Phoenix Water Services Celebrates its 100th Anniversary

A Brief History

Introduction

Tap water is essential for almost every facet of life – from drinking to entertainment to fire protection. There's almost nothing as reliable or a better value. And, 2007 starts a new year and a new century for Phoenix tap water customers. That's right; the city of Phoenix's Water Services Department is celebrating its centennial: 100 Years … A Century of Superior Water Services in Phoenix.

Phoenix purchased its first private water company in 1907. The city immediately began making improvements to the system by digging wells and adding water lines and pumps. Wastewater operations began a few years later.

At one time, surface water from the Verde River was delivered through a 30 mile long redwood pipeline. Since then, Phoenix has opened five water treatment plants, with a sixth coming on-line later this year. Two wastewater treatment plants and a water reclamation plant have followed as have almost 7,000 miles of water lines under the streets of Phoenix and over four million tests and measurements each year to make sure Phoenix tap water meets or exceeds a multitude of water quality and safety regulations. The department now serves 1.5 million tap water customers in Phoenix and two million wastewater customers throughout the Valley. And, the city has ensured a reliable tap water supply by using several sources of surface water, groundwater and reclaimed water.

As Phoenix Water Services enters its second 100 years, enhancements will focus on customer services, ensuring our future water supply, technology, the environment, maintaining aging water and wastewater lines and treatment plants, increased regulatory compliance and security. Public awareness programs asking customers to use water responsibly, cease placing grease down the drain and pay bills on-line will continue, as will efforts to attract talented workers to the industry.

Early Beginnings

Around 800 B.C., Hohokam Indians used stone and wooden tools to dig canals and build dams to manage the flow of water. But "modern" history tells the story of how technology, as well as human perseverance, now allow 1.5 million Phoenix, Arizona customers to live with a safe drinking water supply and reliable wastewater services.

Just following the civil war in the latter half of the 1800s, many people with a pioneering spirit entered the Salt River valley and began to settle the area. One

man, Jack Swilling, a former confederate soldier, came to the Salt River valley, and along with his friend, Darrell Duppa, gave Phoenix its name.

Not long after his arrival, Swilling set out to start his own irrigation company by making better use of the roughly constructed canals previously established by the Hohokams.

With plentiful irrigation water to provide growth for crops and to water cattle, the population of Phoenix grew and so did the economy.

The city of Phoenix was officially incorporated in 1881; just one year after a census of the city pegged the population at a whopping 1,708 citizens. Initially the citizen's demand for drinking water was satisfied by enterprising business owners, such as bars, hotels, laundries, barber shops, and bathhouses, who installed wells on their property as a means of drawing business and, if necessary, fighting fires. But as the population grew, so did a strong need for a larger water supply to quench the needs of the growing economy and its residents.

In April 1889, several wells were drilled near 9th Street and Van Buren to make up what was then the first privately organized water company, known as the Phoenix Water Works Company. The new system could provide two-million gallons a day, through an eight-mile system of pipes.

However, a severe drought hit the Salt River Valley between 1898 and 1904, and during this time, pressure on city officials to raise the issue of municipal ownership of the water utility began to build.

In January 1899, the first of several failed bond elections took place. But in December 1903, the voters approved the bonds to create a municipal water system. And although the voters had approved the funding, three-and-a-half more years would pass before the political and legal red-tape was removed so the city could purchase of what was now known as the Phoenix Water Company for a cost $150,000. And, on July 1, 1907, the city officially took over operation of the utility.

The Verde River as a Water Source

While the canals used for irrigation water were improved after the National Reclamation Act was signed in 1902 – the law that resulted in the creation of Salt River Project and several dams on the Salt River - the water was considered too salty. So, city officials began to seek out a source of surface water for municipal use, one derived from pure melting snow and rainwater.

In 1913, after half-dozen years of city ownership of the water system, the idea of bringing water from the Verde River, which contained far less dissolved minerals,

was being given serious consideration. In 1915, a site for the Verde River water intake was identified on the Fort McDowell Indian Reservation. After several years of evaluation, design, and water rights negotiations, in 1920, the construction of the 28-mile Verde pipeline began. In order to build the project for the amount of funds allocated by a bond issue, city officials elected to purchase inexpensive redwood pipe for the line.

A 38-inch diameter redwood pipeline would be built of staves bound with steel straps much like a barrel, and the sections would be placed end-to-end over the long distance to Phoenix. Much of the pipeline would be above ground, but some portions of the line were buried.

The redwood line terminated near 9th Street and Van Buren where the major water pumping infrastructure was located. A city park now sits at that famous location, and it is named for the river from where the water was brought – Verde Park.

In February 1922, water from the Verde River began to flow to Phoenix customers. The line had been completed in December the previous year, but a chlorination facility needed to be constructed before the water could be used.

In 1927, the wells were drilled near the Verde River water pipeline intake so additional water could be supplied to the growing city. However, within the next year, the redwood pipeline began to leak and a study was put under way to replace the line with a larger concrete line.

By December 1930, construction began on a new 42-inch concrete waterline from the Verde River, and a 20-million gallon reservoir.

Wastewater Treatment

The first sewer system in Phoenix was also a private utility, completed in 1892. In 1911 the city of Phoenix purchased a private sewer system and municipal wastewater operations began. Although there were individual septic tanks and cesspools in use to dispose of wastewater in the growing city, the early sewer franchise disposed of raw wastewater at a sewage farm at 15th Avenue near the Salt River. The city built a large septic facility there in 1913, and in 1915 expanded the system with a series of settling tanks to treat wastewater at 19th Avenue and the river. an actual industrialized facility to treat wastewater to protect the public health didn't exist until 1932, when the 23rd Avenue Wastewater Treatment Plant was completed and began operation. The plant has since been enlarged and modernized, and now is one of the best examples of wastewater treatment facilities in the southwest United States, capable of producing highly treated effluent that can be used for many reclaimed water needs.

In 1958, another wastewater treatment plant was constructed in cooperation with the city of Glendale. The plant site was near 91st Avenue and the Salt River. Today, the 91st Avenue Wastewater Treatment Plant can treats wastewater from the cities of Phoenix, Glendale, Mesa, Scottsdale, and Tempe, who co-own the facility as part of Multi-City partnership known as SROG, the Sub-regional Operating Group. Reclaimed water from 91st Avenue is used for crops and the Palo Verde Nuclear Power Plant, thus saving on drinking water. The treated wastewater also helps provide a wildlife refuge in the Tres Rios Demonstration Wetlands Project.

In 2000, the Cave Creek Water Reclamation Plant was completed, which is the department's first plant that was constructed specifically to provide reclaimed water for urban uses, such as golf courses, cemeteries, and parks.

Keeping Up with Demand

In the 1930s, federal funding allowed water service to expand into the suburbs, and during the 1940s, an increased use in evaporative coolers created a higher demand for water.

In the last three months of 1940, wet weather created the largest runoff in seven years, and this runoff ended a record drought. The ending of the drought was celebrated on April 26, 1941, on which day Governor Sidney Osborn declared it a "Day of Thanksgiving for Water."

A postwar increase in population and a surge in economic conditions in 1946 caused a critical water shortage in Phoenix and city officials began to look at options. The Arizona Republic reported that fire protection in the summer was inadequate because high demand caused pressure to drop significantly.

In September 1946, the water development committee presented the idea of making major improvements to the Phoenix water system, which would include improving the distribution system, the Verde River water intake, constructing the gates at Horseshoe Dam, and building the very first water filtration plant. The bonds to fund the projects, which were about $5 million, were overwhelmingly approved by voters in November of that year.

In June 1947, the city awarded the contract for the construction of the Verde Water Treatment Plant for $1.16 million. And after a new right-of-way was negotiated with the Salt River Indian Reservation, the plant began delivering water to Phoenix in 1949.

However, because of much political wrangling over Verde River water rights and future Central Arizona Project issues, the gates to the Horseshoe Dam were not completed until June of 1950. And although the gates, which would provide an additional 23,000 acre-feet of water, took a while to complete, the effect of giving

Phoenix additional water to utilize during the peak demands of summer would benefit Phoenix for many summers to come as the desert city grew.

In 1952, the city of Phoenix signed a contract with Salt River Project (SRP) known as the domestic water service agreement. That same year, the city constructed a water treatment plant on the Arizona Canal near 24th Street. The plant, which was then known as the Squaw Peak Water Treatment Plant, now the 24th Street Water Treatment Plant, began delivering water to residents in 1953.

In 1957, the Phoenix water system began expansion into northern, western, and southern areas of the city that had recently undergone annexation. Phoenix voters approved a $35 million bond sale so the city could enhance the water system and purchase private water companies in the recently annexed areas. The bond sale also included an expansion of the Squaw Peak Water Treatment Plant, and the construction of a new reservoir.

In 1959, Phoenix and Mesa entered into an agreement to purchase land from the Val Vista Investment Company for a jointly owned water treatment plant. Before the plant could be built, Mesa needed to enter into a domestic water service agreement with SRP.

Then after a dozen years, in 1971, Phoenix and Mesa requested a funding grant from the U.S. Environmental Protection Agency as part of the recently created Clean Water Act. The grant was requested to assist in the construction of the Val Vista Water Treatment Plant. Construction began in 1973 and water deliveries began in 1974.

Meanwhile, Phoenix continued to grow in the west valley. In the late 1950s John F. Long began developing the community of Maryvale, and along with the growth, the demand for water began to increase on that side of town. As a result, in 1961, Phoenix purchased land near the Arizona Canal to build what would soon become the Deer Valley Water Treatment Plant. The plant began supplying water to citizens in 1964.

Also in 1961, the city authorized an expansion of the Squaw Peak WTP, and the addition of more reservoirs at city plants and elsewhere. Meanwhile, the city continued to purchase private water companies and add service connections.

In 1964, total water production capacity for the city of Phoenix reached 360 MGD.

In late September 1968, the law was signed that paved the way for the Central Arizona Project (CAP) to begin. Groundbreaking for the CAP began in May 1973, although it would take another 12 years for Colorado River water to reach Phoenix. The CAP proved crucial to providing a water supply for non-agricultural

lands outside the boundaries of the Salt River Project that did not have surface water rights from the Salt and Verde rivers.

In 1980, as part of Arizona's compliance with federal requirements regarding authorization of CAP allocations, state officials created the Arizona Groundwater Management Act, and along with it, the Arizona Department of Water Resources. This act restricted Phoenix's ability to pump groundwater as before. However, because of the completion of the CAP in the Phoenix area, the city would now have a third surface water source.

The Union Hills Water Treatment Plant, which was the first water treatment plant to treat CAP water, was completed in October 1985.

In 1987, Phoenix joined a group of other Valley cities to negotiate improvements to dam safety in the wake of disastrous floods that struck the Salt and Verde Rivers in the late seventies and early eighties. The final project was known as "Plan 6." It included adding height to Roosevelt Dam, and constructing the New Waddell Dam to increase water storage at Lake Pleasant. The Valley cities pledged funds to speed construction of the dam safety project, and after its completion, received rights to floodwaters that might be captured by the modified structures.

Phoenix and other Valley municipalities also paid for the SRP/CAP interconnect that would allow SRP facilities to accept CAP water into the SRP system, providing even more flexibility in treating and delivering water to Phoenix residents. The SRP/CAP interconnect also served as a necessary first step in facilitating the ability to recharge water into the ground in order to replenish groundwater supplies. The Arizona Legislature created the legal authority for water recharge projects in 1986 and in 1987 CAP began construction of projects that would allow Arizona to store excess Colorado River water in the ground for future use. By 1993, the SRP/CAP interconnect enabled Valley cities to construct the Granite Reef Underground Storage Project (GRUSP) downstream of the interconnect in the Salt River.

Recent Improvements

In 1994, as part of a research project to determine if wetlands could polish effluent from the 91st Avenue Wastewater Treatment Plant so it could meet upcoming wastewater treatment regulations, the city, in cooperation with SROG and the U.S. Bureau of Reclamation, created the Tres Rios Constructed Wetlands Demonstration Project. Another goal of the project was to restore the natural wildlife environment of the Salt River in that area. Because of the success achieved with the demonstration wetlands, a full scale wetlands has been designed and has begun the initial phases of construction.

In 1991, the Lake Pleasant area was chosen as a possible location for a future plant that would make use of CAP water. The plant being located far to the north of town would allow for a finished water supply to be delivered mostly through gravity, thus reducing electrical pumping costs. The Lake Pleasant plant will go online in 2007.

The Future and Beyond

The future of the Water Services Department holds a great many things – but if there is one thing that is very true about the history of Phoenix – it is that the quality of life has been contingent upon a reliable and safe tap water supply.

Together - elected officials, city management, planners, engineers, and employees of the Water Services Department - have worked diligently for 100 years to ensure that continued and increasing demands by Phoenix residents and businesses for high-quality, reasonably-priced water were met in a timely and cost-effective manner. That proactive planning continues as Phoenix regularly updates its Water Resources Plan and looks at varying scenarios of drought, northern snows that create our drinking water and technological advances to ensure that our grandchildren will have the tap water they need.

Public health needs of the community will always be a top priority. To that end, over 4 million tests and measurements are taken each year throughout the treatment and distribution systems, as water remains one of the most heavily regulated industries in the nation.

As Phoenix begins to age, replacement and rehabilitation water and sewer lines as well as treatment plants has become a major priority to ensure reliability. Customer Services, including internet use, phone contact and meter reading always are at the forefront of future planning, as are security, public awareness programs, proactive fiscal management, and technological advances that can save Phoenix water and wastewater customers money.

The city of Phoenix, like the mythical rising bird, will build upon its first century of superior water and wastewater services, and continue to enhance the lives of customers with foresight and skill.

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