the death of Markley, spending just one night incarcerated before he was released on bail.

The swiftness of Texas frontier justice in the 19th century was legendary. An accused man could be tried and hung in a week. But Nalle had the money for the best lawyers, who delayed the trial almost 2 years, and obtained a change of venue to Georgetown, north of Austin. The trial was heard on January 20, 1880, after Nalle's lawyers failed to gain yet another continuance. Nalle's claim of self-defense vindicated him in a jury decision made public the following day.

Nalle unsuccessfully ran for Mayor in 1884, but succeeded when he ran again in 1887. His main opponent was, curiously, one of the witnesses of the street fight, though this did not become a campaign issue.

From the beginning of his tenure as Mayor, his proposals and opinions were mired in controversy. At his first Council meeting, Nalle tried to get a friend already serving as Secretary to the Mayor appointed as City Clerk. The Council rejected it. Nalle tried to change the City printer to the company owned by the same friend that the Council rejected for Clerk. The Council rejected it. Later in his term, the Council rejected his chosen slate of election judges.

Nalle became entangled in a dispute with the school board when he wanted land designated for a school site to be used as a military base. He even traveled to Vermont at his own expense to convince the army to create this base. Again, he was unsuccessful. Nor was this his only dispute with the school board. He wanted school revenues to be dispensed by City government because he did not consider the board competent to administer its own finances, a policy they did not take well to. Nalle also pressed hard to have a bond election for city improvements, but fell 1 vote short of the two-thirds of Aldermen necessary to set this public vote.

The biggest issue of his tenure as Mayor, however, was the building of the Austin dam that was proposed to provide potable water and electricity to the city.

## The Big Gamble

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The Water Company was fast gaining a reputation for price gouging and unreliable service. To begin with, a large portion of City revenues was being spent on water, electricity, and hydrant and lighting rentals (as much as 1/7 of the 1886 budget). There was resentment since this money could be spent on desperately needed City infrastructure and services. Moreover, Austin was a poor city, and its leaders desired industries that would create wealth and employment. But the Company would not lower its rates to attract that kind of development.

The Water Company had also been criticized for providing "muddy and filthy water." During times of drought or equipment failure, this water was provided under low pressure, and in some cases, there was no water at all.

The possibility of hydropower for Austin had been discussed as early as 1839 when a commission appointed by the President of Texas, Mirabeau B. Lamar, recommended Austin as the site of the new nation's capital. A Charter had actually been granted by the City to build a dam in 1871, but the project was never attempted. The local recession created after completion of the new Capitol building in 1888, and the desire for Austin to determine its own destiny, created momentum.

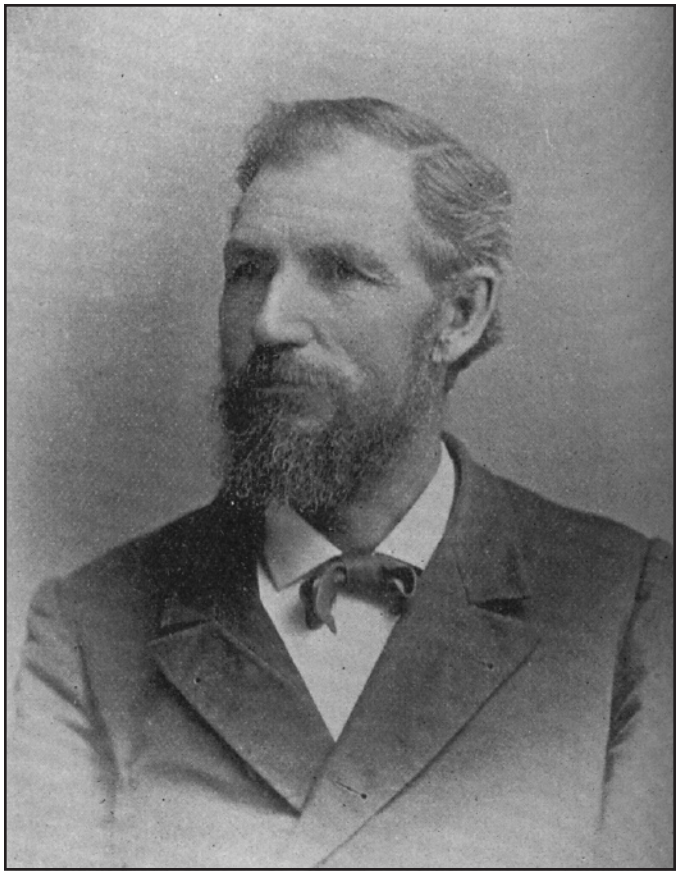
In 1890, building a dam that would provide an independent supply of lower cost water and electricity was the issue of the day. As importantly, it was seen as a path to prosperity: bring low-cost power to Austin, and Austin will have industry, and industry will provide employment, a larger tax base, more and better City services, and an improved standard of living.

Nalle was something of a fiscal conservative. He believed the dam to be an extravagance. Austin's power structure united around Nalle's mayoral opponent, John McDonald, in the 1890 election. McDonald had helped direct a study on the dam's potential funded by the city's Board of Trade (Chamber of Commerce) 2 years earlier. It did not hurt McDonald's chance for victory that the *Statesman's* President, Alexander Wooldridge, was one of the dam's biggest champions. Nalle was swept out of office.

Very quickly after taking the reins, the new Mayor and Council prepared to build the dam. They hired engineers to do formal assessments. Their reports were embellished with expectations of a huge new lake that would add beauty to the City, independence from the Water Company, and prodigious amounts of low-cost power to make Austin an industrial city. A Board of Public Works was created to supervise construction, and a bond issue of $1.4 million was approved by a vote of 1,354 to 50 on May 5, 1890. Construction planning began shortly afterwards.

Before the election, Austin's entire bond debt was only $125,000. For such a small population with so little relative wealth, it was a "you bet your city" gamble.

For the duration of the decade, and considerable time after the start of the 20th century, all other municipal ambitions and services were ignored or underfunded. Austin did not have a single paved street until 1906. Its existing



Courtesy of Texas State Library and Archives Commission

*Austin Mayor John McDonald*

dirt streets had no storm drains. They were dusty when it was dry and muddy when it rained. Some of them had holes and needed maintenance, but there was scant funding because of the dam. More police were needed. This too had to wait for the dam. More fire protection and public health also had to wait…because of the dam.

And Nalle? Shortly after his defeat, he joined the Water Company. Within a year, he was serving as its President.

## The Beginning of a Dream

The dam itself progressed quickly. Built just northwest of the current intersection of Lake Austin Blvd. and Red Bud Trail, the artificial lake created by it stretched 22 miles.

Given the small size of Austin at that time, construction required a special railroad to deliver materials to the site. The dam was built on land partially donated by Austin financier George Brackenridge. He had expected to be granted the railroad franchise in return. However, the project became problematic because of landowner protests along the route. He abandoned the effort, and the City stepped in to finance the railroad as well. This overrun was justified by the condition that the City would sell or lease the railroad when the opportunity arose.

The dam construction began on May 5, 1891, a year to the day after the bond election, and completed on May 2, 1893. Upon completion, it was 1,100 feet long and 60 feet high. It was neither the longest or tallest dam in the world, but it was believed to be the first dam located in a river prone to such violent floods. It was also considered the second largest hydroelectricity plant in the country at the time the generators began operation.

Construction of the powerhouse, and water and electric distribution systems, began in 1894, but due to the City's limited finances, if a water main was not in the proximity of the customer, connections would be expensive. In these situations, the Water Company's rates would actually be lower than the City's. So in July, voters approved an additional $200,000 in bonds to extend the water and light system, again by a huge margin, 1,219 to 115.

The City also built 31 streetlamps that were 165-feet tall powered by the system; 15 of these "moonlight towers" still exist and are recognized in the National Register of Historic Places. (These are the only examples of this type of lighting system in the world that are still operating.) The company that provided this system was partially compensated by granting them ownership of the railroad that delivered construction materials.

The City established electric and water rates in early 1895. The charges did not contain a profit from the utility, and large industrial customers were given lower rates as an incentive to locate in Austin.

When water began flowing through the dam on March 7, 1895, it would be hard to describe how giddy Austin citizens were. Though the City had begun using the utility system in May, it was officially dedicated on July 4, complete with fireworks and ceremony. As part of the opening festivities, a week of performances of the comic opera "Pinafore" was performed aboard two party boats on the new lake that would be employed for pleasure cruises. One of these was the "Ben Hur," a 188-foot long steamboat that carried 200-500 people, owned by Mayor McDonald's son. One hundred Austinites volunteered to sing the opera for the entertainment of the attendees of the celebration, including the wife of O. Henry (Sidney Porter), one of Austin's most famous writers.

Another event included in the ceremonies was an international regatta of scull racing. A reputed world champion was ordained at the contest.

O. Henry captured the lightheartedness of the times with a satire he wrote for his publication *Rolling Stone* comparing the rates for the Water Company and the City.

**Old Water Company Prices**

House with green blinds, per year ..... $ 30.00
House containing 7 children using salt mackerel .... 90.00
Three-story rock building with 17 hydrants, (owned by capitalist who voted against the dam), per year ..... 00.00
Two-room framed cottage, no hydrant, hauling water from river in wagon, owned by man employed on dam, per bucketful ..... 1.75
City Councilman's house, with roan horse and four toddy's per day, per year ..... 2000.00
Home of gentleman owning dam bonds, one hydrant, per fluid ounce ..... 100.00

**City prices**

House with 27 rooms, 1 hydrant, per year..... 3.00
House with 1 room, 27 hydrants, per year..... 3.00

The Lake became known as Lake McDonald, in honor of the Mayor who championed it, and the dam was alternately known as McDonald Dam and Granite Dam. At that time, this was the first major man-made lake in Texas. (All but part of one of the 188 major lakes in Texas are artificial, and these man-made lakes were all created after the 20th century began.)

A picnic and recreation area developed around the lake, made accessible by the railroad. Resorts were created for what became a tourism industry. People would travel as far as 100 miles by rail for recreation and water sport. An annual sailing event was held, which gained national attention.

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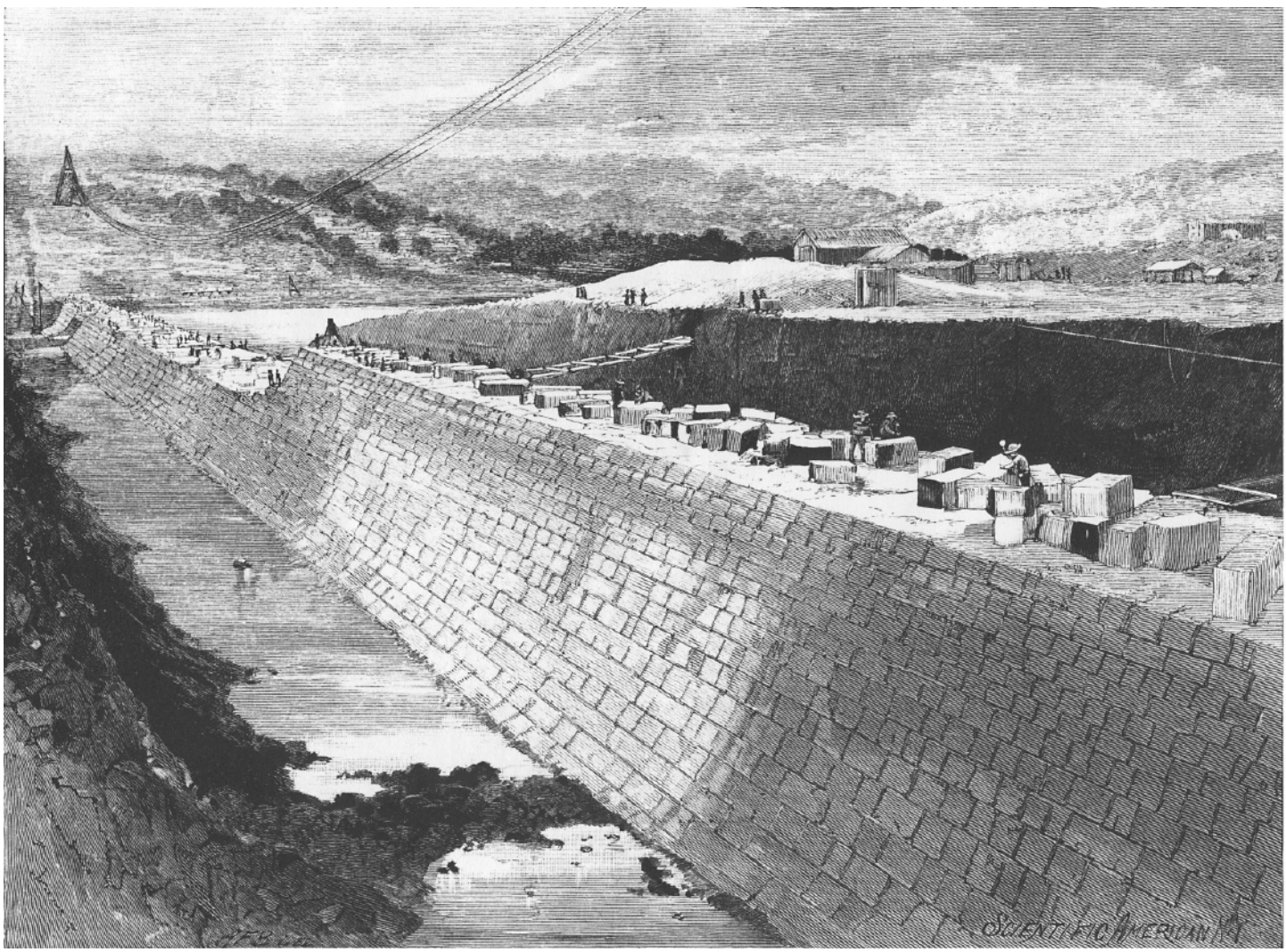
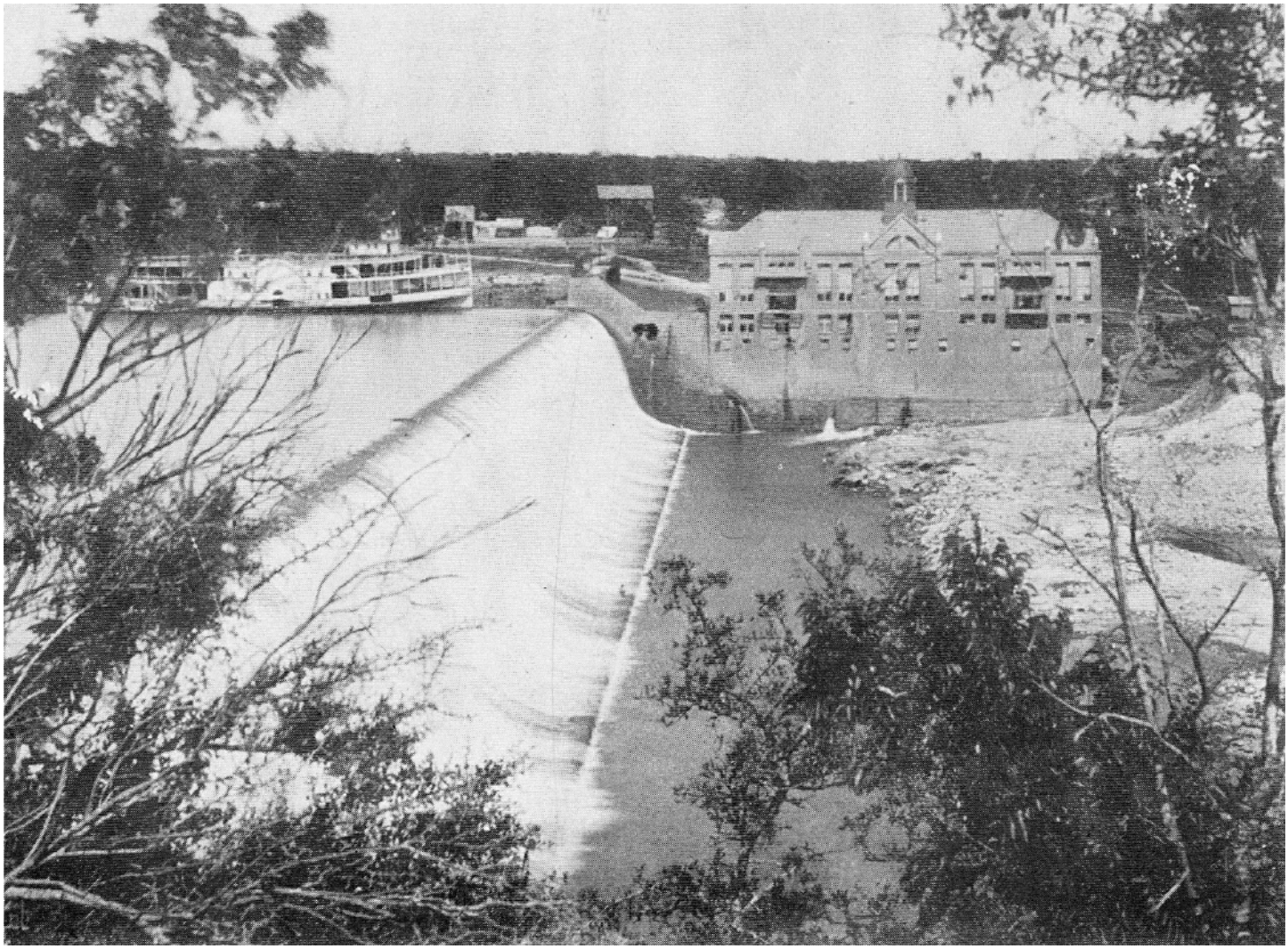
One might expect that the construction and completion of the new system would mark a new era in Austin, and a turning point in the City's history. However, the utilities and the City were visited by a host of challenges, from the Water Company, to technical problems with the dam and water system, to infighting within the City itself.

## Nalle vs. the City of Austin "A trespasser in our streets"

During construction planning in 1890, dissatisfaction with the Water Company intensified. The City commissioned a university professor to test electric lighting and found the current to be weak. The City agitated for a commensurate reduction in prices. Private businesses joined




*Austin Dam Under Construction – Cover of Scientific American, September 24, 1892*



*Water Flowing over McDonald Dam as seen from west bank of Colorado River with powerhouse and "Ben Hur" pleasure boat on far end.*

the complaint. Nalle refused. The City in turn called for purchase of the company, and offers were tendered. Nalle and the directors would not accept. In this confrontation, the City blinked. It was up against a monopoly, so high prices for poor power quality were tolerated while the City impatiently waited for the dam's completion.

Problems erupted again in 1893. During the summer of that year, the City reviewed a report of the business practices of the Water Company, and found them wanting: too much money for poor service. The Council declared they would rather let the lights go out than pay exorbitant fees. On July 3, the Council determined that they would only pay the company based on reduced levels of service. It hired legal counsel to prosecute the Water Company in state and federal court.

Six days later, the Council contracted for 50 gas streetlights to replace electric lights supplied by the Water Company to both save money and increase economic pressure on its rival.

Later in July, the Council attempted to determine the location of the Company's water mains so the City could begin to plan for its own water distribution system. The Company refused to assist.

The Water Company defended itself by pointing to its high costs of production. Whether or not this was true, the company went into receivership after payments were curtailed. In August it shut down electric production, and Austin was left almost completely without power.

Nalle and the Water Company retaliated against the loss of funding and threats to their future business by decrying Austin's dam bonds as financially unsound to their potential buyers, even filing a lawsuit to this effect. Though the Texas Supreme Court and U.S. District Court of Appeals confirmed the validity of the bonds, the Company threatened and filed other suits.

Though this particular suit was lost on its merits, the Water Company's disparagement of the City's bonds had its effect. Bonds representing 66% of the utility's financing were sold below par because of lender concerns.

Nor were they all sold in a timely manner. In the summer of 1893, with considerable work still needed to complete the utility system, the City had trouble selling bonds because

they were considered high-risk investments, and work would have been suspended if it were not for a local bank that advanced money without interest to meet payroll.

Mayor McDonald decried the Water Company as being at the root of Austin's major problems: "these enemies of our city are responsible for the delay in finishing our works. They are responsible for the stagnation of business in our city. They are responsible for the number of men in our city out of employment….Such [legal] threats are made for the purpose of preventing the sale of the remainder of our bonds if possible, and to continue as long as possible the grinding monopoly of which Mr. Nalle is the head, and that has been bleeding us for so long." McDonald labeled the Company "a trespasser in our streets," alluding to its out-of-city owners.

The struggle between these two institutions became a staple of Austin life. Local elected officials were often judged on their positions of how they would provide, or repair, the public utility. One of the worst charges that could be leveled against an opposing candidate in a Council election was that they were working on behalf of the Company.

Between 1893 and 1901, the Company filed numerous lawsuits against the City. Two of them went all the way to the U.S. Supreme Court.

• In 1893, Nalle filed another suit to have pre-1890 bonds declared illegal, even though he authorized interest payments on them while he was serving as Mayor.

• Beginning in 1894 and extending to 1900, the Company filed a number of causes against the City for non-payment on hydrants, lights, and water furnished. The Company contended that the City was legally required by contract to purchase hydrants and other utility services whether or not they were used (a condition frequently referred to as "take or pay"). Most of the judgments went against the City, either in the court of origin or on appeal. However, the City took inordinate amounts of time to comply.

Judgments for the time period between 1893 and 1895 were not paid by 1897. An 1896 judgment was not paid until 1898-99. In November 1901, the U.S. Supreme Court finally ruled on the matter, awarding the Company a judgment against the City for hydrant rentals in 1899 and 1900.

• In January 1898, a major stockholder of the Company, Penn Mutual Life Insurance Company, lost its case before the U.S. Supreme Court to prevent the City from operating its water works.

• In January 1899, the Company filed a lawsuit against the City for $550,000, stating the City should have purchased its plant at the same time it was developing its own system. While the suit failed, the Court ordered the City to pay for past judgments against it for nonpayment of services between 1896 and 1898.

## The Austin Dam vs. City of Austin

The dam was completed on May 2, 1893. Unlike most modern large dams, it did not have floodgates. Under high water conditions, water overflowed in a graceful arc over the crest, which was first observed on May 15th.

It was thought by Austin's leaders and most of its citizens to be one of the most technically advanced of its time. However, lack of sound engineering, combined with a relative lack of experience that industrial countries had with dams in general at the end of the 19th century, created a host of problems that began almost immediately.

By May 30, 1893, water worked its way around the east end of the dam, separating part of the east gate masonry as the east bank began to settle. By August, more head gate masonry was washed away. The leak eventually wrecked the powerhouse foundation about 150 feet downstream, and caused an overrun of $97,000 for repair work.

The powerhouse repair went so poorly that the chosen contractor abandoned the project, and the second contractor did not complete the work until October of 1894.

There were constant leaks in the masonry and brick, which caused service outages while they were repaired, and increased maintenance expenses.

For weeks on end, Austin was without water due to low lake levels or equipment and pipeline problems. A similar situation occurred with the hydroelectricity since there was no back-up generation during droughts and low flows.

In the spring of 1899, a leak in the dam was discovered northwest of the powerhouse. Another leak was discovered in the fall. Repairs were attempted, but in December 1899, the powerhouse foundation began to sink. When the area was excavated, it was discovered that two of the penstocks that conveyed water to the powerhouse were damaged. When they eventually buckled, they gushed huge amounts of water. In February 1900, another minor break occurred.

In addition to leaks, there was massive siltation. Between 1893 and 1900, 48% of the lake volume had filled with mud that had collected because the dam prevented it from being carried downstream. Though all dams are to one degree or another affected by silt, this massive accumulation in such a small amount of time is rare.

Lake McDonald held about 4% of the storage of the Highland Lakes reservoirs upstream of Austin that were built in the 1930s and 40s, 2% if you consider the siltation. It would not have served a large population even in the best case. The silt decreased the storage of lake water, the amount of power that could be produced with it, and the amount of potable water that could be processed and distributed with the power.

## The City of Austin vs. City of Austin

Some of the dam's technical problems have been attributed to the Board of Public Works' interference with the experts in charge of the construction and design. At least two of the project's chief engineers were compelled to resign within a year of each other because of conflicts with the Board. Joseph Frizell had originally wanted the dam to be built 2 miles upstream on what he considered more stable ground. The Board overruled him. He later resigned in June 1892 because of conflicts over the design of the dam and powerhouse.

The engineer who succeeded him, E.W. Groves, resigned in June of the following year because of interference by the Board, after both the Resident (subordinant) Engineer and the Contractor were ordered to follow instructions of Mayor McDonald over Groves.

McDonald claimed Groves was culpable for "the unsatisfactory, expensive, and dilatory manner in which the work was progressing." However, Groves claimed his ouster was the result of a dispute with the Mayor over how to repair the 1893 leak at the dam. He labeled McDonald "angry and insulting" because Groves wanted to lower lake levels to repair the leak, which he suspected would hurt McDonald's leisure boat business.

The dam was not the only problem with the City's new system. Parts of the delivery infrastructure were poorly designed. Water prices and city customs encouraged water waste. And the system, in general, was not living up to the grand expectations people anticipated when they voted to fund the utilities.

In May 1896, the City hired a consultant, Allen Hazen, to prepare an extensive report on the water supply system. He recommended a covered reservoir to provide additional storage in times of drought and equipment failure. The report also hinted that the water lines that had been installed were too narrow for the demand.

Since Austin had dirt streets, and water was now lower in cost for City of Austin customers, there was an increase in citizens watering the streets for dust suppression. In 1896, the Superintendent of utilities recommended a 20% rate increase so that repairs and construction could occur more quickly. He also recommended the installation of water meters in order to base fees on consumption, which to some customers was outrageous. When these rates were implemented, they angered Austin business leaders who wanted cheap utilities to attract industries.

Late that year, Lewis Hancock, the Mayor who succeeded McDonald, acknowledged that the water and electric utilities were operating poorly. The water system could not meet a peak demand of even 1 million gallons a day (less than half of 1% of Austin's all-time historic high in 2001). Water was frequently unfit for consumption because of mud caused by river rises. The electric system lacked sufficient power and distribution capacity, and the system was not lowering taxes as promised.

By 1898, the utilities' poor record was evoking cynicism. Austinites began calling the water utility the "city dew plant." Disparaging comparisons of the City system to the Water Company became common.

By 1899, insurance companies were threatening to raise rates because of the sporadic nature of water supplies. If the dam was low due to drought, people could literally go without utility services, and even fire protection, for weeks at a time.

In 1899, the *Austin Daily Statesman* caustically criticized many of the utility's costs as "useless experiments and the purchase of unsuitable equipment." In 1900, the paper sarcastically stated that the dam "would make an excellent tank on a ranch of proper area."

Another Austin newspaper, the *Texas State Democrat*, remembered the unfulfilled fantasy that was predicted when the lake was created, the vision of summer cottages lining the shores.

The City Council felt unqualified to manage the technical aspects of the utilities. To resolve this, the City Charter was changed in February of 1897 to create a Water and Light Commission as an elected body, with sovereign governing powers over the utilities. This arrangement, however, developed its own set of conflicts.

In November 1899, at the request of citizens, a Council-appointed committee was created to study improvements to the utility system, including the purchase of the Water Company, and an auxiliary steam plant to supplement the dam during periods of low water. However, the Commission would not cooperate.

More important was the City Council's refusal to make payments on the utility's debt. To explain, the utility had originally been proposed as a self-sufficient enterprise where its revenues would cover its expenses. In fact, it had been conceived as a profit-making enterprise, in that revenues exceeding its costs would be transferred to the City's property-tax supported General Fund. However, due to low rates (kept low in part to compete with the private utility) the General Fund was actually subsidizing the utility. One observer at the time noted Austin's rates were only 25-50% of rates offered by the Water Company and those of other Texas cities.

On December 26, 1899, the City Council refused to approve a payment on the utility's debt by a 4-3 margin. The public was outraged. A mass meeting of 1,000 people convened on December 29 to oppose the Council decision. The sentiment from the meeting was that the Council action amounted to a default on Austin's bonds. Speakers included members of Austin's political and business elite.

While a group from this mass meeting met with Council the next day to express their deep concerns, it had little effect. The Council majority passed a small amount of money for debt payments, but it was a token of what was needed. The Council did not want Austin's already high tax rate to subsidize the utility, while the Commission did not want to raise utility rates. This impasse was even more controversial because of the recent proposal for the purchase of a steam plant, as more money could not be borrowed if the utility was delinquent on its current payments.

This confrontation led to the Commission's bizarre decision to sue the City Council for nonpayment in early 1900. However, before a jury trial could begin, the lawsuit was eclipsed by other events.

## The Dam vs. the Colorado River

The Texas Hill Country is one of the most flood-prone regions of the entire U.S. Its shallow soils quickly become saturated with the massive amounts of rain that sometimes fall in the area. Flash flooding of its creeks, rivers, and flood plains is a common occurrence. Moreover, the Colorado River basin upstream of Austin drains an area of about 37,000 square miles.

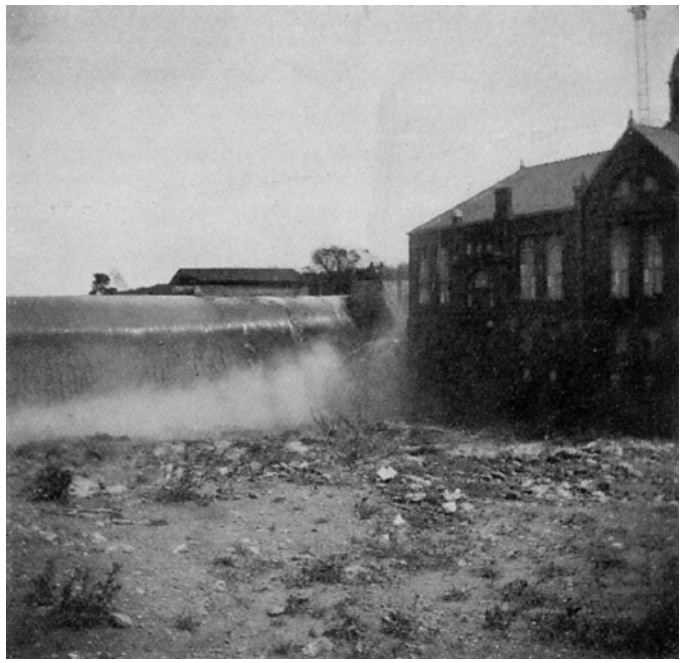
On April 6, 1900, a torrential rain began at about 1 PM that lasted until 4 AM the next morning. An estimated 5 inches of rain fell in and upstream of the Austin area. Some locations received 4 inches *in a single hour*. The downpour followed 2 weeks of fairly heavy rainfall, while rainfall in the preceding month had been 3 times the average.

On April 7, 1900, at about 11:20 AM, the water flowing over the crest had reached 11 feet above the 60-foot high structure, a record peak. About 500 awestruck onlookers on the shore and near the powerhouse were watching the roaring spectacle. Then one observer saw a 50-foot high spout spring up over the crest. Another heard a loud, dull thud. Another said they heard an explosion.

At that moment, a section of concrete and stone 38 feet thick, 75 feet high, and 500 feet long slid from the riverbed and was pushed downstream by a wall of water 70 feet deep and as wide as the river, which swelled as much as a mile wide at some places.

This piece moved in a virtual parallel position some 60 feet in front of the former line of the dam. To those unfamiliar with the structure, the position was so symmetrical that it could have been mistaken as intentional construction. The water crashed through the break with overwhelming force. To this day, large blocks of granite from the original dam can be found in the river downstream of Tom Miller Dam, which is located at the same site.

*"The commotion spread toward the east end of the dam and there was a trembling of earth. The mighty waters roared and plunged with an indescribable fury, and the river, which had a moment before presented a scene of graceful grandeur as it curved*



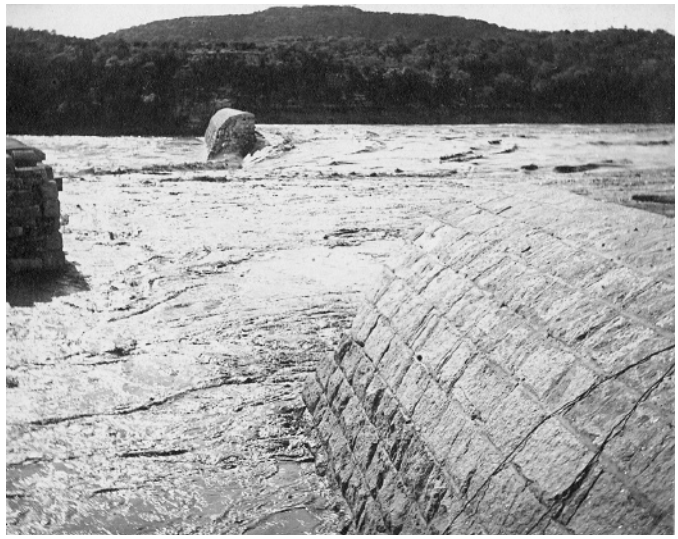
*over the dam was turned into a seething maelstrom…*

*Suddenly, above the dismal roar of the surging, raging waters, there came a cry "The dam is breaking, the dam is breaking." The sound of the cry was as dismal as that of the maelstrom and people shuddered and their blood seemed chilled, although the sun shone warmly from a cloudless sky…"*

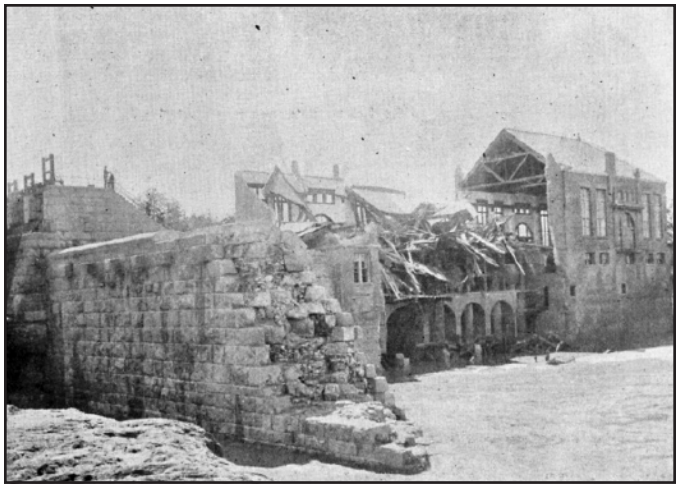
Witnesses described a roar that could be heard several miles away.

A 40-foot tall wave pounded the powerhouse on the east shore. The windows caved and the lower stories quickly flooded. Five workers along with 3 children inside were drowned. Two other workers miraculously and narrowly escaped by climbing through a belt hole in the dynamo room.

Eight men standing by the dam were swept away by the giant wave, rescued about a quarter mile down river.



*Breach of the Austin dam during 1900 flood*



Texas State Library and Archives Commission

*Wreck of the Powerhouse*

A man on horseback made a mad dash from the dam to warn the city and arrived 3 minutes ahead of the flood. The dazed residents barely had time to act before low-lying homes were inundated.

*People residing on the river in small huts came out of them like rats. Their homes were lifted by the torrent as if they were only a match….When the people standing on the bridge saw the water bearing down on them, hardly before they could utter a cry, it had already reached there. Within ten minutes we saw at least thirty houses passing by in the river. Everything imaginable was in the stream.*

The flood drowned 20 people, destroyed 100 homes, caused $1.4 million in damage (1900 dollars), and flooded much of downtown Austin. A Western Union telegraph operator sent emergency dispatches to downstream cities on the Colorado warning of the imminent danger, which likely saved numerous lives.

Within days, mass meetings were held to protest conditions in the city. Council delegated money to the poor, and borrowed firefighting equipment from Houston and San Antonio.

Later that month, railroad men set up disaster tourism excursions for visitors to see the wreckage, despite efforts from Austin leaders to discourage this.

Desperate for power and water, the City ordered a steam engine and boilers to power its water system. The Caswell Oil Mill also lent its steam facilities to the effort. Still, it took 5 weeks before the new equipment arrived and the City could provide even limited water service. For several weeks the Water Company was also out of service.

The City ordered more steam power for electric production, which began operation by September 1. A week later, there was enough power to operate electric streetcars again. It was not until early the next year that street lighting was restored.

In the summer of 1901, due to another drought and the tenuous status of the water system, secret inspectors patrolled the streets to cite water wasters; sprinklers were banned, and outside irrigation could only be performed with a hand-held hose. The situation was so severe that people were again forced to haul water from the river.

## Autopsy

The Austin History Center holds a report by Dr. Thomas Ulvan Taylor, the first Dean of Engineering at UT-Austin, detailing the history of the dam and many problems leading up to the dam break. Holding this document, printed over a century ago, seemed almost eerie. The paper was so old and brittle that I was afraid the pages might crack in my hand. It seemed to be a key part of unraveling the riddle of why the dam failed, and by extension, explaining one of the biggest lethal disasters, economic failures, and political epochs in the city's history.

While the report was in many respects technical, some passages were so wry and sarcastic that you could easily infer the author's chief purpose was to confer contempt for the way so many facets of the dam were left to chance.

There were several theories as to how and why the dam failed, and why the dam's performance had been so poor

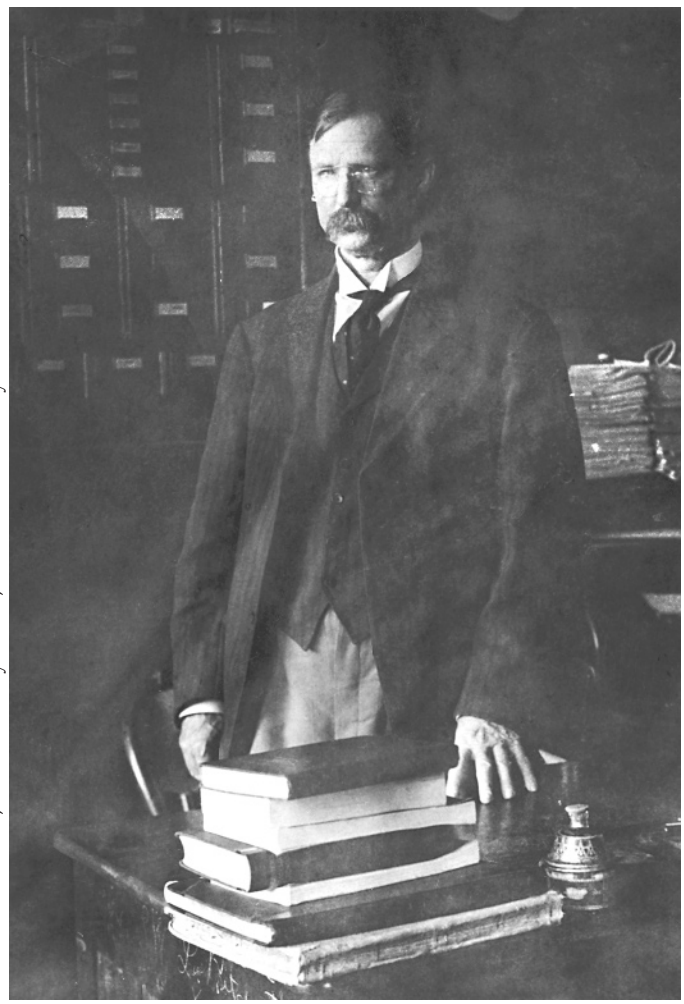


Photo # PICB 13475, Austin History Center, Austin Public Library

*Thomas Ulvan Taylor, first Dean of UT College of Engineering*

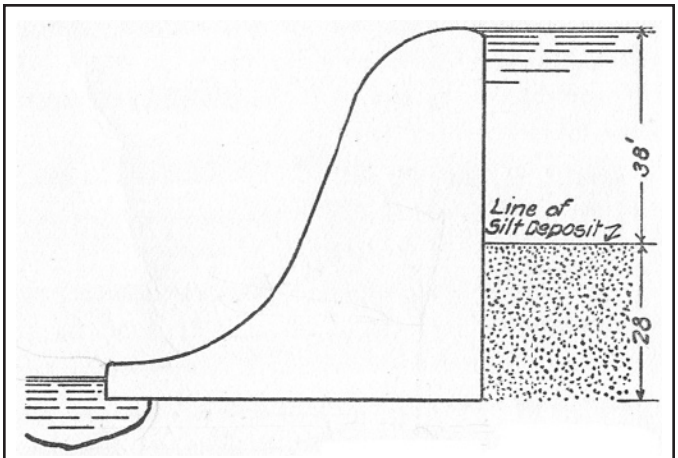


*Diagram from Taylor report showing supposed condition of undercutting and silt deposit prior to Austin dam break*

prior to its demise. Taylor attempted to include as many as seemed credible, sometimes quoting entire letters by the people who wrote them.

Poor Foundation – The most likely direct cause of failure was the lack of a solid foundation under the part of the dam that had moved. While hard bedrock sat under part of the dam on the west and east banks of the river, much of the riverbed had soft, friable limestone beneath it.

It had been noted that prior to the rupture, erosion had been observed underneath the toe of the dam, on the downstream side away from the two shores. This erosion's main cause was suspected from a kind of water-hammer effect as high water flowing over the dam wore away the soft limestone underneath the dam's foundation. This erosion was not repaired. The water under the toe of the dam actually acted as a kind of lubricant when the river was at flood stage to cause a portion of the dam to literally slide off the riverbed.

Joseph Frizell, the dam's original engineer, had intended to excavate a more solid foundation in the riverbed to ensure against an accident, but was forced to resign before this could happen. He actually wrote the City in 1896 warning that a break could occur because of this situation.

Poor Site Location –Several experts quoted in the report observed that the dam was built on the Balcones Fault line, which made stability questionable and seepage under the dam likely. Some of these people suggested that moving the dam site only 2 miles upriver to more stable geology would have eliminated this problem.

Since Miller Dam, completed in 1940, is built at the site of the original dam, the challenges the fault line posed were not insurmountable. However, almost 5 decades worth of engineering and construction experience passed between the building of these two structures.

Substandard Materials – The dam had a hard shell made of granite. However, its core was filled with soft limestone rubble that was considered soluble under certain conditions, and according to Taylor, "utterly untrustworthy." Modern dams are made of concrete.

Disrespect for Professional Opinion – Two chief engineers were effectively fired by the Board of Public Works for one reason or another. At one point in the construction process, there was no engineer directing the project at all, and the contractor was assigned to direct the technical aspects of the project.

Lack of Planning – The dam designers had profoundly overestimated the amount of electricity that it could deliver because they did not account for minimum river flows and lake evaporation. Electricity had been promised for building lighting and motors, street lighting, streetcars, and the water supply system. In addition, the dam was built to lure industries to move to Austin with cheap and plentiful power. There was, however, no way that the dam could come remotely close to supplying this projected demand in a reliable manner.

## A Great Reckoning

The City of Austin had three difficult long-term challenges to deal with in the wake of the flood: settling its debts; settling with the Company; and deciding if it would rebuild the dam. Given the enormity of these tasks for such a small city, and the ardently hostile feelings against the Company, they happened in a relatively short time period of about 3 years.

### Begging Forgiveness

The period around the time of the dam's destruction is the only time in the City of Austin's history that it ever technically defaulted on its financial obligations. In actuality, the City did not refuse payments for any great length of time, but it did ask for a restructure of the debt owed.

On April 20, 1900, the City notified its bondholders of the tragedy and that payments would have to be deferred. For about a year, there was uncertainty about how to proceed. At a public meeting of over 1,000 citizens held a week after the dam break, strong support was voiced for continuing a General Fund transfer to the City utility. They felt failure to do so would be tantamount to default, and endanger the ability to borrow more money to repair the damage.

However, in August 1900 the City Council voted to reduce the property tax rate and deny the transfer to the utility for 1899. In December, they voted to do the same thing for taxes levied in 1900. A policy of default seemed to be taking hold.

But in the next Council election in April 1901, 3 of the 4 members who voted against the utility transfer (in 1899) were defeated. The City adopted a new policy of debt negotiation. A month later they restored the General Fund tax

levy for the utility. In July a committee of elected officials and business leaders visited New York to negotiate with bondholders to restructure the outstanding debt.

The lenders were reassured that the elected officials who voted against the utility tax levy were due to a few "non-representative" Councilmen. Then the delegation pleaded for consideration due to devastating losses and the need for replacement steam power. Ultimately there was an agreement to reduce the interest rate on $800,000 of principal, granting a savings of about $425,000 over the 30-year life of the refinanced note.[4]

During the negotiation, the bondholders attempted to persuade the City to negotiate a sale of the utility to the Water Company. Austin representatives adamantly refused, but said they would settle the controversy.

## Buy Your Enemy

In April of 1900, shortly after the tragedy, the Water Company, led by Nalle, offered to buy the working machinery from the City's utility plant at "a fair valuation" and furnish water and light to the City at 25% less than the City's charged over the preceding 5 years. This relief would come in 10-14 days, and it was couched as a temporary proposal. Nonetheless, the City declined.

It had only been a week after the flood when a subcommittee of Austinites, headed by former Mayor Hancock, decided that while a sale of the City's utility assets might be advisable to its bondholders or even another private utility company, a sale to the Water Company would not be acceptable. The committee also reasoned that if the City was to buy the Water Company, it must take action to rebuild its own system. Otherwise, the Company would fill the void, and its assets would become more valuable and harder to buy.

In May of 1900, Austin City officials again made an offer to the Water Company to buy its system. The company was more willing to sell. The terms, however, were uncertain, and complicated by the various lawsuits pending by the Company against the City.

In May 1901, the Company won a judgment of $25,600 against the City for unpaid hydrant rentals in 1899 and 1900. It was appealed to the U.S. Supreme Court and decided in the Company's favor that November.

On September 30, 1901, the City and the Water Company attempted to settle. By a narrow 8-6 vote, the City Council voted to pay the Company $175,000 as an initial payment plus $25,000 per year for the next 25 years. But in late 1901, the previous Mayor, John McCall, attempted to stop the sale with an injunction claiming that the City did not have authority in its Charter to enact this purchase. The injunction survived the District and Civil Appeals Court, but was struck down by the Texas Supreme Court in June 1902.[5]

After all the court cases had been heard, the City Council authorized a new purchase agreement of the Water Company in August 6, 1902. It required $175,000 as initial payment, $84,500 in court judgments against the City, and annual installments of $22,500 per year for 25 years.

This was a considerable amount to a poor city already mired in debt. To elaborate on just how financially stressed Austin was at this time, between 1900 when the dam broke and 1902, property tax appraisals fell 29%. It took until 1907 before nominal appraisal values (not adjusted for population and inflation) recovered to 1900 levels.

The outcry that the August Council meeting provoked was consistent with the rest of the rancorous 15-year struggle with the Company. The meeting was salted with charges of bribery and attempted coercion on the part of both the Water Company and the Council.

Unlike other expenditures of Austin's utility system, the money was not authorized by the voters. The City Attorney ruled this illegal. The settlement was finally approved after midnight by an 8-5 vote, a bitter end to one of the most divisive political issues in Austin's early history.

## Old Dreams Die Hard

After the tragedy of the dam break, Austinites immediately began to think about its reconstruction. However, due to the emergency situation, followed by the renegotiation of debt and the further expense and drama of purchasing the Water Company, action was considerably delayed.

In addition, the $250,000 purchase cost of a steam plant was cheaper than the rebuilding option, though at times fuel costs ended up being about $60,000 – each year.

After considerable time and deliberation, in 1903 the City decided to have a private contractor rebuild the dam at their own risk and sell the power under contract to the utility. After several attempts to start this process, a partner was finally chosen for this project in 1912, and the company began construction almost immediately. While the structure itself was completed, it was again damaged by a flood in 1915, this time because of defective floodgates. The contractor ultimately went into receivership, and the dam never generated electric power.

It was not until Tom Miller Dam was completed in 1940 that Austin's dream of reliable hydroelectric power was realized. The quantity of electricity it provided Austin in 1941 amounted to less than half a percent of Austin's electric consumption in 2011. The dam's power was shared by Austin and the Lower Colorado River Authority (LCRA) until 1980. Currently its production is committed to the LCRA through 2050.

## You Can't Argue With A Broken Dam
### The Role of a Historian

Austin started out with a dream: build a dam. It would bring inexpensive water and power, better paying industrial jobs, better city services, and an increased standard of living. It was the city's ticket to prosperity. Fifteen years of a small town's epic struggle against a predatory monopoly, poor engineering, human vanity and fallibility, and the forces of nature inundated original expectations.

The end result was a public utility system that allowed the City some control over its own destiny. Both the water and electric utilities provide essential and adequate services for Austin's residences and businesses. Today, Austin's electric system is one of the largest municipal electric utilities in the country.

It would take Austin three decades to pay the debt on the broken dam. It would also be decades before Austin would have all the infrastructure of a modern city, much of it funded by the New Deal in the 1930s and federal grants in the 1940s. It was not until the 1950s that the business community and the local government began recruiting industry in a major way.

Despite the political, financial, and lethal disasters embodied in this episode in Austin's history, the City salvaged two working utilities that helped it better determine its future. Factors contributing to this included determination, luck, and likely, lasting enmity for their opponent. (Revenge can be a stellar motivator when more altruistic virtues fail us.)

Today, the profit from the water and electric utilities partially supports the infrastructure and services of one of the fastest growing cities in the country. The governance is locally controlled. The utilities have several remarkable consumer and environmental initiatives not commonly found in other institutions. Austin has the industry that it coveted at the end of the 19th century, in all likelihood, more than any of the original planners could have *possibly* dreamed of.

Where it goes from here is for people active in Austin's future to decide – but this needs to be informed by the real history of how it began.

It is better to know what really happened than be haunted and possessed with false legends that misguide us. Thus arises the question of a historian's true calling: that of a puzzle solver…or an exorcist?

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4 The City was also allowed to apply the sinking fund proceeds to the principal, further reducing payments.
5 A sinking fund was also required by the court decision, raising the outlay for the settlement.