Reclamation Dams

And

The Growth and Development of the Salt River Valley

By

Jack L. August, Jr., Ph.D.
ONE

The Salt River Valley:
Water, Culture, Tradition

On October 3, 1888, as the dread days of summer in the desert southwest passed, Arizona citizens celebrated mightily when they learned that the U.S. Senate had appropriated $100,000 for the U.S. Geological Survey (USGS) to determine the feasibility of reclaiming lands in the arid West. For years, local agriculture entrepreneurs labored as private capital and bonding efforts proved as difficult to attract as was the construction of canals and laterals to put water to beneficial use. The challenge was worth the effort though the return on investment might be decades in the future. Government officials observed with great interest the inexorable stream of settlers moving into central Arizona searching for their new start; their version of the American dream. These settlers sought a secure, regulated and predictable, water supply. Yet the unpredictable flow of the Salt River tempered the hopes of the most optimistic and innovative pioneer farmers.

Like many twentieth century western cities such as Boise, Denver, Fresno, Salt Lake, Spokane, and others, Phoenix’s economic base in the nineteenth century depended upon irrigated farming. Beginning in the late 1860s, non-Indians settled

---


in the central Arizona desert, in which Phoenix is located, and began to construct
diversion works and canals to irrigate lands adjoining both banks of the Salt River.

By the end of the 1880s settlers had extended the Salt River Valley’s canal and
ditch system to approximately 35,000 acres that were receiving water from man-
made irrigation works.³

Phoenix was a small and insignificant settlement dependent on subsistence
irrigated agriculture, which, at any moment could dry up and blow away on the dry
winds, or conversely, could be washed away by an unexpected spring flood.

Perhaps the survey signaled that Congress might act to help this emerging,
taxpaying civilization on the far southwestern edge of the American frontier. In the
last decade of the nineteenth century Salt River Valley residents foresaw,
somewhat optimistically, not only the broad outlines of a vibrant agricultural
civilization, but also a sustainable economy that would grow like an expanding
oasis in the desert.⁴

On February 14, 1889, the U.S. Senate created a U.S. Senate Select
Committee on Irrigation and Reclamation of Arid Lands and three weeks later the
Phoenix Chamber of Commerce adopted a resolution inviting the committee to
visit Phoenix.⁵ Chamber President Henry K. Kemp contacted the Chairman of the
Senate Select Committee, Senator William M. Stewart, of Nevada, and the Senator

³ David Introcaso, “Mormon Flat Dam, Maricopa County, Arizona” HAER No. AZ-14 (San
Francisco: Historic American Building Survey, National Park Service, 1989) 3; Earl Zarbin, “The

⁴ See Donald Worster, Rivers of Empire: Water, Aridity and the Growth of the American West (New York:
Pantheon Books, 1985); Gerald Nash, The American West in the Twentieth Century: A Short History of an
Urban Oasis (Albuquerque: University of New Mexico Press, 1985); John Opie, “Environmental History
of the West,” in Gerald Nash and Richard Etulain, The Twentieth Century West: Historical Interpretations

⁵ The resolutions were passed on April 7, 1889.
replied promptly that committee members planned to arrive in September. The committee visit prompted a flurry of organizational activity. Significantly, Maricopa County Supervisor C. R. Hakes suggested the county appropriate funds to conduct a survey to locate the best reservoir sites, their capacities, and costs. On July 12, 1889 the supervisors appropriated $500 for the survey over the protest of Hakes who wanted a much more substantial sum. The supervisors directed Maricopa County Surveyor William N. Breakenridge to conduct the survey. John R. Norton, representing the Arizona Improvement Company (AIC), along with Colonel James H. McClintock, newspaperman, writer, and director of the Tempe Normal School, were to assist the county surveyor in his public charge. The Board paid Norton $135 for the rental of his two pack mules and on July 17, 1889 the party gathered in Mesa to begin the survey. Their equipment was limited; they measured distances either by stepping them or by counting McClintock’s blue

---

6 Newell, History of the Irrigation Movement, 4, 5; Phoenix Daily Herald, April 9, 16, 1889.
7 The survey’s expenses came to $599.67.
8 McClintock was to be the scribe and write up the expedition.
9 See Breakenridge’s autobiographical account, William M. Breakenridge, Helldorado: Bringing the Law to the Mesquite (Boston: Houghton Mifflin, 1928). An edited version, by Richard Maxwell Brown appeared in 1992, Richard Maxwell Brown, ed., Helldorado: Bringing the Law to the Mesquite (Lincoln: University of Nebraska Press, 1992). Also see James H. McClintock, Arizona: A History of the Youngest State 1540-1915 (Phoenix, 1916). Breakenridge had a colorful history in the military and law enforcement prior to his accepting the Maricopa County surveyor position in 1888. He was born on December 26, 1846 in Watertown, Wisconsin and traveled to the Pike’s Peak mining area when he was just 15 years-old. Three years later, in 1864, he joined Company B of the Third Colorado Cavalry for service in the Civil War. He fought in the battle of Sand Creek and other encounters. In 1876 he arrived in Arizona Territory, ending up in Tombstone in 1880 where he was appointed a U.S. Deputy Marshall under Sheriff Johnny Behan. In Cochise County he was courteous and prudent and resorted to gun play only as a last resort. An excellent marksman, few outlaws challenged him. And as a U.S. Marshall he had unusual authority in the area allowing him to become an extremely effective lawman. He was present during the famous Gunfight at the OK Corral, was on friendly terms with the Clanton faction, and of course, working under Johnny Behan, he was perceived as opposing the Earps, writing later in his 1928 memoir that Wyatt Earp was a desperate character. In 1888 he changed course and accepted the position as Surveyor of Maricopa County. He was soon tasked—along with Norton and McClintock—with searching for a suitable dam site above Phoenix.
mare’s strides. They utilized an aneroid to determine elevations, directions with a small sight compass, and the levels with a simple hand level.\(^{10}\)

Incredibly, later technological developments in surveying affirmed that the Breakenridge Survey measurements and elevations were substantially correct.

They returned to Phoenix on the morning of August 10 and in a report to the supervisors and in an article written by McClintock for the *Phoenix Daily Herald*, the survey crew announced their findings. Indeed they located a number of sites suitable for dams, but the water storage basins were too small until they spied the wide valleys of the Tonto Creek and Salt River, above the head of a narrow canyon. The party agreed they found an ideal location for a storage dam.\(^{11}\)

The *Phoenix Daily Herald* on August 12, 1889 reported that the Breakenridge Survey endorsed, as the most promising dam site, “a box canyon with sheer rock walls several hundred feet high located on the Salt River below the mouth of Tonto Creek.” “A quick, but accurate survey disclosed that the catchment basin behind the dam site would hold more than a million acre-feet of water,” the account continued and optimistically predicted that the planned dam would be the largest

---

\(^{10}\) An aneroid is a type of barometer operated by the movement of the elastic lid of a box exhausted of air

\(^{11}\) Breakenridge later wrote, “After satisfying ourselves about the depth to bedrock and the character of the rock in that vicinity, we went to the upper end of Tonto Creek, the east Verde, the main Verde, and the site of Horseshoe Dam; and then to old Fort McDowell, where we swung back up the river toward the location we had made at the head of the canyon on Salt River. This location was so much larger and better for a reservoir site that we put in most of our time there in trying to get a fair measurement of it. On our return, as the water in Salt River was low, we journeyed down through the narrow canyon and had to cross and recross the river every few hundred yards, as the water would hit first one side of the canyon and then be deflected back to the other side. But it was much better traveling than over the rough Apache Trail.”
artificial reservoir in the world “yet secured at a cost relatively trivial in
comparison to the great benefit to be derived.”

In fact, Breakenridge estimated the cost of the dam and reservoir at not
more than $1,500,000 and “it would supply water enough to irrigate all the land in
the valley from the Arizona Canal dam to Yuma.” The lake behind the dam, he
mused, “would be the largest artificial reservoir in the world.” McClintock agreed
with this assessment and added: “surely the general government can find at no
other place a more eligible site for water storage than this presents, and it should
now be made the aim of our representative citizens to see that Congress is properly
informed and to push matters so that, either by government aid or assisted private
enterprise, the necessary one-half million dollars shall be forthcoming for the
construction of the dam, and that the prosperity of Central Arizona shall be
established as firmly as the rocks.”

12 Phoenix Daily Herald, August 12, 1889. McClintock was born February 23, 1864 in Sacramento,
California, the son of John and Sarah G. McClintock. After attending public schools in San Francisco and
Berkeley, he moved to Arizona to help his brother, Charles, who was founder and co-owner of the first
newspaper in the valley, the Salt River Valley Herald. This paper was later absorbed into the Arizona
Republican. Then, in 1881, after his brother died, McClintock moved to Globe, ultimately becoming editor
of the Globe paper. Sometime between 1883 and 1886 he moved to Prescott—then the territorial capital—
where his mother ran a boarding house and his sister served as a telegraph operator. He found work in the
office of the adjutant general at Fort Whipple and was there during the last military campaign against
Geronimo. McClintock, then twenty-two years-old, enrolled in the Territorial Normal School in Tempe
and graduated with a teacher’s certificate. At the same time he owned a farm a few miles southeast of town
and also found time to work on the local newspaper. In 1889, after a year teaching in remote Pleasant
Valley, in northeastern Arizona, he moved to Phoenix and threw his full weight and writing skill behind the
crucial problem of the day: water. McClintock worked with Norton in several guises; he was a free-lance
writer for the Maricopa County Board of Supervisors and the Phoenix Chamber of Commerce, Arizona
 correspondent for the Los Angeles Times and other papers, and an active state representative in the National
 Irrigation Congresses of the 1890s and early 1900s.

13 Ibid, August 14, 15, 1889. Later he and friend Bucky O’Neill joined the Roughriders and McClintock
suffered machine gun wounds to his leg. In June of 1902 he became a colonel in the Arizona National
Guard. As a writer, however, McClintock made his greatest contributions, repeatedly praising the virtues of
the Salt River Valley. In 1901 when his Roughrider comrade, Theodore Roosevelt ascended to the
presidency, another Roughrider colleague, Colonel Alexander O. Brodie was appointed Governor of the
Territory of Arizona. McClintock hoped that he, too, would receive a political appointment to high office
but was somewhat disappointed that he received the honorary appointment as Phoenix post master general,
The publicly-funded Breakenridge Survey of 1889 was one of a series of private and public actions that triggered transformative growth and development of the arid Southwest. In reality, Phoenix, Arizona Territory in the late 1880s and early 1890s was a small island community in a remote portion of the American Republic. Americans east of the Mississippi oftentimes questioned the expenditure of public moneys on a desert land described by one federal official as “just like hell.” Similarly Arizona citizens wondered why a president and Congress located thousands of miles away in Washington, D.C. should exert power over a region about which they knew very little. Nevertheless Phoenix judged itself by eastern standards and looked eastward for approval. Phoenicians of the Gilded Age boasted that their town was not “wild and wooly” or under constant threat of Indian attack, but identical to an average eastern town of like size. But the lifeblood of this eastward-looking town was the Salt River and its tributaries. The river’s many moods and uses were erratic and unpredictable. It flooded suddenly washing away dams and canal banks, or conversely, ran dry for months ruining those who depended upon it for a steady water supply.

One of the area’s first-born citizens, Carl Hayden, who would later become one of the twentieth-century’s great U.S. Senators and legislative water masters, witnessed the pioneer spirit of cooperation deteriorate into acrimonious
lawsuits and, at times, violence when canal company partners or landholders fought over shares or water rights. Farmers and businessmen alike talked incessantly of spring runoffs, groundwater, watersheds, or precipitation and by the time the Breakenridge Survey located an ideal dam site on the upper reaches of the Salt River, a constant, regulated water supply was the most crucial issue facing the Salt River Valley.\(^{14}\)

The Valley, with the recently-named Phoenix as its population center, had a long, tempestuous history of peoples, cultures, and traditions with water serving as the fulcrum to power and survival.\(^{15}\) The region maintained a culture and tradition that reached back centuries. Soon after the outbreak of the war between the United States and Mexico in 1846, for example, Colonel Stephen Watts Kearny and his Army of the West encountered the Pima Indians farming along the Gila River. The invading Americans, en route to their military destination in California, marveled at the agricultural abundance and extensive irrigation works and realized immediately, as the Spaniards and Mexicans had before them, that irrigation along the river predated the Pimas. By the time Spanish explorers discovered prehistoric ruins in central Arizona, their builders, the Hohokam, had been gone for nearly 200 years. Archeologists continue to debate the nature and extent of the more than 350 miles of canals along the Salt River in the Phoenix area and the additional canals in southern Arizona. It was the most extensive prehistoric irrigation system


in North America, and the Hohokam, according to recent scholarship, irrigated approximately 100,000 acres of land in the Salt River Valley alone. One scholar has noted that while the Hohokam are recognized as the premier desert irrigation specialists of the prehistoric era, they actually used many methods to control and use water. Besides an extensive canal system, they developed terracing, check dams, rock piles and linear and grid borders. Additionally, like other prehistoric cultures in Arizona, Hohokam water resource development fell into two categories: irrigation methods (canals and ditches) and indirect methods reflected in soil moisture conservation. These methods provided powerful technological precedents for the region’s European successors.

Hohokam irrigation works evidenced the earliest impact of water management in Arizona’s traditions. Popular western imagery evokes a place born of rugged individualism but in an arid region one must get along with one’s neighbors to share a plumbing system in order to thrive or even survive. In fact, the earliest forms of government in the world may have arisen in the Middle East over the need to construct and share water distributions facilities. In the Southwest, the irrigation works of the Hohokam present similar early evidence of the necessary cooperative endeavor that leads to an institutionalized civilization.

As Spaniards colonized the Southwest in the sixteenth and seventeenth centuries, they consciously adopted Native American settlement patterns, often

---

16 Michael Logan, “Head Cuts and Check Dams: Changing Patterns of Environmental Manipulation by the Hohokam and Spanish in the Santa Cruz Valley, 200-1820,” _Environmental History_ 4 (July 1999), 405-430.

displacing existing towns and villages where water could be easily conveyed for irrigation. Beyond these effects, Spaniards introduced and reconfigured agriculture in the region. The brought new crops and at the same time introduced livestock and domesticated animals. The Spanish also created a new language of water use, much of it dates from the Moorish occupation of Spain from 711 to 1492. The Spanish word *acequia*, or canal, is still used today, and water users in Arizona continue to refer to the *zanjero*, or ditch tender. The acequia districts of northern New Mexico are the oldest extant governmental units of European settlement in the United States.

The most significant Spanish influence in Arizona and the Southwest was in the law. The Spanish maintained a near obsessive interest in water regulation, reflected in volumes of land grant documents and government officials’ diaries about interminable water rights disputes. The single most important Spanish water legacy is reflected in the Latin phrase “qui est in tempore, potior est in jure”—first in time, first in right. The legal doctrine of “prior appropriation,” became the cornerstone of water law, not only in Arizona but also throughout the trans-Mississippi West. The doctrine of prior appropriation remained in place during the Mexican period (1821-1848) and formed the legal framework regarding the use and distribution of water when Colonel Kearny promulgated his legendary code of 1846 when he took Santa Fe, New Mexico without a shot. That code resulted in continuing Spanish traditions of water and land use until the creation of Arizona Territory in 1863.\(^{18}\)

\(^{18}\) Lamar, *The Far Southwest*, 223.
As the area’s earliest European occupants, Spanish priests, soldiers, and
civilian explorers of the seventeenth and eighteenth centuries took note of the
inhospitable arid landscape and inadequate water supplies of the Salt and Gila
River systems. "With few major exceptions," according to the distinguished
historian of Mexico, Michael Meyer, “the water sources (the Rio Grande, the
Colorado, the Fuerte, the Yaqui, and the Gila being among the most notable)
which the Spanish dignified with the word “Rio” were scarcely rivers at all. Not
even the largest, the Rio Grande, proved valuable for transportation or commerce
either before or after conquest. Although scientific evidence suggests that they
carried a larger flow than they do now, most rivers were not perennial; they ran
only part of the year, trying their best to carry the excess from an exceptional
winter snow cover in the surrounding mountains. The more common pattern was
for the water that reached them to sink quickly into the sandy bed within a short
distance to disappear from human sight. On occasion, however, they ran partly
above surface, then underground, protected from the evaporative powers of the
environment, to be forced to the surface again by the geological structure of a
given area.19

19 Michael C. Meyer, Water in the Hispanic Southwest: A Social and Legal History, 1550-1850 (Tucson:
University of Arizona Press, 1985) 23. See, also, Roger Dunbier, The Sonora Desert: Its Geography,
Economy and People (Tucson: University of Arizona Press, 1970). For its importance to the natural and
human history of the Southwest, the Salt and Gila River have inspired surprisingly few books. Two of the
best known are Edwin Corle, The Gila: River of the Southwest (New York: Holt Rinehart, and Winston,
1951) and Ross Calvin, River of the Sun (Albuquerque: University of New Mexico Press, 1951). Corle’s
book is useful but dated, reflecting an ideology of conquering the wilderness. Other noteworthy accounts
are M.S. Salmon, Gila Descending (Silver City, New Mexico, 1985); Edmunds Andrews et. al. Colorado
Coalition, Arizona Rivers: Lifeblood of the Desert (Phoenix: Arizona Rivers Coalition, 1991); Richard
Berkman and W. Kip Viscusi, Damming the West (New York: Grossman, 1973); Charles Bowden, Killing
the Hidden Waters (Austin: University of Texas Press, 1977); Philip R. Fradkin, A River No More: The
To place the concept of aridity in regional and historical context, with the exception of eastern Texas, the Mexican north, which the Spanish first encountered in the sixteenth century, was generally arid, semi-arid, and on occasion, extremely arid. The availability of water spelled the difference between desolation and abundance with countless variations between the two. This vast desert region had been occupied continuously for several thousand years, but, in the mid-sixteenth century, the population density was low, perhaps less than two people per square mile. Significantly, aridity increased as one moved west from Texas and Coahuila to New Mexico and Chihuahua, and then to Arizona and Sonora and southern California and Baja California. With the exception of the higher elevations and coastal zones of the north, evaporation was high and humidity low. The topography and natural vegetation doubtlessly reminded the first Spaniards of southern Spain. They were not surprised that the sun could crack the soil and blister the land. They fully comprehended moisture deficiency and knew the critical challenges of aridity encouraged the development of a special kind of human society. They, like their successors, the nineteenth century Anglo American pioneers, were not surprised to learn that the labor of controlling water and putting
it to beneficial use could occupy much of the working day in the continuous struggle to forge an existence.

This vast region was much more varied and capricious than its counterparts in Andalucia and Castile. It had a wider range of altitudes, soils, animal life, drought resistant vegetation, and even more unpredictable cycles of annual rainfall. The mountains were more rugged and towering, and the canyons virtually impenetrable. Erosion and sedimentation bequeathed a physiography at once harsh and captivating—frightening yet alluring. The rainy season extended from July to September but few areas of the desert received more than twelve or thirteen inches of precipitation per year. In drier parts, like central Arizona, years of less than seven inches were not uncommon. The mountains of this inhospitable land captured most of the moisture carried by prevailing Pacific or Gulf of Mexico winds and left the valley parched for most of the year. The winter snow cover in the mountains was almost always insufficient to provide lower elevations with a reliable source of water, except during the early spring thaw.20

If these rivers, like the Salt and Gila, did not always carry sufficient water to reflect the desert sun, they nevertheless proved amazingly attractive, drawing the surrounding animal life and providing a modicum of moisture required for

---

desert flora. It was along the rivers like the Salt, arroyos, and quixotic streams that most Indian populations (like the departed Hohokam) adapted to desert life. The alluvial plains, ranging in width from a few feet to several miles were rich and an unreliable source of water. Here, too, Spanish towns, missions, and presidios would cling to a precarious existence. And as these two groups—the Spaniards and the Indians—were forced by physical and historical circumstances into increasingly closer contact; precious water soon came to dominate their varied contests for power and survival.

Indeed, from the time of Fr. Eusebio Francisco Kino’s extension of the “Rim of Christiandom” into the lower Santa Cruz and Gila Valleys in the 1690s, the Salt and Gila Rivers played prominent roles as transportation routes in furthering Spanish aims. Often, diarists noted the remnants of the Hohokam civilization that marked much of the lower reaches of the Gila from its confluence with the Salt.²¹ Sergeant Juan Bautista de Anza, on a reconnaissance of central Arizona in November 1697, took note of ruins on the north side of the “irregular” river: “On the 18th we continued west over an extensive plain, sterile, without pasture; and at the end of five miles, we discovered, on the other side of the river (the Gila), other houses and edifices. The sergeant...swam over with two

companies to examine them; and they said the walls were two yards in thickness, like those of a fort; and that there were other ruins about, but all of an ancient date."\(^{22}\)

Later, in 1775-76, Don Juan Bautista de Anza led a colonizing expedition from Tucson to San Francisco. Fr. Pedro Font, who irritated Anza greatly, nevertheless kept the best diary of this historic expedition that traversed central Arizona via the Santa Cruz to the Gila, then down to its confluence with the Colorado River. The Gila portion of the journey brought forth noteworthy observations of its flow. According to Font, there were Indian agricultural systems diverting water, dry stretches, and occasional deep reaches that coursed slowly down the streambed. In effect, the Gila, in the fall of 1775, was intermittent and erratic, and in many reaches, dry.\(^{23}\) References to the Salt and Gila from the period of the Mexican Revolution (1810-1821) and through the Mexican period (1821-1848) vary little from the accounts of anemic flow with occasional destructive flooding and spring freshets.\(^{24}\)

Historians of American expansionism are unanimous in their interpretation of the primary objective in the War with Mexico (1846-1848); the acquisition of California. With the Treaty of Guadalupe Hidalgo (1848) and the subsequent

---


Gadsden Purchase (1854) affirming American title to the land bisected by the Gila River, much changed in the region’s legal, political, and social foundations as they pertained to land use and water resource development, though some traditions—like the legal doctrine of prior appropriation—carried over to the American period. Evolving concepts and public policies concerning central Arizona’s natural resources emanated from Washington, D.C. rather than from Madrid or Mexico City and the outlines of these policies shaped the life in the Salt River Valley.

On November 11, 1867 Jack Swilling, a Confederate deserter, violent drunkard, and morphine addict, along with approximately twenty downtrodden miners from Wickenburg, unwittingly established the first permanent Anglo-European settlement along the thirty-eight mile course of the Salt River, from the Verde River to its confluence with the Gila. Indeed the valley was a vast alluvial plain that stretched from the Superstition Mountains on the east to the Sierra Estrella on the west. All of Arizona’s major rivers except the San Pedro and the Colorado flow together there, so even though the valley is low desert the snowmelt and runoff from the Mogollon Rim and White Mountains surge down the drainages on their way to the Gulf of California. Its rivers, therefore, made the Salt River Valley the greatest conjunction of arable land in the Southwest. The Hohokam had, in fact, built some of the largest cities there but no non-Indians settled near the junction of the Salt and Gila until 1865 when the army established Camp McDowell along the Verde River twenty miles to the northeast. In essence,
the U.S. military gave birth to Phoenix just as the Spanish military created Tucson nearly a century earlier.²⁵

Swilling and his group of miners-turned-farmers, aware that Camp McDowell needed food and supplies, claimed six thousand miner’s inches of water from the Salt River for irrigating purposes and they recorded the filing with the Yavapai County Recorder in Prescott. A few days later, on November 16, the group formed the Swilling Irrigation and Canal Company. And in December they began construction of an irrigation canal on the north side of the Salt River near Tempe Buttes. A hard formation of caliche, however, halted their efforts and they moved downstream and commenced work on canal four miles west of their original attempt. They realized that the canal could not be completed in time for the planting season so they cut a temporary ditch along a long-abandoned Hohokam Canal and planted several hundred acres of corn and beans. Work continued on the Swilling Ditch, later known as the Salt River Valley Canal or Town Ditch. By 1871 the ditch was carrying 200 cubic feet of water per second and could irrigate 4,000 acres. It later became the Salt River Valley Canal which ran straight through the center of Phoenix.²⁶

²⁵ The four companies of cavalry and one company of infantry stationed there fed themselves by hacking 200 acres out of the dense bottomland along the river but their farm failed. Thereafter, civilians, particularly those who settled in the Salt River Valley, supplied the 470 soldiers and their horses. See Sheridan, Arizona: A History, 199.
²⁶ Douglas Kupel: Fuel for Growth: Water and Arizona’s Urban Environment (Tucson: University of Arizona Press, 2002) 34; Phoenix Herald, May 4, 1878. Swilling recorded his filing in Prescott because it was the county seat for that portion of the Salt River Valley. Maricopa County was created in 1871 from portions of Yavapai County. A miner’s inch is a measurement of flowing water and in Arizona equals 0.025 cubic feet per second (cfs). Importantly, this earlier unit of measurement was not a fixed and definite, and varied from place to place. The flow was measured by passing water under six inches of head through a one-inch square opening. By 1871 the ditch was carrying 200 cubic feet of water per second and could irrigate 4,000 acres. It later became the Salt River Valley Canal which ran straight through the center of Phoenix.
These efforts proved successful and opened the Salt River Valley to agricultural enterprise and development. In 1868 Swilling and Thomas Barnum carved out new ditch three-quarters of a mile upstream from the Swilling Ditch head. This “north extension ditch,” organized under the name, Phoenix Ditch Company, later became known as the Maricopa Canal. To the south of the Swilling Ditch, Jacob and Andrew Starer built the Dutch Ditch. Several pioneer farmers settled along the Dutch Ditch and by 1870 an incipient farming community of 250 souls cultivated 1500 acres of land.27

During the 1870s local residents relied on the Salt River, irrigation ditches, or wells for their domestic water supplies. In August 1870, the Arizona Miner reported that in Phoenix, “Digging wells has commenced. One of sixteen feet has a large supply of delicious water. At present the ditches supply nearly every demand of man, beast, and crop.”28 One Phoenix resident wrote in an August 31, 1872 letter: “Recent rains have damaged the ditches—so town has no water for a week, except that which has been hauled from river or drawn from wells.”29 In the 1870s, also, town commissioners arranged to supply irrigation ditches with water from the Salt River Valley Canal which ran along Van Buren Street on the northern edge of town. While wealthier residents dug wells for personal use, most residents used water from the irrigations ditches; both for irrigation and domestic purposes. And for community uses, the commissioners contracted for a well which was dug in the

---

27 Arizona Miner (Prescott), September 3, 1870; March 2, 1872; April 27, 1872; November 23, 1872.
28 Arizona Miner (Prescott) August 27, 1870.
29 Arizona Miner (Prescott) August 27, 1870; August 31, 1872.
town plaza. And, in 1879, Judge John T. Alsap erected the first windmill in Phoenix for pumping water.\(^{30}\)

During this decade of community-building, saloons and hotels took the lead in the installation of plumbing fixtures and distribution systems. In 1878 Phoenix hotel owner John Gardner stunned residents and travelers alike when he introduced shower baths. Toilets added the following year completed this innovative plumbing system and turned the hotel into a “resort” for the dust-covered traveler. Even more exciting, Gardner added a swimming pool in the next year. The owner of the Capitol Saloon at 27 East Adams Street kept pace with Gardner and constructed a small water distribution system. Using a dependable well in the back of his saloon, the bartenders pumped water to an elevated tank and from there distributed it to five or six other businesses, including a Chinese laundry, two other saloons, and a bathhouse. One pioneer resident, John Rau, said that he first saw the system in 1879 and commented that “it was old then.” In fact, the fountain from the well at the Capitol Saloon provided most of the residents of Phoenix with their drinking water and only three other wells in Phoenix were convenient for locals to obtain drinking water; one in Dr. Thibido’s backyard, a second at Monihon’s Corral, and a third in the stage corral.\(^{31}\) The 1880 census recorded 1,708 residents in Phoenix and that fall a group of residents raised money to place a pump in the plaza well. By the end of 1880, public-spirited Phoenicians completed the project, placing a cover over the old dug well to prevent debris and

\(^{30}\) Phoenix Herald, January 26, 1878; September 28, 1878; October 17, 1879; October 27, 1879.

\(^{31}\) Kupel, Fuel for Growth, 34-35.
refuse from contaminating it and installing a hand pump for the benefit of the citizenry.\textsuperscript{32}

Central Arizona in the mid-to-late nineteenth century was an arid land, but one that had yielded successful development by prehistoric Hohokam, contemporary Indian groups, Spaniards, and Mexicans. For much of the period between 1850 and 1880 American water development followed the pattern of earlier cultures. While growth was slow and uneven, the seeds for future growth were planted. Furthermore, pioneering efforts in the early years of American political control in Arizona proved that the area had tremendous potential for economic development. Every successful venture eroded the general belief that Arizona was an inhospitable desert. Jack Swilling’s success of transforming Hohokam irrigation canals to new agricultural uses demonstrated that a great civilization might someday rise again in central Arizona.

The Swilling Ditch, moreover, also served as the prototype for other joint-stock canal companies proliferating across the Salt River Valley. Unlike earlier Mormon irrigation projects, the canal companies were business propositions not communal ventures that reinforced theology. Investors joined together to form the companies because they did not possess the capital to build dams and ditches on their own. The shareholders decided how to put their portions of water to beneficial use and some actually farmed their own fields. Others leased their water

\textsuperscript{32} Arizona Republic, October 2, 1937; July 29, 1940; Arizona Republican, September 1, 1890. The Arizona Republican changed its name to the Arizona Republic on November 11, 1930.

By 1872 farmers were cultivating over 8,000 acres of barley, wheat, beans, corn, sweet potatoes, grapes, and fruit trees. In a shockingly brief period the Salt River Valley developed into the most important agricultural region in Arizona. Area farmers supplied not only the military but also the mines, which would proliferate throughout the territory in the next two decades. The beneficent river, conversely, could change radically and threaten the incipient irrigation community dependent upon its sustenance. In September 1868 heavy rains sent a huge flood roaring down the Salt. Six years later, in January 1874, the Salt flooded the valley for three days, destroying the Swilling head gates and wiping out William Parker’s granary, which was filled with ten tons of wheat. Farmers dashed away from their crumbling adobe homes to seek refuge in the local school house and court house. For weeks religious services were held in a saloon. After these two signal events, the farmers knew they faced serious environmental challenges in harnessing the river’s resources.

Thus private business interests dominated water resource development and service in Arizona from 1880 to around the turn of the century. These desert entrepreneurs ranged from the corporate owners of the Atlantic & Pacific Railroad in Flagstaff to Hispanics in Tucson who carried water on the backs of burros from house to house. Typically they were businessmen like John Gardiner in Phoenix.
and not surprisingly corporate entities followed the early individual entrepreneurs. Water systems required amounts of capital beyond the reach of smaller business owners. In addition to hard money, owners of water systems often had to manipulate political capital as well and larger corporate organizations often proved more adept at turning the political system to their advantage; a key asset for the success of latter day corporate water utilities.

The Swilling Canal, like other irrigation projects in the first two decades of Anglo-American settlement in central Arizona, was farmer-owned and the builders either purchased shares in the canal company or exchanged labor for shares. The shareholders thus considered the water transported from the Salt River, through their canals, to be appropriations attached to their land. If floods washed out the canal, damaged a canal head diversion dam, or other appurtenance the owners joined together and made the repairs themselves or voted levies on their stock to pay for repairs. Improvements were addressed in the same manner. The system, at first, worked well.

A different type of canal ownership emerged after Congress passed the Desert Land Act of March 3, 1877. An attempt to adapt land policy to the arid West, the new federal policy resulted in a more realistic approach to western settlement compared to its more famous predecessors—the Homestead Act of 1862 and the Desert Land Act of 1876. Under the revised Desert Land Act a person could obtain 640 acres of land—a full section—in any of the eleven western states and territories for $1.25 per acre if he or she agreed to irrigate it within three years of filing. The law, however, reflected the general American
ignorance of irrigation. No settler could bring 640 acres into irrigation within three years. Instead of helping settlers, the law proved a boon to speculators.34 The Desert Land Act of 1877 at least indicated a willingness to recognize the need for irrigation on western land, but Congress continued to think of farm development as largely an individual Jeffersonian effort. Proponents of the legislation remained confident, moreover, that once given a larger grant by the government settlers would find some way to irrigate land. In short, Western farmers, with the aid of federal land grants, could subdue the West as earlier generations of farmers had subdued the East. This notion, however, was off the mark in the arid Southwest.

For nearly one-hundred years, beginning with the Land Ordinance of 1785, federal land policy, in its various forms and incarnations, encouraged the transfer of the public domain to private hands, thus facilitating the development of a tax-paying civilization. In the arid West in general, and in central Arizona in particular, the acquisition of land and the development of scarce, yet valuable water resources in the last quarter of the nineteenth century, created a dynamic situation that shaped the early development of Phoenix and Maricopa County and formed the nexus for its economic future. Private enterprise and initiative, with the assistance of federal policies encouraging settlement, influenced greatly the economic and environmental worlds of the earliest settlers in Arizona Territory.35

34 At the end of three years speculators easily avoided the intent of the law and completed their claim. The original Desert Land Act of 1876 called for adequate irrigation but did not specify how officials of the land office could determine what was adequate. The omission created vast opportunities for fraud. Speculators paid people to make claims and plow a few furrows and claimed that the furrows were ditches.

Phoenix incorporated as a city in 1881 and its earliest officials soon wrestled with complaints over the provision of services. Water quality issues, as well as availability, marked the public outcry. In June 1881 a reporter for the Arizona Gazette lamented the filthy condition of water supply ditches and that “fully-one-half of the population” received its domestic supply from the irrigation ditches that ran along both sides of major streets in the city. The critique ended with the admonition that residents had received better service before incorporation. An Arizona Gazette subscriber later complained of a flock of ducks living at the head of the town ditch and polluting the water supply. On March 10, 1882, Phoenix Herald readers received a stiff warning from the editor: “We have noticed for some time in front of several saloons spittoons put into the ditches stay there to soak. This is a very bad habit and, according to the law, a nuisance. Many citizens use this water for drinking and culinary purposes. Desist, gentlemen, from this foul practice.”

In May 1882, Walter S. Logan, a powerful New York attorney who later served as President of the New York State Bar, visited Arizona. Logan asserted that he and his clients could bring some order, civilization, and, importantly, investment capital to the thirsty yet growing territory. Governor Frederick A. Tritle, along with then-Arizona Territory Attorney General, Clark Churchill, later described by Logan as “the best lawyer within a thousand miles of Arizona,” rode up and down the entire length of the Salt River, paying particular attention to a much-discussed route for a new canal that cut across the northern edges of the Salt River Valley. Tritle proved an especially ardent

---

36 Arizona Gazette (Phoenix) June 16, 1881; December 15, 1881; Phoenix Herald, May 20, 1880; August 17, 1881; June 19, 1884.
promoter of Arizona’s future. He declared in his Report to the U.S. Department of
Treasury for the Year 1884, “The agricultural advantages of Arizona are, I think,
generally underestimated abroad. There is no more productive soil in America than is to
be found in the valleys of Arizona, and it is believed that a greater variety of productions
can be raised here than elsewhere in the United States, providing water can be had for
irrigation. Not only does the soil produce fine crops of cereals, but fruits of all kinds, and
vegetables of the finest quality.” He later recounted that he “saw every now and then,
under the small ditches built, their ranches and their gardens, their fields, and their stone
houses, and all that Arizona even then could produce in such prodigal plenty.”

After the tour, Logan and Churchill “formulated the economic plan under which it
became possible to build irrigating canals in Arizona with outside capital.” Further,
Logan later took credit for organizing “the Arizona Canal Company to begin the work
and it was a client of mine in the east,” he continued, “and friends of W.J. Murphy in the
West, who furnished the money to build it.”37 Logan’s exaggerated rhetoric, nevertheless,
reflected the early, if ephemeral, optimism of the time and he quickly placed his brother,
H.H. Logan, into the emerging concept of a canal company to help expand the
agricultural imprint developing in the Salt River Valley.

With Phoenix growing at an unprecedented rate and residents clamoring for
sustainable amounts of potable and useable water, new canal companies organized
under the broad guidelines of the Desert Land Act of 1877. The wheels had
already been set in motion. On March 10, 1882, attorney William H. Hancock,

37 “It Was Arizona’s Night: The Governor of that Territory Banqueted at Bath Beach,” New York Times,
July 29, 1891. In the article, Logan, described as the ex-president of the New York State Bar Association,
hosted an event for Arizona Territorial Governor John Irwin to discuss the “size, the growth, and the
resources of Arizona...from various standpoints...over coffee and cigars that followed a complimentary
dinner given by Walter S. Logan to the Honorable John S. Irwin and H.H. Logan of Phoenix, Arizona.”
merchant J.Y.T. Smith, rancher Wilson W. Jones, and banker Martin W. Kales filed for 50,000 miner's inches of water and a canal location. On December 20, 1882, Hancock, Kales, and territorial adjutant general Clark Churchill incorporated the Arizona Canal Company with Churchill as president of the board of directors and Logan's brother, H.H., as secretary. Others were to be associated with the company. First National Bank became treasurer and later this role would be assumed by the Valley Bank of Arizona. Frederick A. Tritle, governor of the Territory, was named to the board of directors as were Colonel F.C. Hatch and Moses Hazeltine Sherman. The latter, a former superintendent of schools was made adjutant general of the Territory. Arthur Barry was the first engineer of the company but was later replaced by Charles A. Marringer. This was an investor-owned corporation, which sold stocks, bonds, and water rights to finance construction and operation. Theoretically, the company maintained the canals, head works, and dams, and asserted ownership of water appropriated from the Salt River. To secure water delivery, buyers of water rights signed contracts with the companies in which they agreed to pay a set fee per acre of land. In some instances, companies rented water to farmers and ranchers.38

According to the articles of incorporation, the Arizona Canal began about three-quarters of a mile below the junction of the Salt and Verde Rivers and extended northwest, skirting the northern edge of the Salt River Valley, crossing

---

Skunk Creek and New River, spanning the Agua Fria about eighteen miles north of its union with the Gila River, and continuing twelve miles to the White Tank Mountains before turning south to the Gila. Two months after incorporation, Hancock, Smith, and Jones sold their water rights to the Arizona Canal Company for $5.00. In announcing the sale, the Arizona Gazette noted that the new canal would open “hundreds of thousands of acres of land” to cultivation. These grand assumptions might have been correct if the canal had extended west of the Agua Fria River as proposed, and that all of the land along the projected route could be claimed for agricultural use. As it turned out, more than half the acreage was off-limits to the canal company.39

The project was ambitious. It was, to one observer, “the largest, longest, had the highest point of diversion on the [Salt] river and served more acreage…it was in a position to exert power….”40 Unlike the other major ditches, the Arizona Canal did not follow Hohokam precedents and instead it tapped into the Salt more than forty miles upriver, along the northern edge of the Salt River Valley, where no one, not even the Hohokam, had ever farmed. By May 1883 the first twenty miles of the Arizona Canal had been surveyed and was ready for construction.41

39 In creating Arizona Territory in 1863, Congress had reserved from each township sections 16 and 36 to benefit public schools. Then, in 1871, Congress gave the Texas Pacific Railroad Company the odd numbered sections for forty miles on each side of its proposed route across central Arizona. This meant that only sixteen sections (10,240 acres) of the thirty-six sections (23,040 acres) in each township along the projected line of the Arizona Canal would be open for entry. If the canal were constructed as outlined above, settlers could conceivably file entries only on approximately 90,000 acres.
41 Murphy, “W.J. Murphy and the Arizona Canal Company,” JAH, 43.
Churchill prepared to hire a contractor. In Prescott, forty-year-old W. J. Murphy heard about the project and traveled to Phoenix to talk with Churchill.42

At first blush Murphy considered this project another in a growing list of contracts to burnish his resume. This project, however, proved to be very special. It involved him deeply in the development of the Salt River Valley and he would spend the rest of his life in the area. Murphy had arrived in Arizona in 1881 to grade bed for the Atlantic & Pacific Railroad in the northern part of the territory and the job had been recently completed. His crew was rested and ready to work. In late April 1883 Murphy signed a contract to build the 40.75-mile-long Arizona Canal. This contract called for the canal to end at Skunk Creek, east of the Agua Fria River, though it also outlined the construction of five bridges, the Arizona Dam to divert water from the Salt into the canal, lateral ditches, two sets of head gates, and waste weirs. Construction costs would be paid from the sale of company stock and $500,000 in 8 percent interest bonds with face value of $1,000.00.

Murphy understood and grappled with the engineering complexity at hand. The canal was designed to be thirty-six feet wide at the top and thirty feet wide at the bottom for the first five or six miles with a depth of about six feet. For the first three miles a uniform grade of one and three-quarters feet to the mile was to be held and two feet per mile for the rest. The slope of the bank was to be one and one-half to one foot for the looser material such as the dirt. The diversion dam, located three miles below the confluence of the Salt and Verde rivers, would consist of fascines, bundles of brush tied together and weighted by rocks secured inside. Engineers also planned to have some rock cribs, large wooden crates

42 Apparently, the two had met previously in Prescott and had been acquaintances for some time.
floated into place and then filled with rocks to make them sink to the bottom and remain stationary. The dam was to be approximately 1000 feet in length with a fifty-foot base.  

Another aspect of the project raised questions about the logistics and financing of the contract. It contained strict, precise language and provided that the canal should be completed to a certain point—the twenty-mile point—by March 1, 1884; less than a year from the commencement of operations. If not completed the contractor was to forfeit the contract and also the unpaid balance of work already done. Furthermore payment for services rendered was to be entirely in stocks and bonds of the Arizona Canal Company. This required Murphy to sell bonds as well as administer the contract in order to get money to operate. Thus no cash was involved and water rights and land served as two forms of payment. Whatever understanding about the sale of bonds—and Murphy grew disgruntled when officers of the company were slow, if not available, to assist him in selling the bonds or borrowing money on them—it fell to Murphy to raise the money to pay his fees, the wages of his men, and the subcontractors. Murphy knew that he must assume increased responsibilities with the unique circumstances inherent in the contract. With the preliminaries out of the way, Murphy and his crew hurried to make the move to the emerging oasis in the desert, the Salt River Valley.

44 Arizona Republican, April 18, 1923; Arizona Gazette, November 20, 1883; Weekly Arizona Herald, June 4, 1885; W.J. Murphy to Laura, August 21, 1884, AC, ASU.
45 Arizona Canal Company, Articles of Incorporation, Box 1, 358-61; Maricopa County Recorder’s Office (MCRO), Arizona State Archives, Library and Public Records, Phoenix; Arizona Gazette (Phoenix) May 19, 1882. It appears the contract was signed on April 27, 1881.
The construction crew moved to the Phoenix area on April 30, 1883 and readied for the massive project. Murphy and Churchill, meanwhile, embarked on a range of land speculation activities. On April 25, 1883, two days before the perfected the construction contract, the two filed eighteen entries under the Desert Land Act at the U.S. Land Office in Tucson. Significantly, seven of the entrants were Murphy family members or relatives of his wife, Laura Fulwiler Murphy. These included Murphy’s father, George, sister Mary M. Culver and her husband, attorney Joseph F. Culver of Emporia, Kansas. Laura Murphy’s brother, William Dunlap Fulwiler, a Hackberry, Arizona miner, and her sister, Julia L. Fulwiler, a music teacher in Prescott, were also listed. The eleven other entries also raised eyebrows. Churchill’s wife, Margaretha, territorial governor and Arizona Canal Company Director, Frederick A. Tritle, company engineer Andrew Barry, company organizer Martin Kates and civil engineer and Murphy friend John D. Buckley of Greeley, Colorado round out the set of entrants. Significantly, entrants were required to sign an affidavit attesting that the filing was not made for the purpose of fraudulently obtaining title but for the purpose of faithfully reclaiming a tract of desert land.46 Most of the claimants had never seen the property and the large number of family members, the identical handwriting, and language in all of the applications suggested that the filings were a coordinated effort by Murphy,

---

Churchill, and the directors of the Arizona Canal Company to claim large tracts of land to be irrigated from the proposed Arizona Canal.\footnote{The same pattern of dummy entrants tied to Murphy emerged after Congress repealed the Texas & Pacific Railroad subsidy in February 1885 due to the failure of the company to build. Thus the odd sections of land were thrown open to settlement and Laura Murphy wrote her husband, who was peddling Arizona Canal Company bonds in New York, "The odd sections I suppose will be thrown open soon...Are there any you want entered on Desert [Land] Act and what names can you use?" She continued on with her admonition and mentioned three adjoining sections in what is now Phoenix, beginning on 32nd Street on the west and continuing to 56th Street on the east and between Thomas Road on the south and Indian School Road on the north. See Laura Murphy to W.J. Murphy February 23, 1885, W.J. and Laura F. Murphy Collection, Special Collections, Hayden Library, Arizona State University, Tempe, Arizona.}

The questionable filings notwithstanding, the construction workforce was organized like a military operation and it's General, Murphy, traveled to San Francisco, Detroit, Chicago, New York and other cities in the East seeking capital to construct the system. Like the early nineteenth century when there were no large pools of venture capital in the eastern United States, so there were none in the West in the latter nineteenth. As a result, Arizona and the Salt River Valley, like much of the West "found itself under the sentence of economic colonialism," dependent on Eastern capital to finance its large and significant improvements. Investors in these cities, like many of those at home in Arizona, were primarily interested in speculation, not water distribution or quality of life issues in the economic colony. Thus the Arizona Canal Company experienced the trials and tribulations of speculation in western water and lands.\footnote{Another solid account on the early history of Phoenix and the Salt River Valley is Karen Smith, "From Town to City: A History of Phoenix, Arizona, 1970-1912," (M.A. Thesis: University of California at Santa Barbara, 1978); John W. Caughey, "The Insignificance of the Frontier in American History," \textit{Western Historical Quarterly}, V (1974) 13-14; Smith, \textit{The Magnificent Experiment}, 6.}

Nevertheless, in early May 1883, Murphy's organization established headquarters north of the old Fort McDowell Road and as work progressed he moved with the other workers westward across the northern edge of this speculative desert empire several times. Each day the crew returned to familiar surroundings—their canvas tents—and one
local writer described the mobile community as a "little canvas town" with a boarding house, blacksmith shop, commissary, engineers quarters, tents for three families, and a number of larger tents that housed sixty or seventy men. Also, the construction crew maintained livestock corrals, stacks of hay for the stock, piles of tools, wagons, and all of the accoutrements necessary for camping, clearing, excavating, and prosecuting the work in various conditions and varying circumstances. As excavation of the Arizona Canal progressed 225 two-mule teams enabled the 450-man workforce to execute their jobs. The crew's earlier experience in northern Arizona served them well as they faced greater challenges, responsibilities, and endless work hours on the grandest water resource delivery system project in the history of the region, construction of the Arizona Canal.

Like other western areas not yet visited by the growing lattice work of the transcontinental railroad system, the Salt River Valley, in 1883, remained an agricultural island of vast distances, rugged mountains, scorching deserts, and cultural admixture of Hispanics, Anglos, and Indians. In spite of its eastern pretensions Arizona was a land of rudimentary transportation, isolation, parochialism, and endemic violence. Indeed, forging an existence in Arizona included violence as a condition of life. The raw frontier lured various types from all over the U.S.; even from throughout the world. They formed a civilization marked by youth, daring, ambition, energy, recklessness, greed, contempt for restraints, and a casual view of suffering and death. Local newspapers reported countless incidents of bloodshed and lawlessness. Three economic and social influences incited men to violence. The scramble for quick money and the power that went with it—ambition—played a key role in the area's social psychology. Added to that were the dangerous blends of liquor and guns. Nearly everyone went armed and most of these
young men in their teens and twenties drank constantly and often heavily. The combination oftentimes proved deadly. Many spent no small amount of time avoiding situations where this uneasy confluence met in the Salt River Valley. 49

In one instance, Richard E. Sloan, a newly arrived attorney from San Francisco, who would later become a territorial judge, governor, and, after statehood, Supreme Court Justice, visited the Arizona Canal construction site with engineer Albert Barry. They located a burial site of one of the men, John Coil, who had died in an accident during the construction process. According to Sloan, the crew foreman approached Barry after the burial and said, “It’s too bad that Coil’s grave should remain out there in the desert without anything to mark it.” The company engineer responded that he should craft a suitable elegy and place it on the head of the grave. The next afternoon, after the foreman worked on the project all day, he brought to Barry the result of his literary efforts: “Here lies John Coil; a son of toil; who died on Arizona soil; he was a man of considerable vim; but this here air was too hot for him.” Sloan recounted that the headboard bearing the inscription was erected and it remained there for several years. 50

Much effort in the process centered on the care and use of the mules; motive power for the project. Indeed they transported men, hauled supplies and water, and pulled excavators, plows, and scrapers. The logistics of providing energy for these animals came from the five tons of hay and 4,500 pounds of barley consumed daily and countless hours and days of labor. The chief engineer, Barry, determined whether the work required the removal of soft dirt, loose rock, or hard rock. Most of the excavation was in loose dirt where plows and wheel scrapers could be used. Mules pulled the excavators and bucket

chains conveyed the dirt over the bank. The crew perfected this method while working on the Atlantic & Pacific project in northern Arizona and implemented it on the canal project.\textsuperscript{51}

Daily life on the work crew grew monotonous. Murphy ran a temperance camp, not selling liquor and not even allowing it on the premises, thus avoiding drunkenness, braggadocio, and violence. There was little in the way of recreation, though workers were encouraged to attend the Presbyterian Church in Phoenix. The summer heat and dust made life in the canvas tents unbearable. Plank floors served to tamp down the dust though food preparation over a wood stove became virtually impossible for the cooks. During the summer violent sandstorms followed by driving rains were the norm. One contemporary wrote of a summer storm in August 1884, “A great wind blew upon us about four o’clock and leveled the whole camp. Our quarters were greatly wrecked. The kitchen was so much so that we had to take the cook tent of the other camp. Our large tent was torn badly but before dark we had a shelter. I was so thankful that we escaped uninjured. We were all in the tent when it went over.”\textsuperscript{52} Despite the vagaries of nature, life surrounding the construction of the Arizona Canal settled into a routine of hot and dusty sixteen hour days.

At one point the crew responded to a call that one of the subcontractors had encountered a ridge of hard rock at a site south of Camelback Mountain, near what is today the intersection of 56\textsuperscript{th} Street and Indian School Road. Instead of attempting to dislodge the rock ridge they decided to leave it in place, allowing the water to flow over the geologic formation thus creating a twenty-foot high waterfall known as Arizona Falls.

\textsuperscript{51} Murphy, “W.J. Murphy and the Arizona Canal Company,” \textit{JAH}, 147-148.
\textsuperscript{52} Laura F. Murphy to W.J., August 23, 1844, W.J. Murphy Papers, ASU.
In time, this anomaly in canal construction became a favorite destination place for picnics and outings.\textsuperscript{53}

In addition to the technical and construction challenges the company faced, the struggle to raise money for payment of wages, food, and supplies continued to weigh on Murphy. As early as the summer of 1883, the Phoenix bank of Kales and Lewis refused to furnish funds for the construction despite the fact that Martin W. Kales was one of the founders of the Arizona Canal Company. Evidently the bank abandoned active support of the canal project and turned its attention to land speculation, road construction, and mining ventures that consumed latter day prospectors and would-be magnates.

Fortunately, Murphy convinced an old friend from his Atlantic & Pacific days, Colonel William Christy, to move to Phoenix and establish a new bank and in September 1883 a charter was issued for the First National Bank of Phoenix, with authorized capital of $100,000, \textdollar50,000 of which has been paid up,\textdagger according to an account published in the \textit{Arizona Gazette}. The same article described Christy as \textquote{a man of the highest standing and a banker of very large experience.}\textsuperscript{54} Christy, forty-two years-old at the time, moved

\begin{footnotes}
\item The section of land, owned by Murphy, became the Ingleside Tract. Murphy planted trees and citrus orchards and it became a kind of local, unofficial park on the county road eight miles northeast of Phoenix. The \textquote{unofficial park} status was short-lived, though Murphy had big plans for the area. He built what was the Valley's first \textquote{resort}, the Ingleside Club, later renamed the Ingleside Inn. Since there was no air conditioning or cooling the Inn was open only in the winter. It operated until the early 1940s. Then, two women turned the facility into a private school for girls. The school operated until 1957 and in 1959 it was sold to a developer who tore it down and put up apartments that have been converted into condominiums. Regarding the site that Norton and his crew was unable to displace; in 1902 a small hydroelectric plant was built over the falls and in 1910 construction began on a larger 850 kw plant at the falls. This plant was in continuous use until 1950. Then, in 2003, the Salt River Project rejuvenated the area and called it the \textquote{Arizona Falls Hydroelectric Project,\textquote{ which included an improved park (G.R. Herberger Park), dance floor, waterfalls and a 750 kw hydroelectric generator designed as an educational facility for local schools.

\item Christy was a banker from Des Moines, Iowa and knew the Chief Engineer of the Atlantic & Pacific, who introduced him to Murphy. The two got along well and Christy accompanied Murphy to Phoenix to look over the project. Since his project was not being supported by the existing bank Murphy proposed that Christy move to Phoenix to establish a new bank. Christy remained in Phoenix for the rest of his life and later, in 1891, was appointed Territorial Treasurer by Governor John Irwin. Christy arguably was the first person to gain a degree of serious financial recognition of Arizona by Eastern money markets, selling more
\end{footnotes}
to Phoenix, purchased a 440-acre farm west of the city on a country thoroughfare that was soon being called Christy Road—now McDowell Road—and immediately made a contribution to the community beyond stemming off insolvency for the Arizona Canal Company. With zeal, thoroughness, and imagination, Christy studied the local cattle situation and concluded that Hereford would flourish better than the Longhorn he found when he arrived in the valley. He imported the white-faced breed to prove his point. He also conducted water, soil, and weather tests and planted olive, citrus and peach trees, some of which took root and others not.

But Christy and the new bank could not help Murphy in the short term and he needed cash immediately. His application for a loan from an Albuquerque bank had been refused and he had not heard back from the Bank of Arizona in Prescott, where he had applied for a similar, yet smaller loan. Murphy had exhausted his own means and only 3% of the canal work had been completed. Worse, Christy could not raise even $5,000 and Murphy, in frustration, wrote his wife, Laura: “The amazing questions that arise are how money shall be raised to start the bank and where shall I get money to keep the camp going till the bank opens? Something must be done before long. A car load of machines coming and nothing to pay freight with.” Fiscal instability plagued the project and prospects seemed bleak.

than $2 million of bonds in New York to fund the debts of towns, counties, and the Territory; debts that had been mounting due to pressing water issues.

55 Arizona Gazette, September 25, 1883; W.J. Murphy to Laura, no date (This letter was apparently written in August-September 1883), W.J. Murphy Collection, AC, ASU.

56 Christy was born in Trumbull County, Ohio, February 14, 1841. When he was thirteen the family settled on a farm in Osceola, Iowa, where at the age of seventeen, he began teaching for three years at a nearby country school. In July 1861 he enlisted in the Union Army and rose rapidly in the ranks, fighting at Shiloh and Lookout Mountain. At the Battle of Jonesboro, July 29, 1864, Christy was wounded four times while leading a saber charge. In spite of wounds in both shoulders and through his left hand and arm, he led still another charge against the Confederates. The following day he was captured and sent to a hospital in Newman, Georgia. Six months later he was paroled and exchanged. His wounds were so serious that he
In order to attract investors, dispose of the canal bonds, and raise money, Murphy drafted an Arizona Canal prospectus, something he considered "out of his line," but crucial for his fiscal survival. Somehow its distribution to prospective investors and the formation of the First National Bank of Phoenix enabled the fledgling project to survive this early cash crisis. The bank officially opened for business on November 22, 1883 in the newly constructed Ellis Building. Samuel J. Murphy, W.J. Murphy's brother, was appointed president; W.J., vice-president; Christy was cashier, and E. J. Bennitt, Christy's brother-in-law, was his assistant. The newspaper notice allowed, "All the parties connected with the bank are men of sound financial standing and well-known integrity." Meanwhile Murphy visited one of his creditors, First National Bank in Los Angeles, which held his note for $16,000. The board of directors would not extend but a trip to San Francisco resulted in $42,000 in loans which enabled him to pay off the Los Angeles bank debt while still keeping the canal project alive. J.W. Dodge, of San Francisco, appeared to have saved the day for Murphy and from the Bay Area he wrote Laura: "I had expected to have this business done by Christy. Did not anticipate so great difficulty in raising money on these bonds, but that turns out to be the hard business in the scheme, and so far nothing is done." Murphy managed to keep going, remaining loyal to the apparently inept Christy and returned to Phoenix in mid-December. He carried his left arm in a sling for three years. Shortly after being mustered out of the military in 1865 Christy bought a business college in Des Moines, Iowa and met and married Carrie Bennitt. He became active in Republican politics and in 1872, at the tender age of thirty-one, he was elected State Treasurer of Iowa and was reelected to second term in 1874. Then he became cashier and a director of the Capital City Bank of Des Moines and continued in that capacity until 1881. Then he organized the Merchants' National Bank of Des Moines, and served as cashier there. One evening, on the way home from Republican party meetings he caught cold and contracted pneumonia. This was followed by violent asthma attacks. On his doctors order he and his family moved to Arizona in August of 1882 and purchased a ranch forty-five miles north of Prescott. Fortunately, his brother-in-law, E.J. Bennitt had lived in Yavapai County for several years, working as a surveyor, civil engineer, and also for the Goldwater mercantile firm. After eighteen months, Christy had regained his health and was successful in raising cattle and cultivating crops on his ranch.
vowed to continue his fundraising activities while the new First National Bank of
Phoenix bank extended liberal credit to him. In short the project remained fiscally afloat
at year’s end 1883.57

As Murphy addressed the fiscal challenges the subcontractors sprinted to
complete the first portion of the contract which had to be finished on or before March 1,
1884. During this period the project faced its greatest crisis. As noted earlier Martin W.
Kales, who supported the project in its earliest days, not only ceased financial backing in
mid-1883, but also reversed course entirely and took several provocative actions to
prevent its completion. For example, while Murphy was in California in the summer and
fall of 1883 working desperately to keep the project afloat, Kales knew that Murphy was
unable to pay rental costs on equipment and mule teams. Kales urged canal
subcontractors to file liens. According to contemporary accounts Kales told one of his
bank directors that Murphy and his partners were cutting into the bank’s business and he
sought to put Murphy into bankruptcy and cause the new bank, First National of Phoenix,
to go down with him. Kales intended to “bust Murphy.”58

Murphy left Phoenix for San Francisco on another fundraising effort on February
20, 1884, the same day a huge storm swept into the Salt River Valley. The storm washed
down the telegraph lines cutting off the valley with the outside world. There was no
communication of any kind in or out of Phoenix for two weeks and reportedly the first
message taken out was conveyed by a Pima Indian who swam across the Gila River. At
this time, Kales induced all but one of the subcontractors to quit work and “attach

57 Papers of W.J. Murphy, cancelled notes to J.W. Dodge, AC, ASU.
58 Zarbin, Two Sides of the River, 85-88.
Murphy’s outfit with a view to preventing the completion of the contract stipulation.\textsuperscript{59}

The remaining subcontractor, J.T. Simms, resisted Kales’ efforts thanks to the entreaties of Will D. Fulwiler, Murphy’s brother-in-law. Simms completed the canal to the required point at 10 a.m. of the morning of the day that the contract required that it should be completed by noon.\textsuperscript{60}

In early 1884 Murphy and his partners performed some local fiscal sleight-of-hand banking maneuvers in order to keep the project solvent. The unrelenting Kales pounced on the fact that the National Bank of Phoenix had extended more credit to Murphy than its national charter permitted. In an overnight reaction to Kales’ complaint to federal officials the bank reorganized under territorial banking regulations and reopened as the Valley Bank of Phoenix. The officers of the new bank were the same as the old First National, with the exception of the president. Moses Hazeltine Sherman held

\textsuperscript{59} \textit{Arizona Republican}, April 18, 1923. It remains unclear how many subcontractors continued to work after the attempted attachment but Simms stayed on for some time, though he quit late in the summer 1884. In April 1884 he headed to San Francisco to procure necessary irons and timbers for putting in the dam and head gates at the head of the Arizona Canal. But it appears that in the summer of 1884, Simms quit. On August 19, 1884, Murphy wrote, “Shall have my hands quite full now. Simms has abandoned his contract. He had been trying to get me to pay him the final 10% of what work he has already done. He is not entitled to them—till all his excavation is completed and his anxiety to get them made me suspicious and now failing to get the bonds he admits he is not going on with his contract.” See W.J. Murphy to Laura, August 19, 1884, AC, ASU.

\textsuperscript{60} Murphy, “W.J. Murphy and the Arizona Canal Company,” JAH, 156. It appears also that Murphy was indebted, financially at least, to J.W. Dodge of San Francisco. He wrote much later that “In relation to Mrs. Dodge I will only say that to her dead husband more than to any one man I am indebted for success in completing the canal. When others in San Francisco believed the lying stories afloat, he said I have faith in the canal and in Murphy and he not only worked with others to get money for me but he borrowed $10,000 to loan to me. Mrs. Dodge was in full sympathy with her husband in his efforts to assist me and she has been very lenient and a considerate creditor. When she needed money to settle up the estate she could have used the securities she held of mine but would not for the reason that [the] party who offered to take them would have sold them out at a great loss to me.” In fact, two cancelled notes indicate that on January 20, 1884, W.J. Murphy executed a note for $25,000 to J.W. Dodge, putting up for collateral five $1,000 bonds. Interest was set at 2% per month but reduced to 1 1/2% on May 10, 1884. A second note for $10,000 to J.W. Dodge was secured by twenty $1,000 bonds. The notes were finally paid off on February 11, 1888.
that office. The local newspaper explained to its readers that the object of the change was to "untrammeled the policy of the Bank and permit it to make larger loans."

In the field environmental forces threatened work already completed. The heavy rains in February 1884 caused floodwaters to flow down the completed parts of the canal and spread over Section Seventeen, leaving that part so wet that the crews were forced to remove two miles south and work on that section until Section Seventeen dried out. Unable or unwilling to reconcile his dual role of contractor and fundraiser, Murphy endeavored to have the company take over the sale of the bonds. The company attempted to oblige and Churchill and Governor Tritle journeyed to Chicago and New York in an effort to assist in raising capital but were unable to convince investors of the potential profitability of the canal venture. Another cash crunch ensued in September 1884 as Murphy traveled again to San Francisco ordering materials for the Arizona Dam portion of the project. On September 9 he ordered a carload of powder and wagons and carts to haul lumber from Maricopa and on October 2 he ordered a carload of iron for bridges. His $30,000 in notes in San Francisco were due and another $13,000 past due had to be paid. In effect, Murphy had no money to pay for these deliveries and hoped to secure funds before the goods reached Arizona. He then returned briefly to Phoenix to oversee the beginning of the construction of the dam and then headed to New York in November to follow up on a lead developed by Governor Tritle and Churchill. He remained in the East working every angle to raise money in places like Hartford, New Haven, and Boston and was able to borrow $5,000, putting up $25,000 in bonds as collateral.

Evidence of the haste in the overnight reorganization was that the new stock certificates had "Valley Bank" penned in and "First National Bank" crossed out. See stock certificates, numbers 11, 14, 15, 21, First National Bank of Phoenix, AC, ASU; Weekly Phoenix Herald, April 17, 1884; Arizona Gazette, April 14, 1884.
Throughout this first major effort at developing an irrigation infrastructure in the Salt River Valley Governor Frederick Augustus Tittle, a tireless promoter for the Territory of Arizona, in general, and the Arizona Canal project, of which he maintained a pecuniary interest, in particular, was a central player. A Republican appointee in a heavily Democratic federal territory, Tittle nevertheless developed longstanding relationships throughout the region. In his 1884 report for the Commerce and Navigation section of the U.S. Department of Treasury, Tittle relied much on Murphy’s Arizona Canal Company prospectus and touted the virtues of the Salt River Valley and the canal project to his superiors in Washington, D.C.62 “In the Salt River Valley an immense canal is being constructed which will convey water enough...to reclaim 100,000 acres besides providing motive power for an immense amount of machinery,” he wrote. With the 35,000 acres already under cultivation, he proffered that “when the canal is ready for use, it is expected in the spring of 1885, this valley will be as valuable and productive as any area of equal extent in America.” He encouraged settlement: “The possibilities for the immigrant in this and adjacent valley of the Gila are wonderful,” and added, “land can be had reasonably cheap [sic]; that which has not been improved can be had for $5.00 to $10.00 per acre; improved land for $15.00 to $30.00 per acre, according to the character of the soil and location. This price includes a water right sufficient for crop raising.”63

62 Tittle, who previously had sought office in Nevada, had experience in arid land economics and gained the confidence of President Chester A. Arthur, who appointed him Governor of Arizona Territory. Tittle served from 1882-1885 when President Grover Cleveland, a Democrat, assumed the presidency.
63 Frederick A. Tittle, “Appendix 27: Extracts from Report of Hon. F.A. Tittle, Governor of Arizona, for the Year 1884,” in Joseph Nimmo Jr., Chief, Bureau of Statistics, Navigation and Commerce, Report on the Internal Commerce of the United States (Washington: Government Printing Office, 1885) 244-247. In prefatory comments to his comprehensive report to the U.S. Department of Treasury, Tittle wrote, “In reference to the benefits of the canal to the Territory, the following quotations from the prospectus of the canal company are instructive.”
He continued his chamber-of-commerce like discourse for his federal colleagues. “The land is deep alluvial soil of surpassing fertility. The surface remarkably even, being free from elevations and depressions, with an even grade of about 10 feet to the mile from the foothills to the river, rendering it perfectly adapted for irrigation....The yield per acre of wheat and barley is from 25 to 35 bushels and after this is harvested corn can be planted on the same ground, and a fine crop raised the same season,” he boasted, and “apples, peaches, pears, plums, figs, quinces, apricots, and nearly every other variety of fruit yield largely.” In anticipation of introducing citrus into the Salt River Valley agricultural economy, Tritle extolled the virtues of the region to a questionable degree: “Lemons, oranges and olives can be raised with profit, and finer grapes cannot be produced anywhere. Sugar cane and cotton have also been grown successfully.” Tritle oft-repeated his statements to potential investors throughout the eastern seaboard and though exaggerated in some instances, he nevertheless effectively sold the Salt River Valley as a Garden of Eden and potential agricultural empire.

Richard E. Sloan, as noted earlier, the last Territorial Governor of Arizona (1909-1912), echoed his predecessor’s assessment. “I arrived in Phoenix in 1884,” he wrote in his celebrated memoir, “and the Arizona Canal was then under construction. W.J. Murphy, whom I met in San Francisco, was its promoter and builder....The subsequent development of the Valley is due, in large measure, to his foresight and his faith in the future of the country.” 64

64 Ibid. Tritle covered topics like water power, water supply, reclaimed lands, agricultural products, livestock, land grants, and artesian water in his report. Among other things he observed, “The most profitable cereals are wheat, barley, and oats. The yield this year (1884) is estimated at 340,000,000 pounds. The wheat produced here is of extra fine quality and makes superior flour. The market for these productions comprises a radius of 400 miles of surrounding country....The means of water crops being in the hands of the farmer and with no frosts to interfere, the yield is very certain. There has not been a failure of crops in this valley since its settlement thirteen years ago. It is a notorious fact that in all countries where
But the environment needed to be harnessed to the benefit of man and often Salt River Valley residents experienced the humbling and matchless power of the natural environment. In December 1884 the river's natural flow interfered with dam construction. On December 13 a steady, hard rain lasted for twelve hours and by the evening the river had risen two feet. The mountains were white with snow and the current was so rapid that it carried away two days of work. On Christmas day 1884 melting snows in the Salt River watershed left the river “booming.” More of the dam was swept away. Yet by January 22, 1885 construction of the dam seemed “under control” and the workers labored away “day and night.” The carpenters finished their work on January 24 and crew members expected the dam to be completed on January 31 if “there was no big rise in the river.” Indeed on January 28, the crew had been cut to thirty men and ten mule teams and one crew member, James “Jim” Cashion, brought in the last load of lumber to complete the bridgeworks. Over the next month the crews completed final touches on the dam and bridges, repaired leaks, and by April 30, 1885 the work on the canal and its attendant infrastructure had been completed, though the financial troubles were not as Murphy scrambled to pay workers and creditors alike.

Murphy and his crew foreman, according to the Weekly Phoenix Herald, headed the final inspection of the completed canal during the last week of May 1885. Along with Arizona Canal Company President of the Board, Clark Churchill, and Board lands that are supplied by water for irrigation rate at more than double the value of those lands that depend on rainfall, and this is owing to the larger crops produced and the greater certainty of crops on irrigated lands. In some countries—Spain, for instance—this disparity is even greater, the value of irrigated lands being more than three times that of other agricultural lands.”

Murphy, “W.J. Murphy and the Arizona Canal Company,” JAH, 162. Murphy spent the month of January 1885 in New Haven, where he hoped to make “arrangement for some temporary help.” He confided to Laura that “The success of building the canal seems assured already, and now comes the other part, to make a success of disposing of the securities. That part ought to be the easier part, but I am not sure that it will prove to be.”

Arizona Gazette, June 1, 1885; Murphy, “W.J. Murphy and the Arizona Canal,” JAH 164.
Director, Colonel F.C. Hatch, and Engineer Charles Mariner, the group set out in an ambulance leading a saddle horse behind it and the entourage first visited the W. J. Murphy campsite about eight miles northeast of town near Squaw Peak (renamed Piestewa Peak in 2003). From Murphy’s camp the group headed east and inspected the head gates and the dam, which conveyed the Salt River’s waters into the canal. In order to gain better perspective, Churchill mounted the horse and rode on top of the canal bank. The tour ended with a return to the dam and head gates and Churchill, Mariner, and Hatch camped the night near the home of the gatekeeper, Mr. Stelzreide, and amused themselves by fishing and swimming in the river.

The next day the party returned to Murphy’s camp, Churchill riding the horse the entire distance on the canal bank. On the third day of inspections Colonel Hatch returned to Phoenix while the rest of the group continued their inspection to the west, covering nineteen miles from Arizona Falls. Cuts in the rock in the eighth and ninth miles required blasting and in miles twenty-six and twenty-seven were deep cuts in cemented material; more difficult than solid rock. The Herald reporter had kind words to say about Murphy: “A master stroke was the selection of W.J. Murphy by Gen. Churchill as the party to execute the work of construction. Our people have good reason to know this.” He added, “The contract for the entire work having been let by him....At times as many as 500 men and 300 mules have been employed on the work, but in all this work there was no confusion.” “The most perfect order and discipline,” he averred, “prevailed all along the line and Mr. Murphy has not only performed the work but has also performed it.
faithfully, and paid all his workmen and others for their labor, materials, and supplies consumed.\textsuperscript{67}

The \textit{Herald} reporter, who accompanied the entourage, moreover, spared no verbiage in describing the physical appurtenances of the new canal, dam, and related infrastructure. Also, his description provided future historians with a clear snapshot of the remarkable achievement that shaped the valley’s economic, social and cultural future.

The upper canal was cut in solid rock, “excavated through solid granite.” “The dam” he wrote admiringly, was “constructed of fascines supported by cribs filled with heavy rock and extends across the Salt River from a point...some three-quarters of a mile below the Verde River so that the projecting natural rock of the mountain practically forms a section of the dam itself.” The waste weir, he observed, was built of heavy timber about forty feet wide and sat at the height of the dam. Just to the west of the waste weir sat the head gate. “This structure,” he wrote, “is a model of mechanical skill, strength, and symmetry...built of exceedingly heavy timbers and solid masonry laid in Portland cement. It is forty feet wide and so contrived to let six feet in depth of water in to the canal. Its bulkhead rises over the gates to a height of twenty-three feet.

On June 1, 1885 the \textit{Arizona Gazette} trumpeted, that the canal “stood the test and...was finally accepted by the company. Water flows gracefully and evenly through the entire length of 41 miles.” The reporter wrote effusively of the sheer size of the project, noting that “this canal will carry as much water as the Erie Canal in the state of New York.” “The Arizona Canal,” he continued, was “a grand improvement and

\textsuperscript{67} \textit{Weekly Phoenix Herald}, June 4, 1885. The reporter overstated his case here. While Murphy’s spirit was willing his bonds were weak. Murphy was not part of the triumphal inspection; instead he was in New York City hounding investment bankers and potential investors, trying desperately to sell bonds or borrow money on them to meet head off the creditors who were hounding him on all fronts.
although of a public nature it has been constructed entirely by private means and great business capacity of a few men.” He concluded his story in grandiloquent fashion: “It will furnish water to reclaim a very large tract of land…to supply thousands of farm, vineyard, orchard, and stock-growers homes, upon lands which have been an unproductive desert of no value for any purpose. It will be of incalculable benefit to this valley and the whole territory….No improvement in any part of the country originating in private enterprise and involving so much expenditure has, to our knowledge, ever been brought to completion.”

The completion of the Arizona Canal in 1885 served as a powerful example to local citizens; as more land was brought under cultivation most of the canal companies in the valley became corporate associations issuing capital stock. The informal operating model and maintenance procedures, impressionistic management of water shortages and distribution of the early ditch days were no longer sufficient for the increasing number of people dependent upon water delivered through the canals. More businesses than agricultural tools, these corporate canal companies leased and assigned water rights within the service limits of an irrigation ditch with little regard for the primacy of prior appropriation, thus setting the stage for interminable lawsuits. Water certificates, in fact, became common currency in the Salt River Valley in the 1880s, as increasing numbers of them found their way into the hands of persons who were not owners of the land but instead were money lenders collecting defaulted loans. Indeed, the significance of the shift from cooperative to corporate irrigation, as manifested in the Arizona Canal project, can be seen largely in the changing purposes of the canal companies; making a profit

68 Arizona Gazette, May 28, 1885.
from land sales, not controlling the water supply for farming, became the object purpose and W.J. Murphy and his associates exemplified this new fiscal reality.  

Indeed, between 1883 and 1893 a total of 277 people filed entries under the Desert Land Act for land along the canal and many were Murphy-Fulwiler family members. He actively promoted the Arizona Canal Company in his home state of Illinois and recruited allies and confederates from the U.S. Congress, Tucson District Land Office, and other strategically placed bureaucrats in the federal government. Instead of actually selling the land Murphy merely informed potential buyers of land and water that was available through the Arizona Canal Company Project. It appeared, therefore, that if someone was interested in filing a claim under the Desert Land Act, Murphy likely collected a “finder’s fee” or had the “buyer” sign a mortgage--unrecorded, of course--in Murphy’s favor. Murphy then sent a “relinquishment” to the General Land Office and arranged for the buyer to be the next entrant for the relinquished parcel. If, in fact, the buyer intended to occupy and farm the land, he either purchased a water right or an Arizona Canal Company bond. After May 1885, when the canal was completed, and “at any time before 1,000 water rights shall be sold,” each $1000 bond could be

---


70 Murphy’s Peoria land sales demonstrated how his relinquishment system worked. Arizona Canal Company engineer Andrew Barry filed an entry on April 25, 1883 and it was filed by Churchill and Murphy. Barry signed a relinquishment, and the General Land Office canceled the entry on March 6, 1886. Six days later, Samuel Bartlett, a Peoria grain dealer, filed an entry on the same section. The land entered by Barry and Bartlett was Sec. 4-T2N-R2E, 43rd to 51st Avenues and Glendale to Northern Avenues. Bartlett did not own water rights when proof of irrigation was made. After Bartlett’s death the land was transferred to Murphy’s Glendale Land Company for $1.00 on October 27, 1903.
converted into two water rights. Money derived, through the Merchants’ Loan and Trust Company of Chicago, was to be used to pay off the canal company’s bonds.\textsuperscript{71}

Murphy, meanwhile, planted twenty acres of citrus trees at Ingleside, a move that punctuated the development of an extensive and profitable new enterprise for the valley. On the south side of the river, fellow Salt River pioneer Charles Trumbull Hayden mimicked Murphy and the trees bore fruit, thus proving wrong those skeptics that suggested the area was “too cold for citrus.” Five years later Murphy laid out the Orangewood section and using two parcels on opposite sides of North Central Avenue he planted 1300 acres in citrus.

In May 1887 Murphy, in order to generate capital and obtain land for himself, formed the Arizona Improvement Company (AIC) with John R. Norton as superintendent. In effect Murphy sought to gain control of the Salt River, Maricopa, and Grand Canal Companies—north of the Salt River. Norton became water master for Murphy’s newly configured consolidation and superintendent of AIC.\textsuperscript{72} Under the aegis

\textsuperscript{71} Significantly, at this time Murphy owned no land in the Salt River Valley nor was he an agent of the federal government nor authorized to sell the public domain. He was not actually “selling” land. After his dummies filed entries on the public domain they signed and gave to Murphy a document called a “relinquishment,” which restored the land entry back to the federal government. Upon receiving a relinquishment the U.S. General Land Office reopened the claim for entry by any other party. The challenge lay in the timing; when Murphy forwarded the relinquishment to the General Land Office he had to ensure that the person to whom he had “sold” the land would be able to make the new entry. The finder’s fee may have ranged from $1,000-$1,500 per section. Also, the goal of selling 1,000 water rights was never reached. See William Christy to W.J. Murphy, August 25, 1885, W.J. Murphy Papers, AC, ASU. Deed Books in the Maricopa County Recorder’s Office (MRCO) reveal 744.8125 water rights issued by the Arizona Canal Company between January 24, 1886 and March 15, 1907. For an overview see Earl Zarbin, “Desert Land Schemes: W.J. Murphy and the Arizona Canal Company,”\textit{Journal of Arizona History} 42 (Summer 2001) 163-164.

\textsuperscript{72} All was not perfect on the Arizona Canal for the first decade of operation. William Bartlett, for example, explained how the distribution system worked to the benefit of Murphy and his partners to the detriment of the water users under the project. “As land owners,” Bartlett fumed, “we are entitled to a certain amount of water which we have not received and we have not received it for two reasons...because Murphy as manager has never cleaned out the canal and it is not in shape to carry the amount of water necessary to satisfy the water rights the company has sold and...because a large percentage of the water that starts in the canals is diverted before it reaches our land for the use of Murphy & his friends.” The latter complaint
of the AIC, Norton oversaw the building and construction of the Crosscut Canal in 1888 which successfully brought all canals on the north side of the river under one management and operational system. From that time until the turn of the century he assisted Murphy in developing not only strategies and plans for future land acquisitions and internal improvements, but also represented him at various business and governmental meetings and official functions. Furthermore, performing administrative duties for AIC. As superintendant of AIC, Norton oversaw the grading of the eighty-four-mile Maricopa and Phoenix Railroad right-of-way using the men, teams, and scrapers from the recently-constructed Arizona Canal. And, like his two years laboring on the canal, Norton’s home was his tent, even though he had purchased the property in north Phoenix. The *Phoenix Gazette* described the grading project as it reached a point four miles east of Tempe: “Their tents are pitched about a mile and a quarter from the river. The outfit consists of a commissary tent, sleeping tents and two other occupied as a dining room and kitchen. A great feed bin for the mules flanks one side of the encampment and wagons and the usual incidentals of a mechanical camp are scattered about.” Under Norton’s experienced supervision the crew completed the roadbed grading in late June 1887 in time for the first passenger train carrying fifty people over the completed line from Tempe to Maricopa. Ultimately, Norton resigned his water master post on January 1, 1899, turning it over to his trusted friend, Dan McDermott, who had worked for many years as a zanjero for the Arizona Canal Company. As the *Arizona* plagued virtually every canal venture in the Salt River Valley during the last quarter of the nineteenth century. See Zarbin, “Desert Land Schemes,” *JAH*, 165.

73 *Phoenix Gazette*, May 19, 1887.
Republican described this succession “[McDermott] is a capable man and will make a
good superintendent.”

The implications of the completed railroad spur were significant and further
transformed the valley’s agricultural economy and triggered the crop diversification that
marked the 1890s and the first decade of the twentieth century. As Maricopa County’s
population grew from 235 souls in 1870 to 11,000 by 1890, the Maricopa and Phoenix
spur line opened the valley to unprecedented opportunities. Farmers knew prices of wheat
and barley fell in the late 1870s after a brief boom in the earlier part of the decade.
Wisely, they diversified their crops in the 1880s, discovering that some fruit trees
flourished in the valley’s mild climate; they planted peach, fig, apricot, and a variety of
citrus trees next to the traditional alfalfa, clover, and grains. On the north side of the river,
along the 50,000 acres of land irrigated by the Arizona, Maricopa, Grand, and Salt River
Valley canals, farmers planted alfalfa, citrus orchards, and grains. As local boosters
publicized the completion of the railroad spur in 1887, which finally allowed the Salt
River Valley to market and ship its agricultural products via the mainline Southern
Pacific railroad, more settlers came to build homes and farm the rich, alluvial soil of
central Arizona.

True to its corporate origins, AIC investors included wealthy outsiders, including
Francis G. Newlands and Frederick Sharon of San Francisco as well as Andrew Crawford
of Chicago. Newlands, who later became a member of the U.S. House of Representatives
from Nevada, played a major role in bringing the federal government into the reclamation

74 Arizona Republican, January 4, 1899. The first order of business, once the Arizona Canal Company
controlled the other three canal companies, was to remove them as plaintiffs in a February 1887 lawsuit
against the Arizona Company for diverting water from the Salt River. Then, Norton worked to integrate the
infrastructure and distribution systems regulating water use and distribution.
75 Smith, The Magnificent Experiment, 5.
of arid lands fifteen years hence. AIC embarked upon a set of development projects, including the planting, harvesting, and marketing of citrus and the development of Grand Avenue, then on the northwest corner of Phoenix, in order to promote land sales to the west and northern agricultural reaches of the valley. AIC oversaw important aspects of other transportation projects, like the Santa Fe, Phoenix and Prescott Railway right-of-way issues of the late 1880s and early 1890s (the spur to Ash Fork) and the effort to build a Phoenix street railway. In spite of Murphy’s and his partners’ frenetic activity with outside investors in their never ending efforts to capitalize and stabilize the Arizona Canal Company, the unremitting themes of land speculation, flood damage, lawsuits over water rights, and a host of related issues cast a pall over the system into the 1890s. Not surprisingly, eastern capital and credit tightened and the national Depression of the 1890s further discouraged potential investors. It surprised few local observers that in

---

76 The standard work on Newlands is William D. Rowley, Reclaiming the Arid West: The Career of Francis G. Newlands (Bloomington: Indiana University Press, 1996). Newlands was the driving force behind the so-called Newlands Reclamation Act of 1902. The measure established the nation’s reclamation policy and had a profound effect on the development of the western economy in the twentieth century. It empowered the Department of the Interior to build reservoirs and reserve public lands for farmers in the arid areas of the West, and it gave the Secretary of the Interior unprecedented administrative authority. It was considered a radical measure designed to both conserve and utilize resources within western states.

77 Michael Duchemin, “Introducing the Urban Form: The Arizona Improvement Company in Phoenix, 1887-1890,” (M.A. thesis: Arizona State University, 1992), 37-49. Murphy’s and Christy’s business practices aroused suspicions from the outside investors in AIC. Newlands was especially critical of Murphy’s business practices and all the outside investors by 1889-1890 rid themselves of their shares. Meanwhile, Murphy continued his questionable bait and switch practices utilizing the imperfect federal land laws designed to encourage settlement on the public lands. Though the General Land Office attempted to investigate alleged wrongdoing under the Desert Land Act, they were woefully understaffed and their special agent proved impolitic at best. Historian Harold H. Dunham wrote: “The special agents could not effectually stop the rampant fraud on the public domain because of inadequate numbers, vastness of territory covered, lack of reform in the land system itself, temptations of bribery, and removal for thwarting powerful interests.” See Harold H. Dunham, “Some Crucial Years in the General Land Office, 1875-1890” in Vernon Carstensen, ed., Public Lands: Studies in the History of the Public Domain (Madison: University of Wisconsin Press, 1968) 181, 195.

78 According to his grandson, Murphy crafted an apologia for his famous progenitor in 1982. “It would be nice to be able to say that this worthy gentleman [Murphy] soon raised all the money he needed and then returned to Phoenix with all his worries over, but it wasn’t to be. W.J. would wrestle with these problems for years. This is not to imply that W.J. did not find his way out of the financial mire; indeed, he remained in Arizona, registered a long list of accomplishments that contributed materially to the Salt River Valley, and prospered.” Murphy, “W.J. Murphy and the Arizona Canal Company,” JAH 166. Also, a good
spite of a Herculean effort, the Arizona Canal Company went into receivership in the late 1890s. By 1896, no longer able to pay interest on its bonds, the company was claimed by Eastern bondholders, who reorganized as the Arizona Water Company. In that year, the north-side system had 106 miles of main canals, 200 lateral ditches, and the potential for irrigating over 150,000 acres of land. 79

As noted earlier, Salt River Valley farmers and landowners whiffed the “scent of government appropriations,” as reflected in the Breakenridge Survey. Major John Wesley Powell of the United States Geological Survey (USGS), undoubtedly, stimulated the imaginations of countless Americans when he argued for a more rational approach to problems posed by the arid West. In his Report on the Lands of the Arid Regions of the United States, in 1878, he argued that a great number of farms could be created out of the public lands west of the 100th meridian if water were made available. This report, and Powell’s previous and celebrated explorations and writings on unexplored reaches of the arid West, cannot be underestimated in their respective impacts on Salt River Valley citizens. William H. Goetzmann, in his Pulitzer Prize-winning account, Exploration and Empire: The Explorer and the Scientist in the Winning of the American West, asserted that “the greatest explorer-hero since the days of Fremont was one-armed Major John Wesley Powell....A casually educated and self-made scientist with a driving ambition.

79 In 1896 also, W.J. Murphy laid out the subdivision of Orangewood and planted citrus there, as had done with Ingleside in 1891. He planted several hundred acres of citrus and farm crops in the Glendale area, and is credited with revolutionizing the Valley’s agriculture industry through introduction of commercial citrus growing. He also organized a citrus growers association and collaborated to build a citrus packing house. Because of his interests in the canals and agriculture industry, Murphy laid out the town of Glendale, and then persuaded friends from Peoria, Illinois to found the town that bears that name. Recognizing the need for transportation to these outlying areas he developed Grand Avenue from Five Points to Peoria. He also formed a company to operate streetcars and was awarded the franchise in Phoenix. He then laid tracks from the Southern Pacific Depot, on Seventh Street and Washington Street west to Seventh Avenue, north to Five Points, and out Grand Avenue to Six Points.
Powell was perhaps the outstanding representative of a breed of political men who came to the fore in the late nineteenth century.⁸⁰ In short, Major Powell descended the previously unexplored 1,500 miles of the Colorado River. It was, according to Goetzmann, "the climatic event of the late-nineteenth century exploration and would mark the opening of the last completely unknown territory in the continental United States."⁸¹

Powell and those like him labored primarily in the cause of reform; they were intellectuals and scientists which made their concepts and writings oftentimes difficult to understand. Their tool was knowledge gained by hard experience as field explorers. If Powell appeared overconfident as he unrolled his maps before Congressional committees and federal bureaucrats, published his massive, erudite tomes in obscure series, he nevertheless had the good of the nation on his mind. Further, as scientists and public men, Powell and his cadre sought to put the explorer and his practical experience to the highest purpose by promoting the fair, efficient, and socially useful development of the American West. Twenty years before Theodore Roosevelt and the Progressives ushered in an era of conservation and social reform, Powell and his like-minded scientists had already developed the framework along which such reform could be accomplished. They had already formed the bureaus and commissions, trained the staffs of experts, and streamlined the dissemination of information whereby the reform ideas could reach the mainstream of American society. Powell and his associates were figures grappling heroically with the vast forces of nineteenth century political and economic darkness that surrounded them.

⁸¹ Ibid., 541.
The significance of Powell’s work went far beyond adventure into the unknown. He and his men made their work meaningful by focusing on issues of social and scientific significance. He remained a scientist with a clear view of the single central problem that lay behind all his study of the West, namely the problem presented by the environment to people who wished to settle in the region and make use of it. A central theme ran through all of his writings: institutions and techniques devised in what he called the humid Eastern sections of the U.S. could not be successfully transplanted to the new and challenging Western environment. In short, Powell’s mission was to describe accurately the new environment for an onrushing civilization. It was, in essence, a pedagogical mission, and as civilization invested in the West, Powell’s mission ultimately became a reforming one. He was a teacher and social reformer.

Among the multiple topics that drew Powell’s attention he focused on the theme of future settlement in the lands of the arid West. As early as 1873, in his annual report on the Surveys of the Plateau Province, Powell emphasized the extreme aridity of the region and the necessity for some sort of rational land classification system. In 1878 as part of his campaign for the consolidation of the various government surveys and land office projects into one responsible civilian authority Powell, in his most famous work and arguably the first modern treatise on political reform as it related to the American West, the Report on the Arid Regions of the United States, stated clearly that much of the region was unsuitable for settlement and farming along patterns devised in the comparatively humid East.

Irrigation and cattle grazing, topics that tied together the Salt River Valley were economic activities that drew the most attention in the famed report. Powell warned that
two-fifths of the U.S. was arid and stated flatly that a scientific and environmental approach to the West and its resources was imperative. Powell offered innovative solutions: First, the country had to be mapped and the lands classified as mineral, coal, pasturage, timber, and irrigable. He then proposed two new land laws which would organize irrigation districts and pasturage districts. As Powell drafted them they would have provided sweeping changes to existing laws. No longer, for example, would the traditional Land Office grid pattern of 160-acre farms be laid out across the West. Instead, he argued, irrigation districts similar to the Mormon colonies he had observed in Utah, should replace the existing system. The unit for each irrigated farm would be 80 acres and not 160 and all water rights would inhere to the land. Powell went further. Groups of farmers, he urged, should come together to form irrigation cooperatives, thereby sharing in the enormous expense of the dams, flumes, and ditches. His vision: that these districts would be governed democratically and, if possible, locally, in the public interest. Grazing, he proposed, should be organized in units of 2,500 acres, twenty acres of which might be irrigated farmland used for growing winter hay and various other necessities. In this instance also, all water rights would inhere in the land and cattlemen were encouraged to cooperate in grazing districts of adjoining and, importantly, unfenced land.

These proposals, the capstone of Powell’s towering career as an explorer and scientist, were intended to avert a number of problems which he had observed in his extensive travels in the West. And, important to the Salt River Valley was the issue of monopoly of water rights, which according to traditional Anglo-Saxon settlement patterns and law, was prevalent under extant conditions. Typically, individuals settled
along the streams and dammed up the flow for their own use as reflected in Phoenix and other arid areas of the West. Then, Powell observed, due to the expense involved water companies were formed—like Murphy’s ventures—and using loopholes in the Timber Culture Act of 1873 and the Desert Land Act of 1877, they were able, in many cases, to gain a monopoly on much of the available water in the West. They could use it for mining, waste it, sell it to the highest bidder, or use it to force settlers out of a certain region. With the formation of irrigation districts and water rights inhering to the land, this undesirable outcome, in Powell’s opinion, would not happen. Powell’s impact, especially in territorial Arizona, became evident as residents moved to develop a coherent system of land use and water resource conservation, development and distribution. 82

Richard Hinton, the widely read western journalist, carried Powell’s arguments further. In uncompromising terms Hinton urged massive federal spending for devising comprehensive irrigation works in the region. And, when Powell was appointed to direct the United States Geological Survey in 1881 he urged Congress to deal directly with irrigation policy. He continued to pressure lawmakers and by 1888 the Senate Select Subcommittee on Irrigation, chaired by Senator William Stewart of Nevada, held fifty-three sessions throughout the west to hear testimony. When the committee arrived in Phoenix in the fall of 1889, local officials handed the Senators the notes generated from the Breakenridge Survey and Norton, McClintock, and Breakenridge discussed their findings with the visiting lawmakers. 83

But opposition arguments that federal intervention could disrupt private efforts to build profitable irrigation works gave Congress pause. Support for massive federal intervention, as advocated by Powell and other government reclamation proponents, cooled temporarily and instead Congress focused its efforts on assisting the states to develop projects in conjunction with private enterprise. Arizona, of course, had not attained statehood, so consideration of the various proposals floated during the early 1890s were neither relevant nor applicable to the Salt River Valley or the Territory of Arizona. But there was more than a laissez faire constitutional argument that underscored the concept that this was a job for the states and not the federal government. The colonial tension between the underdeveloped West and the developed East oftentimes caused westerners to resist what it perceived as eastern control of the right to self-determination.84

Indeed, local residents heard the repeated argument that the federal government was too far away and the arid regions too dissimilar, while easterners argued that it was not fair that their taxes could underwrite internal improvements and thus develop the lands and natural resources infrastructure for another. In the end, the philosophy of state control over potential government irrigation projects and the simultaneous resistance on the part of easterners to use tax money to pay for western development found a legislative voice in the Carey Act of 1894. This law enabled the President to authorize an allocation of one million acres within each state’s public lands for irrigation, reclamation, settlement and cultivation; surplus funds were to be used for reclaiming other land within the state.

The Carey Act—a compromise—was largely ineffective, however, largely due to the lack of private financing and little public domain was reclaimed under this legislation.85

In 1893, when Wells Hendershott, a lawyer and promoter from New York, filed claim to the reservoir site upon which the Breakenridge Survey recommended construction of a storage dam, Murphy and valley leaders were, at first, delighted. Hendershott, who had formed the Hudson Reservoir and Canal Company, told local farmers and businessmen that he planned to turn the Tonto Basin reservoir site into a lake with the goal to store flood water for the irrigation of a large expanse of dry land east of Mesa. The company, financed largely by the New York interests of Man and Man, a firm of lawyers and engineers, hired a local journalist, writer, and businessman, Sims Ely, who later wrote a popular book on the Lost Dutchman Mine, to open offices in Phoenix in 1894. Company engineers developed engineering plans for a masonry dam of 225 feet to create a thirty-square-mile reservoir.86 Part of the program was to construct a diversion dam at Granite Reef, a site which could divert water into the north-side and south-side canal systems. Throughout the 1890s the company studied, measured, and calculated

---

85 One of the best accounts of the Carey Act in operation can be found in Mark Fiege, Irrigated Eden: The Making of the Agricultural Landscape in the American West (Seattle: University of Washington Press, 2000). In fact, Arizona was not eligible for Carey Act funds until 1909 when Congress extended its provisions to the territories. By that time, however, its provisions were not practicable for Arizona. Joseph Maull Carey, Wyoming governor and senator was born on January 19, 1845 in Milton, Delaware. He was educated at Union College in New York and the University of Pennsylvania. In 1867 he was admitted to the bar and practiced law in Philadelphia before heading to Wyoming Territory in 1869 where he was appointed the first U.S. Attorney of the newly-organized territory. President Ulysses S. Grant then appointed him as associate justice of the Wyoming territorial Supreme Court, a position he held from 1872-1876. He then went into Wyoming politics; mayor of Cheyenne, 1881-1885 and territorial delegate to Congress, 1885-1891. In 1890 he introduced the act establishing Wyoming statehood. He authored the Carey Act, which was embraced largely in Idaho and Wyoming, but not in Arizona. He was then elected United States Senator and served in that office until 1895. IN 1910, he switched parties from Republican to Democrat and was elected Governor of Wyoming in 1910 and served a four year term. He died on January 17, 1937.

stream flows, depth of bedrock, and surveyed potential lines for a canal route to the lands near Mesa that Hendershott favored. In the spring of 1896, D. M. Ferry, the millionaire seed money man from Detroit, and Dr. A.J. Chandler, who also maintained water and land interests in the area, visited the Tonto country to survey the dam site and storage prospects of the Hudson Company. They left Phoenix indicating serious interest in the enterprise.\textsuperscript{87} Demonstrating the company’s seriousness of purpose, Hudson applied for a right-of-way through the Gila Indian Reservation in exchange for supplying water to those Indians living along the proposed easement.\textsuperscript{88}

But the Hudson Reservoir and Canal Company could not close the deal. Despite reasonable plans and solid engineering information, Hendershott and his conferees could not convince outside investors that the $3 million dollar project was feasible. Like Murphy and the Arizona Canal Company, the Hudson Reservoir and Canal Company ran headlong into tight money, skepticism, and narrowing credit markets. In fact, the two projects landed on common ground when the Hudson River and Canal Company attempted to purchase from the Arizona Improvement Company, north-side water rights and land claims as collateral to borrow upon, but the insecure status of AIC prevented this transaction. Henry Man, one of the chief investors, insisted that all of the acreage in the valley had to be taken up and the rate for water rental doubled in order for the Tonto Project to be profitable.\textsuperscript{89}

\textsuperscript{87} Phoenix Gazette, April 9, 1896.
\textsuperscript{89} See Arizona Republican, April 20, 1863; December 20, 1864; January 13, 1895; Arizona Gazette, December 21, 1898; Mawn, “Phoenix, Arizona,” 223-224;
The Hudson River and Canal Companies frustrations were further exacerbated by the Salt River’s unpredictability in the 1890s. An enormous flood in 1891 destroyed crops and homes and in what became a cruel irony a decade-long drought followed the disastrous flood. One contemporary suggested that “the big drought started in the 1890s and extended into 1903, practically ten years.” Another chronicler interpreted the ten-year precipitation shortfall as “the blackest period in the history of the Salt River Valley.”

And, as noted above, a nationwide Depression that lasted well into the new century compounded the human suffering. Murphy struggled to maintain his water-based businesses, and like so many others, he suffered severe financial setbacks and tightened his fiscal belt. By 1897, one of the worst years of the drought, water scarcely trickled in the Salt River, crops failed, water shortages for livestock and domestic uses grew acute, and the local economy ground to a halt. The following year saw the desert begin reclaiming the desert empire: livestock died, settlers abandoned once-prosperous farms, and those who stayed hoped and prayed for a change in the weather. Desperate residents from many districts throughout the valley called meetings to take action against the environmental extremities of flood and drought.90

The Salt River Valley’s economic and environmental challenges unfolded against the backdrop of the formation of the National Irrigation Association and their annual National Irrigation Congresses which began in the early 1890s. This broad-based cause, headed by reclamation pioneers William Ellsworth Smythe and George H. Maxwell, combined with the local water shortages of the period, shaped the debates in a rapidly

---

90 Carl Hayden to Charles Trumbull Hayden, March 29, 1897; Hayden Family Letters Collection, Carl Hayden Papers Collection; Carl Hayden, “Remarks at the Tenth Annual Banquet of the National Reclamation Association,” Hayden Biographical File, Carl Hayden Papers, Collection, Special Collections, Hayden Library, Arizona State University, Tempe, Arizona.
changing political and environmental climate. Many became embroiled in several trying water rights suits. Water scarcity, naturally, led to over drafting of scarce supplies and, landholders spent sums of money on litigation. Bookstores, barber shops, and mercantile outlets had reading material on irrigation and reclamation, including Smythe’s magazines *Irrigation Age* and *Little Land in America*, or Maxwell’s published tracts, which oftentimes resembled diatribes. The national press covered National Irrigation Congresses, where Smythe, Maxwell, and their supporters held forth and farmers and livestock owners read with interest the proceedings and resolutions published at these well-attended affairs. These late-nineteenth-century pioneers, dedicated to the “Conquest of Arid America,” gave Salt River Valley residents a clear understanding of the problems not only in their region but also of the other western states and territories.  

By the mid-1890s, the vicissitudes of flood and drought coupled with the now-obvious inability of the private sector to develop the necessary infrastructure to collect, preserve, and distribute water led many valley farmers to conclude that only the federal government possessed the ability--specifically the money and technical expertise--to put water to beneficial use for the public good in the arid Southwest. They began looking to the nation’s taxpayers to alleviate their problems. In anticipation of the Fifth National Irrigation Congress, held in Phoenix in July 1896, William “Bucky” O’Neill, an Arizona delegate to the Irrigation Congress, submitted a national irrigation bill for review by Congress participants. Adapted from California’s Wright Act of 1887, which permitted farming regions to form and bond irrigation districts, O’Neill’s plan, in brief, called for the federal government to advance funds to state-recognized irrigation districts in order to

---

reclaim desert lands for agricultural production. The loans, he allowed, were not to exceed $1 million in any given year and the cost per-acre could not exceed $25.00. Loan charges were to be a lien on both the land and irrigation works and every government-lent dollar was to be repaid in full. O’Neill also prepared a well-reasoned response to the predictable laissez-faire arguments of those who opposed the federal government entering the reclamation business: “After the expenditure of millions in improving Eastern harbors and rivers, building post office and other edifices, after guaranteeing the bonds of railroad companies to the extent of millions, with the Republican and Democratic parties advocating the expenditure of one hundred million dollars to build the Nicaragua canal, after the payment of over twelve million dollars in bounties to sugar growers of the South, after the establishment of protective tariffs for over fifty years for the benefit of the East, there is no reason why such a bill herein proposed [the national irrigation bill] should not be passed.”

Attendees watched O’Neill grow frustrated as delegates scoffed at his proposal. O’Neill took the floor to wrathfully denounce the delegates for speaking in generalities and evading particulars. He was booed and many members chastised him for his behavior after the session ended. Frederick Newell, representing the U.S. Geological Survey at the Congress, allowed that he doubted that the annual meeting would result in securing government reclamation of arid lands, but if the annual meetings persisted, he offered that the matter might gain traction with federal legislators. Later, Newell recalled that the Fifth National Irrigation Congress “favored construction of storage reservoirs by the federal government where necessary to furnish water for reclamation of public lands.”

92 Arizona Republican, July 4, 1896.
though the public reaction immediately following the irrigation congress appeared to suggest otherwise.93

Perhaps affirming O’Neill’s frustration, Salt River Valley farmers called a mass meeting to discuss their problems immediately after the conclusion of the Fifth National Irrigation Congress. Significantly, a citizens’ water storage committee was appointed to investigate three possibilities for storage in the Salt River Valley: private ownership, corporate ownership, and government construction.

In essence the citizen’s water storage committee considered several financing schemes including the creation of irrigation districts modeled after California’s Wright Act, tax levies on lands, exemption from taxation of water storage works, and developing new canals to foster further agricultural development. The local press observed that long time land owners, especially on the south side of the Salt River in Tempe, remained reluctant to participate in a privately held water storage program without special assurances and provisions. These farmers wanted to insure their interests and protections in any canal or reservoir company proposal that related to water distribution. Indeed the committee report revealed the fractious nature of the water storage debate as it pertained to water rights and privately-held lands in central Arizona.

Almost imperceptibly, however, sustained and growing support for a national irrigation program took root immediately after the Fifth National Irrigation Congress in Phoenix. Frederick Newell, the USGS hydrological engineer who attended that congress, persisted in his efforts to convince the U.S. House and Senate that some type of national bill should be passed. Famed scientist and army engineer Hiram Chittenden added that “a

comprehensive reservoir system in the arid regions of the United States is absolutely essential.” He agreed with Powell and his disciples within USGS and journalist Hinton that the federal government was the best and only place to facilitate this development. Put another way, the “Chittenden Report” (1897), the result of a congressional directive to explore reservoir sites and report upon the feasibility of constructing hydraulic works for water storage, recommended government construction, ownership, and operation of storage works in the West. While most historians agree that the Chittenden Report marked the official beginning of the movement for national irrigation by declaring that the federal government was the only entity capable to implement the proposed program, it also concluded, erroneously, that federal reclamation for water storage might be included with river and harbor concerns. Captain Hiram Chittenden served with the Army Corps of Engineers and the report’s sponsor, Senator Francis Warren of Montana, placed reclamation legislation within rivers and harbors bills. Therefore the Corps, and not USGS, at first served as the bureaucratic home for national irrigation; a notion that displeased Newell and the Geological Survey. The movement to lobby Congress to enact national irrigation legislation took on another intriguing dimension and the USGS worked vigorously to regain control of the movement among the stakeholders in the federal government. In fact, Newell played a central role in these efforts not only to pass some form of federal legislation, but also to affirm that the Geological Survey implemented this progressive reform that impacted so dramatically water resource development and agricultural expansion in the American West.94

94 Arizona Gazette, December 29, 1898; Samuel P. Hays, Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920 (New York: Athenaeum, 1975). This classic work, among other issues, discusses the rivalry between the various government water agencies. This concern with bureaucratic turf also impacted the development of the Salt River Valley as the Department of
Between 1870, when Phoenix formed as an agricultural outpost, and the convocation of the Fifth Annual National Irrigation Congress in 1896, Salt River Valley residents had lived through a dozen years of remarkable growth, change, and agricultural development. Upon closer scrutiny, economic growth and development in the arid region became interwoven with the history of social reform in the United States during the period known as the Progressive Era; which began in earnest in the 1890s. The Salt River Valley had witnessed the false starts and early successes of cooperative water resource development to the inauguration of corporate water development during this period. As the nation stood at a crossroads in water and land policy in the 1890s and as Salt River Valley residents groped for answers in a depressed economy and an environment that at once sustained and threatened, modern science and government joined forces to assist the private sector. Civic involvement, political engagement, and local leadership were mutually reinforcing factors in addressing the Salt River Valley’s water challenges.

Reconciling private initiative with the conservation credo of the greatest good for the largest number of people over the longest period of time—a progressive maxim— informed the public debate in territorial Arizona. The political and social tension of an emerging and modern irrigated agricultural civilization, symbolized in the completion of the Arizona Canal in 1884 and the spur line from Tempe to Maricopa in 1887 fueled a population influx and agricultural revolution by the mid-1890s.

Agriculture’s Division of Irrigation Investigations challenged the authority of the U.S. Reclamation Service.
TWO
Roosevelt

The environmental and economic challenges of the 1890s, “one of the darkest decades in this history of the United States” had a significant impact on Salt River Valley residents.\(^1\) The Depression that marked this decade was magnified in other ways; a deluge of European immigrants that exceeded 4 million, the growth of America’s urban centers, the expansion of tenant farming, and the proliferation of large institutions, including the manufacturing corporation. These sweeping nationwide developments deepened fears among the country’s social and political reformers. The corporate consolidation movement that began during the nineties reinforced fears of monopoly and the subversion of democracy; the villains were the new immigrants, urban bosses, and industrial tycoons. From 1893-1898 an average of 20% of the urban workforce lacked jobs; this staggering statistic reached a peak in 1894 when it reached 30%. The Carnegie Homestead plant strike near Pittsburgh in 1892 and the Pullman strike in Chicago in 1894, for example, raised fears the country was in deep social and economic trouble.\(^2\) Worse, the drought in Arizona and many parts of the West resulted in complete crop failures in 1894 and 1895 and reinforced growing demands for federal aid.\(^3\)

Newspaper accounts of strikes, social unrest, and misguided corporatism prompted territorial leaders to wonder if Arizona could sustain its mines, ranches, and farms. The ongoing Depression suggested the nation, let alone central Arizona, could not survive without

---


\(^2\) In fact in 1894 alone 1,400 strikes involving more than 5,000 workers visited the country.

diffusing urban tensions. Private funding for arid land reclamation dried up and property values declined precipitously. The future of the region that looked so bright in the 1880s now appeared ominous and forbidding.

In the 1890s the Salt River Valley's economic base continued to expand—in spite of the trying times—as more land was brought under irrigation. By the end of the decade, approximately 100,000 acres were planted, mostly in forage crops and grains. Continued expansion of the Valley’s farm lands, however, appeared doubtful, as the area of land in the Salt River Valley susceptible to irrigation far exceeded the available water supply. By the end of the 1890s, the normal flow of the Salt, and its tributary the Verde River, had been thoroughly exploited. Competition for the limited supply resulted in an excessive number of private water companies which constructed elaborate and redundant systems of parallel canals. The result was that valley-wide irrigation became grossly inefficient and future development appeared problematic. Even worse, the amount of litigation arising over competition for the limited water supply, coupled with the drought noted above, added even more stress to water users.

The chorus of voices grew for federal reclamation of arid lands. Proponents often equated the national irrigation campaign with that of free silver which erupted in large part because of the West’s increasing political power in Congress. For example, in 1889 and 1890 the western states doubled in number with North Dakota, South Dakota, Montana, Washington, Idaho, and Wyoming entering the union. They joined California, Colorado, Nevada, Texas, Kansas, and Nebraska. The trans-Mississippi west held 10% of the population, a handful of seats in the House of Representatives, but now maintained substantial power in the Senate. Considerable differences separated the Great Plains, the Pacific Coast, the Rocky
Mountains, and the Southwest. These sub-regions of the trans-Mississippi West vied not only for settlers but also for federal aid.

As mentioned earlier, at the fateful Fifth National Irrigation Congress in Phoenix in 1896 Frederick Newell, chief hydrographer for the USGS, was a major presence. Newell, like several fellow federal employees, stood at the center of efforts to pass national irrigation legislation and his not so subtle agenda was to make sure that the Geological Survey and not the Army Corps of Engineers, was responsible for its implementation.

Newell’s background reflected the serendipitous circumstances that brought him to Phoenix in the summer of 1896. His influence on Salt River Valley leaders proved hypnotic and in several ways, his occasional presence in the valley and his enduring impact on residents from that point forward altered the history of federal reclamation in Arizona Territory. Newell was born in the small lumber and mining town of Bradford, Pennsylvania in March 1862 and while still a baby, he moved from aunt to aunt after his mother died. His father, however, owned a large number of oil fields in western Canada and Pennsylvania. Though motherless, he was a privileged, beloved, and bright child and before he finished high school he had the opportunity to learn surveying, mechanics, book keeping and printing; by the time he graduated high school Newell was better prepared than most youngsters to proceed on to a degree in higher education. His father, however, was anxious that he enter the oil business and forced him to leave school before graduation. The elder Newell had contracted malaria, so young Frederick, as a high school junior, had the overwhelming responsibility of managing an oil conglomerate. Despite these distractions, Newell was accepted to the Massachusetts Institute of Technology (MIT) in 1880 and pursued his undergraduate and graduate degrees there. At MIT the study of geology captured his imagination and in need of material for a doctoral dissertation in 1887, he joined the USGS and there, Major John Wesley Powell
succeeded in diverting Newell’s interest in geology and mining to developing water resources in the West. In 1888 he became an assistant hydraulic engineer responsible for carrying out Congress’s newly mandated irrigation survey of the arid West. In this role he traveled widely through the West and saw first-hand the difficulties the settlers in the region faced when they tried to farm dry land. Ambitious and empathetic, he became an important missionary and contributor to the development of federal water policy and applied his combination of personal ambition and technical expertise to further his goals in implementing some form of national irrigation program.

Congress appropriated another $50,000 to the Geological Survey to gauge stream flows in order to determine the water supply in the U.S. and to prepare reports on the best uses for water in the nation’s arid and semi-arid regions. The second of these reports was on irrigation near Phoenix, Arizona. The chief purpose of this and other similar investigations were twofold: to gather scientific and technical data for planning reclamation projects and to publicize potential reservoir sites to Congress. While the report focused on the Gila and Verde as well as the Salt it provided little new information on the Tonto site beyond the research already completed by the Hudson Company. Newell and Arthur Powell Davis, John Wesley Powell’s nephew, emphasized the role that the federal government could take in reclamation in and around Phoenix. They concluded also what outside investors had recently discovered—that private investors in irrigation schemes would rarely find them lucrative ventures. At the same time, Newell saw that the concept of social engineering and federal largesse to the degree necessary was problematic and possibly politically divisive. Costs for developing the requisite infrastructure could be repaid in full, Newell argued, if they were distributed uniformly to all who benefitted and the USGS hydrographic engineer advocated this approach as early as 1897.

---

In his report Davis considered the Tonto site “one of the most important possibilities for the
future of agriculture in...Arizona.” Davis added: “It would probably be impossible to find
anywhere in the arid region a storage project in which all conditions are as favorable as this
one. The capacity of the reservoir, in proportion to the dimensions of the dam is enormous.
The lands to be watered are of remarkable fertility....” Significantly, public statements of this
nature emanating from federal officials, like Newell, encouraged local officials to include
government support on their reclamation agendas.5

Despite these promising developments, local residents had not arrived at any consensus or
clear vision on what sort of government aid Salt River Valley landowners favored. On one
side were those who favored the USGS approach to administer a national irrigation program
through continuous annual appropriations from Congress. Another method, favored by a
significant portion of settlers, was to cede public lands to the states and territories where they
were located; a variation of the Carey Act template. Congress tossed the ideas back and forth
and as the nineteenth century closed, little, if any, progress on this front had been made.

Newell voiced his regret in a private letter reprinted in the Arizona Gazette of April 5, 1899: “I
have long appreciated the necessity of water storage in Arizona and am doing whatever is
possible to forward it. We now have a field party along the Gila River under a clause in the
Indian appropriations bill. Their work is narrowly restricted by law, so that we can not take up
the question of larger public importance. If this could be done I have no doubt that the results

5 Davis, Irrigation Near Phoenix, 66; Newell, “History of Irrigation Movement,” 4. Arthur Powell Davis was born
February 9, 1861 in Decatur, Illinois, attended public schools and graduated in 1882 from Kansas State Normal School,
then secured a degree at Columbian University (now George Washington University) in 1888. The year he graduated
from Kansas Normal he was employed as assistant topographer of USGS by his uncle, John Wesley Powell. This
appointment began a career of government service that spanned four decades and earned him an international reputation
as an hydraulic engineer. Before he retired Davis personally planned and supervised the construction of more than 100
dams, and 15,000 miles of irrigation and drainage canals in 16 states benefiting from the Reclamation Act. These dams
and waters brought forth crops on more than three million acres.
would be beneficial. Until the people of Arizona express themselves clearly and emphatically on the subject it of course is improbable that Congress will take action."^6

Meanwhile, at a meeting of the Trans-Mississippi West Congress at Wichita, Kansas in June 1899, the movement for some type of national irrigation program took on another and more assertive structure with the organization of the National Irrigation Association. George Maxwell, the peripatetic California attorney, was selected to head the Executive Committee. Maxwell had already made his presence felt in the Salt River Valley and would continue to influence Arizona leaders on a variety of reclamation issues for the next several years. In effect, westerners decided that the work of the National Irrigation Congress needed to be carried on throughout the year in order to bring public sentiment to the cause of federal reclamation.^7

Meanwhile, Salt River Valley leaders realized that the serious drought, federal inaction, and the failure of the Hudson Company to construct the Tonto Dam with private funds required some type of local response-- the formation of a new citizens’ committee on water storage. The Phoenix and Maricopa County Board of Trade created a Water Storage Committee comprised of five community leaders: Sam McGowan, superintendent of the Phoenix Indian School, was named chairman of the commission, and he was joined by John W. Evans, Benjamin Heyman, Benjamin Fowler, and Vernon Clark. These five were charged with investigating the various possibilities of water storage for the valley and to recommend to the Board of Trade a plan on how to best increase the regional water supply. The Water Storage Committee Report, issued on April 10, 1900, advocated what the citizens’ storage committee supported in 1896; constructing a storage dam through the issuance of county bonds.

---

^6 Arizona Gazette, April 5, 1899.
^7 Arizona Gazette, June 1, 4, 7, 1899.
bonds. The committee members proposed, unrealistically, to purchase the Tonto Basin reservoir site, build a dam, and purchase all the canal systems in the valley. The Water Storage Committee favored bonding Maricopa County, which at the time was assessed at $10 million, and at 4½% annually, it could retire an estimated project indebtedness of over $6 million. Many opposed this proposal, believing that the Hudson Company had lost its right to the site because they had failed to use it.

In fact in one of the numerous meetings of the Water Storage Committee, a member of the County Board of Supervisors offered: “I do not know how the people of the County will receive a bond proposition. They will want to give it a great deal of consideration, and I myself would like to study it carefully before expressing an opinion.” He continued, “Still there is one thing all are agreed upon. We’ve got to have a more liberal and permanent water supply than we now have and there are only two ways to get it. One is diverting the waters of the Colorado and it isn’t certain that can be done at all. The other is by means of a storage reservoir.” The statement prefigured two major future projects that played central roles in Arizona; the Salt River Project and the Central Arizona Project.

---

8 The Phoenix and Maricopa County Board of Trade was the successor to the original Phoenix Chamber of Commerce. McCowan presented the report on behalf of the Water Storage Committee before the Board of Trade on the evening of May 1, 1900. In addition to discussing various methods to conserve water and increase yields, the report examined four ways to raise moneys for reservoirs: federal appropriations; federal government cession of lands to states and territories; private enterprise; and voting bonds to be sold by Maricopa County. They recommended the latter course. S.M. McGowan, “Report to the Phoenix and Maricopa County Board of Trade,” April 10, 1900. See also Arizona Republican, May 2, 1900; Arizona Gazette, May 2, 1900.

9 Arizona Republican, January 9, 1901. At a January 8, 1901 meeting the Hudson Company dam site issue was discussed and the figure of $200,000 was proffered. Chairman McGowan said the company was entitled to something, while others argued that the site could be purchased for far less. Some were steadfast in their views that Hudson should receive nothing.

10 Arizona Republican, April 10, 12, 1900. The Supervisor added: “I do not see how the taxpayers of the county can lose anything by bonding. If capitalists are willing to risk from two to two-and-a-half millions it seems to me that we can afford to risk a half million. I believe it would be a successful enterprise and men who would put up a couple of million dollars must feel pretty sure about it. If it should be a success the taxable value of property in this county would jump at once from $10,000,000.00 to no less than $30,000,000.00. It wouldn’t take long for the tax on this increased valuation to amount to as much as the bond issue and the county would have its preferred stock in the enterprise left. This is the public or county view of it. The benefit to the farmer, the businessman, and everyone else interested in the valley would be beyond calculation. As I said, something will have to be done, anyhow.”
The Water Storage Committee moved forward with their bonding effort. To finance the brash plan, 500,000 acres needed to be charged $1.25 per acre water rent. This meant that every acre cultivated in the Salt River Valley must join as well as a significant number of acres--up to 300,000--not in cultivation. The philosophical difference between the county bonding plan and a privately sponsored reclamation program was easily explained: the people would control the project. Corporations were unlikely to ponder ways and means for alleviating the conditions of its patrons. Indeed a small intimation of populist rhetoric tinged the ongoing debate. The Water Storage Committee’s assertion that “if any corporation has the control of our water supply we may rest assured that the people will be required to pay about all the traffic will bear,” resonated with the public. Valley farmers were not antagonistic to business; they objected to an unfair deal.11

The committee’s rosy, if overly optimistic report, did not consider the difficulty of uniting farmers behind a bonding proposal nor did it comprehend the enormity of the indebtedness. “A little energy and determination” proponents of the plan asserted, was all that was needed to sell the bonds and begin work within a year. Furthermore, there was a political detail that needed to take place before the Water Storage Committee could execute its plan; Congress had to pass enabling legislation in order for Maricopa County to be able to bond itself. It was located within a federal territory.12

Indeed little was accomplished between April 1900, when the Board of Trade’s Water Storage Committee issued its report, and the fall of that year, due to Congress’s summer recess and valley residents’ penchant to head to California or to northern Arizona’s mountain country. The resulting lack of progress on the heels of the optimistic report was discouraging.

---

11 McGowan, “Report to the Phoenix and Maricopa County Board of Trade”; Smith, Magnificent Experiment, 15.
12 Arizona Republican, July 17, 1901
for other reasons. First, another citizens’ committee meeting, held in the fall, resulted in the selection of thirty-six representatives from every canal, every section, and every industry in the valley. But the enthusiasm abated significantly when rains fell and the need for water grew temporarily less urgent. Conflict erupted among groups of landowners. “There was talk, talk, talk, and inaction,” one reporter noted, coupled with “grumbling accusations.” Some accused others of nefarious motives and others determined that if their plan were not adopted, no other plan could be. 13

The impasse was based on old rivalries between lands under the north-side canal system and those under the south-side system. Also, divergent self-interest played a role. Water users in Tempe, who were served by the south-side system, were extremely protective of their vested water rights. Dwight Heard, who owned all the irrigated lands under the San Francisco Canal (roughly 8,000 acres) and Alexander J. Chandler, with 18,000 acres of south-side water rights from his Consolidated Canal and power plant, sought to protect their advantages. 14 Canal companies, always concerned with profits, proposed complicated and costly plans for their sale and use.

Into the mix stepped rancher and businessman Benjamin Fowler. In 1889, Fowler abandoned his career as a successful book publisher in New York and moved to the Salt River Valley. He hoped for a more leisurely lifestyle. The Massachusetts-born and Yale-educated Fowler immediately became a leader in his adopted home and emerged as a skillful negotiator and persuasive advocate who at the same time was able to smooth over rough feelings among contending factions. He was a diplomat of the first order. Soon after his arrival in the valley he was elected president of the Arizona Agricultural Association, the Phoenix Board of Trade, the

---

13 Arizona Gazette, August 12, 15, 16, 28, 1900; Arizona Republican, August 12, 23, 1900.
Associated Charities of Phoenix, and the Phoenix Chamber of Commerce. All sides trusted Fowler and in many ways he became a de facto “director of the future.” He responded eagerly to the charge and took over as Chairman of the Water Storage Committee.15

In the fall of 1900 Fowler traveled to Washington, D.C. to press for passage of the enabling legislation so Maricopa County could move forward with the bonding plan. 16 There he met and grew close with Frederick Newell of the USGS, George Maxwell, the reclamation propagandist, and fellow Yale graduate, Gifford Pinchot, Chief Forester in the Department of Agriculture’s Forest Service. Over the next year Fowler, the Salt River Valley’s erstwhile lobbyist in Washington, D.C., grew convinced that federal reclamation of arid lands could solve the nation’s social problems by decentralizing population away from urban centers. Inexorably, Fowler, through frequent lunches and dinners with Newell, Pinchot, and Maxwell, began to lean toward supporting a federal project for the Salt River Valley, though he continued his efforts to secure Maricopa County enabling legislation.17

Fowler was unable to move the enabling bill through Congress. House committee members cited several reasons for its opposition; there was no way Congress would guarantee the interest on the bonds, and it would not allow government engineers to conduct survey work under a citizens’ advisory committee as was outlined in the legislation. Tinkering with the language helped little and by March 1901 the Water Storage Committee had nearly disbanded.

15 Fowler later became the first president of the Salt River Valley Water Users’ Association. He was born in Stoneham, Massachusetts on December 14, 1843 and attended public schools before going to Andover and Yale. He was a member of the 50 Regiment, Massachusetts Volunteers during the Civil War and detailed in the U.S. Signal Corps under General Nathaniel Prentiss Banks. By the time he discharged he had made up his mind to teach and did so in Danvers, Massachusetts. He later studied law in Boston but quit after one year to go into the publishing business. During the next twenty-seven years he published books in Chicago, Boston, and New York. Then, when he arrived in Arizona, he saw the arid desert, and its potential and for the next seventeen years he thought of little else other than water.
16 Fowler’s arguments that the British had reclaimed more than 35 million acres in India fell on deaf ears. Even those congressmen who supported the concept could not visualize a successful project in which a dam would be located so far from its service area.
17 Smith, Magnificent Experiment, 18-19; B.A. Fowler to Ethan Hitchcock, November 20, 1900, and Charles Walcott to Ethan Hitchcock, January 14, 1901, Records of the Bureau of Land Management, Record Group 49, Old Canal and Reservoir files, National Archives, Washington, D.C.
and valley residents began to wonder if a bonding bill was the best idea to secure an adequate and assured water supply. The report mentioned that the only federal reclamation bill that could be successful in Congress was the so-called “Newlands Bill,” named for Nevada Representative Francis G. Newlands, which provided federal funds for reclaiming public lands of the arid West.¹⁸

While Fowler and others continued to flail away in their oft-divergent attempts to gain control of the Tonto site, Maxwell and Newell lobbied Congress through 1901 for passage of the Newlands Bill. The bill, designed to overcome the limits of private enterprise in the various challenges in construction of irrigation works, also provided for the creation of an arid-land reclamation fund, comprised from the receipts from the sale and disposal of lands in the sixteen states and territories of the arid West. Significantly, the Secretary of the Interior had sole and complete discretion over the use of the fund and, upon recommendations of the USGS, over the selection of projects which would provide water for public lands. Repayment for construction was to be complete though no interest would be charged.¹⁹

Fowler informed valley residents that Pinchot and Maxwell were good friends with Vice-President Theodore Roosevelt, a strong supporter of the conservation and reclamation movements at the national level. Newell convinced Interior Secretary Ethan Hitchcock to send a letter of support to the House Committee on Public Lands. It read, in part, “In some respects, the case is comparable to that of a city whose harbor has been improved. The land values increased...but the work carried out by private enterprise may not be remunerative to the

¹⁸ Arizona Republican, March 20, 1901.
¹⁹ See William D. Rowley, Reclaiming the Arid West: The Career of Francis G. Newlands (Bloomington: Indiana University Press, 1996);
builders. It is evident that if further reclamation is to take place it must be through
governmental action.”

The Newlands Bill reflected “Progressive” reform sentiment at the federal level, a
movement that swept through the country at the turn of the twentieth century. Reformers, like
Newlands, Newell, Maxell, Roosevelt, and others of their ilk, sought to inject rational system
and organization into American political, economic, and social life. Overall, it stressed science
and technology in the development of arid lands for the nation as a whole, not for local
interests. While the proposed legislation provided for construction of essential reclamation
works in the arid West, it also circumvented longstanding regional policies and traditions
regarding irrigation. The bill called for a more closed system of decision making than past
internal improvement legislation. It embodied, as Samuel P. Hays wrote, “the gospel of
efficiency.”

While President McKinley and Secretary of Interior Hitchcock supported the natural
resource policies articulated best by Newell and Pinchot, they did not actively work to see
them put into practice. Newell, Pinchot, and Fowler met almost every night during the early
months of 1901 to discuss the Newlands Bill and ruminate over lobbying strategy, but their
efforts fell short in the 56th Congress as the legislation was barely defeated on March 1, 1901.
Fate altered the course of history in the American West in the fall of 1901. On September 6,
1901, Leon Czolgosz, a self-proclaimed anarchist, walked up to President McKinley, who was
at the Temple of Music attending the Pan-American Exposition in Buffalo, New York, and

20 Portions of the letter were reprinted in the Arizona Republican, January 25, 1901.
Reappraisal,” in Gene Gressley, ed. The American West: A Reorientation (Laramie: University of Wyoming Press,
1968); Samuel P. Hays, The Response to Industrialism, 1885-1914 (Chicago: University of Chicago Press, 1957); Otis
Graham, Jr., The Great Campaign: Reform and War in America, 1900-1928 (Englewood Cliffs, New Jersey: Prentice-
Hall, Inc., 1971); Leah Mae Brown, “The Development of National Policy With Respect to Water Resources,” (Ph.D.
dissertation: University of Illinois, 1937); Jack L. August, Jr., Vision in the Desert: Carl Hayden and Hydropolitics in
the American Southwest (Ft. Worth: TCU Press, 1999).
shot him twice. The President appeared to be recovering from his wounds but took a turn for
the worse six days after the shooting and lingered until he died on September 14, 1901. Vice-
President Theodore Roosevelt, much to the chagrin of Republican Party regulars, ascended to
the presidency. A friend of Pinchot, Newell, and Maxwell, he committed himself to their
vision of natural resource policy in general and federal reclamation in particular. In one of his
first messages to Congress, President Roosevelt outlined a plan of action; the language used
was taken almost verbatim from the three reclamation advocates. He said: “Whatever the
nation does for the extension of irrigation should harmonize with the trend to improve the
condition of those now living on irrigated lands….Our aim should not be simply to reclaim the
largest area of land and provide homes for the largest number of people, but to create for this
new industry the best possible social and industrial conditions.” Roosevelt was the catalyst for
the passage of legislation that provided for a national approach to arid lands irrigation.

The reintroduced Newlands Bill was a priority piece of legislation for the new and
popular President and his message signaled to private land owners in Maricopa County and
throughout the arid West that a change in emphasis to include private lands in the legislation
was possible, if not probable. Roosevelt’s message went far in diluting opposition based upon
the concept that the Newlands Bill would exclude private landholders under proposed federal
reclamation projects.22 Finally, on June 17, 1902 Congress passed Francis Newland’s National
Reclamation Act—arguably the most important piece of legislation impacting the history of the
American West.23 The legislation was national in scope, gave great authority to federal project

22 August, Vision in the Desert, 26-27. Roosevelt was on a hiking trip with his family and was summoned from Mount
Thawahus in the Adirondacks to Buffalo. At 3:15 p.m. that day, at the Ansley Wilcox Mansion, 641 Delaware Avenue,
in Buffalo, forty-three year-old Theodore Roosevelt became the 26th President of the United States and the youngest
man to hold the office up to that time. See also D. Jerome Treton, “Theodore Roosevelt and the Arid Lands,” North Dakota
Quarterly 36 (Spring 1968) 21-28; Pisani, To Reclaim a Divided West, 312-315.

23 Pisani, Water and the American Government, 17-35; August, Vision in the Desert, 27; Smith, Magnificent Experiment, 23.
engineers, and placed government in an unprecedented role of shaping the character and nature of rural western society. Reflecting the essence of Progressive era reform, the law acknowledged the ideals of small farmer democracy and sought to incorporate local water law into its broad-based framework. For example, the Newlands Bill made water rights “appurtenant to the land irrigated, and beneficial use…the basics, the measure and limit of the rights.” To be sure, as a shaper and subsidizer of the arid West, the National Reclamation Act took its rightful place alongside the Homestead Act of 1862 and even the historic Land Ordinance of 1785 with its promulgation of “grids, townships, and ranges.” On a local level, perhaps Tempe “south-side” spokesman, Carl Hayden, put it best, as he assessed the region-wide implications for Arizona residents with the passage of the bill as he prophesied that a reservoir would appear at the Tonto site: “All of the valley…has very little to lose and much to gain by the building of the reservoir….The boom time is coming before very long.”

Quickly, Frederick Newell and his USGS brethren took action and proposed to Interior Secretary Hitchcock that he create a Reclamation Service from within the Survey’s hydrographic branch. This proposal thwarted the rival efforts of the Department of Agriculture’s Irrigation Division and the Army Corps of Engineers so they would not be an operating agency while at the same time solidifying control of the new program in the hands of engineers. The initiative was successful and Newell was appointed chief engineer of the Reclamation Service on July 9, 1902, three weeks after the passage of the Newlands Reclamation Act.

---

By this time Fowler had abandoned the enabling legislation for Maricopa County as the National Reclamation Act gained traction with Congress and the Roosevelt administration. He and Newell spent a considerable amount of time together in June and July 1902, and Fowler had convinced Newell to go to Arizona. Clearly, the two had discussed the developing concepts for project eligibility under the new law and Newell thought it important that a proposed project fulfill the financial provisions of the Reclamation Act, that the engineering and hydrologic aspects be sound, and that the water rights be adjudicated. Furthermore, tucked neatly away and in small print, and partly due to Fowler’s efforts, was language that “extended coverage past development of new lands not under cultivation to include land in private ownership, already under cultivation.”25 The Salt River Project, as it was now commonly called, fit this technical profile.26

Shortly after President Roosevelt signed national irrigation legislation into law, stakeholders formed an organization which could deal with the government implementing the National Reclamation Act to benefit the Salt River Valley. The task commenced with a 26-member Water Storage Conference Committee, chaired by Fowler. After Judge Joseph H. Kibbey drafted a remarkable plan for harmonizing the differences between the valley’s water users, the conference committee elected eleven of its members to serve as an executive committee to prepare articles of incorporation. The committee, in turn, provided Kibbey with its ideas, and he drafted the Articles of Incorporation of the Salt River Valley Water Users’ Association (SRVWUA). The executive committee scoured the articles section by section and there were numerous disagreements that took weeks to resolve.

25 Salt River Project, *Taming of the Salt*, 68.
Meanwhile the articles were circulated among Phoenix lawyers for review and then submitted to the full committee. Significantly, they subordinated local interests to national ones, making every subscriber for stock in the water user association subject to the rules and regulations of Congress or any Executive Department of the federal government. Indeed, the Articles of Incorporation were masterfully drawn, anticipating problems between local custom and federal law where no precedent existed.27 Not all differences were settled but the Articles of Incorporation for SRVWUA were filed with the Maricopa County Recorder. Newell and the Reclamation Service praised the final guidelines for the new SRVWUA as soon as they read them and recommended them as models for other projects.28

SRVWUA officially incorporated under Arizona law on February 9, 1903, but Newell had received a copy of the preliminary Articles of Incorporation when he was in Arizona in January to meet with survey crews. On a train from Albuquerque to La Junta, New Mexico on his return trip to Washington, D.C. he read the draft and found them more than acceptable—a “model” for others as he later put it—and moved quickly to select the preliminary projects for Secretary Hitchcock’s approval. On March 6, 1903, Newell and one of his chief assistants, Charles Walcott, presented five projects to Hitchcock for selection; Milk River, Montana,

27 Joseph H. Kibbey, “Brief of Articles of Incorporation of the Salt River Valley Water Users Association, May 25, 1903,” Salt River Project Archives, Salt River Project; Smith, Magnificent Experiment, 35. Specifically Kibbey took on the thorny problem of water rights. By using beneficial use—in this case meaning the amount of water required for proper irrigation—as the measure and limit of the water right, the articles attempted to limit the possibility that a landowner with prior rights to the natural flow would waste water by taking that water and project developed water. For example, a farmer with prior rights to 10 acre-feet of water would not be able to take an extra acre-foot of project water to irrigate his alfalfa crop if the proper amount of water to irrigate that crop was 10 acre-feet. Similarly, priority of right lost its primary importance in determining water rights, as the articles, craftily, attempted to harmonize water use among old and new settlers. But for landowners with old water rights, particularly under the Tempe and Mesa canals, the Articles of Incorporation radically changed local practices. Prior appropriation, though still extant, lost much of its power. So too, the notion that the individual should determine his own beneficial use of water was diminished. Where so-called floating water rights existed in the past, SRVWUA prohibited its members from transferring shares in the association unless the corresponding land was also transferred. The suggested cost per acre, $12.50, payable over a ten-year period did not include the initial subscription charge to the water users’ association. Therefore, the cost per acre charge was substantially higher than the average $1.50 per acre charge most landowners with vested rights were used to paying for delivery of natural flow.

28 F. H. Newell to Secretary of Interior Hitchcock, February 20, 1904, Records of the Bureau of Reclamation, Record Group 115, Salt River 1902-1919, series 261, National Archives, Washington, D.C.

Walcott wrote Secretary Hitchcock about the Salt River: “The conditions are typical of those which must be made elsewhere, and in considering this project and regulations it is necessary to create such precedents as will be desirable for other parts of the U.S.” The Salt River Valley appeared ahead of every other section of the country in its preparation for federal reclamation.

Interior Secretary Hitchcock approved the articles in April 6, 1903 thus assuring construction of the Tonto Basin Reservoir. Fowler was elected the first president of the SRVWUA and he continued to wrestle with every question and disagreement within the new organization. Among the most difficult was acquisition of the dam site from the Hudson Reservoir Company, purchase of the canals so that SRVWUA would possess a delivery system, and construction of a road from the Valley to the Tonto Basin.

After these signal developments, Fowler and others addressed the equally tedious task of explaining the articles to the farmers and landowners. Farmers using specific canals formed committees to further the goals of the organization. It was a tall order for a pioneer community to change its western predilection of “every-man-for-himself” into a spirit of mutual cooperation and trust. The absence of adequate private capital for construction had been the primary obstacle to a successful outcome for the locally sponsored project. Still there was hesitation because what appeared to be an act of benevolence could carry with it onerous federal oversight. Local control of the project, an issue of great significance in the 1890s when landowners solicited private investment, contradicted President Roosevelt’s and the

---

29 Charles D. Walcott to E.A. Hitchcock, June 6, 1903, Records of the Secretary of Interior, Record Group 48, Lands and Railroads: Reclamation, National Archives, Washington, D.C.; Minutes, Board of Governors of the Salt River Water Users’ Association, April 6, 1903, Corporate Secretary’s Office, Salt River Project.

30 Fowler and Kibbey knew that selection of the Salt River as a project depended upon government acceptance of its organization and the executive committee carefully considered the content of the Articles of Incorporation. In essence, the articles sought to reconcile reclamation law with territorial vested rights. See Arizona Republic, December 25, 1982.

31 Arizona Republican, May 24, 1903.
Reclamation Service’s belief in the importance of central authority. In essence, local practice would now be adjudged against the conservation axiom of the greatest good for the greatest number over the longest period of time; a Progressive reform credo reflected in the reclamation law. The fifteen-year struggle for a storage reservoir in the Salt River Valley became enmeshed in the movement for national social reform as Newell’s Reclamation Service sought to make reclamation of arid lands the cornerstone for change in natural resource policy. In the end government subsidy meant federal control and territorial residents must live with it.  

In May and June, 1903, Salt River Valley residents had embraced the new order. The chairman of the Joint Committee of Water Users under the Grand, Maricopa, and Salt River Canals issued a statement on June 7, 1903: “Now, therefore, be it resolved that it is the best sense and judgment of the committees so appointed that the best interests of the water users under the Salt River Valley Canal, the Maricopa Canal, and the Grand Canal, will best be served by the immediate signing up of all land owners and water users under the said canals who desire water storage under government control and supervision, immediately sign their lands under the Articles of Incorporation of the Salt River Valley Water Users’ Association in order that the proposition of this valley may be presented by the Secretary of Interior of the United States within ten days. Every delay from this time endangers our project.”

By June 11 nearly ten thousand acres were signed over to the Water Users and ten days later the amount had grown exponentially to 153,000 and canvassers were still lobbying in Mesa and Tempe, the areas most resistant to change. Dwight B. Heard, the community leader who owned 8,000 acres south of Phoenix, fought to preserve the big farmers and canal companies under doctrines of prior appropriation and local autonomy. He was a formidable

32 Smith, Magnificent Experiment, 25.
33 Ibid, June 8, 1903.
force, who opposed the new program and became the de facto leader of the opposition. He headed to Washington to meet with Secretary of Interior Hitchcock in an effort to amend the SRVWUA Articles of Incorporation. The meeting took place on June 17, 1903 in Hitchcock’s office. Immediately after the meeting he wired a message to friends in Phoenix: “Satisfactory conference with Secretary Hitchcock. Confident reservoir is assured. Return home next Saturday with definite plans to stop friction and ill will.” The contents of the Heard telegram were made public and “before night it had become the sensational feature of the day in respect to the storage campaign.” The June 20, 1903 Arizona Republican informed its readers: “A congratulatory telegram was received yesterday from Dwight B. Heard, in which he gave assurance of the building of the Tonto Reservoir. He also said his conference with Secretary Hitchcock had been quite satisfactory....Heard accepted the situation and receded from his position of antagonism and that his followers in the opposition might be expected to join in the popular movement for the building of the reservoir....We have always believed that if the matter were fully understood by Mr. Heard that he would not try to turn aside the greatest opportunity that was ever presented to the valley and one which in the nature of things would not be presented again for years.” Heard had finally arrived at the conclusion that neither he nor any other major landholder could gain anything further in their opposition to the enterprise and in July he subscribed 720 acres personally and 640 acres of the Bartlett-Heard Land and Cattle Company. When the subscription books closed, on July 17, 1903, landholders had committed 200,000 acres.

34 Charles D. Walcott to Dwight B. Heard, June 19, 1903, Charles D. Walcott Papers, Smithsonian Institution Archives, Record Unit 7004/Box 1, Smithsonian Institution, Washington, D.C.; An example of Heard’s amendments to the articles can be read in Arizona Republican, April 19, June 21 1903; Phoenix Daily Enterprise, June 20, 1903. Heard’s opposition was tenacious and riled Reclamation Service personnel. In essence, Heard traveled to Washington to meet with the Secretary to try to convince him to modify the SRVWUA Articles of Incorporation. Hitchcock’s refusal to modify the articles effectively stopped Heard from pursuing the path of changing the fundamental direction of the Water User’s Association. At the same time, Heard considered himself a friend of the water storage movement. Still, his earlier opposition excluded him from the early decision making of the new water organization.
By 1904 residents had formed a single association encompassing all landowners in the valley, except Tempe. Members of the association received shares in the new water storage system that would be built over the next five years and which provided that the water rights would be “perpetually and inseparably” tied to the land. Farmers, not speculators, would control the organization. Canal companies would pass into history. The Phoenix Board of Trade, paid homage to the leadership of SRVUA President Benjamin Fowler on March 5, 1904; a “triumphal entry” and a “general jollification” meeting to celebrate the contract executed between the Water Users’ and Secretary of Interior. In fact, the Arizona Republican called the event: “The celebration of an epoch in the history of the valley.” This was the capstone achievement that ensured the construction of the reservoir and the celebration took place at the courthouse plaza and included music by the Pioneer and Indian School bands along with the usual round of speeches.35

The promise of federal reclamation in the Salt River Valley triggered a period of growth and development, much of it centered around new technologies. Indeed, the key to a great deal of economic development that took place in the Southwest during the first two decades of the twentieth century was the development of transportation technologies.36 Turn-of-the-century Arizonans worked on and witnessed the expansion of railroads and roads in the Salt River Valley in the 1890s and 1900s and they later marveled at the completion of the Panama Canal. During the first decades of the twentieth century railroads remained the major instrument for economic development in the region. Especially relevant to agriculturalists was the development of the refrigerated railroad car service pioneered by the Santa Fe, Union Pacific, and Southern Pacific railroads, which carried fruits and vegetables from the West Coast to eastern urban centers. In 1906, for example, the Union Pacific and Southern Pacific

35 Arizona Republican, March 5, 1904. Fowler and Judge Kibbey addressed enthusiastic crowds at the celebratory event.
pooled their resources to organize the Pacific Fruit Express, a joint fleet of refrigerator cars that carried the bulk of Pacific produce eastward.

The extension of railroads stimulated increasing demands for better roads and highways to connect city and country, and to serve as feeders for the railroads. Salt River Valley residents were especially avid supporters of the good roads movement. Many began to participate in “auto runs” as early as 1905 and in 1910 a group of residents joined the Maricopa County Automobile Club, modeled after the California State Automobile Association established ten years earlier. Farmers and businessmen alike lobbied for improved roads throughout the valley realizing that good roads could transport crops and livestock to market.37

The overarching theme that tied valley residents’ public, professional, and family lives together was the quest for a reliable and sustainable source of water and all concerned watched intently as the building of the great dam at Tonto Basin unfolded. The site of the proposed dam was sixty miles northeast of Mesa and forty miles northwest of the bustling mining community of Globe. These were leg-slashing, hoof-bruising miles across some of the most rugged country in Arizona. The Sierra Anchas bracketed the northern reaches of the area while the Mazatzals curved away to the northwest. To the south loomed the Superstitions. There were no nearby settlements where workers could live and in the first decade of the twentieth century only one road twisted through the mountains to Globe. Everything else was rocks, thorns, and heat. Thirty years earlier, Generals George Stoneman and George Crook pursued Yavapais and

Apaches across these reaches but now San Carlos Apaches from the nearby reservation would comprise many work crews who would build this Anglo monument to progress.38

The first order of business was to connect the dam site to the outside world, something the Hudson Company could not or would not do. Government workers blasted a road to Globe then began the famed Apache Trail, then called the Yavapai Trail since it was the Yavapai who lived along the Salt River that enabled two rail lines from Mesa to access the eventual construction site. The road gave engineers nightmares and threatened workers’ lives.39 It wound along the Salt River, clung to steep cliffs and ascended and descended mountains like Fish Creek Hill in 10 percent grades. Road builders had to use lifelines to hack twenty-to seventy-foot deep cuts.40

The next challenge was to minimize costs for supplies. Stonemasons, for example, quarried the masonry blocks of the dam from sandstone cliffs in the area, but project engineers calculated that buying and freighting cement to the dam site would cost an astronomical $9.00 per barrel. Reclamation Service engineers learned from the 1889 Breakenridge Survey that deposits of limestone and clay lay north of the Salt River. The result was that government workers were able to produce cement at $3.00 per barrel. Though the cement trust protested vigorously, the Reclamation Service continued to manufacture cement at the site. In another similar instance, private lumber contractors were unable to meet their quotas so government

---

39 Arizona Daily Silver Belt, March 16, 1961. In fact, later a new road north had to be built as the water behind the dam would back up and cover roads then in use. It was on this road that Al Sieber, noted Indian scout, was killed while in charge of a crew of Indians digging out beneath to loosen a gigantic red sandstone boulder above the road. When Sieber saw it was ready to fall into the excavation below, he hustled his men out before starting to move out himself. The boulder crushed him, and though his crew hurried to remove the boulder, he was dead when they reached him.
40 Reclamation Service planners decided it would be cheaper to manufacture the cement on the site than to pay freighting costs. To build housing for the camp workers, a sawmill was built on the Sierra Ancha. A cement mill was also built. A water supply had to be built and a sewage system established. Also a temporary steam power plant was installed. Corrals, store houses, and warehouses were built. Bricks, too, were made on the site. There was a scarcity of fuel in the area so a power canal was decided upon as part of the project to develop power for the construction of the dam, including the operation of the cement mill and pumping plant water from sources in what was called “the Little Salt River Valley.” The water for the power canal was taken about nineteen miles upstream from the work site. Contract work on the canal was begun in 1904 and the system was in operation in 1906. See Arizona Daily Silver Belt, March 16, 1961.
engineers took over a private sawmill in the Sierra Anchas and raised production from 119,000 board feet per month to 214,000. The onsite brain trust, "Visionary Technocrats," according to one writer, led by a thirty eight year old professor from the Colorado School of Mines, Louis C. Hill, illustrated that the "gospel of efficiency" could work in the Tonto Basin.41

Construction of the dam began in 1905. The contract for the construction of the dam was let in April 1905 to the J. M. O’Rourke Company of Galveston, Texas, which had just finished building the great Galveston Breakwater after the historic hurricane, tidal wave, and flood of 1900. Under the contract, the Reclamation Service furnished cement and sand and electric power at .05 cents per hour. As it turned out, 1905 was one of the wettest years in memory and the rains triggered unprecedented flooding throughout the Colorado River Basin.42 Then on November 26, 1905, a warm rain melted snow in the mountains and the river rose thirty feet in just over fifteen hours. Water roared down the canyons at 130,000 cfs and ripped piles out of the river bottom. It swept away diversion dams and flumes and more floods through the winter of 1905-1906 prevented construction from resuming until March of the latter year. O’Rourke and the crews returned and hacked away at earth with picks and shovels because engineers had concluded that too many explosives could weaken the rocks. Then, the crews used wooden derricks to hoist stones that weighed up to ten tons, filling the joints with concrete that had to be kept wet six days to prevent cracking. On September 20, 1906, the first stone was laid for the dam. Slowly the structure took shape, curving upward between the cliffs. By the time of the next floods, in 1908, the south end of the dam was high enough to

---

42 See Norris Hundley, Jr., Water and the West: The Colorado River Compact and the Politics of Water in the American West (Berkeley: University of California Press, 1975); August, Vision in the Desert, 55.
force the water over the northern end. This development, perhaps, was the first sign of flood control for the Salt River Valley.\textsuperscript{43}

The development of hydroelectric power was also an important and enduring aspect of the project. Reclamation engineers realized that to cultivate the maximum amount of acreage under the project—stored water would not be sufficient to irrigate all project lands—they needed to enhance stored water by using surplus hydroelectric power generated at Roosevelt to pump groundwater in the valley. Underground water resources were already under wide use when the Reclamation Service considered this plan. Geological Survey personnel found farmers using the shallow and deep wells in Phoenix, Tempe, and Mesa when they conducted a detailed groundwater investigation in 1903. The report indicated an “immense amount of water” existed over the Salt River Valley’s 525 square miles. Most of this water was available at less than fifty feet from the surface. Reclamation Service engineers concluded that the substantial volume of quality groundwater available made pumping an important consideration. Hydroelectric power produced at Roosevelt could pump enough underground water to irrigate an additional 50,000 acres.\textsuperscript{44}

Realizing that there would be a continued use for hydroelectric power beyond the dam’s construction, the Reclamation Service modified its power plant design. The original dam located the “temporary” construction generators inside the reservoir about eighty feet above the Salt River stream bed. This plan was abandoned and instead the Reclamation Service installed the power canal units immediately below the south, downstream side of the dam and housed in a cut out in the canyon wall. The equipment was placed in a shallow cave to protect

\textsuperscript{43} The first machine installed temporarily for power was the 1,000 horsepower horizontal turbine and generator. In order to protect it from flying or falling rock, it was placed in a cave excavated in the face of the cliff immediately behind the permanent power site, \textit{Arizona Daily Silver Belt} (Globe, Arizona) March 16, 1916.

it from floods and blasting. Water was conveyed to the generating units from the power canal above through a 620 foot, steel-lined penstock tunnel, seven feet in diameter. Although the diversion dam was not completed until 1906, the first power canal unit began producing power six months earlier from water diverted into the canal by a temporary brush dam at the diversion dam site. Water from the canal produced 1,300 horsepower, more than necessary for supply construction.45

Construction of the permanent power plant at Roosevelt was begun in October 1906 and finished in the spring of 1908. After completion, the power canal units—now expanded to three—were moved into the power house through the extension of the seven foot penstock. Augmenting this power output from the power canal penstock were three additional units which received stored water from the reservoir through a ten-foot diameter penstock running through the dam face. By 1912, five units were installed with an operating capacity of 4,500 kilowatts (kw).46

Significantly, in 1906 Congress passed legislation authorizing the Secretary of the Interior to sell excess hydroelectric power generated at federal reclamation projects, giving municipal purposes preference. The receipts from these power agreements were to be deposited in the reclamation fund and credited as repayment money to the project from which the power was derived. As noted above, the primary use for Roosevelt’s power was to pump groundwater, however, with the anticipated excess from the Roosevelt plant, power was actually first used for commercial purposes. As it turned out, in 1907, Secretary of the Interior James R. Garfield, entered into an agreement to sell 1,500 kw to the locally-based Pacific Gas and Electric Company, which, in turn, sold the electricity to the City of Phoenix and thirty or

46 A sixth turbine, rating at 5,000 kw, was installed in 1916.
more valley businesses. Under the contract power was transmitted to Pacific Gas and Electric in September 1909 after the Roosevelt to Phoenix transmission line was completed. Shortly after Pacific Gas received power, hydroelectricity was transmitted to Mesa and the Gila River Indian Reservation to lift groundwater for irrigation.  

Masons laid the last block on February 5, 1911. The structure rose 284 feet from the bed of the river and was 184 feet thick on the bottom and 16 feet wide on top. It arched 1,000 feet from canyon wall to canyon wall in a great concave bow. The dam, which cost over $10,000,000.00—triple original estimates—inundated more than 16,000 acres, making it the largest artificial lake in the world at that time. The Reclamation Service hailed it as a “monumental triumph of the skill and genius of [its] scientist creators,” with its massive, rough-hewn wall and its three towers.

Five weeks later the dedication took place. On March 18, 1911, former president Theodore Roosevelt, in a Kissel Kar driven by Tempe resident Wesley A. Hill, a former Rough Rider, led a caravan of twenty-three other cars. They headed up Center Street (today’s Central Avenue), where hundreds of people had gathered to see and cheer the former president. “Colonel Roosevelt bowed left and right as he passed through the business section” of town.  

After visiting the Phoenix Indian School, the caravan traveled east and then north along the Crosscut Canal to the Arizona Canal. They then proceeded along the bank of the Arizona Canal to the Granite Reef Diversion Dam, where they crossed the river and followed the desert trail to the Roosevelt Road (Apache Trail) and the dam. More than 200 more cars

---

48 Arizona Democrat, March 20, 1911.
joined them from the Salt River Valley and Globe, even though a stage coach had plunged off Fish Creek Hill, killing a woman passenger, the day before.

At precisely 4:16 p.m. an auto shot around the bend of the big road, according to the *Arizona Democrat*, and in the front seat sat a figure in a long white Ulster, wearing a black slouch hat. The appearance of Roosevelt’s car was the signal for the discharge of eleven guns at the dam, followed by the cheers of at least a thousand onlookers. The reverberations of the guns fluttered the large American flag and the blue Reclamation Service flag floating above the parapets of the dam. Prior to Roosevelt’s speech, several notables addressed the crowd, including Governor Richard Sloan, chairman of the dedication, who said the dam was “a vindication of the wisdom and foresight and a justification of the effort and labor of all those who were instrumental in bringing about a national irrigation policy.” Louis Hill followed, pointing out that even though the reservoir was less than half-full, all of the land served by the Water Users’ Association was “safe from drought for two years, even if no flood comes” all of which water would have been lost for use without Roosevelt Dam. Benjamin Fowler, now president of the National Irrigation Congress, said the dam “will stand as an everlasting testament to serve, conserve, and safeguard the interests of all people alike. To its builders it is a splendid monument. To a great and growing community in an arid region, it is a guarantee for all time of prosperity, happiness, comfort, and peace.” Roosevelt followed and spoke extemporaneously. He said that the structure, which was officially christened Roosevelt Dam in his honor, was one of the two “greatest achievements of my administration,” the other being the Panama Canal. He predicted that the Salt River Valley would become one of the richest agricultural areas in the world. Then, the former president pushed a button that raised three huge iron gates. Water spouted from the dam and headed for the fields sixty miles away and
according to the Arizona Republican, “A mighty roar of water rushed through the canyon and
the dedication of the greatest storage dam and reservoir on earth was an accomplished fact.”49

During the construction of the dam and into its early years of use in the teens and
twenties, evolving water law in the context of federal reclamation, laid an important
foundation to the region’s brave new water world. Justice Joseph Kibbey and Justice Edward
Kent handed down decisions that affected water rights well into the new century. Earlier, in
1892, Kibbey, then-the chief justice of the territorial Supreme Court, tried to resolve a number
of water rights and canal company disputes that punctuated the increasingly chaotic
community of water users. Kibbey’s landmark decision, in Wormser v Salt River Valley Land
Company (1892) reaffirmed the doctrine of prior appropriation. Eighteen years later, as the
dam neared completion, Justice Kent essentially reiterated Kibbey’s decision in Hurley v
Abbott (1910).50 The decision determined the prior rights of all acreage in the Salt River
Valley and even adjudicated when each parcel had been first cultivated. The Kent decree, in its
determined complexity, took into consideration elements of the federal Newlands Reclamation
Act and enabled Arizona to undergo a seamless transition into statehood in 1912, especially as
it concerned water law administration. The decree stands as one of the great early monuments
to Arizona’s maturing legal system.

49 Arizona Republican, March 19, 1911; Arizona Democrat, March 20, 1911. Roosevelt added some relevant reflections
in his unedited remarks. He said “As soon as it was done [the National Reclamation Act signed into law] I called Mr.
Newell and I said, ‘Now I want this work divided fairly. There will be great pressure by different senators and
congressmen who will honestly think that their state has first claim, that they have a meritorious project, and as Arizona
and New Mexico have not any senators or congressmen, and as I raised three-fourths of my regiment in New Mexico and
Arizona I will take their place and now I want to see that they get a fair deal.’ Mr. Davis and Mr. Newell answered at
once that they were perfectly easy in Arizona. Mr. Newell said that there were two projects that they regarded as two of
the most important, if not the most important, projects of the Reclamation Service. Mr. Newell and Mr. Davis took the
keenest personal interest in everything connected with starting this work just as if they had been citizens of Arizona who
were directly to be benefited by the proposed work and they couldn’t have been more devoted to it or towards it or have
served it or more conscientiously worked to see this policy adopted in a form that would make it of the widest and most
far reaching benefit to the people of the Salt River Valley.”
50 By this time, Kibbey had also served as Governor of Arizona Territory (1905-1910).
A new and more productive relationship developed between local water users and the federal government. Although the bulk of these users were farmers, on October 1, 1910, City of Phoenix officials executed a water contract with the Department of Interior’s Reclamation Service for the delivery of water. Justice Kent, to his enduring credit, had recognized the urban dimension of portions of the Salt River Valley in the Kent decree and this was reflected in the map designating urban areas that accompanied his legal rendering in the *Hurley v Abbott* (1910) case. Ultimately the annual renewal of water-delivery contracts with the Department of Interior’s Reclamation Service became routine until 1917, when the SRVWUA took control of the project. On March 20, 1919, the City of Phoenix executed its first water contract with SRVWUA. Clearly, public ownership and government stewardship characterized this Progressive Era evolution in water policy.  

Phoenix, which increased in population nearly three-fold between 1910 and 1920, experienced a decade of dynamic growth and change. In the former year agrarianism, the small town, decentralization and competition reigned triumphant in America’s constellation of values. The romantic, voluntaristic world of the Arizona Roughriders and the Spanish American War gave way to the efficiency-minded state of the Progressive era and the systematization of World War I. By the advent of the 1920s the distinguishing characteristics of a new America could be foreseen—urbanized, centralized, industrialized and secularized.

The boom times in World War I resulted in the planting of more cotton than alfalfa in order to support the war effort. But the end of the war did not create the millennium that many had hoped. Instead the postwar period was one of crisis, anguish, and tribulation. Local residents, as did the entire western world, welcomed the end of the fighting in Europe yet the nation was beset with tensions and frustrations that came with forced adjustments to a

---

peacetime economy. To a considerable extent the worst fears were fueled by the economic depression that settled on the region between 1920 and the immediate years thereafter. Most residents in Maricopa County—farmers, cattlemen, miners, and those in manufactures—were affected by the cancellation of war orders. Salt River Valley farmers bore the brunt of shrinking markets and plummeting prices. Prices for beef and hogs dropped to one-half wartime levels, plunging numbers of Arizona cattlemen into bankruptcy. Most struggled to keep agricultural, ranching, and related enterprises afloat; the early twenties proved profoundly difficult but the Salt River Valley Water Users' Association proved a stabilizing influence and helped Salt River Valley residents sustain their agriculturally-based economy.
THREE

Water, Hydroelectric Power, and Growth in the Salt River Valley:

1920-1930

When the Association assumed operation and maintenance of the Salt River Project on November 1, 1917 it faced several challenges. SRVWUA needed to add to its water supply because several thousands of acres of “dry” lands were included within the boundaries of the Association’s reservoir district but excluded from project membership. While the Association needed to improve an additional water supply to some of its lands, other low-lying areas—approximately 10,000 acres—needed the groundwater table reduced because inadequate drainage had caused it to rise perilously close to the surface. The Association, moreover, wanted to improve its water delivery system, particularly to areas planted in cotton. It needed an adequate method to dispose of waste water. Finally, SRVWUA faced a labor shortage due to World War I.

The Association took a straightforward approach to addressing these challenges. To provide more water to meet irrigation demand and to relieve areas needing drainage from rising water tables, it built thirty-eight pumping plants in 1918. To dispose of wastewater, the Association worked with local private landholders and constructed several inexpensive waste water ditches. To deliver more water to farmers, SRVWUA used its drainage pumps, expanded laterals and lengthened canals, and added an additional pump to its Highline pumping plant. Little could be done immediately to hire additional workers, especially zanjeros (water deliverers). Over time the Association added to its work force and by 1920, the labor market had stabilized.
SRVWUA, while addressing these immediate concerns, still needed to resolve the conflict between water storage for irrigation or releasing it for hydroelectric power generation. In his 1918-1919 annual report, Walter R. Elliot, the Association’s General Superintendent and Chief Engineer, advised “The development of electric power on this Project is a matter that must be given more and better consideration than it has received in the past. Better year-round [electrical] service is demanded, for the interest of the project.” In essence, Elliot argued that if the project hoped to increase power sales to commercial and industrial customers, it needed to offer a more reliable commodity.¹ Significantly, Elliot stated that the Association needed to make the supply of power during winter months free and independent of irrigation needs.

In effect, as long as the power system was subject to irrigation demand, Elliot advised the Board of Governors to consider constructing a steam power plant at one of its hydroelectric facilities to serve winter electrical demand. He suggested that the Association’s electrical service during the winter months was unsatisfactory and that the condition would become worse as demand grew. Elliot concluded that the Association needed to expand its power services to protect its $4.5 million investment in its hydroelectric system and to control the future power market. There was already demand by owners of the undeveloped land adjacent to the Salt River Project to the east and to the west. These landowners needed power to fuel groundwater pumping plants. If the Association wanted to protect its considerable investment and maintain control of

¹ The Water Users’ first annual report was written for the eleven-month period November 1, 1917 to September 30, 1918. Salt River Valley Water Users’ Association, History of the Salt River Project for the Period November 1, 1917 to September 30, 1918 (Phoenix: Salt River Project, 1918) 2-5, 71-82.
electrical power in central Arizona, it would have to expand its hydroelectric power capabilities. If it failed to grow in this regard, the Project's operational limitations would invite competition.²

In July 1920, Elliot and Association President F. M. Wilkinson left office and were replaced by two others who would, for the next decade and beyond, influence significantly the nature and direction of growth in the Salt River Project. Frank A. Reid was elected president and Charles C. Cragin, was elected to Elliot's office as general superintendent and chief engineer. Reid was an Oklahoma native who ventured southward to attend Fort Worth University. He arrived in Arizona in 1910 and purchased a cattle ranch in Yavapai County, near Ash Fork, then focused his interests in the Salt River Valley. Before joining the Association he and Jim Cashion formed the Reid-Cashion Land and Cattle Company. Reid also acquired interests in mines, ranging from Maricopa County to northern Mexico.

Charles Cragin was born in New York and graduated from the College of Engineering of New York University in 1906. Before leaving the eastern seaboard he worked in developing the City of New York's water supply, playing a junior role in the design and preliminary construction of the city's Ashoken Reservoir, formed by Olive Bridge Dam. Shortly after he graduated from NYU he moved to San Francisco where he was employed as a consulting water supply engineer for the Oakland, Berkeley, and Alameda Water District. Prior to coming to the Salt River Project, Cragin worked across the western portion of the North American continent; British Columbia, Montana, the Dakotas, New Mexico, and several other California cities. Under

² For the three fiscal years 1917-1920 the average annual net hydroelectric power revenue from the Salt River Project was $299,619.00. In this period the Water Users' repaid the federal government $203,320 each of the three years as repayment for the cost of the Salt River Project.
the leadership of Reid and Cragin, the Association undertook a two-year study to analyze the costs and benefits of expanding the Association’s hydroelectric potential.³

The result of this initiative was a detailed study entitled, “Report on Proposed Additional Development of the Salt River,” which was completed in February 1922. Cragin was assisted in this effort by Assistant Chief Engineer Francis J. O’Hara and Electrical Engineer Harry J. Lawson. The Cragin Report, as it was commonly called, focused on four issues: how much power could be developed economically by assessing the project’s available water supply; what construction plan would develop additional hydroelectricity; what methods of financing were available for expansion; and most importantly, was hydroelectric expansion necessary.⁴

The engineers began their study by calculating the project’s total water supply. The Association drew water from four sources; the Salt River, the unregulated flow of the Verde River, the return water at Joint Head Dam on the Salt River, and pumped groundwater. For the period 1899-1921, the average annual runoff from the Salt River was 882,000 acre-feet. The average annual runoff from the Verde River for the same period was 594,000 acre-feet. Through Joint Head Dam, the diversion structure in Phoenix that captured percolating underground water, 65,000 acre-feet was counted upon annually. Groundwater pumps supplied 55,000 acre-feet per year for the period 1889-1921. With the Association’s newly installed drainage pumps, another 150,000 acre-feet per annum was tapped. Taken together, SRVWUA could count on 1.69 million acre-feet annually. The authors demonstrated that the project developed a significant amount of

³ Reid was born in 1880 and Cragin’s birth date is unknown. For biographical information on Reid see his obituary in Phoenix Gazette, October 24, 1961. Olive Bridge Dam was part of the Catskills Aqueduct and completed in 1916.

water but they also addressed the fact that without the ability to better manage its use, additional hydroelectric power was not possible.

Three conditions hampered expansion. Roosevelt Dam could generate power only when irrigation demand necessitated the release of water. This fact made power generation a seasonal activity and this was even more restricted because all other project water sources were used before Roosevelt to satisfy water demand. Thus, water from Roosevelt was released only when the Valley irrigation demand was not met by the unregulated flow of the Verde, the Joint Head flow, as the normal pump supply of the Association, or possible flood water. Another impact on the production of Salt River hydroelectricity was the wide variation of the river’s annual flow. In 1916, for example, 2.3 million acre-feet came down the river; in 1903 only 250,000. The river’s monthly variation could produce 100,000 acre-feet for each of eight consecutive months and then produce virtually no water at all.

The Association needed increased ability to regulate the flow of the Salt River at Roosevelt Dam. Yet it could not offset the project’s irrigation demand to sell power. One of the overall conclusions, therefore, was that the Association needed to further regulate and stabilize the Salt River’s flow if it expected to develop a constant year-round power supply. The Cragin Report recommended four alternatives to increase power output. First, it restated Elliot’s suggestion to build a steam plant. The three engineers also proposed that the Association build a detention or regulatory dam below Roosevelt at the Mormon Flat site, and build another dam between the two to be used strictly for hydroelectric power production. The third alternative included a recommendation that a storage dam be built on the Verde River. This option would

---


6 Ibid., 63-68.
allow Roosevelt to release water for power in the winter. In the summer the Verde would release its winter storage and still permit Roosevelt to release water for power, although at a reduced rate. The fourth possibility was a combination of all of the aforementioned alternatives.

The engineers recommended the second alternative. If the Association undertook the construction of Mormon Flat Dam, it would enable Roosevelt to produce hydroelectric power when there was no irrigation draft required. According to the report, Mormon Flat would store 90,000 acre-feet of water run for power from Roosevelt. It would also capture water from a 276 square mile watershed which amounted to an additional 30,000 additional acre-feet annually. The construction of what the engineers called the Mormon Flat Power Dam (it became Horse Mesa Dam) would permit the development of 25,000 kw. The Cragin Report also suggested that power output at Roosevelt could be increased by raising the spillways fifteen feet. With this modification, another 270,000 acre-feet of additional water storage would be added thus enabling the building of a seventh 9,000 kw unit to the dam’s power plant.

The costs were substantial. The hydroelectric expansion program would require an expenditure of $5.9 million or $175 per kw. In order to finance the expansion program the engineers recommended that the Association consider soliciting construction funds in advance from large electrical users. The copper companies, Central Arizona Light and Power Company (CALAPCO), and the irrigation and electrical districts were the obvious targets for this solicitation since they were already demanding 60,000 kw of power. If these entities funded construction, Cragin and his assistants argued, the Association could repay them through credit
and reduced assessment rates.\textsuperscript{7} If assistance to fund construction could not be obtained, Cragin believed that SRVWUA had the means to finance the 34,000 kw development.

The Cragin Report considered other factors to move forward with hydroelectric power expansion, including market competition. Three potentially competitive projects were in the planning stages in the early 1920s. Private interests were assessing the area above Roosevelt Dam, designing the so-called Black River Project. The Paradise Verde Irrigation District’s hydroelectric development plans on the Verde River were also well-known, but like the Black River Project, it was twice as costly as SRVWUA’s. The largest power plan was the speculative development of the Colorado River by California interests. Cragin was not concerned with this plan, or the others, because power off the Colorado would have to travel too great a distance to serve a widely scattered Arizona market. He estimated the cost of developing power on the Colorado at $155 per kw and combined with the high transmission costs to serve the dispersed Arizona users, the total price of the Colorado River hydroelectricity would approach $300 per kw, or over $100 more per kw than the Association could develop.\textsuperscript{8}

\textsuperscript{7} Ibid., 16-33, 63-68. Cragin, especially, argued for upfront funding because he believed it would take too long to sell the expansion to the project’s shareholders who were required to approve the issuance of bonds by a three-fourths vote. He stated, “A number of years of education would be required to convince our 5,000 shareholders of the feasibility, necessity, and benefits under an ordinary bond issue method of financing.” The report also listed several other considerations for expansion of the project’s hydroelectric facilities. Instead of erecting a Mormon Flat Power Dam, Cragin offered a plan to build a smaller structure at that site and build another dam at Pine Creek, seven miles below Roosevelt. Combined, this alternative set of dams would produce a total of 24,000 kw. This alternative was put forward because although it would cost more than one power dam, the initial expense would be lower if only one was constructed first. The report also advocated the construction of a power canal to run eighteen miles from a diversion structure built on the Salt to the Verde River. In this scenario, Salt River water would be stored on the Verde and run to produce power when the irrigation demand required.

\textsuperscript{8} Ibid., 44-51. In his report, Cragin wrote that A. P. Davis estimated the cost of the Colorado River project, or the Boulder Dam (now Hoover Dam) project, would be $55 million. He estimated the amount of power at 400,000 kw. Cragin surmised that the large amount of power would be more appropriately transmitted to Los Angeles, Salt Lake, Denver, or San Francisco, cities where there was a larger and more concentrated market. In determining the transmission of Colorado River hydroelectric power to Arizona markets, Cragin excluded outlying communities like Yuma, Clifton, Morenci, and Kingman.
The lack of other competitive inexpensive hydroelectric power left central Arizona's power market open to the Association. In 1920 the entire state of Arizona used roughly 500,000 kw hours of electricity with the anticipation that the annual demand would double by 1930. About eighty percent of the 1920 load was within a 100 mile radius of the Salt River Project’s hydroelectric power plants. Cragin realized that the Association had an opportunity to contribute more to the state’s power resources beyond its current 80 million kw annual share.

As suggested earlier, peace after World War I altered the Association’s financial calculus. While the Cragin Report was being prepared project shareholders were whipsawed by countervailing economic forces. The agricultural economy, combined with incipient urbanization in Phoenix and the surrounding communities, resulted in nimble responses to serious economic challenges. Beginning in 1915, while World War I commenced in earnest, Association farmers planted more acres in cotton due to skyrocketing demand. At the same time the area’s population nearly tripled between 1910 and 1920 from 11,134 to 29,053 and much of that population growth was tied directly to the economic opportunities created by wartime demand for products produced in the valley. It was more than the sum of irrigated agriculture and the developing transportation grid. Geography and topography placed Phoenix in a favorable location. The disruption of shipping lanes and exigencies of World War I sent the prices of domestic agricultural products soaring and farmers reaped unprecedented profits. Indeed Phoenix and the Salt River Valley saw agricultural activity expand to new levels.  

— Local leaders struggled to gain advantages in urban development. The greatest challenge confronting late nineteenth and early twentieth century boosters and developers in the Salt River Valley was a stable and regulated supply of water. And as the Salt River Valley prospered so did its urban manifestation, Phoenix. Indeed, the area became the leading agricultural producer in the Southwest.
Almost every crop made money at the beginning of the war, and diversity characterized Salt River Valley agriculture. Alfalfa covered about half the land, but farmers also cultivated wheat, vegetables, melons, citrus, barley and other crops. Much of the forage was exported and large herds of cattle and sheep wintered on valley fields and the local dairy industry flourished. As the *Arizona Republican* put it on August 19, 1917, “Alfalfa was King, Cotton was Queen, and every Dairy Cow a Princess.”\(^\text{10}\)

But by 1917 the Queen, as historian Thomas Sheridan put it, “staged a coup.” When World War I broke out Great Britain placed an embargo on the export of long staple cotton to other countries in order to maintain its supplies. Extra-long-staple cotton yielded a fiber of far greater tensile strength than other shorter staples, which made it very appealing for producers of industrial fabric, particularly for tires. The world’s crop came from Egypt and the Sudan, where British capital had financed and developed this unique strain of cotton. Thus tire companies in the U.S. were cut off from their sources just as the War Department had ordered thousands of airplanes, which needed cotton for their tires and the fabric covering their wings. As a result defense contractors scrambled for new domestic supplies of long staple cotton necessary in the production of tires and airplane fabric. However, this crop required a longer growing season than that of the more humid southern Cotton Belt and the Salt River Valley maintained the necessary seasonal length.

Cotton joined cattle and copper as the three C’s driving the Arizona economy. At the beginning of the cotton boom Salt River Valley farmers were growing 7,300 acres of extra-long-staple-cotton. To punctuate this development, the Goodyear Tire and Rubber Company of

Akron, Ohio, in an effort to keep its plants operating during the shortage, purchased cotton from Salt River Valley growers and in 1917 bought two large tracts of land to grow its cotton. Under the direction of Paul W. Litchfield, the two tracts—one eight thousand acre parcel southwest of Phoenix called Goodyear and another 16,000 acres west of Phoenix named Litchfield—became the site of two agricultural company towns. Litchfield hired experts and the enterprises flourished with cotton gins, mills, and thousands of acres of cotton. Goodyear also contracted with local farmers to purchase more than $3 million worth of their cotton. Farmers dedicated a large percentage of their acreage to long staple cotton in 1918 and 1919 while noting the enormous implications of Goodyear’s presence in the valley. Meanwhile, other tire companies, like Dunlop and Firestone joined Goodyear in the Salt River Valley as prices continued to rise. In 1920, for example, cotton production peaked. Between 1916 and 1919, prices rose from $233.00 to $406.00 per bale, with Goodyear willing to pay up to $625.00. Similarly, acreage dedicated to long staple cotton rose exponentially; from 7,300 acres in 1916 to 190,000 acres. The Salt River Valley became a vast uniform grid as everyone plowed under other crops and sold off dairy cattle. As the *Arizona State Magazine* announced in March 1919, “The milk producer and the land owner have yielded to the siren song of cotton and much good dairy stock has gone to the block.”12 “Men who never saw cotton grow in their lives,” wrote Richard Wells in a

---

11 Bradford Luckingham, *Phoenix: The History of a Southwestern Metropolis* (Tucson: University of Arizona Press, 1989) 74. *Arizona Republican*, February 20, 1919, January 1, 1920; A. George Daws, *The Commercial History of Maricopa County* (Phoenix: Daws Publishing, 1919); Geoffrey Mawn, “Phoenix: Central City of the Southwest” (Ph.D. dissertation, Arizona State University, 1979). By 1918 cotton production replaced alfalfa growing as the leading industry in the Salt River Valley. In that year 72,000 acres were planted in cotton; up from 7,300 acres in 1916. By 1920 that number had increased to 190,000 acres or three quarters of the irrigated land in the valley. Land prices rose astronomically. According to one observer, “In January 1916, 80 acres of land near Peoria sold for $60 an acre. In January 1919 it sold similar tracts for $500 an acre. That was an increase of 833%.”

12 *Arizona State Magazine* (March, 1919); Sheridan, *Arizona: A History*, 212-213. With irrigated land increasing in price by as much as 800 percent, dairying and alfalfa production became unprofitable for established farmers and astronomically expensive for those looking to purchase land. The patchwork of grain fields, date orchards, and citrus groves disappeared as monoculture spread across the Salt River Valley.
magazine dedicated to the business side of farming, *The Country Gentleman* of April 17, 1920, “brought their bankroll, their youngsters, and their household goods to find the foot of the rainbow.” 13

As the war ended the military canceled a vast majority of contracts in the fall of 1920 and when pickers were preparing to harvest the bumper crop, 450,000 bales of Egyptian cotton flooded the U.S. market. Arizona cotton growers who expected to receive $1.50 per pound, were extremely lucky to sell their crop at 28 cents per pound. Since it cost 65 cents per pound to grow the crop, many farmers went broke and many teetered on the brink of bankruptcy. “White gold” became a “white elephant” in the matter of one month. As one scribe described the disaster, “the roulette faro crop” that led the Salt River Valley up the easy grade to the very top…kicked it over the edge on the steep side.” The cotton market, like so many others, collapsed in the fall of 1920. Placed in broader context, the nation’s wholesale price index for farm products dropped ninety points from 1920 to 1921 or from 211 to 121. 14

Other circumstances impacted the Association’s financial status. The cessation of wartime hostilities brought a decline in the copper industry, though this was less dramatic than in irrigated agriculture. Income dropped for the Association because the copper mines were the largest customers for hydroelectric power. Revenue received from Inspiration Copper Company, the largest consumer of hydroelectricity, dropped by nearly one third from 1920 to 1921. Association revenue from Inspiration in 1919-1920 was $170,130. In 1920-1920, the amount fell to $121,567. Beyond the farming collapse the Association had to contend with its annual

---


14 *History of the Salt River Project for the Period October 1, 1920 to September 30, 1921*, 10-12, 257-258.
payment to the federal government. It took no small amount of negotiating skills for Association
president Reid to navigate the various extended deadlines during these lean years.

In November 1922, Reid and Cragin took their cause and recommendation to the Board. Both argued for the construction of Mormon Flat Dam and improvements to Roosevelt, likely due to the fact that they did not think the Board would approve issuing debt for the entire $5.9 million and during uncertain economic times. They buttressed their arguments with facts. Cragin reminded the Board that the extant power system varied in output from 3,000 kw to 18,000 in wet years and 2,000 kw to 7,000 kw in dry years. This variance was, Cragin inveighed, “an invitation to disastrous competition from any other company with a more stable commodity to sell,”15 He added that the Association’s $4.5 million investment needed to be protected. If he Association made the $1.8 million additions to Roosevelt and the construction of Mormon Flat Dam recommended in his report—which he promised could be completed in twelve months—the Association could generate an additional 55,000 kw hours. Cragin elaborated on these pronouncements claiming that within a few years the increased power output made available would “operate the entire Salt River Project,” pay interest on the bonds issued to fund the construction, pay the U.S. its installments, and provide $50,000 per year for project upgrades. After the debt had been retired in 1936, Cragin optimistically predicted, that power revenue would pay all project expenses, while producing a surplus, above depreciation, of more than $400,000 per year. Cragin concluded his board presentation on a cautionary note. If the Association failed to expand, he stated flatly, “the present strategic position of the Association with respect to [the] Arizona market is doomed.”16

15 Minutes, Board of Governors of the Salt River Valley Water Users’ Association, November 15, 1922.

16 Ibid. Cragin also mentioned in his comments to the Board that his income estimates were conservative.
Predictably, Reid supported Cragin’s contentions. He added that an expanded power system would significantly reduce water fees. Assessments would not exceed $1.27 per acre per year, much less than previous fees, some of which reached as high as $4.00 per acre per year. Beyond the added income, Reid argued that water developed through Mormon Flat Dam would result in cultivating an additional 8,000 acres within the project area. Reid ended his portion of the session: “I cannot emphasize too much...Mr. Cragin’s report. We are in the power business. We cannot afford to stay out of the power business with the large and growing demand for pumping on our project and power needs on the farm. Never in the history of the Valley has there been greater need for vision on the part of the members of the council and Board of Governors to see this great opportunity of our Association.” Thus, with Reid’s support, the Association Board of Governors voted unanimously to support Cragin’s hydroelectric expansion plan which it called “Mormon Flat Development No. 1.” The resolution called for a special election of the Association shareholders to vote on issuing $1.8 million in bonds to fund the construction of Mormon Flat Dam as well as the improvements to Roosevelt Dam.17

Reid and Cragin had more work to complete. They needed to campaign vigorously to sell the development to Association farmers. They accomplished this task via a publication called The Associated Arizona Producer. First published in March 1922, the sole purpose of the bimonthly tabloid was to promote agricultural development in the Valley. In its first issue, November 15, 1922, The Producer was listed as the official organ of the Arizona Pima Cotton Growers, the Salt River Valley Water Users’ Association, the Arizona State Farm Bureau, the Arizona Grain Growers, the Roosevelt Hay Growers, the Arizona Dairy Producers, the Arizona...
Poultry Producers, the office of the County Farm Agent, the Maricopa County Poultry Association, and the Union of Melon Growers. The Producer was distributed free to all shareholders and not surprisingly, the publication ran a series of lengthy and detailed front page articles promoting the hydroelectric expansion program to the Association’s shareholders and other Valley residents.

The first article, “The Mormon Flat Development Plan and Its Possibilities,” echoed Reid’s and Cragin’s arguments to the Board of Governors. After reframing the technical details and financial prospects, the editors confidently stated, “In the construction of Mormon Flat dam shareholders of the Salt River Valley Water Users’ association [sic] are [would be] doing what is the logical and consistent thing for them to do.” In a subsequent piece, published in its December 15, 1922 issue, The Producer restated points made in the previous edition, adding that the only cost to the shareholder would be “the time to vote.” In the last issue appearing before the bond election, Louis C. Hill, engineering consultant for the Association and a former Reclamation Service engineer for the construction of Roosevelt, authored an essay entitled, “Financial Aspects of the Salt River Plan given by Expert.” Hill enthused about the Mormon Flat project, noting its financial soundness. He argued that the available connected electrical load greatly exceeded the combined capacity of all Association plants including the planned increases at Roosevelt. Hill posited that the Association needed to strengthen its electrical output and thus increase its electrical rates by developing a dependable production load. This load, importantly, should not vary with irrigation demand. And, as the previous articles emphasized, beyond the Association’s need for power for drainage and groundwater pumping, Hill pointed out the

18 By the end of the following year, 1923, the publication’s office had moved to the basement of the Association’s office in downtown Phoenix and SRVWUA took responsibility for the tabloid.
existence of several large electrical users in the Valley which desired a firm supply of power. Indeed, for an investment of less than $2 million, Hill concluded, the Association could irrigate more land, store more water, improve flood control and increase revenues by $400,000 per year.¹⁹

Just three days after the publication of Hill’s article, on January 4, 1923, the Association asked its shareholders to vote on several proposals. Should the Mormon Flat Development No. 1 as presented to the Board of Governors on November 15, 1922 be ratified? Should $1.8 million in bonds be issued to finance construction? Should the Board be given authorization to levy assessments against the shareholders’ acreage to assure payment of the interest and principal of the bonds? Should the Association’s articles of incorporation be changed to reflect the additional indebtedness and to extend the life of the corporation an additional twenty-five years? The well-orchestrated campaign to sell Mormon Flat development was effective; the program passed 98,838 in favor to 7,065 opposed. Reid and Cragin were so confident that the Association’s shareholders would approve the plan that on the same day of the special election, they released the development’s bond prospectus. Between January and March 1923, copies of the bond prospectus were distributed nationally to a variety of financial institutions. Interest in the bonds was keen. On February 27, 1923, the Arizona Republican ran a headline, “Automobiles Needed,” and issued an “appeal for automobiles to be used in showing 100 California bond salesmen over the Valley and the Salt River Valley Water Users’ Association project.” The Chamber of Commerce organized the appeal and asked for at least twenty-five autos for a Saturday and Sunday tour. Those who could spare their vehicles for two days were asked to call the Chamber

on Second Avenue and Adams Street or call 6294. On Saturday morning the visitors were shown Phoenix downtown and the northern sections of the Valley. In the afternoon, the bond salesmen were taken to the areas south of the Salt River. On Sunday morning the group convened at 6:00 a.m. for a tour of Roosevelt Dam then returned to Phoenix at 6:00 p.m. for a dinner. Many came to Arizona as “doubting Thomases” and the visit and inspection of Roosevelt Dam, the Mormon Flat dam site, and the work already done along the lines of irrigation and power development impressed all who took the tour. Representatives of M. H. Lewis Company, Stevens Payne and Serling Company, Banks Huntley and Company, Drake Riley and Thomas Company and Cartens and Earles, Inc. were unanimous in their positive assessment of central Arizona and its potential.

On March 22 all bids were opened. The winning bidders were Citizen’s National Bank of Los Angeles and A.P. Giannini’s Bank of Italy of San Francisco. The bid price was $.94 of par value at six percent interest, payable in fifteen to twenty years from the date of issuance. Reid and Cragin remained single-minded and did not want to delay beginning at Mormon Flat because they had already begun work at Roosevelt and it was nearing completion. They did not want their construction crews inactive while the bonds were out for bid. According to Cragin, it would cost the Association $40,000 per month for delaying construction of Mormon Flat.

---

20 Arizona Republican, February 27, 1923.


22 The Board accepted the amount, although it had hoped for better terms, because these were the first Association-issued bonds and they carried with them the “burden” of income tax.

23 Although the bonds were approved, interim certificates were sent to the banks because the legality of the bond issue needed to be clarified. The Mormon Flat bonds were the first issued by an organization that had an outstanding debt to the federal government. The issues were addressed in two friendly lawsuits decided by the Arizona Supreme Court. The decisions, rendered by September 1923, were decided in favor of the Association in that they did not impede the organization from moving forward with its financing plan. See Orme v Salt River Valley Water Users’ Association.
The bond campaign continued. On April 30, 1923, the *Arizona Republican* ran a story under the headline, “Bond Salesmen Leave Phoenix: Sold on Valley.” Bond salesmen from five of the largest bond houses on the Pacific coast left Phoenix on a special train, the night before to “sell the Salt River Valley” to California capital through the medium of Mormon Flat bonds. For two days the representatives of the coastal financial concerns had made an intensive study of the prevailing conditions and potential possibilities in the Valley. One financier in the group expressed his conviction that Arizona in general and the Salt River Valley in particular “possessed the goods” and the task of disposing of the Mormon Flat bonds would be an easy matter.24

As the sale of bonds took place, construction work began at the site of the new Mormon Flat Dam. According to the *Twin Falls Daily News*, the dam was designed to “enlarge and stabilize a hydro-electric power system which its sponsor declares is unique in the history of power production, unique in that the hydroelectric power, though a byproduct of an irrigation project, would repay the entire cost of the project.” Idaho was a major player of reclamation activities and residents there followed the innovations taking place in central Arizona. As the *Twin Falls Daily News* described the project to its readers, “The Mormon Flat project has been worked out to make possible continuous large scale power generation at Roosevelt. The project involves a 160-foot dam at Mormon Flat, 27 miles below Roosevelt, to catch and hold for irrigation purposes the water released from Roosevelt in the generation of power. The plan includes raising the spillway at Roosevelt and the installation of additional generators....The income will not only take care of the interest and principal of the new bond issue but will moot

---

24 *Arizona Republican*, April 28, 30, 1923.
the major portion of payments to the government for the original cost of Roosevelt dam, giving
the farmers their irrigation water a very low cost per acre." 25

While work was underway on the Roosevelt portion of the project, Cragin drafted an arch
design for Mormon Flat. The design departed dramatically from the design the U.S. Reclamation
Service used for Roosevelt. Dam design in the 1920s had progressed dramatically from the turn
of the century and the design used in constructing Roosevelt was obsolete. The use of the arch in
dam construction dates to the Roman period and over the centuries its application faded in
Europe and in the Middle East. However, beginning in the late nineteenth century it grew more
popular in the American West. The demand for low cost irrigation, flood control, and
hydroelectric power works, particularly in California, provided impetus for the design’s
resurgence. The first American arch dam of significance was Bear Valley Dam, constructed in
the San Bernardino Mountains east of Los Angeles in 1884. At the time, the design was
considered so radical that James Dix Schuyler, the noted hydrologic engineer of the period,
called it the “eighth wonder of the world.” 26

Because of the contributions Bear Valley and subsequent dams in California made to dam
design technology, by the 1920s arch dams had become the preferred design type for narrow “U”
and “V” shaped canyons. By 1922, more than eighty single arch dams and twenty-two multiple-
arch dams had been constructed in California. In drafting the Association’s design of Mormon
Flat Dam, Cragin drew inspiration from California, his experience in the design review and
construction supervision of the Cave Creek Dam north of Phoenix, which was completed in

26 James Dix Schuyler, Reservoirs for Irrigation, Water, Power, and Domestic Water Supply (New York: John
Wiley and Sons, 1905), 342-343.
1923, and the works of Danish-born Lars Jorgensen, a consulting engineer in San Francisco, who promoted a variation to the arch design.27

The Reclamation Service, under the 1917 Agreement, required that the Mormon Flat Dam plans be submitted for federal review. Final approval was gained on February 2, 1923 when Secretary of the Interior Albert Fall approved the January 4 special election results. While Cragin completed drafting his plans, preliminary work on Mormon Flat dam construction was begun and by April 1923, a 1.5 mile access road was completed to the site from the Apache Trail. Another road was built to replace the 3.5 miles of Apache Trail that would be inundated by the Mormon Flat Reservoir.28

Local newspaper accounts documented the rapid pace of dam construction. On August 2, 1923, for example, the Arizona Republican announced, “Construction Work on Mormon Flat Dam Rapidly Progressing,” adding, “Work on the dam...is being pushed, vigorously, and no delay in its advancement is anticipated.”29 Cragin, meanwhile, continued to promote the project. He was the keynote speaker at the county chapter of the American Institute of Banking’s annual banquet at the Hotel Adams. He began his talk before the two hundred county bankers, wives, and their guests with the comment, “Next to the human element, we believe that the development of cheap power will have more to do with the future expansion of Phoenix and the Salt River


28 At the time work on the access road was completed, transmission and telephone lines reached the dam site. By the summer of 1923 a construction camp had been built on the south side of the river, one-quarter mile downstream from the site. It was comprised of offices, three bunk houses, a mess hall, engineers’ and superintendents’ houses, a reading room, recreation hall, ice plant, bath house, ambulance garage, and other structures. A domestic water supply was constructed by pumping water from the river 370 feet to an overlooking hill.

29 Arizona Republican, May 20, August 2, 1923.
Valley than anything else.” At the time of his talk, in late May 1923, Cragin noted that “the work at Roosevelt Dam has already been completed and the road from Apache Trail highway to the dam site finished…and at present the Association is blasting out the bottom of the cliff for the flume way to carry the river flow while construction of the dam in underway.” Finally, Cragin pointed out that the annual payroll of the Association totaled $750,000, of which approximately $500,000 went to Phoenix-based employees.\(^\text{30}\)

Through 1923 and 1924 construction on the Mormon Flat Dam continued apace. Area residents, keenly aware of the development’s historical significance, took a variety of actions to place their imprint on the new structure. On February 7, 1924, for example, a mass meeting was held at Washington School for the purpose of naming the new dam after Salt River Valley pioneer and entrepreneur, W. J. Murphy. Significantly, Anna Griggs, advertising manager for *The Arizona Producer*, introduced the resolution. It read in part: “Whereas the life and achievements of Mr. Murphy in this county and state have contributed greatly to the present state of the community. And whereas his accomplishments have not only been valuable for their material success but also are to be remembered for their emphasis on the value of high ideas and the better things in life…we the undersigned submit that the Board of Governors of the Salt River Valley Water Users’ Association name the new dam ‘The Murphy Dam at Mormon Flat.’”\(^\text{31}\) Though the citizens’ resolution passed, the Association did not name the dam in honor of Murphy.

Concrete for Mormon Flat Dam was first poured on March 11, 1924. By June 8 sufficient progress had been made so that the river could be diverted through a pair of ten-foot openings at


\(^{31}\) *Ibid.* February 8, 1924.
the north end of the structure. Work continued through the remainder of 1924 and into 1925. In February 1925 Mormon Flat Dam had risen to a sufficient elevation that water began to collect behind it. Two months later, the dam was completed. As Cragin explained: “The dam is strictly utilitarian in construction and finish without elaborate architectural treatment. The coping [parapet] consists of a plain 5-foot wall, broken into panels by plain pilasters. The character of the concrete was such as to leave a smooth surface against the forms, free from pockets, and the dam as a whole looks well-finished and in keeping with the setting.” The small-town *Winslow Daily Mail*, reflecting statewide interest in the project, ran the headline in its February 27, 1925 edition, “Mormon Flat Dam Was Completed Last Week.” It outlined the dam’s features, stating that “the new dam’s is 155 feet high and 32 feet wide at the top and 90 feet wide at the bottom. It includes 44,000 cubic feet of concrete. The dam will impound 90,000 acre-feet of water and is a part of a $1,800,000 project of the Water Users’ Association to increase water resources in the Salt River Valley.”

Soon after the dam was completed the Association entered into an agreement with CALAPCO to add a hydroelectric power plant. On June 24, 1925 the Association and CALAPCO signed the agreement; CALAPCO would advance the Association $410,000 for construction of a single 7,000 kw hydroelectric unit at Mormon Flat. In return for the funding, CALAPCO would receive all the plant’s electrical output. Under the terms of the agreement, CALAPCO signed on to purchase hydroelectricity from the Association for fifty years. For the first twenty five of those, the power company would purchase a minimum of six million kw

---

32 Mormon Flat Dam was completed on February 14, 1925. C.C. Cragin, “Mormon Flat Dam, Salt River Project, Arizona,” 111-112; *Winslow Daily Mail* (Winslow, Arizona) February 27, 1925. The Association completed the work at a cost of $1.23 million, only slightly more than the original estimate of $1.079 million.

33 “Agreement Between Salt River Valley Water Users’ Association and Central Arizona Light and Power Company, June 24, 1925. The agreement was amended and supplement several times.
hours per year. After that period, the annual minimum amount would be determined by mutual agreement or arbitration.\textsuperscript{34}

While the Association constructed Mormon Flat Dam engineers began preparing to further Cragin’s expansion plan by commencing the construction of Mormon Flat Power Dam or, as it would become known, Horse Mesa Dam. Workers began excavating the site in the spring of 1924. Horse Mesa Dam, as noted above, was located between Mormon Flat and Roosevelt dams and was intended to produce 33,000 kw of electricity. Work began in earnest on Horse Mesa Dam in the summer of 1924 and was completed three years later in the summer of 1927. In many ways, Horse Mesa was to become the focal point of the project’s electricity development.

Reid and Cragin argued that it would provide enough annual income to pay for the expansion, repay the federal government for Roosevelt Dam, and operate the Salt River Project.

Cragin’s hydroelectric power expansion program was made possible through a power sale agreement with Inspiration Consolidated Copper Company. The mining corporation, the largest business in Arizona, yearned to expand its mining operations in Miami by adding a $6 million leaching plant. In order to operate the new plant Inspiration needed more electrical power and in June 1924 the copper producer contracted with the Association to purchase all the hydroelectricity would be sold to the power company at $.008 cents per kw hour, a rate deemed favorable by Reid and Cragin. \textit{The Producer} noted that “similar power” had been sold recently in California at a rate of $.0035 to $.0045 cents per kw hour. At the $.008 rate the Association was guaranteed a minimum gross annual income of $42,000 for the first twenty-five years. As Reid and Cragin figured it, since the Association’s repayment of the $410,000 upfront funds, with six percent interest equaled $31,868 per year over a twenty-five year repayment period, minimum net income from the power company would still be no less than $10,000 per year. Beyond the income from CALAPCO, Association leaders, based on the previous thirty-six year record of river flows, believe the Mormon Flat plant would produce forty-three million kw hours annually with an annual gross income of $344,000. Thus, having the power company fund the construction, buy enough developed power to more than offset the debt repayment, and leave enough kw hours to produce $312,000 in additional income, less operation and maintenance, was to Reid and Cragin an outstanding opportunity.
hydroelectric power generated from the yet-to-be-constructed Horse Mesa Dam.\textsuperscript{35} The Board approved the Horse Mesa construction program unanimously. And, like the situation with Mormon Flat, the Association needed shareholder approval to authorize the development. They had already established a public relations template and explained this plan in the pages of \textit{The Associated Producer} and at several public meetings held throughout the Valley between June 30 and July 25, 1924. Cragin expressed confidence, telling local farmers, “The risk every farmer takes every year that he plants a crop...is a greater risk than the entire risk he will take with the Horse Mesa development....” “There is no possible chance to be taken in connection with the Horse Mesa Project,” he added, because “Inspiration Copper is the largest power market in Arizona.” He also correctly asserted that even without Inspiration, the market for power in the Southwest was far ahead of power development and that the Association could not go wrong in developing all the power possible.\textsuperscript{36} When the votes were tallied on July 30, 1924, shareholders approved the Horse Mesa development by a 20 to 1 margin; 79,468 in favor, 4,607 against.\textsuperscript{37}

On August 23, 1924 work began on a six mile roadway to the dam from Apache Trail. This aspect of the project was difficult, time consuming, and expensive. The topography from Apache Trail to the dam site was extremely rugged. Furthermore, problems emerged between the Association and what was now called the Bureau of Reclamation over the design of the dam and

\textsuperscript{35} P.G. Spilsbury, “Six Thousand Farmers Meet Twelve Thousand Businessmen,” \textit{The Associated Arizona Producer} 3 (August 1, 1924) 3, 8. Louis C. Hill, consulting engineer, recommended the agreement between the two entities. Inspiration and the Association signed the agreement on June 14, 1924. The price was set for $.0065 cents per kw hour. Inspiration agreed to buy a minimum monthly amount of 7.25 million kw hours each month. This equaled an annual payment of $565,000. Furthermore, Inspiration agreed to make this payment even if their power requirements were less than 7.25 million kw hours, and whether or not power was made available to that extent.

\textsuperscript{36} “Only $2,500,000.00 in Bonds Necessary to Build $4,400,000.00 Horse Mesa Project,” \textit{The Associated Arizona Producer} 3 (July 1, 1924) 5; “Horse Mesa Election,” \textit{The Associated Arizona Producer} 3 (July 15, 1924) 3; “Successful Horse Mesa Meetings in Valley,” \textit{The Associated Arizona Producer} 3 (July 15, 1924) 5.

\textsuperscript{37} \textit{Arizona Republican}, July 29, 30, 31, 1924. Immediately after the vote the Association issued a prospectus to several hundred financial institutions. On August 28, 1924, the Board opened all bids and the best was made by the Anglo London Paris Company. The bid of 97.64 cents on the dollar was accepted by the Board.
ultimately a consulting engineer was hired to assist. Final design for the dam was completed on April 3, 1925 and excavation and preliminary worked continued on schedule. According to one contemporary account, the Horse Mesa dam site was “in an inaccessible canyon,” and it “was necessary to spend nearly a million dollars blasting five miles of road from solid rock before the dam could even be started.” By March 1, 1926, Cragin and his crew were ready to begin work on the dam.

The shareholder election, scheduled for July 29, 1924, had a complex list of eight propositions. Propositions 1, 2, 5, 7, and 8 dealt directly with Cragin’s Horse Mesa plan as presented to the Board. Propositions 3, 4, and 6 required some careful consideration. The Association was issuing only $2.5 million in construction bonds. The remaining $2.243 million was to be raised through Roosevelt Agricultural Improvement District Number One and the Agriculture Improvement District Number 2. District Number Two lands, 22,500 acres previously irrigated by the Tempe Irrigating Canal Company, were being admitted into the Association on the condition that these lands be used as collateral to issue $1.578 million in bonds. Proceeds from these bonds were to be used to finance the construction of Horse Mesa Dam. Likewise, the Roosevelt Agricultural District Number One, comprised of about 9,500 acres of dry lands scattered throughout the Salt River Project area, would be permitted to obtain Association water if it issued $665,000 in bonds to help fund the Horse Mesa development.

38 Ogden Examiner (Ogden, Utah), June 5, 1924.

39 These improvement districts were formed under the authority of Title 45, Chapter 4, Arizona Revised Statutes (1922).
Repayment of both district’s bonds would be made from the sale of Horse Mesa hydroelectric power.\(^{40}\)

News of the Association’s water and power development program drew the attention of numerous outside investors, including the leadership of the Los Angeles Chamber of Commerce. On November 5, 1925, the *Yuma Morning Sun* reported that “The President and nearly a score of directors of the Los Angeles Chamber of Commerce, a party which included many of the most prominent men of the financial, industrial, and business life of the metropolis of southern California started at 8:00 a.m. yesterday morning from the Adams Hotel on a trip across the Salt River Valley over the Apache Trail in the lands of the Mormon Flat, the Horse Mesa, and the Roosevelt dam, and into the mining centers of Miami and Globe.” P. J. Lynch, assistant general superintendent of SRWUA and members of the Arizona Industrial Congress accompanied the California group. Significantly, the purpose of the trip was to show the visitors “the wonderful irrigation system of the Salt River Valley and go give them a general idea of the mining and other districts of central Arizona.” The Yuma daily speculated that the Los Angeles Chamber of Commerce representatives were visiting Arizona for first hand information that “will enable them to further plans for colonizing the vast agricultural areas of the state.”\(^{41}\)

---

\(^{40}\) Lands under the Tempe Irrigating Canal Company did not sign into the Association after 1903 because the company had one of the oldest water appropriation dates on the Salt River and thus did not want to assume construction debt for Roosevelt Dam. The Tempe lands joined the Association in 1924 because of the need for the Association’s drainage program to lower their groundwater table. In order to join the Association, the Tempe lands were required to pay $800,000 in back assessments. The Tempe Canal lands signed into the Association on June 16, 1923.

\(^{41}\) *Yuma Morning Sun*, November 5, 1925. The party reached Globe at the end of the first day of the tour and spent the night at the Old Dominion Hotel. The following day the entourage inspected the mining town Superior, the agricultural lands of Florence and the Casa Grande Valley, “soon to be watered by the San Carlos Dam now under construction,” the livestock ranges in the vicinity of Tucson and ended up at the Santa Rita Hotel in Tucson where they were entertained by the Tucson Chamber of Commerce.
Concrete was first poured for Horse Mesa Dam on May 26, 1926. From that day, concrete was poured continuously and through the remainder of the year the dam rose steadily. By December 1926 the dam had risen more than one hundred feet from the foundation and by the end of the year the Association had completed all of the 110 kv transmission lines. Significantly as work continued in the spring of 1927 the Association raised the water level in the reservoir as quickly as possible. It needed to bring the water up to the spillway level to meet coming summer irrigation demand. Water behind Mormon Flat had been nearly exhausted the previous summer. Fortunately, by July 1, 1927 Horse Mesa reached its spillway crest elevation and water was released downstream to Mormon Flat. Filling the reservoir at Horse Mesa had additional benefits. The Association had constructed the hydroelectric plants at the same time as the dam was built. The early completion of the power plant at Horse Mesa provided SRVWUA two benefits. It satisfied Inspiration Copper's thirty-month contractual provision and it allowed the Association to begin paying off construction costs while the dam was being built. Through the end of construction the hydroelectric plant generated twenty-two million kw hours for a net profit of $150,000. On August 4, 1927 the last of the dam and power plant's concrete was poured.

Horse Mesa cost $5.319 million, exceeding the original estimate by $576,000. Cragin indicated he did not think the overrun excessive, given the expense in accessing the site,

42 History of the Salt River Project for the Period October 1, 1925 to September 30, 1926, Chapter Two, “Engineering,” 3; History of the Salt River Project For the Period October 1, 1926 to September 30, 1927, Chapter Two, “Engineering” 2; “Horse Mesa Plant Starts Producing Income at Rate of $2,000 a Day,” The Associated Arizona Producer 4 (April 1, 1927) 3; “Farmers Get Big Income from Horse Mesa Development,” The Associated Arizona Producer 4 (May 1, 1927) 5; “Last Concrete Poured at Horse Mesa Dam—Power Income for Year Over $1,500,000,” The Arizona Associated Producer 4 (August 15, 1927) 5.

43 The only remaining work item from the project was the realignment of 7.5 miles of the Apache Trail which was inundated by the reservoir. The work was completed by the Arizona State Highway Department under a contract signed on April 29, 1922. Importantly, under this agreement the Highway Department agreed to take over the maintenance of the road from the Association and integrate it into the Arizona state road system.
performing the above-stream excavations, and employing nearly seven-hundred men at the site. Significantly, the completion of Horse Mesa Dam in the fall of 1927 was not the end of the Association’s expansion program. Reid and Cragin knew additional opportunities existed as they analyzed the Salt River’s drop between Mormon Flat and the Project’s diversion dam at Granite Reef. 44

The development of water and power in the Salt River Valley as well as the anticipation of expansion of these foundations of the regional economy had a profound impact on the nature and direction of the Valley’s growth. Except for Salt Lake City and Spokane, founded in 1847 and 1881 respectively, other major inland cities like Denver, Omaha, Lincoln, and Topeka, for example, maintained no major manufacturing industries. However, each grew much more rapidly and larger than Phoenix in the last third of the nineteenth century. While these differences reflect a variety of historical and economic factors, the salient point was that an agriculturally-based city like Phoenix, even with rail transportation and some government functions, was not a major western city at the outset of the twentieth century. Even in the Southwest, it remained subordinate to El Paso and in fact its growth before 1920 more closely resembled that of Emporia, Kansas rather than that of Denver. The Salt River Valley Herald’s observation in 1878 aptly described Phoenix’s growth during its first decade; it was not feverish or “of the mushroom order.” That assessment remained appropriate for the subsequent two decades. 45


Phoenix’s position within Arizona was more complex and through the 1890s it maintained its position as the largest community in central Arizona. But Phoenix was not the dominant city in Arizona during the first two decades of the twentieth century and it vied with other territorial communities for growth, power, and influence. Competition with Tucson commenced in earnest especially after Phoenix established direct rail connections in 1881 and later became the territorial capital. The two cities differed in other ways; Tucson was larger, older, more Hispanic in population, and more “pueblo” in its architecture. Its economy was more closely linked to commerce and mining than its competitor to the north. Attitudes between the two cities were frigid. In 1911 the *Arizona Republican* (Phoenix) commented that “it was exceedingly hard to harmonize the wonderful greatness of Tucson as heralded by its newspapers, in comparison with the unimportance of Phoenix,” when a recent report revealed that Phoenix banks had twice the assets of Tucson’s. Indeed Phoenix possessed obvious strengths in this interurban competition, especially when Roosevelt Dam was completed in 1911, thus providing a secure source of water and an expanded acreage of irrigable land. Boosters touted agriculture at this time claiming “in a stretch of a thousand miles the Salt River Valley is the only big agricultural oasis, the one real natural base for the big city which is to be built between Los Angeles and El Paso.” With statehood in 1912 expanded responsibilities for state government attracted people and jobs; Phoenix became the center of economic and political activity and took advantage also of its central position in the Valley, boasting a substantial range of businesses, professionals, and skilled workers. The Salt River Valley became a magnet for professional talent. By the mid-1920s Phoenix possessed key economic strengths.

---

development groups, like the Chamber of Commerce, organized in 1888, which promoted its future and served as the nexus of community cooperation.47

To place central Arizona’s growth in the 1920s into proper perspective, the Association’s expansion activities, and their direct and indirect impacts, came at a critical time in the development of an urban hierarchy that developed in the inland West during the late nineteenth and early twentieth century. Doubtlessly, visitors witnessed the profound impact that World War I had visited upon Phoenix and its environs. The population nearly tripled between 1910 and 1920 from 11,134 to 29,053. As suggested earlier, a variety of factors had contributed to this dynamic, growing, and economically vigorous civilization. It was more than the sum of irrigated agriculture and the developing transportation grid. Geography and topography placed Phoenix in a more favorable location than the state’s mining communities, or even Tucson. Moreover, during World War I, Phoenix and the Salt River Valley enjoyed unprecedented economic growth as agricultural activity expanded to new levels, thanks to federal reclamation and a stable water storage and delivery system.48 As noted earlier, long staple cotton became essential to the war effort as foreign exporters were cut off from the U.S. market. As a result defense contractors found new domestic supplies of long staple—also known as Pima—cotton necessary in the production of tires and airplane fabric.49

47 Arizona Republic, April 6, 1911; Vander Meer, Desert Visions, 40. Phoenix, in 1925 counted 26 of the Valley’s 29 dentists, all 11 architects, 4 accountants, and 7 brokers.

48 Local leaders struggled to gain advantages in urban development. The greatest challenge confronting late nineteenth and early twentieth century boosters and developers in the Salt River Valley was a stable and regulated supply of water.

Area residents benefitted from the eight hundred miles of main canals served with low cost water from federally built but locally operated Roosevelt Dam. Indeed the project marked a critical transition in the history of the Salt River Valley. It provided a stable supply of water and while annual rainfall was stable through the 1910s Phoenix experienced great variation in precipitation during the next decade with four years of severe drought and another three of below average rainfall. Roosevelt Dam mitigated these problems by storing water available in wetter years—1923-1926—and at the same time, as detailed earlier, provided inexpensive hydroelectric power, which became a major feature of the project. While federal financing made the project possible, local boosterism coupled with cooperative community efforts were also major factors in the early success of the reclamation program.50

Federal reclamation in the Salt River Valley during the first three decades of the twentieth century framed the emerging desert metropolis and proved the most important economic innovation up to that time. After the completion of Roosevelt Dam, for example, the quantity of cultivated land increased dramatically, rising one-third from 1910 to 1920 and another third during the 1920s. In the following decade cultivated acreage averaged 360,000 acres and the number of farmers more than doubled from 2,130 in 1910 to 4,359 in 1921. This growth, encouraged by the Phoenix Board of Trade, the Santa Fe Railroad, and the U.S.

---

50 Rainfall data from the Phoenix Weather Bureau of the U.S. Department of Commerce reported in Arizona Republic, November 22, 1942; Philip Vander Meer, Desert Visions and the Making of Phoenix, 1860-2009 (Albuquerque: University of New Mexico Press, 2009) 31. Agricultural production in the Valley had actually fallen by one-fifth between 1895 and 1905, during the decade-long drought, but the return of rain brought those numbers back to former levels by 1908.
Reclamation Service, re-branded the U.S. Bureau of Reclamation in 1923, resulted in increased population, the need for new services, and business.51

Newcomers saw the SRVWUA as the chief institutional arbiter of water use and distribution. One reporter noted in 1919, “a lively and enterprising Arizona city...a beautiful valley, with a great irrigation system, which has reclaimed 250,000 acres of fertile land from the desert.” The scribe added that this agricultural center of Arizona was “one of the most productive portions of our country,” praising “the production, profit, and contented life” of its citizens.52

The cotton market, however, like so many others, collapsed in the fall of 1920, but residents witnessed a resilient recovery that embraced Phoenix a few years later. Salt River Valley farmers learned from the short but deep post-World War I Depression; they diversified their crops. Though cotton remained an important component to the overall agricultural economy, crop diversification became the rule and local banks encouraged this modification by offering generous, low-interest loans for farmers who moved into grains, vegetables, and fruits. By the mid-twenties, alfalfa and grain fields, citrus groves, and dairy herds surrounded the growing urban hub. The citrus industry made a strong reappearance in the valley, especially north of the Arizona Canal from Scottsdale to Glendale. Refrigerated railroad cars, moreover, facilitated safe shipment of perishable fruits and vegetables, like lettuce, cantaloupe, and vegetables which enabled valley farmers to compete with other producers in far away


52 Beulah Austin, “The Progress of the Salt River Valley during the Past Twenty Years,” (unpublished manuscript, Hayden Library, Arizona State University, n.d.).
regions.\(^{53}\) Alfalfa returned to its pre-World War I prominence and along with wheat and barley making similar gains, a boost in cattle ranching and feedlot operations returned to previous levels.

Between 1920 and 1930 Phoenix’s population grew from 29,053 to 48,118 as the dams and power plants that comprised the Association’s infrastructure on the Salt River watershed, facilitated a growing economy to sustain the increasing population. The developing private sector saw agribusiness enterprises gain traction. The new Arizona Packing Company, owned by Edward Tovrea, quickly became the largest and most technologically advanced packing plant between Ft. Worth, Texas and the California coast.\(^ {54}\) Tovrea played a major role in urging residents to “Buy Arizona,” and he was, according to a prominent attorney and booster, “a leader in that movement.” The stockyards and slaughterhouses were located about five miles east of the growing downtown Phoenix business district and became a destination point for Arizona’s sheep, cattle, and hog interests. This kind of business, which broadened the manufacturing and processing base in Phoenix, brought jobs, people, and, potentially, professional people to the area.\(^ {55}\)

The city’s growth reflected not only its natural advantages but also it depended on the vision and abilities of Phoenix leaders. Those who arrived in the 1880s—William J. Murphy, Moses Sherman, William Christy, and Emil Ganz—possessed knowledge, vision, and

---

\(^{53}\) By 1929 more than five hundred carloads of oranges and grapefruit were being shipped from Phoenix to cities throughout the country.

\(^{54}\) Frank Snell oral history interview with G. Wesley Johnson, September 22, 1977.

\(^{55}\) Richard Snell, oral history interview, July 27, 2010, Phoenix History Project, Arizona Historical Society, Tempe, Arizona, Frank Snell Biography (unpublished manuscript) Snell Collection, AHF. A variety of support services for agriculture—packing sheds and processing plants—sprung up along the railroad tracks in south Phoenix. These helped make the area a distribution point and a variety of organizations, led by the Arizona Cotton Growers’ Association, made the city the agricultural and marketing center for the state.
connections, especially with financial institutions based in San Francisco. They realized the inherent potential of the area and understood what was necessary to achieve it. Collectively, their connections with banks and financiers in other states enabled them to pursue financing for key projects and their drive and booster spirit helped sell the Valley to other investors.\textsuperscript{56} The Valley’s attraction for health seekers was significant during this period, as it would be later, for it drew wealthy visitors. Efforts to attract the affluent reflected a developing tradition and yielded significant results as health seekers visited the region based upon its salubrious climate. Delos Willard Cole, New York financier and industrialist, for example, began spending winters in Arizona due to his wife’s ill-health. He hired the local architectural firm of Lescher and Mahoney in 1926 to design El Vermadero, a 3,500 square foot luxury villa on over sixty acres at the base of Camelback Mountain. Similarly, Cleveland businessman and electric power magnate, John C. Lincoln, began spending increasing amounts of time in Phoenix after 1930 because his wife, Helen, had debilitating illnesses. In spite of the familial adversity, Lincoln, ever the entrepreneur, built the Camelback Inn during the depths of the Depression. It became a resort that became a signature of the Valley. Still others of extreme wealth and accomplishment without health care issues added monuments of affluence to the area during this period. William K. Wrigley built La Colonia Solana overlooking the Biltmore Hotel. The “winter cottage” approached 17,000 square feet and twenty-four rooms. Other wealthy families built substantial and elegant winter homes in the area during the period between the wars while

at the same time silent film stars and other celebrities vacationed at the growing number of resorts bringing an aura of glamour to the Valley.\textsuperscript{57}

Yet Dwight B. Heard, a friend of national figures, senators, and presidents, set the standard for longstanding influence and significantly, set an example of public stewardship that influenced the next generation of urban leaders. Indeed Heard did more than build vacation homes and add glamour to the area; he was a builder, visionary and civic leader that shaped the city. Phoenix in the mid-1920s possessed unbounded potential for physical expansion and early commercial and residential builders noted the vertical and horizontal development and the construction work that fueled it on every visit to the capital city. New private and public buildings emerged, especially in the downtown area. Department stores, banks, hotels, and theaters became part of the emerging urban landscape. In the 1920s skyscrapers were viewed as signs of progress. The seven-story Dwight B. Heard Building, erected in 1920 and the Luhrs Building, completed in 1924, symbolized this kind of urban advancement. These were the tallest edifices in the city until 1928, when the Hotel Westward Ho was added to the Phoenix skyline. Others, like the Luhrs Tower and the new State Capitol Building at Seventeenth Avenue and Washington, followed in short order and spoke volumes about this up and coming oasis in the desert.\textsuperscript{58}


\textsuperscript{58} It was during the 1920s especially that Phoenix made the transition from town to city as it grew in size, form, and economic complexity. The increase in size put Phoenix first in the state’s urban hierarchy by 1930 but a more significant impact, according to urban historians, was its effect on the spatial distribution of people and functions within the city. The economic context for this growth, as argued in the narrative, was the expansion of agriculture and the increased use of the railroad, but changes in interurban transportation, from streetcars to automobiles, most directly impacted the city’s form. When the transportation-induced process arrived in Phoenix it maintained only about 3,000 people. Instead of a built out walking city being reshaped by automobiles the process was compressed and many changes ran simultaneously rather than sequentially. Downtown Phoenix was affected by rail, air, and cars which changed the city’s relationship to its surroundings. Residential areas responded to the shift from public to
This growth, moreover, enabled Phoenix to retain the sons of many leaders and to attract others of ability, like grocer-turned developer George Mickle, department store owners Baron Goldwater, Abe and Charles Korrick, newspaper editor Charles Stauffer, architect Les Mahoney, and Theodore O’Malley who had many business interests. The defining aspect of this group was that it was the commercial elite linked to an agricultural economy rather than an industrial elite whose comparatively sudden wealth might have fostered class and wealth divisions. Some had acquired substantial real estate holdings but as attorney Orme Lewis observed, “There wasn’t a rich person in Phoenix in the real sense of the word.” And, while business and professional types sought advancement, their economic interests fostered a boosterism that promoted projects that benefitted Phoenix with special attention to land development that linked the center city with other areas of the Valley.\(^{59}\)

In addition to the appeal of a nascent urban existence amidst a predominantly agricultural civilization, newcomers weighed the distinct advantages that transportation—railroads, air transportation, good roads, and the automobile—and Phoenix’s central position to take advantage of those innovations as yet another factor that gave Phoenix economic hegemony over other areas of the state. By 1927, for example, Phoenix boasted four transcontinental trains that passed through the recently-completed Union Station each day. This downtown architectural jewel, completed in late 1923, was promoted by business and civic leaders because it boosted the development of Phoenix. Both Santa Fe and Southern Pacific Railroad interests contributed to the construction. In short, the new Southern Pacific private transportation, setting a pattern of growth on the periphery of the urban core throughout the remainder of the twentieth century.

main line formed a more-than two-hundred mile loop by leaving the El Paso-to Los Angeles Southern Pacific transcontinental route at Picacho, forty-six miles northwest of Tucson, and rejoining it at Wellton, thirty-seven miles east of Yuma, after it passed through Union Station in Phoenix. Arizona products and raw materials could now be trans-shipped by rail to any point in the country. Also, tourists could now visit the Salt River Valley much more easily and comfortably and Phoenicians could likewise visit other states and regions.60

At the same time as transcontinental rail service reached Phoenix, Scenic Airways, a private venture backed by Phoenix and Chicago investors, Acme Investment Company, established Sky Harbor Airport in November 1928. The location, a few miles east of the downtown business district, covered the area between Twenty-fourth and Thirty-second Streets and Henshaw Road and the Southern Pacific Railroad tracks. Standard Airlines and a few other carriers joined Scenic Airways in the new venture and soon it provided the best air service in the area, which was dotted with several private air fields. The exciting world of air travel opened Phoenix to the region and the nation and on September 2, 1929, nearly ten thousand people celebrated at the dedication of Sky Harbor Airport, yet another transportation tool that highlighted a new economy, culture, and regional lifestyle distinct from other parts of the country.61 In the midst of the Depression, Phoenix’s financially-strapped city government

---

60 See, for example, David Myrick, Railroads of Arizona, Vol. 2 (San Diego: Howell-North Books, 1981); William S. Greever, “Railway Development in the Southwest, New Mexico Historical Review (NMHR) 32 (April 1957) 185-86; Arizona Gazette, June 16, October 1, 1923; Arizona Republican, October 15, 16, 1926.

61 In fact, Phoenix had been slow on the uptake to enter the world of air transportation. In late 1925, after two years of promotional efforts, by the Chamber of Commerce and other booster organizations, the first iteration—the Phoenix Municipal Airport—opened on 160 acres of land six miles west of the city. It started with a whimper. Several private air strips were located throughout the Salt River Valley; the best was the Phoenix Commercial Airfield on Henshaw Road on South Central Avenue. There, in November 1927, the Aero Corporation of California operated Standard Airlines and promoted regular flights to Tucson and Los Angeles. Meanwhile, unable to compete with the private air fields at this time, the City of Phoenix sold the Phoenix Municipal Airfield to an alfalfa farmer. See, for example, Arizona Republican, November 11, 1928, September 23, 1929; Ruth M. Reinhold, Sky
debated whether to buy Sky Harbor, also known as “The Farm,” on the outskirts of the city. Mayor Joseph Jenckes and the council proceeded with the purchase despite the fact that the airport was so rustic that pilots preparing to land often buzzed the field in order to clear it of stray livestock. Acme Investment Company, desperate to sell the 278-acre airport, played fiscal hardball, urging American Airlines to drop service unless the city acquired Sky Harbor. They pressed city leaders: “Buy it or we dig it up and plow it.” Phoenix relented and offered $100,000 for the airport, arguably the best $100,000 the city had spent up to that point. While Phoenix had almost been forced to purchase Sky Harbor, by the time the airport was dedicated on Nov. 11, 1935, its leaders recognized what tiny Sky Harbor could mean to Phoenix’s future.

Mayor Jenckes remarked: “The city has done its part in providing this excellent airport. Today we dedicate it to you citizens to make it truly a Sky Harbor—a port through which will flow much of the important commerce that will go into the future making of Phoenix.” Another dignitary, Major Charles P. Graddick, Washington superintendent of airmail service added: “Businessmen in Phoenix can compete on equal terms with the businessmen of other cities. You, your city and state are in the direct line of the greatest air-transportation system in the world. You can leave this airport by plane and without touching a railroad or steamship, travel by air into forty-seven states, into Mexico, Central America, South America, and the West Indies.”

In addition to the advent of air travel, automobiles and road construction framed developing concepts about transportation in Arizona, not only for mining town communities


but also for the burgeoning desert oasis of Phoenix and its environs. For example, when Moses Sherman sold his streetcar company to the City of Phoenix in 1925, Phoenicians had already accepted the automobile as the primary mode of transportation. It was new, exciting, individual, and private. Naturally, as more automobiles appeared on Arizona’s various thoroughfares, citizens called for better roads. As urban historian Bradford Luckingham observed, “The amount of pavement in Phoenix rose from seven miles in 1915 to twenty-five in 1920 to eighty-six in 1929.”63 As a consequence of the increased numbers of automobiles in the area, this new mode of transportation facilitated the movement of people from the downtown to the valley’s periphery. In May 1924, for example, the Arizona Republican allowed, “Through the Salt River Valley, radiating from Phoenix in all directions like spokes of a great wheel are paved roads. No farm house is over two miles from a paved road.” Auto registration rose to 14,707 in 1922, grew to 25,397 in 1925, and leaped to 41,164 in 1930. Indeed motorized transportation brought with it horizontal mobility and valley residents realized that the automobile and good roads were fundamental foundations to developing commerce, trade, and overall economic growth in the still-new State of Arizona.64

The automobile and good roads had an impact well beyond encouraging transportation and commerce between and within various regions throughout Arizona. Arizonans and Californians were well aware of the implications of the completion of the paved Phoenix-to-Los Angeles Highway over the Colorado River Bridge at Blythe, California that was completed in 1928. This shortened the route to the Pacific Coast considerably and as

63 Luckingham, Phoenix, 82.
64 With substantial improvements to Van Buren Street and Grand Avenue these two major Phoenix thoroughfares were respectively designated U.S. 80 and U.S. 89 in 1925. At the same time Washington Street was extended and paved to the Tempe Bridge, creating a major artery to the east side of the valley. These roadways facilitated transportation and commerce within Phoenix and to the hinterlands it served.
noted above, the previously completed Phoenix-to-Miami-Globe Highway provided easier access to the mining towns of eastern Arizona. Significantly public funding sources and private entities worked together to develop this infrastructure as city, county, and state monies made these projects possible. At the same time local organizations, like the Maricopa County Good Roads Association and the Arizona Good Roads Association, lobbied heavily for these resources. Further, Arizona's congressional delegation, especially then-Congressman-at-large, Carl Hayden, worked diligently to secure passage of federal highway acts that secured funds for these efforts in 1916 and 1921.

The state's lone congressman in the House of Representatives, Hayden—who at the time urged Arizona elected officials, the vast majority of whom were state's rights Democrats and fearful of California dominating the region's water resources—held considerable influence in the 1920s and urged Arizona to sign on to the then-controversial Colorado River Compact of 1922 which symbolized a kind of regional cooperation and mutual economic interdependence. As Congressman Hayden put it to one group who maintained a provincial approach to natural resource development: "Suppose that cheap hydroelectric power doubles the population of Los Angeles, making that great city a manufacturing center, how will Arizona be injured? Will there not be mouths to feed and backs to clothe and will not that create a demand for products from Arizona's farms and stock ranges? How can Arizonans fail to share in the prosperity of so close a neighbor? There can be no cause for jealousy but upon the contrary we should rejoice at the prospect thus presented, for anything that promotes the welfare of the great Southwest, of which we are an integral part, is bound to redound to our benefit." Congressman Hayden saw that Arizona, the Colorado River Basin states (Arizona, New Mexico, Colorado, Utah, Nevada, 65 By 1925 the Phoenix-to-Yuma-to San Diego highway had been paved. 133
Wyoming, and California), and especially southern California, maintained a common regional
destiny predicated upon the development of natural resources, transportation links, and
regional economic growth.\textsuperscript{66} By the mid-1920s, moreover, Phoenix had become the highway
hub of Arizona; cars, trucks, and buses (then known as passenger stages) utilized roads that
connected the capital city with all parts of the Southwest and beyond.

With the arrival of a main line railroad in 1926, combined with the inauguration of
regular airline service in 1927, and punctuated with Phoenicians’ predisposition for
automobiles and good roads, business leaders realized that these transportation developments
prefigured a potent part of Arizona’s future. Taken together, they encouraged more people to
visit Arizona and the consequent demands for better accommodations triggered a boom in
downtown hotel construction. In 1928 two iconic downtown Phoenix hotels opened—the
Westward Ho and the San Carlos. In response to these bold initiatives the established Hotel
Adams underwent considerable expansion and renovation. And in what was then “outside”
Phoenix, two first-class resorts joined the parade of new hostleries for visitors—the Jokake Inn
in 1924 and the Arizona Biltmore in 1928. The notion that amenities of this nature—reflecting
a new kind of economic vigor—could take shape in Phoenix, indicated that the area had
sufficient water and power to fuel the area’s developing hospitality industry.\textsuperscript{67}

\textsuperscript{66} See Jack L. August, Jr., Vision in the Desert: Carl Hayden and Hydropolitics in the American Southwest (Ft.
Worth: Texas Christian University Press, 1999) 111; Snell, unpublished biography, AHF; Luckingham, Phoenix, 82;
Arizona Republican, January 26, 1919, December 28, 1924; Sam Leopold, “The Impact of the Automobile in
Phoenix in the 1920s,” (unpublished manuscript), Hayden Library, Arizona State University.

\textsuperscript{67} Luckingham, Phoenix, 86-87. The Arizona Biltmore cost a staggering $2 million to build and joined the nearby
and already established Ingleside Inn (1910) as new destination locations. The Biltmore, however, set a new
standard and was located six miles northeast of Phoenix between Squaw Peak and Camelback Mountain. It was
designed by Albert McArthur, a Frank Lloyd Wright protégé. The hotel was an instant success and in July 1929
William Wrigley, Jr., chewing gum magnate, owner of the Chicago Cubs, and a part-time winter resident of
Phoenix, invested $1.7 million in the existing hotel company, which included architect McArthur’s brothers and the
Bowman-Biltmore Hotel Chain, and assured the Biltmore’s future as one of the premiere hotel resorts in the nation.
The Chamber of Commerce and a host of fraternal and cultural organizations promoted Phoenix to the outside world and invariably, they touted the areas water and electric power as keys to the desirable lifestyle. As one longtime member stated, “The Chamber of Commerce has always been the center of business development in Phoenix.”\textsuperscript{68} The chamber encouraged and organized annual meetings of state, regional and national groups and one of the chamber’s chief goals was to market Phoenix as an ideal convention city. Indeed competition to attract winter visitors was keen between Phoenix and other emerging Southwestern resort centers. The Chamber of Commerce and other booster organizations like the Phoenix-Arizona Club were essential to increase the popularity of the city and the valley.

Also Phoenix was a “city of joiners,” as one historian described it, where professionals enlisted in fraternal organizations like the Masons, the Elks, the Odd Fellows, and the Knights of Columbus and civic organizations such as the Rotary, the Optimists, the Kiwanis, and the Lions. Further there were numerous clubs, like the Women’s Club that “widened the boundaries of cultural development” and members of the Phoenix Country Club promoted and hosted state, regional, and national golf tournaments. Visitors were especially impressed with the Phoenix Symphony Association, the Phoenix Little Theater, and the Phoenix Fine Arts Association which exposed patrons to concert performances, dramatic productions, and museum displays of all types. And, in 1926, local revelers attended the first Masque of the

\footnote{Furthermore, Wrigley built a mansion adjacent to the hotel and wealthy investors followed his lead; Louis Swift, Cornelius Vanderbilt, Jr., and George Bartlett, among many others, represented the type of person that viewed Phoenix as a winter time destination.}

\footnote{\textsuperscript{68} Frank Snell oral history interview with G. Wesley Johnson, December 7, 1978, Phoenix History Project, Arizona Historical Society, Tempe, Arizona.}

135
Yellow Moon festival and pageant that involved thousands of participants and became, in time, a Phoenix tradition.69

Clearly Phoenix area economic and cultural boosters hoped to craft a proper image—to emphasize an image of stability to the outside world. Local leaders knew that they could not wish or hope their community into an urban juggernaut but that they had to build and boost it into one. They also wanted to attract newcomers and capital investment. Many of these boosters of the 1920s, moreover, were transplanted Easterners and they yearned to recreate the best of their old homes in the new southwestern environment. As suggested earlier, the exemplar who symbolized this type of public stewardship was a staunch representative of the Phoenix elite, Dwight Bancroft Heard. In fact, Heard, who was born in 1869 and thus personified a previous generation of pioneer Arizonans, became a model—an erstwhile practitioner in civic engagement—that future leaders emulated.

Heard, a protégé of Adolphus Bartlett, owner of one of the largest wholesale hardware companies in the country and precursor of True-Value Hardware Stores, married Bartlett’s daughter Maie in Chicago in 1893. The couple moved to Phoenix after Dwight was diagnosed with lung ailments. At once they began their nearly lifelong dedication to the betterment of their new community. In 1900 Heard, with the backing of his father-in-law, became one of the largest landowners in the Salt River Valley when his Bartlett-Heard Land and Cattle Company purchased 7,500 acres of land paralleling the Salt River south of Phoenix. It became a model farm and ranching operation. It exemplified the best of the area’s overall economy with prize-winning cattle, alfalfa, citrus trees, and cotton. At about the same time

Bartlett and Heard acquired 160 acres of prime land along Central Avenue north of McDowell Road and Heard developed this acreage into an exclusive residential subdivision called Los Olivos. It was there that he and Maie built their magnificent 6,000 square foot home called Casa Blanca. They burnished the area’s environment with four hundred palm trees planted along four miles of roads in the subdivision. Heard later built the then-trendy Palmcroft subdivision and made a fortune. Importantly, as he carved out subdivisions in the desert north of Phoenix, thanks in large part to Association-produced water and power, he shared a concern for the quality of life in the developing city and gave back, in multiple ways, to the community that had enriched him.

Heard’s business career and leadership role in the Salt River Valley reached into other realms. As president of the Arizona Cotton Growers’ Association, for example, he played a significant role in making that industry competitive nationally and internationally. Following his change of heart, he was a driving force in bringing Roosevelt Dam and federal reclamation to the region as well as the Central Avenue Bridge, South Mountain Park, and numerous other projects that benefitted the public. Among the additional causes in Heard’s civic leadership portfolio: the Arizona Cattleman’s Association, the Arizona Good Roads Association, Community Chest, St. Luke’s Home, Boy Scouts, YMCA, Trinity Episcopal Church, the University of Arizona, and countless others.

Heard opened his home—described as “the finest in the city”—to potential investors from the East and Midwest. He promoted the city and the valley non-stop and no one was surprised when Herbert Hoover, Theodore Roosevelt, Marshall Field, Harvey S. Firestone or some other powerhouse luminary emerged from Casa Blanca. His investment company in particular became a major force in the development of the region. His Arizona Republican,
which he bought in 1912 and ran until his death in 1929, exerted enormous influence in the political arena. Heard even ran for Governor of Arizona in 1924, winning the Republican nomination but losing a close election to the redoubtable seven-time governor, Democrat George W. P. Hunt.

Maie dedicated her time to cultural endeavors. She and other Bartlett family members donated land for the city's first civic center, where the original Phoenix Art Museum and Phoenix Library were built, and where the recently expanded Phoenix Art Museum stands today. As the couple learned about their new home they developed an ardent interest in American Indian artifacts and art, and they began to acquire pieces that they exhibited in their home. Over the years, they built their collection through travel and contacts with trading posts as well as with Indian arts dealers such as the Fred Harvey Company. Through the years, it became evident that a space larger than their home should be dedicated to the collection and Dwight and Maie decided to build a museum and with little fanfare the Heard Museum opened in June 1929. Indeed, Dwight Heard exemplified the best in public stewardship and civic engagement in Phoenix during the first third of the twentieth century.

Indeed, when he died in 1929, Heard, the man with multiple interests and arguably the Valley's leading booster for the first three decades of the twentieth century, left a gap in leadership, capital, and outside connections. His able assistant at the newspaper, Charles Stauffer, took over Heard's role as publisher of the Arizona Republican, and with his brother-in-law, Wesley Knorpp, built a local media conglomerate by purchasing the Phoenix Gazette and several radio stations. A second death in 1929 marked a generational transition in Phoenix. Baron Goldwater passed away and his demise necessitated that his sons, Barry and Robert (Bob), manage the family department store. By 1930, one year after Heard's death, not only
did Phoenix now boast direct contact with the outside world and serve as a vital business center for a productive hinterland of farming, ranching, and mining but also it appeared to be a good place to live. Observers noticed and appreciated how the civic elite combined private with public interests and how they often directed—with growth and development in mind—the economic, political and cultural lives of Phoenix. Clearly, Heard and others of his ilk were the drivers of a kind of Southwestern urban manifest destiny. Their actions benefited the city and the boosters and developers, in turn, gained from it. 70

As one scholar of these developments suggested, “The growth of central Arizona’s economy can be attributed in large part to Frank Reid and Charles Cragin.” 71 The construction of Roosevelt Dam on the Salt River permitted the sustained and successful settlement of the Phoenix area. But, as noted above, it was the addition of hydroelectric power that enabled central Arizona to advance beyond its agricultural base. Put another way, it was hydroelectricity that provided the Salt River Valley the ability for further and more fulsome growth. In addition to contributing to the benefit of the state’s mining and other industrial enterprises, Cragin pioneered a rural electrification program, which had a significant social impact. This dimension of expansion activity may have been Cragin’s most innovative contribution; bringing electricity to rural domestic users was over ten years ahead of the federal government’s formation of the Rural Electrification Agency during the New Deal years. Taken together, by 1930, eighty percent of all homes in the Salt River Project had connections to electrical service.


71 Introcaso, Mormon Flat Dam, 107.
In his 1922 report, C. C. Cragin left the development of the Salt River below Mormon Flat Dam to "some future time." Specifically, he wanted to move on this issue when the value of power and the growth of the Valley required additional water storage and power generation. By 1928 the circumstances required development below Mormon Flat. CALAPCO was delivering twenty-four million kw hours of power in 1923 and four years later it delivered forty-one. Sixteen million of those kw hours were provided to it by SRVWUA. Cragin stated that there was a "final step in developing the full head of the Salt River between Roosevelt and Granite Reef." In fact, by 1932 CALAPCO estimated that its load would more than double; it needed additional Association hydroelectric power. Moreover, the Association received increasing numbers of requests for domestic rural electric service, receiving over one thousand applications from rural-based shareholders in 1927. Also, the construction of a dam at Stewart Mountain offered SRVWUA the ability to satisfy its irrigation demand quickly, since the regulating facility would be ten miles closer than Mormon Flat to Granite Reef Diversion Dam. Reid and Cragin, therefore, proposed a third power dam on the Salt River in 1928.1

Not surprisingly, Cragin used the same fiscal formula to construct Stewart Mountain Dam as he had done with Mormon Flat and Horse Mesa dams. He secured an agreement with industry to purchase a minimum of hydroelectric power. On February 28, 1928, the Association and CALAPCO entered into a fifty-year agreement. CALAPCO would purchase seven thousand kw of power generated at the proposed ten thousand kw power plant at Stewart Mountain. The

1 "The Stewart Mountain Development," The Associated Arizona Producer 6 (February 15, 1928) 1; "Details of Stewart Mountain Development," The Associated Arizona Producer (February 15, 1928) 2, 10, 11.
agreed upon price, .008 cents per kw hour, promised the Association annual revenues of $520,000 from the CALACO agreement.

In May 1928 shareholders voted for a bond issue for $4.1 million for the construction of Stewart Mountain Dam. The Association planned to use $2.3 million to build the dam, $1.2 million for the construction of an electrical distribution system primarily to serve rural shareholders, and $600,000 to repay a portion of the Roosevelt Dam debt owed the federal government. The bonds sold in June and Cragin, ever efficient, announced the commencement of construction in October, immediately after the bond sale.2

Eight substations and seven hundred steel poles stretched across four-hundred miles served as testament to the program. This enabled the Association to increase its rural service to unprecedented levels. In 1928-1929, 1,634 new customers were added to the 933 already receiving power. The completion of this rural electrification initiative marked the end of the Association’s hydroelectric power program. The added generation capacity at Roosevelt, combined with the hydroelectric plants at Mormon Flat, Horse Mesa, and Stewart Mountain increased SRVWUA’s capacity five times from eighteen thousand kw to eighty-three thousand kw. Put another way, capacity increased from 25,000 horsepower to 110,000 horsepower.

Association power now reached the mines, including Magma, Miami, Belmont, and Nevada Consolidated Copper. It also served CALAPCO, portions of Phoenix and its environs, manufacturers, dairies, flour mills and ginning enterprises, irrigation and electrical districts, and its shareholders—over 3,300 in 1930. For the irrigation side, the expansion program developed

---

2 "The Stewart Mountain Development," The Associated Arizona Producer 6 (February 15, 1928) 1; “Details of Stewart Mountain Development,” The Associated Arizona Producer 6 (February 15, 1928) 2, 10, 11; “Stewart Mountain Development and Valley Electrification Now up to Vote of Farmers,” The Associated Arizona Producer 7 (March 15, 1928) 3. The .008 cent rate was fixed for the first thirty years of the contract. Thereafter, the rate became negotiable. The Stewart Mountain contract was published in its entirety in “Stewart Mountain Contract,” The Associated Arizona Producer 6 (February 15, 1928). Bonds were approved by special election on May 8 after the first election on March 20 failed to get the required three-quarters ratio for approval. The first, unsuccessful vote, underscored growing displeasure among a vocal minority of shareholders with the supposedly high-handed leadership of Reid and Cragin.
150,000 acre feet of water enabling nearly 35,000 acres of previously dry land to go into production. With the expansion plan complete with the finishing of Stewart Mountain Dam in 1930, Frank Reid resigned as President of the Association and was succeeded by John H. Dobson of Tempe.³

Despite the completion of its expansion program, the Association, prior to the completion of Stewart Mountain Dam, had to begin grappling with the stock market crash, which caused an economic downturn in the regional and national farming and industrial economies. The stock market, which had been on its biggest boom in history since the last half of 1924, began to behave more erratically than at any time in its history. But after each downturn, investors and speculators noted, there was a recovery. The vicissitudes of the fluctuating market alarmed few, if any, knowledgeable financial professionals. Then on October 24, 1929—Black Thursday—the beginning of the end arrived. Immediately after the market opened there was a panic to sell and as speculators sought to sell rather than buy, stock prices fell. So many shares of stock traded hands that day—a record-setting 12,894,650 shares—the ticker fell hours behind actual activity on the floor of the New York Stock Exchange as fear and confusion took hold.⁴

Indeed the Wall Street rupture escalated though business leaders tried to staunch the bleeding. Representatives of four of the largest New York banks met in the offices of Thomas W. Lamont of the J. P. Morgan firm at 1:00 p.m. on Black Thursday and they agreed to pool some of their resources and buy, thereby assuring the financial community that they--

³ On the Salt River, forty-one miles northeast of Phoenix, Stewart Mountain Dam created Saguaro Lake, a 70,000 acre-foot capacity reservoir. It is 212 feet high thin-arch structure and is 583-feet long. The History of the Salt River Project for the period October 1, 1929 to September 30, 1930, Chapter One, “Annual Report of General Superintendent and Chief Engineer,” 7 and Chapter 5, “Power and Pumping Division,” 2, 13.

⁴ David A. Shannon, Twentieth Century America: The Twenties and Thirties II, 4th Edition (Rand McNally College Publishing: Chicago, 1977) 148-149; Luckingham, Phoenix, 101. When President Herbert Hoover took office in March 1929 the market had already acted in curious fashion; it skidded in 1926 but recovered by the end of the year. In 1927 the bull market began in earnest and soon grew even more exaggerated. In 1928, for example, Radio Corporation of America rose from $85 to $420. The year 1929 saw even wilder speculation and buying stocks on margin further stimulated speculation.
institutional titans of the banking sector—were not concerned about the sudden downturn. At 1:30 p.m., Richard Whitney, vice-president of the Exchange, walked to the post where United States Steel was traded and placed an order for 10,000 shares at $205.00; the highest bid at the moment was $193.50. To close observers it appeared that the bankers had stepped in to peg the market. At first, the action quieted the jitters and industrials rebounded enough so that there was only a twelve-point loss for the day. On Friday and Saturday trading remained heavy yet prices remained steady. When asked to comment on the overall economy President Herbert Hoover stated flatly, “the fundamental business of the country, that is, production and distribution of commodities, is on a sound and prosperous basis.”

Thereafter the market spiraled downward in spite of occasional gains. By mid-November 1929 the market value of stocks on the Exchange had declined a jaw-dropping forty percent and prices continued to slide. A short comparative list of stock prices on the Dow-Jones index in September 1929 and January 1933 illustrated vividly the wreckage: thirty industrials $364.90 to $62.70; twenty public utilities dropped from $141.90 to $28.00; and twenty railroads declined from $182.00 to $28.10.

In the Far Southwest the effects of the stock market crash were slow to take hold. At the outset, for example, Phoenix suffered markedly less than the urban areas in industrial America. Local newspapers barely mentioned the stock market decline and subsequent events. Yet social challenges, unemployment, and structural economic dislocations were on the not-too-distant horizon. Copper mining, the state’s most profitable industry, declined precipitously when consumer demand and purchasing power decreased and the market became oversaturated.

Prices dropped from $.18 per pound in 1929 to $.056 per pound in 1932 and between 1931 and

---


6 Shannon, *Twentieth Century America*, 149.

7 See *Arizona Republican*, October 25, 26, 27, 1929; *Tucson Daily Citizen*, October 25, 26, 27, 1929.
1933 most of Arizona’s copper mines shut down or cut back dramatically in production. Put another way, Arizona, the nation's leading-copper producing state, saw the value of its overall mining production drop from $155.7 million in 1929 to $14.7 million in 1932. The Salt River Valley was caught in the economic quagmire as farm production decreased from $41.8 million to $13.8 million during the same three-year period. Additionally, livestock production declined from $25.5 million in 1929 to $14.7 million in 1932.

For the Association, the onset of the Great Depression resulted in the lowest level of prosperity among Valley farmers since the post-World War I Depression. Gross crop returns for the project were forty percent less in 1930-1931 than the previous year. Moreover, a severe drought worsened conditions; combined water storage of the four dams in 1930-1931 was 150,000 acre-feet, far below the 1.7 million acre foot capacity. The Depression also derailed full use of the Association’s expanded power potential. The Arizona copper industry’s downturn, from a 1929 aggregate income of $226 million in 1929 to a much lower $15 million in 1934 resulted in corresponding lower levels of power delivery. Thus the losses in crop and electrical revenues caused the Association to fall short of its repayment obligations to the federal government. In his 1932-1933 annual report, Harry Lawson, who had replaced Cragin as General Superintendent and Chief Engineer in May 1933, described the challenging economic climate: “So widespread and critical was the distress affecting people of all walks of life during the year just closed that old laws and practices broke with the strain.” In fact, the only money the Association was able to raise was an $880,000 grant from a New Deal agency, the Reconstruction Finance Corporation. This money was used to provide support for shareholders’ dwindling farming operations and help retire part of the $1.059 million in bank

---

8 Unemployment in mining towns was severe; total population in the state dropped from 435,573 in 1930 to 380,000 due in large part to the abandonment of mining towns. Many of these displaced miners moved to Phoenix or Tucson to look for employment in the urban centers. See Jay Edward Niebur, “The Social and Economic Effect of the Great Depression in Phoenix, Arizona, 1929-1934,” (M.A. thesis, Arizona State University, 1967) 2-18.
notes. Ironically, the sale of power was expected to make the four dams self-supporting, repay the debt, operate the irrigation system, and lower the Association’s shareholders acreage assessments; instead hydroelectric power costs, combined with the exigencies of the Depression, left the Association with a mountain of debt.9

Yet New Deal policies infused some life into the regional economy and throughout the 1930s the federal government had poured money into western states to create a new economic infrastructure. The Bureau of Reclamation undertook several projects to correct spillway deficiencies and other structural issues at Roosevelt, Mormon Flat, Horse Mesa, and Stewart Mountain in the second half of the 1930s. In fact, just three years after the Association completed Mormon Flat Dam, consulting engineer William S. Cone found that the spillways for all four Salt River dams were inadequate. In July 1933, Cone wrote, the July 1916 Salt River flood caused the canyon walls and spillways at Roosevelt to disintegrate to the extent that it was feared that the rock would “wear back the spillway crests.”10

As noted above, in the dark economic conditions of the 1930s, the Association could not finance the repair work to the four dams. With the assistance of Arizona Senator Carl Hayden, however, it persuaded the Bureau of Reclamation to perform the spillway work as part of the contract to build Bartlett Dam on the Verde River. This development took place after years of conflict with the Verde River Irrigation and Power District, after the Department of the Interior awarded the Association the right to stored water on the Verde. On November 26, 1935, the Association signed a contract with the Bureau of Reclamation whereby the Bureau would construct Bartlett Dam on the Verde River about twenty-five miles above the confluence of the

---


Salt and Verde. According to plans, the dam would store between 170,000 and 200,000 acre feet of water. All the work was funded under an interest free loan up to $6 million made to the Association by the Emergency Relief Appropriation Act of 1935.11

In 1936, the Arizona Legislature amended a law allowing formation of agricultural improvement districts - government units that can finance improvements with tax-free bonds. The Salt River Project Agricultural Improvement and Power District was created, the modern version of the Salt River Project (SRP) as it exists today. Thus, SRP became two entities: the Salt River Project Agricultural Improvement and Power District, a political subdivision of the state of Arizona; and the Salt River Valley Water Users' Association (SRVWUA), a private corporation. Over the next several decades, a series of major improvements along the Salt and Verde rivers raised the number of reservoirs in the district to six, and at the same time SRP constructed and maintained a number of other electrical generating stations throughout the state.

Bartlett was the first multiple-arch dam constructed by the Bureau of Reclamation, a distinction based upon the fiscal stringency that characterized the Great Depression. In August 1936, work began on Bartlett. The dam was named for William Hoyt Bartlett, who came to Arizona in 1888 and later discovered the site of the dam. Earlier, he had surveyed the Town of Glendale, served the Verde River Irrigation and Power District for ten years as field engineer and secretary for thirty-three years. Cost was a primary concern, thus Bartlett's buttresses were hollow and its arches thin. Less material was needed, saving on concrete and freighting costs. When completed in May 1939, Bartlett Dam was 286.5 feet tall and 800 feet long; the highest multiple-arch dam in the world. "To the farmer," the Arizona Republic declared at the time, "it

11 "Contract Between the United States of America and the Salt River Valley Water Users' Association Providing for the Construction of Bartlett Dam, and Repairs to and Completion of Other Dams and Project Canals," November 6, 1935. The contract also called for miscellaneous improvements to the Project irrigation system and the rehabilitation of the Roosevelt Dam Power Canal and Diversion Dam. For another perspective on the construction of Bartlett Dam see E. C. Koppen, "Building Stewart Mountain Dam," The Irrigation Era 30 (November 1939) 308-314. Koppen served as resident engineer for the Bureau of Reclamation.
[Bartlett Dam] represents a project which will add approximately one additional acre foot to his irrigation resources under the proposed management of the...reservoir it is creating.” 12

For the Association, the completion of the work under the 1935 contract could not have been more fortuitous. The improvements of the four Salt River dams benefitted SRWUA almost immediately, and although Bartlett was not fitted with a hydroelectric unit, stored water on the Verde enabled the Association to generate more power on the Salt. In the winter of 1940-1941, the second winter after the work was finished, central Arizona received over twenty inches of rain; three times its annual amount. This excess precipitation filled the Association’s reservoirs which were nearly dry due to another prolonged drought. Bartlett’s completion was also a welcomed event since World War II, already underway in Europe, triggered new demands for the central Arizona farming, industrial, and mining businesses. The war effort maximized the Association’s power system’s capacity. In four of the five years SRWUA generated and purchased for resale over 600 million kw hours annually, or enough power to net the Association millions of dollars in power revenues.

After a decade or more of economic drift due to the Depression, the Association’s hydroelectric expansion program reached its full potential in 1941 as the U.S. entered World War II. Specifically, the war effort revitalized Arizona’s copper and farming industries. Though copper did not approach its 1929 levels of production ($226 million), it improved significantly from mid-1930s levels. By 1944, for example, copper-producing mines exceeded $133 million in valuation. This was a vast improvement from the Depression low of $15 million in 1934. Similarly, Project crop production and livestock raising produced record revenues of $36

---

12 Arizona Republic, March 6, 1936, May 24, 1939.
million in 1944. Central Arizona’s wartime farming and industrial boom was fueled, in large part, by the Association and its irrigation and power programs.\textsuperscript{13}

Meanwhile, Arizona and fourteen other states in the trans-Mississippi West led the nation in federal grants and loans per capita between 1933 and 1939 with federal funds building highways, like U.S. Route 66 and other all-weather highways. The proliferation of special New Deal programs like the Public Works Administration, Civilian Conservation Corps, and the Works Progress Administration, along with new agricultural programs, increased the visibility and importance of the federal government in Phoenix and throughout Arizona. By 1935 over fifty federal agencies had offices in the city. Some complained that “in far too many cases the Phoenix office of a federal agency is merely a sub-office,” while the regional offices were located in San Francisco, Denver, or even Albuquerque. Still, the consequences of the infusion of federal dollars was significant and even Barry Goldwater grudgingly admitted in 1940 that “this huge expenditure of public moneys...has been of extreme importance to retailing.”\textsuperscript{14}

In spite of the challenging times, Association water and power provided an economic context that bode well for the future. In 1934, Phoenix area promoters cast about for a more appealing sobriquet than “Salt River Valley” to brand the region. One advertising agency offered “Valley of the Sun” as an appropriate identity for Phoenix and its environs. Soon Arizona leaders, in numerous public addresses, utilized this term to countless audiences in their

\textsuperscript{13} History of the Salt River Project for the Period January 1, 1944 to December 31, 1945, Chapter One, “Report of General Superintendent and Engineer,” 1, 3-5. In the worst agricultural year of the Depression, 1932, crop receipts on the Salt River Project amounted to only $9.6 million.

\textsuperscript{14} Carl Abbott provides an insightful overview of the federal presence in Clyde Wilmer and Martha Sandweiss eds., The Oxford History of the American West (New York: Oxford University Press, 1994) 469-499; Quotations in Vander Meer, Desert Visions, 80. Federal spending was equally vital for construction, the largest sector of the city’s economy in the late 1930s, accounting for nearly one quarter of Phoenix area employment, directly and indirectly. During this period buildings at the state fair grounds, North High School, Phoenix Junior College, and Arizona State Teachers College (renamed Arizona State University in 1958) were constructed. Reclamation projects improved dams along the Salt River and made possible the building of Bartlett Dam on the Verde River as noted in the narrative. Airport runways, buildings and lighting were improved and road-related construction—the aegis of the WPA and PWA, added 40 miles of paved streets in Phoenix, bringing the total to 117 miles, along with 95 miles of sidewalks, and 73 miles of curbs. Bridges, sewers, and waterlines were constructed as well along with three public housing units.
unrelenting efforts to sell the city. During the second half of the decade, the Chamber of Commerce, the Phoenix-Arizona Club, and other like-minded booster organizations used the term in their promotion campaigns. Even during the depths of the Depression decade, some described the area as “Paradise on Earth” or a “Garden of Eden.” Indeed some exaggerated the salubrious environment in overwrought terms: “A person coming to the Valley of the Sun is fascinated by thousands of acres of green and gold citrus groves; marvels at the date gardens with their graceful, swaying palms, and the soft, grey-green olive trees.”15 In 1939-1940 the Chamber of Commerce reviewed the winter visitor statistics with some satisfaction. Over 35,000 visitors came to Phoenix during that season, filling hotels, resorts, and guest ranches, while the exclusive Camelback Inn announced that it experienced a 107 percent increase in business since 1937. Naturally the war in Europe prompted the increase in numbers since tourists avoided traveling abroad and chose instead the “Valley of the Sun” for their vacation.16

At about the same time the Civil Aeronautics Act of 1938 established a federal aid program for airport construction that had special importance for the widely spaced cities of the West. In addition the legislation had the broader effect of transferring federal responsibilities for non-military aviation from the Bureau of Air Commerce to a new independent agency, the Civil Aeronautics Authority.17 Along with the advances in air transportation, great dams rose to block

15 Arizona Republic, November 18, 1934.
16 Luckingham, History of Phoenix, III - 112.
17 See Civil Aeronautics Act of 1938, 75 Cong., 1 sess., ch. 601, 52 stat. 973, Vol. 52 (Government Printing Office: Washington, D.C., 1938) 973-130. See also Robert H. Ferrell, Truman and Pendergast (Columbia, Missouri: University of Missouri Press, 1999) 46. Ferrell asserts that Senator Harry Truman, following the admonition of Senator Carl Hayden, to demonstrate a “work horse” ethic, helped move the bill through the Senate. However, Senator Pat McCarran, Democrat from Nevada, was the primary author of CAA. On April 14, 1938, the Nevada senator introduced S. 3845, a bill to establish an independent civil aeronautics authority to regulate aviation-related commerce and safety. In floor debate, McCarran emphasized the likely increases in air traffic, the growing segment of the economy represented by aviation, and the reality that aviation would soon be a major source of inter-state transportation in the United States. On this last point, McCarran stated: “If we are ever to have safe, regular, and economically sound air transport, it must be administered by a strictly nonpolitical body. Safety regulations are largely nullified by political influences, and, in my opinion, the time is not far distant when the air-traveling public will rise up and demand reasonably safe air transportation.” Although some senators opposed the creation of yet another new federal agency and maintained that the Commerce Department was adequate to the current needs of airline travel, the bill passed the Senate by voice vote. In the
watercourses throughout the West during the New Deal years and hydroelectric power generated from these structures facilitated industrial growth in Phoenix and elsewhere throughout the region.  

During this period of transition, one of the leading lawyers in the city, Frank Snell, met banker Walter Bimson through mutual friends and colleagues, Joe Refsnes and Snell’s law partner at the time, J. Fred Elliott. Bimson, who like Snell, influenced the nature and direction of the valley’s growth and development from the 1930s through the 1970s, began visiting Phoenix in the early 1930s as an employee of the Harrison Trust and Savings Bank. Elliott had tried to negotiate some loans from Harrison Trust for the Arizona Cotton Growers and Bimson represented Harrison’s interests. In fact, Snell recalled that one of his earliest meetings with Bimson was at a barbecue for Bimson in Elliott’s back yard. Snell depicted his early contact with Bimson: “He handled the cotton business for Harris Trust and we [Elliott and Snell] represented the farmers. I got to know Walter well even before he moved permanently to Phoenix.”

A good friend of President Franklin Delano Roosevelt, Bimson ultimately moved to Arizona and took control of the Valley National Bank in 1933. His Chicago experience and the

---

18 Abbott, *The Metropolitan Frontier*, 8. The federal government in essence created a new aircraft industry during the war years. A number of aircraft manufacturers had operated in southern California since World War I but in 1939 their total production numbered about 1,000 planes per year. Between 1942 and 1945 they delivered about 40,000 planes annually although the engines were still manufactured in Detroit. The total amount of federal contracts in the war years amounted to about $29 billion of which California received a substantial portion. Indeed, when President Roosevelt called for the production of 50,000 planes per year many considered this number unrealistic. But his lofty goal energized the industry; western plants built about 40% of the total in the U.S. or about 120,000 planes. Douglas, Lockheed, and North American Aviation employed more than 200,000 workers and Boeing, in Seattle, another 50,000. Significantly half the employees were women.


20 The Harris Bank was established in 1882 as N.W. Harris Company and reorganized in 1907 as Harris Trust and Savings Bank. See also Walter Steadman, *The West and Walter Bimson* (Tucson: University of Arizona Museum of Fine Art, 1971).
expertise he developed in that rough and tumble financial world benefitted the Valley and Arizona through the New Deal and beyond. Snell recollected that “for the first two or three years he had his hands full, not with his bank alone, but with the broader banking problem in Arizona because he had as much to do as anyone with not closing the banks in Arizona....I know the part he played in paying warrants when nobody else would buy them. He paid them in full when others were buying them at discounts. Teachers, state workers, employees went to him and he had complete faith; as far as I know he didn’t lose a dollar but nobody else would buy them [warrants].” Bimson purchased warrants at full value, Snell said, because he knew the people needed it and he thought it “was damned good publicity. He was a good businessman.” 21 Snell added that he used branch banking, small loans, and he loaned $500.00 to military personnel without any other endorsement and that brought many a man back to Arizona.” He was not necessarily “selling” Valley National Bank but instead “Walter Bimson who set that policy.”22

Bimson symbolized a longstanding Arizona tradition of seizing upon federal largess. He was well aware of the Bureau of Reclamation’s upgrades at the four Salt River dams and the 1935 contract that added Bartlett Dam on the Verde to enhance irrigation and power generation. As noted earlier, in the early twentieth century state leaders worked diligently to facilitate the development of water and irrigation projects. As Bimson and the Valley National Bank sought to gain traction in the Arizona market, he and developer Del Webb, who had arrived in Phoenix in 1927, took prompt action. When President Roosevelt unveiled the original National Housing Act in 1934, which would be expanded as the Federal Housing Administration (FHA) loan program, they saw this as an opportunity, unlike many of their banking and developer brethren.

22 Ibid. Snell almost rhapsodized about Bimson and his character and abilities in the 1977 oral history interview. He said, “Harris Trust had such confidence in him; that’s probably where all the money [to pay warrants at par] came from....He also had a good connection with City Bank Corporation...people just had confidence in that man.”
In Phoenix, this New Deal initiative was embraced with alacrity and Bimson, Webb, and Snell foresaw the potential of these federal loans to aid homebuyers, banks, and builders. Title 1 of this program provided small installment loans for home repair or “modernization.” Bimson promoted these extremely popular “character” loans and, as a result, spending on construction materials and home appliances, which required electrical power, rose substantially. Between 1935 and 1940 a total of 2,160 new homes were built and the FHA insured two-thirds of them. The new homes represented over 10 percent of total housing stock in the city and a striking 61 percent were owner occupied; twice the level of previously built homes. Snell recalled this New Deal program as one that “helped move Phoenix from the hope to the reality of home ownership.”

Bimson, for his part, traveled the country speaking before other banking and business groups in support of the New Deal program. He bragged that “Valley National Bank has consistently pioneered in the FHA program which has meant so much to the state as a whole in stimulated business and increased employment.” Indeed this was no idle boast; Valley National Bank, which was a small regional bank in the 1930s ranked fifth in the nation out of more than eight thousand banks that made housing loans. In two decades, Valley National Bank grew into the largest in the intermountain West. The consequences of these developments, for the bank, for developers, and for the growth of Phoenix were obvious.

Webb, likewise, took advantage of New Deal programs. A former Californian he arrived in Phoenix in order to regain his health. He began work in Arizona as a carpenter and parlayed...
a relentless work ethic into a vibrant construction enterprise in the 1930s. He made his first millions off New Deal programs, erecting homes, hospitals, and government offices with federal grants or loans. "Construction is no longer a private enterprise," he exclaimed at the time, "but rather a subsidiary of the federal government."\textsuperscript{26} By 1935, moreover, business in Phoenix had recovered sufficiently to claim modest-to-considerable growth. The federal government was Maricopa County's largest employer and purchaser, having injected more than $10 million annually into the area. In 1937 more than fifty federal agencies, bureaus, or offices employed nearly 6,000 people with collective salaries in excess of $6 million. Private sector businesses were also supported with $4 million in spending for materials, equipment, and supplies. The New Deal programs benefitted not only the likes of Bimson and Webb but also the community at large.\textsuperscript{27}

In 1940, a year after the completion of Bartlett Dam, few could have imagined the changes they were about to witness. In that year, Phoenix was the 198th largest city in the country but when World War II ended it had moved up 99 slots in population. Phoenix, now the state's largest city, counted only 65,414 people in its environs and still maintained significant vestiges of its agricultural past. As Phoenix-based economist Elliott Pollack described pre-war Phoenix: "In 1940 the Greater Phoenix area was the agricultural capital of the Southwest, the political capital of Arizona, and functioned as the economic and social focal point of the region. It was already a national tourist attraction with highway, rail, and air transportation links to the rest of the country."\textsuperscript{28} In this context, young ambitious business leaders Bimson, Webb, and retail merchant Barry Goldwater, seized opportunity and injected themselves into prominent

\textsuperscript{26} Luckingham, History of Phoenix, 107; Ray Sancho, "Del Webb: Profile of a Southwest Builder," (unpublished manuscript, Department of Archives and Manuscripts, Arizona State University, 1980).
leadership roles in a changing economy that struggled to shake off the hangover of the Depression. Many of these leaders frequented the Adams Hotel after work to confer with farmers, cattlemen, and mining executives who gathered in the state’s de facto center of power to lobby Arizona legislators. Chamber of Commerce officials delivered “spirited talks” to the Rotary, Kiwanis, and other service clubs and organizations, pointing out common goals and linking human and fiscal resources among the various groups.29

Indeed the role of the emerging elite in Phoenix was shaped by social and business service groups. The city was still comparatively compact in size and modest in population and this group of wealthy, influential men met often in both formal and informal settings. With a total downtown area of no more than twenty blocks, and with commercial and entertainment venues concentrated along a few blocks of Washington Street, people routinely saw each other at work and play. “You couldn’t go two blocks without meeting ten people that you knew well,” one leading lawyer of the time recalled. Service clubs forged connections by recruiting members, offering club luncheons, and engaging in service projects. Many recalled fondly that this period was one when “men had a little more time….We knew each other better.” Four years after Frank Snell joined the Kiwanis Club, for example, he became president and he remembered, “I could call everybody by name, you know, and know their business.” Snell elaborated on the respective role of these groups: “The Rotary Club owned the town, the Kiwanians ran it, and the Lions enjoyed it.”30

Yet, the Phoenix Chamber of Commerce provided the broadest and most significant gathering of professional, business, and community leadership. The elite dominated the leadership of this group, notably presidents Les Mahoney (1933-35), Orme Lewis (1937-38),

29 Arizona Republic, June 24, 1939. In the talk referenced in this edition of the Phoenix daily newspaper, Snell outlined his plans for future activities and continued to tout the importance of the tourist trade.
30 Frank Snell oral history interview with G. Wesley Johnson, May 26, 1977, AHS; Arizona Republic, November 22, 1942.
and Snell (1939-40). Another informal group, met at the Arizona Club on the tenth floor of the Luhrs Hotel. The group, most of whom were chamber members, often met for dinner and while air-conditioning—one of the first rooms in the city to boast this innovation—enabled a comfortable setting during the summer months, the gatherings involved serious discussions. One frequent participant described the Arizona Club as “very important; it was a place where people met to talk. Families pretty much went out of town in the summertime, the mountains, Flagstaff, Prescott....Prescott was probably the most popular.” The club was “the place of greatest interest because there was always a roundtable down there at which it was pleasure to be at for all those years....It was the business people and it was more important than you think.” Howard Conway (who paved most of the streets of Phoenix), Charles Korrick, Harold Diamond, Orme Lewis, Bob Goldwater, and Barry Goldwater were regular attendees. Dinner guests “solved the problems of the entire city and the nation,” but elaborated, “We really did talk about important things and many were carried out.”

Indeed by 1940 Phoenix’s urban framework had been established as what had been the agricultural capital of the Southwest began a nearly half-century transformation into the preeminent metropolis in the region. During the 1930s, as noted earlier, a strong relationship between Phoenix and the federal government helped mitigate, to a degree, pressing problems during the Depression. The New Deal, indeed, expanded the federal landscape in the West by its emphasis on the use of government as a positive force. But New Deal policies, according to historian Gerald Nash, “also laid a firm foundation for even greater federal involvement in the economy of the West.”

31 Frank Snell oral history interview with G. Wesley Johnson, May 22, 1977, AHS; Vander Meer, Desert Visions, 87. Snell added that there were “twelve or fifteen regulars who attended the Arizona Club roundtable and it was a pleasant way to spend an evening.”
remain strong during World War II and beyond and the economic implications of mobilization and global conflict pushed Phoenix well toward metropolitan status. This economic rise, historians have argued, began as a combustible admixture of three-hundred days of sunshine per year with the technology of destruction.\(^{33}\) It was ironic indeed that the prosperity sought in vain in peacetime during the 1930s was achieved through federal intervention in the war years of the 1940s.

World War II stood as an important turning point in the growth of the American West; cities like Phoenix launched into a half-century of headlong urbanization. One Phoenix resident described this juncture in apt terms: “We were coming out the Depression but the war came as a bang, really, businesses came in and labor was short.”\(^{34}\) Additionally, the prosperity during this period arose not by design but through the exigencies of national mobilization. In this process the West—and Greater Phoenix—played a major role. As a comparatively undeveloped region it was more open to experimentation than the older more industrialized areas in the Midwest and East. Further, since most of the military action of World War II took place in the Pacific, Arizona and other areas of the West were well-positioned due to geographical proximity to the West Coast to become important staging areas. Because much of the West, including Phoenix and Arizona, was without elaborate economic infrastructures, it did not require massive reconversion to war production but instead offered ample opportunities for rapid development of new industries. Unquestionably, during World War II the federal government transformed what had been a largely natural resource-based economy into one that was more diversified and


\(^{34}\) Snell oral history interview with Johnson, September 22, 1977.
could soon boast an industrial base.\textsuperscript{35} With ample amounts of water and power, Phoenix and Arizona contributed to the war effort and at the same time benefitted from the global conflict.

During the war itself the federal government spent $4.4 billion to build and expand western military bases. The Defense Plant Corporation, the Reconstruction Finance Corporation, and the Maritime Commission put another $4.1 billion into industrial plants for the war effort. War supply contracts totaled $27.8 billion for combat equipment and $5.8 billion for related materials. Stagnant cities that experienced agricultural and mining depressions in the 1920s and 1930s, like Phoenix, embraced these new wartime industries with alacrity. The war transformed small communities into booming cities and built entirely new communities on desert mesas and sagebrush plateaus. The mobilization of western resources and the drafting of previously unpopulated western lands for the war effort gave Phoenix and other western cities a head start on the economic upswing of the 1940s-1960s. The West in general and Phoenix in particular ended six years of mobilization and war with a vastly expanded regional market, a new industrial infrastructure, and a fresh influx of workers and wealth.\textsuperscript{36}

\textsuperscript{35} Nash, \textit{The Federal Landscape}, 43. In the broadest sense, the $60 billion-plus spent in the West by the federal government between 1940 and 1945 dwarfed government expenditures during the New Deal. Congress authorized half of this amount for war materiel. This amount was five times the value of all manufactures in the West in 1939. Federal agencies spent almost half of the $60 billion in California, which doubtlessly redounded to benefit Arizona as well. Much of this amount helped California build a powerhouse aircraft industry. Put another way, in 1930 the federal government spent $130 million in California; in 1945 it spent $8.5 billion. In its collaborative efforts with private enterprise, moreover, government set the parameters and goals. In short it was the senior partner and private enterprise was the junior associate in carrying out mobilization for the war. Even more, the war effort facilitated major shifts of population westward, a vast overhaul of selected sectors of the western economy, an enormous increase in the size and number of military establishments, and a reshaping of the economic contours of western cities, like Phoenix and Tucson. Finally, agriculture, mining, and electric power producers, most of which were bulwarks of Arizona’s economy, increased their production during the conflict.

\textsuperscript{36} The federal government, as a matter of policy, largely through the Defense Plant Corporation and the War Department, dispersed war production. The dispersal policy reflected a concern for national security and a willingness to locate war manufactures in the interior West. Denver, for example, prospered as a center for ammunition and, incredibly, small ship production. The Las Vegas area emerged as the site for the world’s largest magnesium plant. Phoenix drew tire and parachute factories. Provo, Utah became the location of the West’s largest steel plant due to its proximity to the West Coast. Moreover, smaller communities throughout the region profited from thousands of subcontractors who worked for large enterprises on the Pacific Coast. Indeed within four short years the federal government altered the physical and economic landscape of the West. See, for example, Nash, \textit{The Federal Landscape}, 44.
Almost imperceptibly, if unconsciously, Phoenix area business and political leaders shaped the nature and direction of this unprecedented economic juggernaut. Frank Snell, as a dominant force on the Phoenix Chamber of Commerce’s recently created National Defense and Aviation Committee as well as chairman of the Finance Committee, championed a military marketing strategy for Phoenix. His neighbor and client, A. Lee Moore, chaired the chamber’s National Defense and Aviation Committee and worked closely with elected local and federal officials in emphasizing Arizona’s considerable natural assets. Snell’s imprint on these developments could be found throughout these initial efforts to attract military installations to the Phoenix area prior to the official U.S. entry into World War II on December 8, 1941.37 Although the scale and pace of mobilization in 1940-1942 were unanticipated, Phoenix boosters had jumped into the metropolitan-military complex sweepstakes and they knew the competition for these federal defense industry fruits would be fierce.

As suggested above, the quest for defense dollars in the “armed peace of 1940” and President Roosevelt’s interventionist stance against Nazi Germany triggered even more focused competition for defense facilities. A partnership between big business and big government set the economic transformation in motion and by 1939 FDR himself admitted that “Dr. New Deal” was losing ground to “Dr. Win the War.”38 Even before the war, the U.S. military had addressed the notion that it would be prudent to build training bases in the southern third of the nation, where the climate would not cause training interruptions. An eight-year federal survey in the 1930s reported that Phoenix had the best flying conditions of the seven Southwestern cities it studied, and local weather allowed excellent visibility ninety-five percent of the time. At the same time Phoenix boosters noticed that the Dallas Chamber of Commerce and its Citizens Council, which spoke for that city’s business elite, campaigned in Washington offices and

corporate headquarters for a naval reserve aviation station base and a North American Aviation Company plant. By 1943 employment in that federally financed plant reached 40,000 and the Chamber of Commerce trumpeted that Dallas was “the War Capital of the Southwest.” Rival city Ft. Worth, forty miles west, secured Tarrant Field and a Consolidated Vultee Aircraft (Convair) plant, with the support of its arch-rival Dallas. In both cases, civic boosters used political connections to secure these federal prizes. Significantly, the Defense Plant Corporation, which built the North American and Convair facilities, had a board member from Dallas and operated under the Reconstruction and Finance Corporation, directed by Houston banker and booster Jesse Jones. In the Convair effort, “Mr. Fort Worth,” Amon Carter, publisher of the *Fort Worth Star Telegram*, spoke directly with President Roosevelt on behalf of his city.

Phoenix leaders followed the Dallas-Fort Worth blueprint. Arizona Senator Carl Hayden responded to wartime exigencies and Phoenix leaders’ admonitions, helping to secure Phoenix Military Airport (Luke Field) on land donated by the city in early 1941. Hayden and junior senator Ernest McFarland, touted the creation of a “huge air program in the sun,” claiming the area offered potential air bases, excellent flying weather, and “the availability of a vast uninhabited territory, near at hand, for gunnery range purposes,” attributes already known to Army officials based on previous studies. Level surfaces, little rainfall, and the rarity of high winds, Hayden and McFarland informed U.S. Army officials, made the area even more appealing. The *Arizona Republic* of January 15, 1941 ran a front page headline, “Huge Salt River Valley Airbase Planned,” and speculated that the flier training program under consideration was projected to cost $1 million and that “the proposed big aviation training field in the valley...was part of the national defense program of the U.S. Army.”

39 According the *Arizona Republic*, City Manager Donald C. Scott and other officials close with aviation developments suggested that the training field was past the “mere talking” stage and already had official status. One thousand men at an average pay of $40.00 per month were anticipated to inhabit the area “west of the irrigated valley.” Annual benefits
the front page trumpeted, “Pilot Training Base is Assured: Big Airfield Approved by Board.”

“Establishment of the U.S. Army’s advanced training base 2.5 miles north of Litchfield Park became a virtual certainty yesterday,” the story began, “when an examining board of ranking officers here since Sunday announced they are recommending the project to the war department.”

Bimson, with the aid of Snell, facilitated the purchase of the land in question, hammering out an agreement whereby the City of Phoenix bought 1,440 acres of land which, in turn, was leased to the government for $1 per year effective March 24, 1941. Also, Snell was serving as General Counsel to the Central Arizona Light and Power Company (CALAPCO) and persuaded this client to expend $25,000.00 “in five minutes,” according to newspaper accounts, to run power to the land under consideration. The Association-produced hydroelectric power in this particular instance had a direct impact on facilitating the construction of this iconic military installation. And on March 29, 1941, Del Webb Construction Company broke ground on what was then being called the Litchfield Park Air Force Base. On August 15, 1941, Senator Hayden telegrammed the Arizona Republic announcing the new facility would be officially named Luke Field after Frank Luke, Jr., the Phoenix flying ace of World War I.

Civic leaders comprehended the enormity of the defense industry coming to Phoenix and understood the role that aviation would play in national security. Two years prior to the establishment of Luke Air Field, the Phoenix Chamber of Commerce supported the entrepreneurial efforts of Phoenix aviator Carl (Pappy) Knier, who launched a Civilian Pilot
Training Program at Sky Harbor Airport. Local businessmen realized early on that air transportation could help build the tourist economy and with the outbreak of the war, military air training facilities could serve as a major economic boon to Phoenix. One major supporter of air transportation said, “If you think about it nothing could have happened here [Phoenix] if we hadn’t got airplanes….For a person to come here from New York it was as much as three days and two nights by car or rail. So the airplane was important. Before the war, you know, we were really isolated; we had good rail service—Southern Pacific and Santa Fe—but they took time. Airlines took that away. And businesses were able to have branches in Phoenix and still have their main offices in Chicago, New York, St. Louis and not be disturbed by a two, three, or four hour flights. It brought growth and a lot of good citizens.”

Indeed World War II was the first American War in which air power played a crucial role. Scores of new air bases quickly became adjuncts to western economies and large testing areas for new weapons, usually but not always on public lands, became familiar additions to the federal landscape. These facilities, as in the case of Arizona, brought new jobs and new markets to the region. The military presence was especially important in areas like Phoenix, where economies were not as diversified as other parts of the country. With the conflict in Europe growing more menacing the federal government contracted with fliers throughout the country to conduct “war preparedness programs,” like Knier’s.

In 1940 California-based investors bought out Knier and expanded the program at Sky Harbor and named it Southwest Airways. The new company opened another operation at Thunderbird Field north of Glendale and signed a contract with the Army Air Corps to provide

---

training to cadets.\textsuperscript{46} In short order another contract was signed with England’s Royal Air Force to train its cadets and a new base in Mesa, Falcon Field, opened in September 1941.\textsuperscript{47} That same month the Army Air Corps selected yet another site to build the “Mesa Military Airport,” in the east valley. In its early stages it was called “Higley Field” and as Chamber of Commerce members soon boasted to the press, “the Phoenix area could provide all facilities necessary for developing in progressive stages fledgling fliers into full-fledged pilots.” This most recent 160-building base cost \$4.7 million and again, Del Webb Construction Company was called upon for the job employing 2,500 men in building what ultimately became known as Williams Air Force Base. Webb followed the money and his political and business acumen made him a wealthy man during the war and beyond.\textsuperscript{48} With the completion of Williams in January 1942 and the Webb-constructed Thunderbird II Field in Scottsdale a few months later, the Salt River Valley, in a short two-year span, became arguably the nation’s leading army air center.\textsuperscript{49}

\textsuperscript{46} Indeed, various cities petitioned for their share of the federal money, and in 1938, as noted in the narrative above, a Civilian Pilot Training Program was begun in Phoenix, with the unspoken purpose of training pilots for the probable upcoming war.

\textsuperscript{47} Luke Air Force Base was named for the first aviator to receive the Medal of Honor posthumously, Lt. Frank Luke, Jr. Born in Phoenix in 1897, the “Arizona Balloon Buster” scored 18 aerial victories during World War I; fourteen German observation balloons and four enemy planes. He was killed in battle on September 29, 1918 at the age of twenty-one. As discussed in the narrative, the U.S. Army sent a representative to Arizona to choose a site for an Army Air Corps training field for advanced training in conventional fighter aircraft. On March 29th, the Del Webb Construction Company began excavation for the first building at what was known then as Litchfield Park Air Base. The first class of 45 students, Class 41-F, arrived on June 6, 1941 to begin advanced flight training in the AT-6 “Texan”, although only a few essential buildings had been completed. Flying out of Sky Harbor Airport until the Luke runways were ready, pilots received 10 weeks of instruction and the first class graduated on August 15, 1941. Captain Barry Goldwater served as director of ground training the following year. During World War II, Luke was the largest fighter training base in the Air Corps, graduating more than 12,000 fighter pilots from advanced and operational courses in the AT-6, P-40 “Warhawk”, P-51 “Mustang”, and P-38 “Lightning” aircraft, earning the name “Home of the Fighter Pilot.” On February 7, 1944, pilots at Luke had achieved a million hours of flying time. Luke became the largest fighter-training center in the country.

\textsuperscript{48} Contractor and developer Webb built many of the new bases and housing units throughout the region and of course his name was synonymous with Sun City which rose in northwest Phoenix two decades later after World War II. See Margaret Finnerty, \textit{Del Webb: A Man. A Company} (Phoenix: Heritage Publishers, 1999); Raymond Carlson, “Del Webb,” \textit{Arizona Highways}, 27, 2 (February 1957).

\textsuperscript{49} Luckingham, \textit{Phoenix: The History of a Southwest Metropolis}, 137-139. Ultimately construction costs brought \$6.2 million into the economy and provided employment for 2,500 men in their construction, with an annual payroll of \$3.5 million. Webb arrived in Phoenix at the same time Snell moved to the Valley of the Sun. Webb was born in Fresno, California in 1899, the same year Snell was born. But their respective lives took different tracks thereafter; Webb quit school at age thirteen to work as a carpenter and play semipro baseball. But a bout with typhoid fever consumed his 6’ 4” body and his weight dropped from 204 lbs. to a frightfully gaunt 99 lbs. In 1927 he moved to Phoenix to recover his health, formed the Del Webb Corporation and hitched his star to Arizona. As one chronicler put it, “by the time he died

162
Webb's success mirrored that of other large-scale construction contractors in the West during the war. The federal government facilitated rapid capital formation through the private banking system. The function of the banks was not just to buy and sell war bonds; the Federal Reserve Board also authorized them to extend government-guaranteed loans to contractors like Webb. Typically these loans enabled private corporations to retool and to expand their plants for war production and initially after the first two months after Pearl Harbor it was difficult for small subcontractors to convert to war manufactures because they were not included in the program. A.P. Giannini, the president of the Bank of America, whose bank became involved early in the purchase and sale of Mormon Flat bonds and the best-known banker in California and the West, however, perceived this gap in federal policy. Giannini, who had also pioneered branch banking in the 1920s, was adept at influencing federal banking regulations and in 1942 he organized an information service for small businesses to provide them with leads in securing federal contracts. In addition to his lobbying in behalf of the small business sector, he also helped secure passage of a law that allowed businessmen to use government contracts as collateral for bank loans. Giannini was also a key figure in persuading the Federal Reserve Board to issue Regulation V, which eased requirements for small contractors seeking bank loans. In several instances, Snell, using these new federally-approved inducements and fiscal tools, assisted local bankers, like Bimson, in facilitating capital formation and loan programs for
western banks and clients. Clearly these wartime fiscal innovations helped pump money into the local economy.50

Arizona's arid desert environment attracted army camps as well as air bases, and with the establishment of Camp Bouse, Camp Horn, Camp Hyder, and Camp Laguna in 1942-1943, tens of thousands of troops were stationed within one hundred miles of Phoenix. As many as fifteen military trains serving the posts passed through Phoenix every day and Phoenix became a playground for troops on their leisure time. According to Mayor Newell Stewart (1942-1944), off-duty soldiers "walked through town and bought everything there was—meat, cigarettes, and liquor." "World War II," according to one Arizona historian, "was an Arizona merchant's 'dream come true.'"51

The civilian population swelled as well as large-scale manufacturing followed in the path of the construction of military bases. American military officials, determined to minimize the consequences of a successful attack on American soil, dispersed strategic defense installations throughout the country. Paul Litchfield, who oversaw the cotton boom during World War I, played a chief role in recommending the Salt River Valley to his longstanding contacts in Washington, D.C., informing federal officials: "It is well inland and thus protected from possible air attacks." Furthermore, he touted the comprehensive transportation infrastructure that had been forged between 1920-1940, noting that Phoenix and the surrounding area was

50 As Giannini helped enable western banks to acquire federal funds to facilitate the war effort more efficiently, his brother, Mario Giannini worked on another area of western capital formation. He persuaded Congress to authorize the Smaller War Plants Corporation whose sole task was to channel federal contracts to small business. In fact, among the small enterprises that took advantage of these inducements was Walt Disney Productions, which produced propaganda and army training films in wartime. In these ways the federal government was involved in stimulating capital formation by western banks. See Harold G. Vatter, The U.S. Economy in World War II (Irvington, New York: Columbia University Press, 1988); Simon J. Kuznets, National Product in Wartime (New York: National Bureau of Economic Research, 1943); Sterling J. Brubaker, "The Impact of the Federal Government Activities on California's Economic Growth, 1930-1956," (Ph.D. Dissertation, University of California, Berkeley, 1959); Gerald D. Nash, A.P. Giannini and the Bank of America (Norman: University of Oklahoma Press, 1992); Felice A. Bonadino, A.P. Giannini: Banker of America (Berkeley: University of California Press, 1994); Lynne Pierson Dotti and Larry Schweikert, Banking in the American West (Norman: University of Oklahoma Press, 1991).

well-connected by air, rail, and highway to the rest of the nation, especially southern California, where many of the aircraft plants were being built. Litchfield convinced the federal Defense Plant Corporation (DPC), in July 1941, to lease land from the Southwest Cotton Company; a subsidiary of Litchfield’s Goodyear and Tire Rubber Company.

According to his attorney, “Paul Litchfield was a great guy, wonderful in many ways. He named the town out there [Litchfield Park] and he had the welfare of this community at heart. For example, he helped create the Thunderbird Graduate School in the west Valley. According to a Litchfield friend, “Having a quality resort out there, like the Wigwam, was important and he was proud of his home out there in the west valley.” Litchfield also possessed a renowned sense of humor, which he displayed when introduced to world-famous architect Frank Lloyd Wright. After shaking hands, Litchfield stated, “I enjoyed your book, Mr. Wright.” Wright, with a puzzled look on his face, inquired, “Which book is that?” And Litchfield responded quickly, “The Winning of Barbara Worth,” which of course, was the work of Tucson novelist Harold Bell Wright. According to one observer of Wright’s reaction to the exchange, “I thought there was going to be a fight,” but Litchfield scored his point on the apparently self-

52 Immediately after World War II Snell, Litchfield, Bimson and the familiar short list of local leaders acquired a former military airbase Thunderbird Field for $407,000, a token amount, on the condition that it be used as a school for at least ten years. Richard Snell stated that this was one of his father’s great interests and he took great pride when classes began on October 1, 1946. The first class of 234 students graduated on June 14, 1947. At the time it offered only one degree, a Bachelor in Foreign Trade and its curriculum emphasized Spanish and Portuguese languages and Latin American business culture. The school underwent several iterations from the days of Snell’s involvement; The American Institute for Foreign Trade (1946-1968), Thunderbird Graduate School of International Management (1968-1973), The American Graduate School of International Management (1973-1997), Thunderbird, The American Graduate School of International Management (1997-2004), The Garvin School of International Management (2004-2007), and The Thunderbird School of Global Management (2007-current).
important architect and the amusing story made the rounds in the local business community for many years after the incident.\textsuperscript{53}

Military mobilization progressed with remarkable speed and breadth; the DPC broke ground on what would be called the Goodyear Aircraft Corporation on August 21, 1941—three weeks ahead of schedule—and under Army orders issued two days prior, the plant west of Phoenix was to be double its original size.\textsuperscript{54} Plans called for the first unit to be completed by November 1, including installation of all equipment, with the first unit to begin operation under a work-training program a few days afterward. The second unit was completed on January 1, 1942 and the production of airplane parts and military balloons commenced.

State and local officials placed enormous significance on the west valley aviation plant. One city official equated the development to the completion of Roosevelt Dam and the achievement of statehood. Chamber of Commerce members and a host of dignitaries participated in the pouring of the first batch of concrete—Arizona Governor Sidney P. Osborn performed the ceremonial deed—on August 21, 1941 at 9:00 a.m. Howard Pyle, then program director for the Arizona Republic Electrical Equipment Company radio station KTAR, served as master of ceremonies as competing station KOY also broadcast the ceremony live to its listeners. One of the day’s speakers, A. F. Moriarty, vice-president for sales for Central Arizona Light and Power Company, commented that the initiation of construction of the aviation plant “marked another milestone in the three-point program of establishing this valley as an important aviation center.” Moriarty explained that four army training fields with over 12,000 military personnel, the expanded airline schedule at Sky Harbor Airport in which three major companies

\textsuperscript{53} Snell oral history interview with Johnson, September 22, 1977; Harold Bell Wright, \textit{The Winning of Barbara Worth} (New York: Book Supply Company, 1911). This was Wright’s best-selling work and his only one of historical fiction; it sold 1,635,000 copies in its first edition.

\textsuperscript{54} \textit{Arizona Republic}, August 20, 22, 1941. Litchfield provided the government with an ideal location for this plant; on Litchfield Park Road, four miles south of the small community of Litchfield Park and one-half mile north of U.S. Highway 80 on the branch line of the Southern Pacific Railroad to Litchfield Park.
had applied for permits for additional schedules flying in and out of Phoenix. The development
of aircraft and allied industries in the valley had transformed the economy in the last twelve
months.55

Phoenix city officials were ecstatic with the Goodyear plant, claiming “the project brings
to Arizona its first large defense industry and is expected to herald many other major industries
for the Phoenix area” and a palpable manifestation of the military industrial complex had risen
from west valley cotton fields. At its height, the Goodyear plant employed 7,500 people, making
it the largest employer in the Salt River Valley. Soon, in 1942, Alcoa opened an aluminum
extrusion plant, constructed by Garrett Corporation, in southwest Phoenix. AiResearch at Sky
Harbor Airport followed and together these industries employed 6,500 people. In 1943 the
Allison Steel Company, which had been operating in Phoenix since the 1920s, undertook
wartime production of portable bridges.56 In time laborers flocked to the city to work in these
facilities creating high demand for housing. Not surprisingly auto trailer parks became a
common form of housing for war plant workers.57 “We trained cotton pickers galore out of
Tennessee, Mississippi, Arkansas, and Kentucky,” quipped one Goodyear executive, and many
of the Okies and Arkies who had nearly starved in the valley during the winter of 1938 before
moving on to California returned to Phoenix to assemble planes in Arizona-based defense
plants.58

Undeniably the Association, during the war effort, contributed mightily to business
expansion. In 1943 it delivered 602 million kw of electricity. Power was generated from its
hydroelectric plants, supplemental oil and diesel steam units located at its Cross Cut

55 Richard Snell, oral history interview with Jack L. August, Jr., November 9, 2011, Phoenix, Arizona, author’s files. See
also, Arizona Republic, August 1, 22, 1941.
56 Frank Snell, oral history interview with Christina Minister, March 26, 1988, Centennial of Phoenix Chamber of
Commerce Oral History Project, Phoenix, Arizona.
57 Gerald D. Nash, The American West in the Twentieth Century: A Short History of an Urban Oasis (Albuquerque:
University of New Mexico Press, 1977) 229.
hydroelectric plant, and power it purchased from CALAPCO and the mines. This amount was twenty times more energy than the entire state produced in 1920, almost four times the amount the Association produced in 1932, its Depression-era low, and 100 million hours beyond its previous peak production.\(^{59}\) The various war industries, noted above, were also fueled by the Association. The electronics industry, led by Motorola, AiResearch, General Electric, Kaiser Aircraft and Electronics, Goodyear Aircraft, and Sperry Rand, located in the Valley because, among other reasons, they needed a dry climate and access to water and power to manufacture precision electronics instruments.\(^{60}\)

In fact, the war prompted the construction of another dam on the Verde River, Horseshoe Dam, fifty-eight miles northeast of Phoenix. The War Production Board ordered Phelps Dodge Corporation to increase copper production by 80 percent. In order to comply, Phelps Dodge needed another water source. They selected Black River in the White Mountains, northeast of Phoenix. Like the Verde River, Black River is a major tributary of the Salt and by 1943 Phelps Dodge had worked out an innovative agreement with the SRVWUA for water exchange. In effect, to compensate the Association for water taken from Black River, Phelps Dodge agreed to construct a storage dam at the Horseshoe site on the Verde to store runoff that would otherwise be lost.\(^{61}\) Between 1943 and 1945 Phelps Dodge constructed Horse Mesa Dam on the Verde River, with the assistance and support of the U.S. government’s Defense Plant Corporation and SRVWUA. By 1945 the dam could impound 60,000 acre feet of water. Because Phelps Dodge was removing water that might otherwise flow into Salt River Project dams, the federal government and the copper company built the structure. Phelps Dodge used the water at its

---

\(^{59}\) History of the Salt River Project for the Period January 1, 1945 to December 31, 1945, Chapter One, “Annual Report and Financial Statement.”

\(^{60}\) Luckingham, Urban Southwest, A Profile History, 78-84.

\(^{61}\) Horseshoe Dam is an earthen structure 202 feet high, with a reservoir capacity of 131,500 acre feet. Spillway gates were added in 1949 by the City of Phoenix to increase further the domestic water supply. Under an agreement with the Association, the federal government facilitated a water diversion by Phelps Dodge from the Black River upstream on the Salt River.
Morenci mine and smelter and the Association managed the dam for the benefit of Valley agriculture and other water users.\textsuperscript{62}

The Association served well the mining industry in addition to municipalities, utilities, electrical districts, industrial manufacturers, farm industries, gins, and rural consumers, who, incredibly, numbered over 10,000 by 1945. Power receipts and acreage assessments brought the Project out of the annual net losses of the 1930s and from 1940 to 1945 it experienced a strong recovery, earning in excess of $5 million net profit.\textsuperscript{63} By the end of World War II non-mining industries had developed to such an extent that municipalities, utilities, and irrigation pumping had surpassed mining’s electrical usage. Also, the rural domestic electrical market continued to expand, consuming thirty million kw hours, an increase of five hundred percent from 1935.

During the 1940s, also, another industry emerged on the scene in the Salt River Valley. Tourism in Phoenix and the surrounding communities attracted over 50,000 tourists per annum in the postwar years. Technological advancements in air conditioning also prefigured a new era and encouraged businesses to move to Arizona. As Harry Lawson commented in his 1945 annual report, “Postwar conditions in the area have become amazing.”\textsuperscript{64}

In 1940 about half of Arizona’s population was centered in Phoenix and Tucson. Ten years later, two-thirds of the population lived in these two desert urban centers—a direct result of federal military policy—making Arizona one of the most urban states in the nation. In Maricopa County the population rose from 186,000 to 332,000 during the decade. Indeed not since the early territorial period had the U.S. military played such a key role in shaping the state’s


\textsuperscript{64} History of the Salt River Project for the Period January 1, 1945 to December 31, 1945, Chapter one, “Annual Report and Financial Statement,” 5.
future.65 In the summer of 1942 the military plants ran three shifts per day and never closed. Workers and military personnel headed to Phoenix during their time off and restaurants, movie houses, and even swimming pools stayed open all night. “It [Phoenix] was just full of soldiers,” one resident recalled, “The Air Force training men even came from Yuma, and people here treated them well. Economically, it was a good thing. They spent a lot of money here on the weekends when they were free.”66 George Luhrs, the hotelier, recalled, “At night the sidewalks on Washington Street and Central Avenue, you would have thought you were in New York City. The traffic of pedestrians was from the buildings to the curb.”67

Viewed in broad context, World War II ushered in a new era in western economic development so that it was possible for Phoenicians to speak in terms of the period before the war and thereafter. Essentially, the federal government promoted the restructuring of a natural-resource based colonial economy into a technologically oriented service economy undergirded by massive federal expenditures. The federal government served as the instrument that unleashed the entrepreneurial energies of millions of people and the war brought economic diversification to the region. Arguably, it stimulated the growth of manufacturing in the region as did no other single influence since the Gold Rush. Inevitably some wartime industries ceased operations in 1945 but others remained.

This was true of Phoenix; some government defense contracts and the closing of plants disrupted some businesses but Phoenix’s growth continued. The aerospace industry, for example, expanded and prospered largely on the foundations laid during World War II. Similarly, the aluminum industry grew. During the postwar decade the federal government sold its plants to private industry. Many servicemen who had trained at local air bases returned with

66 Frank Snell oral history interview with Minister, March 26, 1988.
their families. Some war plants closed temporarily and were reopened to private industry, which leased unoccupied government buildings at bargain prices. In 1946, for example, Reynolds Aluminum took over the Alcoa plant. AiResearch, which closed its doors the year after the war ended, reopened in 1951.68 Motorola Research, a major manufacturer of radio and electronic parts, established its first plant in Phoenix in 1948. In the wake of this economic activity arrived Cold War defense contractors. Aircraft component industries loomed large but they were followed almost immediately by missile component manufacturers. In these instances the value of the product justified shipping costs to distant markets. These defense industries produced a multiplier effect since they, in turn, attracted a host of other manufacturing enterprises.69

Indeed some economists have claimed that wartime manufactures did not proliferate in the region after 1945. But social historians have argued that after the war westerners in general and Arizonans in particular were attuned to the future and not the past. Certainly by 1949-1950 service industries had grown more important in the regional economy and the emergence of major western financial institutions, the explosion of tourism, and the entertainment industry served as harbingers of the new age which had been aided and abetted by federal policies. The population of Phoenix in 1950 had risen to 106,818, up 63% from 1940, and had emerged as the largest center of trade, transportation, and government between Dallas and the Pacific Coast. It also began to emerge as a financial center. In 1947, for example, bank loans exceed $2 billion

---

68 AiResearch Manufacturing Company joined the Phoenix industrial community in 1951 on a permanent basis. A division of the Garrett Corporation, the company designed, developed, and produced gas turbine engines, air turbine drives, pneumatic controls, and other aircraft and missile components. Its electronic products included cabin temperature regulators, fire control computers, and radio noise filters. Though the Phoenix production plant was directed primarily toward military consumption, its commercial business increased dramatically with the arrival of the jetliner as a means of civilian transportation. By 1959, in fact, the firm employed nearly 3,500 people. See Ralph Mahoney, “Industrial Boom: Ten Years Ago Electronics was only a Minor Factor in the Salt River Valley,” Arizona Days and Ways: The Phoenix, Arizona Republic Magazine,” March 10, 1957.

and permits for new construction soared to $9,885,030. Air traffic boomed; by 1947 Sky Harbor Airport ranked first nationally in civilian traffic handled and fourth overall in total traffic.\textsuperscript{70}

Equally important to this mid-century transformation, the westward population movement prompted by the federal government through its wartime job creation had a major impact and increasing amounts of water and power, generated by SRP, were required. In Arizona the increased population base created new markets and attracted a wide range of entrepreneurs with opportunities not extant before the war. Beyond these developments World War II created a symbiosis between the military establishment and entrepreneurs on local, state, and national levels. Soon, this partnership, which became known as the military-industrial complex, served as another means by which the federal government spent vast sums not only to develop infrastructure but also to provide seed money for new technically-oriented industries that shaped the economy in the second half of the twentieth century.\textsuperscript{71}

Through the war years and for three decades beyond, all Project dams performed without incident, operating successfully, storing water and generating hydroelectric power. After World War II, SRP built three steam-generating plants in the Phoenix area to keep pace with growth, and later also joined other utilities in a 2,650-mile transmission system across the Southwest that enables delivery of electricity to the Valley from power plants throughout the region. Other than routine maintenance on the Project infrastructure created before and during World War II, no major work on the structures was performed. Since the mid-1930s spillway program to the late 1980s, two programs improved the physical facilities and power generation efficiency. Under the federal Rehabilitation and Betterment Act of 1949, upgrades were made to the dams and the hydroelectric generating capacity. Concerning the latter improvements, the Association, after internal review and consultation with the Bechtel Corporation in San Francisco, increased the dams’ hydroelectric generating capacity, converting their output from twenty-five cycles to sixty cycles. At Mormon Flat, also, the Association reconstructed the dam’s access road, rebuilt the operators’ residences, repaired the camp’s water supply, and cleaned the dam’s penstock. At Horse Mesa, further maintenance on the spillway tunnel was completed. Under the same federal act, the

1 In 1947 power sources included the hydroelectric power facilities at the dams, a 3 mw hydro-plant at the Crosscut Canal, and gas/oil-fired plants at Crosscut. In 1952 the Kyrene Generating Station, south of Tempe, came online. The 521 mw capacity plant boasted six units: two original steam units, three combustion turbines, and one combined-cycle unit. Five years later, in 1957, the Agua Fria Generating Station, located west of Glendale, was placed in operation.
Association borrowed $27 million over three decades to improve its water distribution system. The funds were used to pay for lining and piping many of the Project canals and for replacing wooden canal gates with steel ones.²

After World War II SRP entered into contracts with the cities to deliver water to the rapidly urbanizing Salt River Valley. The Project entered into the first domestic water agreement with the City of Phoenix in 1952 and under this contract the cities were able to divert water from SRP canals at selected sites in order to deliver domestic water to SRP lands within municipal boundaries. Significantly, these contracts provided water supply stability to the cities as SRP’s service territory transitioned from agricultural to urban uses. And a milestone was met when the original $10.3 million debt on Theodore Roosevelt Dam and associated work was repaid to the federal government in 1955.

The major improvements and conversions advocated by Bechtel Corporation, called Hydro Expansion and Frequency Unification (HEFU), cost SRP $22.3 million and the mines $6.2 million, and took place in the late 1960s and early 1970s. In 1969, the Project initiated the HEFU program, which included the installation of pumped storage units at Mormon Flat in 1971 and at Horse Mesa in 1972. The HEFU program, as noted earlier, also provided for the conventional hydroelectric generating facilities at the dams on the Salt River from 25 kw to 60 kw and in 1973, a new 60 kw generating unit was installed at Roosevelt, replacing the existing 25 kw units. The HEFU project was completed in 1973. From Reclamation’s

² "Rehabiliation and Betterment Act," October 7, 1949, 63 Stat. 724. For a history of the Salt River Project rehabilitation and betterment initiative see Jay C. Ziemann, “The Modernization of the Salt River Project: the Impact of the Rehabilitation and Betterment Program” (M.A. Thesis: Arizona State University, 1987); Bechtel Corporation, “Frequency Unification and Hydro Extension Study for the Salt River Project,” 1967. Beginning in the 1940s, the Association realized that twenty-five cycle compared to sixty cycle electrical power was becoming obsolete. Of all the Association power plants, which included three Valley steam plants, only the Salt River hydroelectric units were not producing sixty cycle power in the 1960s. In 1966 the Association determined that it could feasibly increase its Salt River hydroelectric capacity at Roosevelt, Horse Mesa, and Mormon Flat from 60,000 kw to 196,000 kw at sixty cycles. Stewart Mountain had already been converted to sixty cycles in 1962.
spillway improvements in the 1930s to the Association’s HEFU modifications in the late 1960s and early 1970s, improvements continued on the Salt River dams in the late 1980s under the Bureau of Reclamation’s Plan 6 program and the federal Safety of Dams Act. In effect, all Salt River Project dams commenced yet another rehabilitation program beginning in 1988.³

On the cusp of the second half of the twentieth century SRP dams were the foundation for growth in central Arizona and beyond its immediate service area. Demands for these essential services grew after the war due to corporate relocations, agribusiness expansion, the growth of the electronics industry, and an increasingly robust financial services sector. These developments brought with them a continued population influx.⁴ In many ways also, postwar Phoenix, like the rest of the nation, lived under a mushroom cloud; an explosion that ended a hot war ushered in a cold one.⁵ During the Cold War military installations, like Luke and Williams Air Force Base, continued to serve as part of the national defense effort, and former war plants looked not only to the military but also to the private sector for markets. During this heady period light and clean industries, especially electronics firms, were the preferred economic growth generators and these flourished because of the low-humidity and their comparatively low use of water.⁶

Phoenix in the late 1940s and early 1950s could best be characterized as “urban growth in the Sunbelt.”⁷ The city of just over 100,000 began expanding in every direction but because of a paucity of city planning the incorporated municipality in the early 1950s was less

³ It should be noted that in 1974-1975 the original four-unit combined Santan Generating Station was built near Gilbert and in December 1979, the Project completed Unit 1 at its coal-fired Coronado Generating Station near St. Johns, Arizona. The second unit was completed in October 1980.
⁴ See, for example, Luckingham, Phoenix: The History of a Southwest Metropolis, 153.
⁵ Arizona Republic, August 21, 2011.
⁶ August, Dividing Western Waters, passim; August, Vision in the Desert, passim.
⁷ Konig, “Phoenix in the 1950s,” Arizona and the West, passim.
than ten square miles. It faced the possibility of geographical stagnation and isolation if
outlying areas incorporated as individual towns. At this time Saturday Evening Post writer,
Milton MacKay, toured the area and noted that ten to twenty miles from downtown the
estates of the wealthy--the Wrigleys and the Fowler McCormicks--rested in imperial splendor.
In contrast, shacks and slums with unpaved streets on the outskirts of Phoenix and south of the
railroad tracks rivaled the most poverty-ridden areas of the Deep South. Yet neither the
wealthy nor the impoverished were representative of Phoenix in the early 1950s. It was, in
fact, an energetic, optimistic community of middle class businessmen and citizens confident
of their destiny, McKay concluded in his piece. These attitudes, reflected in the improvement
and reorganization of city government—charter revision—and the increasing sophistication of
financial services operations, provided the framework for Phoenix’s continued growth in the
second half of the twentieth century.  

At this time an informal network of key Phoenix power brokers had formed. The city’s
expansion created opportunities for relative newcomers and several, like Bimson, were
actively recruited from other sections of the country. They shaped the politics of the region

---

Michelle Nickerson and Donald Dochuck eds., Sunbelt Rising: The Politics of Place, Space, and Region
(Philadelphia: University of Pennsylvania Press, 2011). The Chicago-based Wrigleys, of course, were known for
their chewing gum empire as well as their ownership of the Chicago Cubs professional baseball team and the Fowler
McCormicks International Harvester.
9 Vander Meer, Desert Visions, 86. Bimson and Snell became close, fast friends and business partners. The president
of VNB was born in Colorado in 1892, briefly attended the University of Colorado, worked as a bank janitor,
graduated from the University of Chicago, and after serving in the Navy during World War I took a position with
the Harris Trust and Savings Bank in Chicago. His work with commodity credits involved contacts with the Arizona
Cotton Growers and Valley Bank and Trust which triggered his first trip to Phoenix in 1926. His connections
expanded due to the fact that Harris Bank’s vice president, Frank Elliott, spent winter vacations in the Valley. In
1933 he arrived permanently and was charged with turning around a failing bank, VNB, the state’s largest bank,
whose assets had fallen by two-thirds and whose administrators had laid off half its work force. While maintaining
the bank’s traditional agricultural business, Bimson moved quickly and aggressively to move money to consumers,
especially in small installment loans. He hired his brother, Carl, to expand the bank’s involvement in FHA programs
for home remodeling and purchase and gained national recognition for his assertive actions. His methods won
friends and profits; bank assets rose immediately, reaching $45 million by 1939, an increase of a staggering 600
percent. This amounted to one-half of the state’s bank assets.
and called on their less powerful counterparts in the financial, legal, manufacturing, and agricultural sectors to implement short and long-term objectives. As contemporaries knew, three individuals, the so-called “Big Three,” dominated the Phoenix power structure at this time: Walter Bimson of the Valley National Bank (VNB), Eugene Pulliam, publisher of the Arizona Republic and Phoenix Gazette, and Snell, co-founder of the law firm, Snell & Wilmer.10

VNB, a Snell & Wilmer client, played a key role in the emergence of Phoenix, and Bimson, who accomplished so much during the thirties and the war, was the person who brought this institution to regional prominence. The bank became the dominant financial force in the state through which a number of interests converged: agriculture (cotton and cattle especially), tourism, real estate, construction, water, and industry. VNB was formed in 1922 through a merger of the comparatively massive Gila Valley Bank and Trust Company and the smaller Valley Bank of Phoenix.11 When Bimson took the reins in 1933 the bank was not only able to survive the fiscal emergencies of the Depression it also expanded by taking advantage of New Deal programs, including the Reconstruction Finance Corporation (RFC). As noted earlier, VNB borrowed money under RFC’s liberal terms and then proceeded to loan that money to many of the banks key clients in Phoenix.12

---

12 As discussed in chapter 4, Bimson established his reputation as a vice-president at the Harris Trust and Savings Bank in Chicago. He brought to the Phoenix business elite the enthusiasm of a new booster with a sense for advertising his bank, his city, and the economic interests with which he was associated. Bimson, emulating Los Angeles area boosters, sent VNB emissaries throughout the country to attract flying schools, military bases, branch factories, government housing, and aircraft firms. Although the bank remained primarily agriculturally oriented, it moved its loan activities into tourism and at one point in the 1940s it printed envelopes with a sticker that read: “The Sun is Shining Today in Arizona.”
With Bimson at the helm VNB financed Del Webb’s early ventures, paved the way for Motorola to relocate to the Valley of the Sun in 1948 and even assisted in the financing of the Las Vegas Flamingo Casino, another of Webb’s ventures. Moreover, Bimson used the bank to interconnect with other interests and according to economic historians his influence in Phoenix came through his informal alliance with Snell, who in most instances personally represented the bank. And, when necessary, Pulliam, after he purchased the Arizona Republic and Phoenix Gazette, assisted with any media or editorial assistance. The three were continually putting together various coalitions, according to Snell, in an effort to “get things done.”

Another factor in promoting growth and development in Phoenix was the salubrious climate. The sun shone eighty five percent of the daylight hours and the valley that sat at an elevation of 1,083 feet boasted more sunny days than any other city in the “Sunbelt.” Phoenix enjoyed an annual average temperature of above 70 degrees Fahrenheit and was one of the driest regions in North America. In addition, the average relative humidity varied monthly between nineteen and forty-seven percent, one of the lowest for any major metropolitan area in the United States. Winters in Phoenix were described as “beautiful” but summer heat climbed as high as 120 degrees.

It was during this period that technology mitigated the environment thus unleashing further economic possibilities in the region. Put another way, although air conditioning was

---


one of the most important inventions in the twentieth century, western historians, until recently, ignored its impact.\textsuperscript{15} The historian Roy Arsenault, for example, postulated that such neglect was perhaps a reaction against environmental determinism espoused by historians like Walter Prescott Webb and Ellsworth Huntington earlier in the century though both oversimplified direct relationships between climate and culture. While climate may not be the only factor to understanding the arid Southwest it cannot be ignored since the growth of Phoenix, Las Vegas, Tucson, and Los Angeles might not have been as rapid had it not been for the technology of air conditioning.\textsuperscript{16}

Prior to World War II the heat discouraged many from settling in Phoenix and southern Arizona. Businesses also hesitated to locate in the Valley of the Sun because of the summer exodus of labor to mountain retreats, like Iron Springs outside Prescott, or to the Pacific Coast beaches. In the postwar years, however, technological innovation intervened; air conditioning made summers moderately tolerable. Snell recalled the impact that the sometimes inhospitable climate had on him when he first arrived in Phoenix. In fact, he credited the development of the Salt River Project and its pioneers for putting water to beneficial use to develop the agricultural infrastructure; in many ways he suggested, the desert and its environmental extremes had been, to some extent, subdued. “We weren’t as much of a desert when I came here in the 1920s. I sometimes wonder why I stuck. By the 1940s we were far from a desert….Thank goodness we had the water users who deserve an awful lot of credit for our being here. I’d look out this window and I’d have seen nothing but alfalfa fields,

\textsuperscript{15} In 1979 Time Magazine correspondent Frank Tippett excoriated the academic community for its neglect of the economic, social, and cultural influences of air conditioning. “Scholars have been aware of the social implications of the automobile and the television,” he commented, “but for some reason have avoided charting and diagnosing all the changes brought about by air conditioning.” See Frank Tippett, “The Great American Cooling Machine,” Time 114 (August 13, 1979) 75.

cotton, or citrus. So, Phoenix, in my opinion, was not a desert.” He reminisced further, “Now that’s something if you’d move to Miami, Arizona like I did. I wondered why I loved coming to Phoenix; it was a treat so it wasn’t too tough here. Hot? Yes in the summer terribly hot with not much relief and don’t forget that all our families went out to the mountains or the coast in the summertime.”

Thus Snell and his contemporaries who arrived in Arizona in the 1920s witnessed an important transition; when climate and culture collided to produce a new, if primitive, technology. First introduced in 1930 evaporative coolers were little more than pads, fans, and a water supply held together with chicken wire. Manufactured in and around Phoenix and later in Tucson and Yuma these devices were widely used during World War II to cool barracks and shops at air bases and housing at armored training units in the desert. After the war the air cooler became an established product; an essential feature in daily life. By 1951 over 90% of Arizona homes had coolers of some type, most of them manufactured in Phoenix. The five largest suppliers were Palmer Manufacturing, International Metal Products Company, Polaire Cooler Company, Wright Manufacturing Company, and Mountainair Manufacturing Company. Altogether these companies grossed $15 million annually and accounted for 50% of the entire evaporative cooler production in the nation. More than three quarters of Arizona-produced evaporative coolers were exported, principally to neighboring states.

In fact, according to one leading Phoenix booster who in 1988 gave an interview to a researcher for the Phoenix Chamber of Commerce centennial, “Nothing would have happened

---

17 Snell oral history interview with Minister, March 26, 1988. Snell described the various coping mechanisms for Phoenix’s summer heat. “We went to Iron Springs, near Prescott and if you had a lot of driving courage you went to Flagstaff or the coast. The coast was very popular where my family went and I’d take the train; sometimes I’d drive. I mean it was a real exodus. And one of the big national magazines said that a woman was not safe in Phoenix in the summertime because of all the summer widowers in town. It took five hours to get to Flagstaff. You went around through Kingman and then to Flagstaff from the West. It took three hours of hard driving to get to Prescott. I know my family felt like we were pioneering.”
if we hadn’t got air conditioning, airplanes, and the war.” “I remember it and this is not for other than we are saying it right now,” he allowed, “but I had the first air conditioning [refrigerated] in Phoenix by chance in my home.” In previous years, he recalled how he would place dry ice on the floor of his car to drive across the desert. “Many people did that,” he said, “we basically put swamp coolers in our cars…we put one in one window and it blew out a vent; it was a business of itself and it was a lot of fun.” Snell used the makeshift auto air conditioning on his drives across the old plank road from Yuma en route to San Diego: “I drove it many times. Many times. It was a plank road, single width with a turnout every three or four hundred feet and the job was [for] you to know when the other fellow was coming on and if you missed you could get into trouble.” Other complications characterized this celebrated yet challenging twelve-hour drive to the west coast: “You had to back up or get off in the sand. There were people you could hire at either end and I think I recall it was ten dollars to pull you out of the sand.” He ruminated how the Phoenix Chamber of Commerce, in 1950, announced a campaign to make Phoenix the “air conditioning capital of the world.”

In the 1950s evaporative cooling gave way to more sophisticated refrigeration units which met the needs of large office buildings, department stores, and spacious homes. The emergence of the local air conditioning industry played a significant role not only in Phoenix’s growth, but also in the growth of other Sunbelt cities. By providing summer comfort, moreover, home refrigeration contributed to Phoenix’s unprecedented housing boom in the 1950s. This was not the first time that cold air affected the course of western history. In the decade after the Civil War, for example, several pioneers in the field of refrigeration

---

18 Snell’s son corroborated this fact, Richard Snell oral history interview with August, November 7, 2011. Also Snell oral history interview with Minister, March 26, 1988. Snell also mentioned the significance of air conditioning, airplanes, and the war in Snell oral history interview, September 22, 1977.

19 Snell oral history interview with Minister, March 26, 1988.
revolutionized aspects of the regional economy with the development of the railroad refrigerator car, which vastly enlarged markets for western fruits and vegetable growers as well as cattle growers.20

Not only did Arizonans require air conditioning in their homes and the work place but also in their cars. In 1939 Packard Motor Car Company became the first automaker to offer factory air conditioning. World War II intervened but by 1950 most auto manufacturers offered air conditioning as an option. At the same time government offices, schools, and universities installed systems and Arizonans born in the second half of the twentieth century assumed cool air was a fact of life and millions of newcomers were enticed to the controlled climate whereas in years past they had been deterred. The rapid adoption of air conditioning in the 1950s, Snell stated, was especially pronounced in hot desert cities like Phoenix, Las Vegas, and Tucson and “not only did it become a new industry it also affected lifestyles and hastened the pace of life.” “The humble air conditioner,” one Phoenix resident offered, “has been a powerful influence in circulating people as well as air.”21

20 In a broader sense between 1945 and 1960 cold air had a significant impact on the western economy. The preeminent pioneer in air-conditioning, William Haviland Carrier, prior to World War I, was active in installing air cooling systems in southern textile and tobacco factories. By the 1920s Carrier had placed his machines in moving picture theaters and railroad trains. During the 1930s Carrier expanded his business, selling units to residences and office buildings. Both houses of Congress and the White House purchased air conditioning systems during that decade. When Henry J. Kaiser announced his plan to build thousands of family homes in the West in 1945 he promised that they would be air-conditioned. In 1950s air cooling was still somewhat of a novelty nationwide; only 5% of the homes had it though the arid regions of the Southwest had a much higher percentage. See Rayner Banham, The Architecture of a Well Tempered Environment (London: Architectural Press, 1969) 51-54, 176-177; Wade Green, “Air Conditioning,” New York Times Magazine, July 14, 1974.

21 Snell oral history interview with Minister, March 26, 1988; Nash, The Federal Landscape, 59-60; Frank Trippett, “Air Conditioned Cars,” Newsweek 40 (September 1, 1952) 54; Frank Trippett, “Measuring the Misery,” Newsweek 53 (June 15, 1959) 29; Frank Trippett, “Now it’s the Weather Bureau in a Storm Center,” U.S. News and World Report 46 (June 22, 1959) 98-99; Robert Friedman, “The Air Conditioned Century,” American Heritage 35 (August-September 1984) 20-22; Gail A. Cooper, Air Conditioning America: Engineers and the Controlled Environment, 1900-1960 (Baltimore: Johns Hopkins University Press, 1998); New York Times, September 6, 1970; John Reese, “The Air Conditioning Revolution,” Saturday Evening Post, July 9, 1960, 100. Air conditioning became common in the 1950s, as suggested in the narrative, and in 1951, Carrier introduced low cost window units that set off a boom in the air conditioning industry. By 1960, according to historian Gerald Nash, 20 percent of homes in the trans-Mississippi West and 50 percent in Arizona and Nevada had air conditioning. Moreover, federal policies endorsed air conditioned living. Beginning in 1950 the Internal Revenue Service (IRS) offered special tax
While the innovation of air conditioning served as one of the important drivers in Arizona’s economy, transportation developments and their modernization—especially air travel and modern highways—were essential to Phoenix’s continued urban growth. Local business leaders lobbied their increasingly influential congressional delegation for help in expanding air traffic in and out of Phoenix. The Truman administration responded almost immediately with the Federal Airport Act of 1946, which authorized grants-in-aid on a fifty-fifty matching basis to public airports. The City of Phoenix financed much of the postwar expansion of Sky Harbor Airport. The results were palpable and several argued that “Sky Harbor played a vital role in the development of Phoenix” in the 1950s. Business and deductions, allowances, and tax credits for homeowners who installed air conditioning in their homes. When physicians prescribed air conditioning as a medical necessity the IRS was willing to extend benefits. Additionally, under the prodding of the Federal Housing Administration (FHA) mortgage companies actually penalized customers who did not have air conditioning in areas with hot climates. Finally, in 1959 the National Weather Service began issuing a “discomfort index” which was a composite of heat and humidity that represented government support for climate control and air conditioning.

22 Louis S. Meyer, “Federal Aid and Its Impact of the State of Arizona” (M.A. Thesis, Arizona State University, 1962); Roger E. Bilstein, *Flight in America: From the Wrights to the Astronauts* (Baltimore: Johns Hopkins University Press, 1994); Robert Horonjeff and Frank McKelvey, *Planning and Design of Airports* (New York: McGraw-Hill Company, 1983). The Federal Airport Act of 1946, Public Law 73-377 brought about a federal responsibility and participation in the further construction of airports through the newly established Federal Aid Airport Program. The Federal Aid Airport Program provided annual funding of 75 million dollars for airport construction and improvements. Two years prior to the Act, CAA submitted a National Airport Plan that helped spark Congressional interest in meeting postwar airport needs. After debating the issue, Congress passed the Federal Airport Act, signed on May 13, 1946, by President Harry S Truman. The Act provided for $500 million in grants for airport projects paid over seven years. The maximum federal grant for an eligible project would provide half of the project’s costs. Local airport sponsors would issue bonds to finance the rest of the cost. All projects had to meet CAA standards for location, layout, grading, drainage, paving, and lighting. Further, all tax money collected by local governments for aviation facilities or fuel had to go for airport operations and maintenance. In 1950, the Federal Airport Act was extended to 1958. Only runways and taxiways were eligible for federal money and local sponsors were responsible for terminal buildings and equipment. On August 3, 1955, President Dwight Eisenhower signed Public Law 84-211, which included a new four-year program that committed $63 million of federal money each year. At the end of this period, another bill continued the money for two more years. Additional amounts were appropriated annually until 1970 when the Federal Airport Act was repealed, and the Airport and Airway Development Act of 1970, signed by President Richard Nixon on May 21, 1970, became law.

industry regarded Sky Harbor as an essential element in their future and in 1957 Arizona State College (Tempe) conducted a study on the role that the airport played in Phoenix economic activity. Researchers concluded that Sky Harbor was one of the fastest growing airports in the nation; passenger traffic had doubled between 1951 and 1956 and freight shipments similarly doubled in number. In that same year CAA ranked Sky Harbor as the tenth busiest airport in the nation and only Detroit surpassed Phoenix in volume of business and number of private flights. Indeed several factors accounted for Sky Harbor’s almost exponential growth during the 1950s. Between 1926 and 1956, for example, the airport was closed for only four hours and twenty nine minutes; a record no other major airport could match. More important, Phoenix had become the largest trade and population center between Los Angeles and Dallas-Ft. Worth, an air distance of 1,200 miles. All major industrial centers in the West and Southwest were within an easy flight to Phoenix; it was less than four hundred air miles to Los Angeles and San Diego while San Francisco, Denver, and Salt Lake City were each about six hundred miles by air. Put another way, 13,000,000 people were within one day’s drive of the Phoenix metropolitan area and manufacturers and distributors locating in Phoenix took advantage of one of the fastest growing markets in the nation—the West and Gulf Coasts and even Sonora, Mexico to the south.24

If air conditioning and air transportation helped fuel the rise of Phoenix’s economic fortunes, federal highways and good roads played a central role in putting Phoenix on the

---

24 The Phoenix Story (Phoenix: Chamber of Commerce, 1960) 8; Konig, “Phoenix in the 1950s,” AW, 24. It should be noted that between 1955 and 1960 the City of Phoenix, which owned, operated, and maintained Sky Harbor, invested over $17 million in airport construction and improvements. Also, one-hundred acres of city-owned industrial land adjacent to the airport were offered for long-term lease to any firm or entity that required the use of air freight. Sky Harbor, located only three miles from downtown Phoenix continued to be one of the most efficient and busy airports in the U.S. It was the hub of five national airways and a total of 840,000 passengers enplaned and deplaned on scheduled flights in 1960 with the airport averaging 25,000 landings and takeoffs per month.
financial map of the region by the end of the decade of the 1950s." The policies of President Dwight D. Eisenhower, who had long been interested in roads, were critical in this important development for the Salt River Valley and Arizona. As early as 1919, then-Lieutenant Colonel Eisenhower led a convoy of military vehicles on a coast-to-coast sojourn to dramatize the significance of good roads to national security. The highly publicized 1919 "Transcontinental Motor Convoy" was intended, in large part, to dramatize the need for continued federal aid to construct better main highways. Twenty-five years later, in World War II, his impressions were reinforced with his experiences leading American forces down the autobahns in Nazi Germany. Upon his election to the presidency, Eisenhower seized the opportunity to inaugurate a national highway program for the U.S. With an economic slump descending on the country following the Korean War, Eisenhower argued that an improved national highway program could put people to work and improve national defense. "The old convoy," of 1919 he recalled, "had started me thinking about good, two lane highways, but Germany had made me see the wisdom of broader ribbons across the land." The result, his "Grand Plan" for highways—announced in his State of the Union Address of 1954—which led to the legislative initiative that created the Highway Trust Fund and the Federal Aid Highway Act of 1956, popularly called the National Interstate and Defense Highways Act.27

Significantly, an important byproduct of the implementation of the Interstate Highway Act was the direct subsidization of the suburban highways system, making commutes between

25 Snell oral history interview with Minister, March 26, 1988.
26 This Motor Convoy traveled the Old Lincoln Highway, the first transcontinental road across America. See Nash, The American West in the Twentieth Century, 33-60; Nash, The Federal Landscape, 64. The convoy left the Ellipse south of the White House on July 7, 1919, headed to Gettysburg, Pennsylvania, and from there it followed the Lincoln Highway to San Francisco. Though bridges cracked and vehicles became stuck in mud the convoy reached San Francisco on September 6, 1919. "The trip has been difficult, tiring, and fun" Eisenhower wrote later. See Dwight Eisenhower, At Ease: Stories I Tell to Friends (New York: Doubleday and Company, 1967).
27 Nash, The Federal Landscape, 64.
urban centers to suburbs quicker with mixed consequences for western cities, like Phoenix. The legislation, moreover, had an even more profound impact on the cultural life of many westerners in general and Phoenicians in particular. "Phoenix became conscious of roads, and of course, the federal government did too immediately after the war and the government went into the road business in a big way; we were the capital, the hub, and there is no doubt trucking played a large a very large part, particularly here and on the coast," one local leader observed. The 1956 law and the subsequent Highway Act of 1958, fundamentally altered patterns of community development; henceforth Phoenix and other fast-growth cities were shaped by the necessities dictated by automobile transportation. By 1960 four federal highways—U.S. 60, 70, 80, and 89—converged on Phoenix. Thirty independent trucking lines served the Phoenix metropolitan area and because a large portion of inbound freight originated in Texas and Southern California, special back haul rates were established so additional cargo could be shipped to Phoenix at lower cost. Indeed, within a few decades the

---

29 Actually, the groundwork for the construction of a transcontinental superhighway started in the 1930s when President Franklin D. Roosevelt expressed interest in the construction of a network of toll superhighways that would provide more jobs for people in need of work during the Depression. The resulting legislation was the Federal-Aid Highway Act of 1938, which directed the chief of the Bureau of Public Roads (BPR) to study the feasibility of a six-route toll network. But with America on the verge of joining the war in Europe, the time for a massive highway program had not arrived. At the end of the war, the Federal-Aid Highway Act of 1944 funded highway improvements and established major new ground by authorizing and designating, in Section 7, the construction of 40,000 miles of a "National System of Interstate Highways." During his State of the Union Address on January 7, 1954, Eisenhower made it clear that he was ready to turn his attention to the nation's highway problems. He considered it important to "protect the vital interest of every citizen in a safe and adequate highway system." It was not a direct path to legislative success. Between 1954 and 1956, there were several failed attempts to pass a national highway bill through the Congress. The main controversy over the highway construction was the apportionment of the funding between the Federal Government and the states. Eisenhower kept repeating his call for a "modern, interstate highway system" in his 1956 State of the Union Address. Within a few months, after considerable debate and amendment in the Congress, The Federal-Aid Highway Act of 1956 emerged from the House-Senate conference committee. In the act, the interstate system was expanded to 41,000 miles, and to construct the network, $25 billion was authorized for fiscal years 1957 through 1969. During his recovery from a minor illness, Eisenhower signed the bill into law at Walter Reed Army Medical Center on June 29, 1956.
completion of a federal highway grid placed Phoenix at the center of regional commerce and trade.\textsuperscript{30}

There was a definite feeling of destiny for Phoenix. The Valley of the Sun combined attractions of a cosmopolitan metropolis, thriving industrial center, rich agribusiness empire, and delightful resort and vacationland, while maintaining an easygoing Southwestern charm. The Camelback Inn was identified with business and tourism. Jack Stewart and his partner John C. Lincoln owned and operated the Camelback Inn. Stewart started a real campaign for advertising the region as the Valley of the Sun, playing up the sun\textsuperscript{31} Camelback Inn went beyond its reputation as a destination resort at the base of the area’s signature mountain.

Business executives came and stayed at the Inn and liked it. Business leaders boasted of local, hosting dinners for representatives of Kaiser Aircraft & Electronics, Sperry Rand Company and General Electric (G.E.), in a successful community effort to lure these three electronic giants to the valley in the 1950s. Personal contact and entertainment played an important part in convincing these companies to locate their facilities in the valley. Some visiting electronics company executives enjoyed the Sombrero Playhouse—described as a “winter straw hat theater”—that offered plays starring Hollywood and Broadway

\textsuperscript{30} Richard O. Davis, \textit{The Age of Asphalt: The Automobile, the Freeway and the Condition of Metropolitan America} (Philadelphia: Lippencott, 1975); Mark H. Rose, \textit{Interstate: Express Highway Politics, 1941-1956} (Lawrence: Regents Press of Kansas, 1979); \textit{The Phoenix Story}, 14; Nash, \textit{The Federal Landscape}, 65. Another result of the Highway Act of 1956 was to connect forty-two state capitals. Most westerners—and especially Arizonans—favored the measure because it promised to link rural and isolated areas to population centers. The act also provided funds for road building on federal properties, like Indian reservations, national parks, and Forest Service lands, thus promising to open the interior West and expand the growing tourist industry. Indian tribes in the Southwest voiced hopes for the Highway measure. Navajo Tribal Chairman, Paul Jones, noted in 1957 that he hoped the Highway Act would lessen isolation and bring jobs to his people. New roads, he suggested, might help in efforts to develop oil and natural gas as well as increase the tourist trade. At the time Navajo unemployment ranged above 50% and a few years later, when Secretary of the Interior Stewart Udall dedicated Highway 89, one of the thoroughfares completed under the act, he declared, “the Navajo Indians have remained isolated because of a lack of passable roads. We look forward to a generation of all American travelers discovering the unparalleled scenic beauties and colorful history of America’s first settlers.” Quoted in Arthur Gomez, \textit{Quest for the Golden Circle: The Four Corners and the Metropolitan West, 1945-1970} (Albuquerque: University of New Mexico Press) 116-117.

\textsuperscript{31} Snell oral history interview with Johnson, September 22, 1977.
personalities. And when one contingent arrived in the spring to survey the area, the delighted 
entourage were taken to three major league spring training games—in Phoenix (New York 
Giants), Mesa (Chicago Cubs), and Scottsdale (Baltimore Orioles). On occasion potential 
recruits were treated to Turf Paradise and Greyhound Park, which featured horse and dog 
racing, respectively, and Encanto Park and the Desert Botanical Garden in Papago Park, 
where an impressive collection of desert flora could be enjoyed.32

The Sperry example was particularly illustrative of broader efforts. When business 
leaders brought Sperry to the area, they raised $650,000 in seventy-two hours, using the 
money to purchase the company a factory site, near Sky Harbor Airport, and paying for 
necessary improvements. There were tax breaks and other inducements and in that year, 1955, 
manufacturing surpassed agriculture as the major source of income in the Valley.33 One El 
Paso businessman, who witnessed the Sperry courtship said: “Industrial scouts are met at the 
plane, entertained, offered free land, tax deals, and an electorate willing to approve millions in 
business-backed bond issues.”34

32 Snell stated that “a group who helped bring Sperry, G.E., and those companies here consisted of Wes Knorpp, 
Walter Bimson, Les Mahoney” and himself. Snell oral history interview with Minister, March 26, 1988; Konig, 
“Phoenix in the 1950s,” AW, 25. By the end of the decade of the 1950s, performing arts groups proliferated the 
valley. Most of the box office went to three organizations—The Phoenix Little Theater, the Phoenix Musical 
Theater and the Phoenix Symphony. Kaiser finally established a plant in 1957 and employed sixty people, over half 
of whom were engineers. This company manufactured electronic ground support and communications equipment, 
and conducted basic research on electronic systems. The Sperry Phoenix Company, a division of Sperry Rand 
Corporation, manufactured flight control and instrumentation systems for all types of aircraft and employed 1,000 
people. Significantly, government contracts accounted for twenty percent of Sperry’s activities.
nothing and unless we start hustling after industry, we’re going to wind up in serious trouble.” Incidentally, in 1950 
Phoenix surpassed El Paso in population thus becoming the largest city in the Southwest. During the 1950s industry 
surged in Phoenix. Between March 1948 and August 1960, 290 new manufacturers located their operations in the 
Salt River Valley. In 1949, the first year that data was made available, the Employment Security Commission of 
Arizona reported that 8,400 men and women were employed in manufacturing in the metropolitan Phoenix area. 
This figure doubled to 16,000 by 1953 and then doubled again to 33,000 in 1960.
Also, post-war Phoenix leaders developed a formal plan: “No dirty industries” were moving into Phoenix. Business leaders were particular on this point and fortunately the experience during the war had been in the electronics field and set a precedent. Indeed, electronics firms found Phoenix especially attractive in the postwar decade for a host of reasons. One significant draw was the large number of tool and dye operations. The absence of smoke and dirt at the time, and a favorable situation with electric power were added inducements. A final factor was the presence of the U.S. Army Electronic Proving Ground at Ft. Huachuca, near the border with Mexico. The military itself, moreover, encouraged the introduction of electronics firms, stressing the proximity of the proving ground and the promise of government contracts.

Indeed six large corporations dominated Phoenix in the 1950s. In 1948 Motorola became the first major electronics company to establish a factory in the area. The complex included a production plant for transistors, a research laboratory, and a Military Electronics Center. In 1959 the company payroll amounted in excess of $17,000,000 and the market value of goods produced and services rendered, according to economist Elliott Pollack, surpassed $35,000,000.\(^{35}\) AiResearch Manufacturing Company rejoined the Arizona industrial community in 1951. General Electric (G.E., later renamed Honeywell) arrived in Phoenix in 1957 to manufacture computers for industry, business, and the military. The company drove state leaders to develop a Computer Center on the campus of Arizona State College (Tempe) and went on to produce a host of problem-solving products for consumers; production accounting, missile trajectory, vibration analysis, structural design, and aerial photogrammetric. By the end of 1959 G.E. employed 1,500 people at its various Phoenix

\(^{35}\) Snell oral history with Minister, March 26, 1988; Pollack, “How We Got There—A Triumph of Will,” 2005. In fact, twenty percent of Motorola’s production was for the military market.
locations. Goodyear Aircraft Corporation had established operations in Litchfield Park in 1941 and became the first aircraft plant in the Valley. After the war Goodyear diversified and with innovations in engineering and research, remained relevant through the 1950s. Along with Kaiser and Sperry Rand, noted earlier, these six electronics companies symbolized the area’s post-industrial economy and brought jobs and people to the region. As one chronicler assessed the situation, “The electronics industry provided a foundation for prosperity in the Valley and retail businesses flourished.”

Sunshine and low taxes too played a major part in attracting industry to the Valley. In 1957, when Motorola manager Robert Barton attested to the area’s national reputation and attraction for business, he said, “We can run an ad in the trade magazines mentioning three places to work—Chicago, Phoenix, and Riverside, in California. We’ll draw 25-to-1 replies for Phoenix compared with other cities. We don’t have to pay a premium to get engineers and other skilled employees to live here either. The premium is free—sunshine.”

Indeed industry was attracted to Phoenix for other reasons as well. Migration to the West, particularly the Southwest, showed no signs of abating and this trend contributed to a burgeoning of population. This development provided an excellent market for consumer goods and local residents enjoyed steadily climbing per capita incomes and purchased products that corresponded with their increasingly cosmopolitan lifestyle. Significantly, hundreds of highly skilled workers, technicians, and professionals arrived in Phoenix each

month during the 1950s. The favorable climate contributed to low absenteeism and helped employers maintain a man-hour production rate that averaged from ten to twenty-five percent above that of other major industrial areas. Retirement costs were comparatively low and Arizona’s “Right to Work” law, passed in 1948, attracted industry.37

The chamber of commerce redoubled their efforts at making Phoenix, and Arizona, more attractive to industry. Chamber members Herbert Legget and James A. Smith, who both served on the Governor’s Industrial Development Council, convinced the Arizona Legislature to approve a number of business-related tax revisions, including the removal of inventory taxes on manufacturers, raw materials, goods in process, and finished products. The legislature also approved an “open port” law which provided tax free warehouse storage of products destined for consumption outside the state. Furthermore, tax assessment of machinery and equipment were assessed at fifty percent of book value.38

In addition to leading the fight for lowering taxes the chamber’s initiative that promoted the “good life,” drew people to the Valley. Local periodicals, especially the chamber’s Phoenix Action, portrayed beautiful models wearing the latest Scottsdale fashions. In many instances, young women in bathing suits emerging from a resort pool in midwinter helped brand this new Sunbelt destination. This type of advertising, used extensively in the 1950s, worked extremely well. Many credited these chamber efforts for increasing the number of conventions as well as attracting unprecedented numbers of tourists. In 1958, for example,

38 Constitution of Arizona as Amended, in Arizona Revised Statutes, Annotated (20 vols., St. Paul, Minnesota: West Publishing Company, 1956) I, 467; and ibid., XIII, 448-449. Unionism was weak and business paid wages ten to twenty-five percent lower than in other industrial areas. After a thorough analysis, the chamber of commerce’s industrial board concluded that changes needed to be made to further the industrialization effort. It included altering the municipal tax rate, lowering freight rates, revising methods of property assessment and passing bond issues for urban development. Konig, “Phoenix in the 1950s,” AW, 27.
3,000,000 tourists visited the Valley of the Sun. The business generated amounted to $125,000,000, an increase of $15,000,000 over the previous year. Yet conventions generated more revenue and population growth and provided outsiders with a snapshot of the city’s industrial potential. 39

The chamber also touted the abundant and affordable electrical power in Phoenix. In the chamber’s The Phoenix Story the role of the area’s two power companies, Arizona Public Service (APS) and the Salt River Project Agricultural Improvement and Power District—a division of the Salt River Project—were emphasized with the admonition that the two entities could more than adequately serve the needs of prospective industry. 40

Affordable and dependable power helped usher in an era of growth that was more than just high tech industry and manufacturing. It also triggered a real estate boom that reshaped the urban landscape. By 1955, Phoenix had grown to twenty-nine square miles with a population in excess of 156,000. Five years later it filled 187 square miles and had a population of 439,000. This exponential growth was described by contemporaries as a “quantum leap.” Henry Leggett, a Valley Bank executive and member of the chamber of commerce, aptly described the 1950s in Phoenix: “The more homes, the more people. The more people, the more business. The more business the more jobs. The more jobs the more business. The more people.” It was, Leggett said, “As near perpetual motion as we are ever likely to achieve.”


40 In the energy realm, the chamber also stressed that natural gas supplies from fields in New Mexico and Texas were sufficient to meet the needs of the growing industrial complex. See also 290 New Manufacturers in the Phoenix Area since 1948 (Phoenix: Phoenix Chamber of Commerce, 1960); The Phoenix Story, 8.
Between 1950 and 1960 the region’s source of income shifted from commercial agriculture to manufacturing, service industries, construction, and government. Changes in the economic base and population increases, as mentioned previously, altered local growth patterns. Industrial parks sprang up on the city edges, residential developments ate away farmland, and commerce shifted from the downtown to the suburbs due to the western predilection toward private, individual transportation—the automobile. In this context Phoenix achieved its position as Desert Metropolis in the Southwest by a vigorous annexation program. While several larger and older cities lost population during this decade, Phoenix grew fourfold in population and eleven-fold in area.41

The circumstances in the Phoenix Standard Metropolitan Statistical Area (SMSA), between 1945 and 1960 favored annexation. Eugene Pulliam beat the drum in the editorial pages of the *Arizona Republic* and *Phoenix Gazette*. As Pulliam stated, he was determined to keep Phoenix from being a “one-horse town.” In one 1956 edition the *Arizona Republic* argued that “Phoenix faces a problem common to all growing metropolitan areas. It must keep pushing its limits out into the country as new housing and industrial developments are built up. Otherwise the new areas will become incorporated and Phoenix will find itself hemmed in by a group of independent satellites.”42 Indeed the city center was not contiguous with any other municipality at any point on its border. Although annexation was hampered by five municipal incorporations within the core urban area during the 1950s, Phoenix successfully annexed significant areas of land. In April 1959, for example, the city acquired forty-three

square miles contiguous to its northern border, including Sunnyslope, with a population of 54,330 and an assessed property valuation of $55,865,000. Other areas annexed in the spring of 1959 included much of present southeastern and southwestern industrial areas of Phoenix. In December of that year city officials proposed adding an additional seventy-five square mile area, which included Maryvale, South Phoenix, and South Mountain. The addition of these areas boosted the city’s population to 429,690.\textsuperscript{43}

Similarly, an unprecedented residential expansion resulted with the population surge. According to Valley Bank records, during the 1950s the number of residential units in the valley doubled and 44,000 building permits were issued by Maricopa County in the years 1957-1959. Residential permits issued in 1959, for example, reached record numbers at 17,000; 13,000 of these were single-family units, while 4,000 were apartments. Building valuations exceeded $153,000,000, with single family residences accounting for two-thirds that amount. In 1959 commercial and industrial building permits totaled $50,000,000 in permit valuations; while public buildings—churches and schools—accounted for an additional $20,000,000. Altogether, residential and nonresidential building permit valuations in Maricopa County in 1959 rose to nearly $350,000,000.\textsuperscript{44}

Home design in the new suburbs reflected a mix of individual and developer tastes while shaping Phoenix’s suburban cultural life. Some builders attempted to inject individualism into residential architecture which resulted in a virtual polyglot of styles. Pennsylvania Dutch, Ohio farmhouses, Southern mansions, haciendas, pueblos, and ranch houses dotted the suburban landscape. Tract housing also characterized the period with John

\textsuperscript{43} Arizona Republic, December 10, 1959. Yet the race to spread outward had several unfortunate impacts, including the thirty year decline of downtown Phoenix.

F. Long, in 1956, introducing the “planned community concept” to the Phoenix area. In many ways Long, and his subdivision in the west valley, Maryvale, not only symbolized the “master planned community,” but also the explosive growth of Phoenix in the postwar era. He began building in 1947 but by 1956 he had built more homes in Maryvale—a name that served as a tribute to his wife, the former Mary Tolmachoff—than all the other new homes in Phoenix. By the time he completed his Maryvale project Long had built nearly 30,000 homes.\(^{45}\) Put another way, he built more homes in one decade than everyone else together had constructed in the four previous decades. His construction methods “resembled an assembly line,” one scribe commented, “but instead of Fords moving along a conveyor belt in a factory, you had carpenters or electricians moving from house to house: a single block might contain every step of home construction from a slab foundation to the finishing paint job.”\(^{46}\) Long built

\(^{45}\) There was not much variety in John F. Long-built homes. “They were cookie cutters,” according to architect Don Ryden, “but you don’t look at a subdivision for its architecture, but for its planning, financing, and construction methods.” This included items like concrete block. Prior to Long’s west valley project houses had been made of wood or brick. Long estimated that cinderblock saved him $500 on every home. By the early 1960s concrete block was used on 85 percent of homes built in Maricopa County. In 1962, Phoenix-based Superlite was the largest block manufacturing plant in the country.

\(^{46}\) *Arizona Republic*, August 21, 2011; John F. Long, oral history interview with Jack L. August, Jr., February 14, 2005, Scottsdale Arizona, author’s files. Long was not alone in his residential development activities. Other developers like John Hall and Ralph Staggs were home producing machines as well. In 1959 Long built 2,577 homes; Staggs 1,522, and Hall 1,179. Demand for homes was high at the end of the 1950s. Snell & Wilmer did not represent John F. Long in any substantive legal transactions but his cultural and economic imprint on the Valley in the 1950s proved lasting and historically significant. An unassuming but supremely confident man whose character was forged during the Depression, many contemporaries viewed him as a visionary, whose innovative building techniques spread from his native Arizona around the world. Long described himself as “a lone wolf,” an ordinary, hard-working man. He became Arizona’s largest homebuilder and among the top ten in the nation. Born in Phoenix on May 17, 1920, Long worked on the family farm during his youth, graduated from high school in 1939, served four years in the Army Air Corps during World War II, and engaged in two short disappointing ventures in business before finally hitting his stride in residential development and master planned communities. With money saved after his second failed venture and a GI loan he bought a lot on North 23\(^{rd}\) Avenue in Phoenix and purchased two adjoining lots. In May 1947 he married his wife, Mary, and decided to build a home. The newlyweds constructed their home at a materials cost of $4,200.00. However, a surprise opportunity to sell for $8,500.00 launched him on his unprecedented homebuilding career. His first notion was that he thought he would build a few houses on the adjoining lots then get out of the business. But succeeding homes sold easily and by 1949 he had hired six men to help him. When prospects approached he would put down his tools, brush a hand at his clothes to wipe away the dust, and lean over a pickup truck’s fender and conduct business. Between 1951 and 1954 he built nearly 1,600 homes in West Phoenix. Over the next five years he hit his stride. In the fall of 1954, he started the Maryvale development. Maryvale grew from what was open farmland west of Phoenix and he served as a testament to the company known as John F. Long Properties. The industry and community awards, which began pouring in during
more than houses; he created communities which needed shopping centers, parks, schools, and health care facilities. In Maryvale he pioneered in suburban planning, reserving land for amenities. Many of the schools and parks he built with his own money. One observer described accurately this aspect of the 1950s suburbanization of Phoenix: “People who come to Phoenix don’t want to move into the inner city; they’ve come to get away from that.”

Another distinct example of the nature of suburban development in Phoenix was reflected in Del Webb’s “special-purpose” subdivision, Sun City, which appeared in the Valley just northwest of Phoenix in 1959. Webb, like his friends, the Big Three, had ridden the boom since the outbreak of World War II. Webb’s Sun City, in many ways, became an alternative model for a number of other planned communities that materialized in the Valley in the 1950s. According to one company insider, Sun City grew out of Webb’s interest in an area called Youngtown, a planned retirement community outside Phoenix that had been featured on a television show called “Omnibus.” Webb had ingratiated himself in the community, especially when, in 1950, he brought his professional baseball team, the New York Yankees, to Phoenix for spring training, for one year, having traded spots with the New York Giants, who spent their training season in Florida. Meanwhile he had established a housing development division within his company but had not explored the planned community concept. The company undertook market surveys, and explored different locations—Florida, California, and Phoenix—then decided on the Salt River Valley location. Webb acquired thousands of acres near Youngtown from the J.G. Boswell Company, a large

the 1950s continued to the end of his life. Reports of his indefatigable work ethic and generosity of spirit grew to legendary proportions and the history of Long’s participation in the growth of Arizona deserves careful consideration.

47 Arizona Republic, August 21, 2011.
48 Finnerty, Del Webb, 121.
cotton-growing firm, which led to a partnership. Webb created a new subsidiary, the Del Webb Development Company (DEVCO), with 49 percent of the entity owned by BoswelL. DEVCO proceeded to transform cotton fields into a “planned special purpose community” with grassy medians, paved roads, artificial lakes, golf courses, recreation centers, banks, shopping centers, restaurants, and other features that constituted an urbanized enclave amidst agricultural lands. The immediate and continued success of Sun City put Webb on the cover of *Time* on August 3, 1962. Later, in 1964, the magazine named him “Man of the Year,” for his development of a new urban-suburban lifestyle. By blocking out large tracts of land, as Webb and Long demonstrated in the building of their planned communities, irrigated farm lands and orchard areas were displaced. But in these instances and others, developers and home buyers argued that they had found a higher and better use of the land.

Another cause and symptom of the suburbanization of Phoenix in the 1950s related to dependence on the automobile for transportation. Growth in Phoenix from 1945 to 1960

---

49 See, Finnerty, *Del Webb: A Man, A Company*; Wiley and Gottlieb, *Empires in the Sun*, 184. Del Webb was born in Fresno California, on May 17, 1899, the son of Ernest G Webb, a fruit farmer, and Henrietta S Webb. Webb dropped out of high school to become a carpenter's apprentice and in 1919 or 1920, Webb married Hazel Lenora Church, a graduatc nurse. At the age of 28, he suffered typhoid fever from an inmate in San Quentin prison in 1927 (he was playing in an exhibition baseball game). At the time he was 6 feet tall and weighed 200 pounds; his weight dropped to 99. As a result he moved to Phoenix, Arizona to recover. In 1928, he began his namesake company which was a construction contractor. As noted earlier in the narrative he received numerous military contracts during the Second World War including the construction of the Poston War Relocation Center near Parker, Arizona. Poston interned over 17,000 Japanese-Americans and at the time was the third largest “city” in Arizona. According to Finnerty, Webb was associated with Howard Hughes and played golf with Hughes, Bing Crosby, Bob Hope and Barry Goldwater. His personal lawyer in Arizona was former Snell partner from the 1930s, Charles Strouss. A lifelong baseball fan and former minor league player—he played for minor league teams in Oakland, Modesto, and Alameda—in 1945 Webb and partners Dan Topping and Larry MacPhail purchased the New York Yankees Major League Baseball Team for $2.8 million. He bought out MacPhail in October 1947. Webb and Topping remained owners of the Yankees until they sold it to CBS in 1964. In the years that Webb and Topping owned the Yankees— which they sold for $14,000,000—they won fifteen pennants and ten World Series. Pertaining to construction in the Sunbelt, in 1948, in Tucson Webb contracted to build 600 houses and a shopping center called Pueblo Gardens. Finnerty postulated that this development was a prelude to Sun City which launched officially on January 1, 1960, with five models, a shopping center, recreation center and golf course. The opening weekend drew 100,000 people, ten times more than expected, and resulted in a *Time* magazine cover story.

resulted in the integration of the rural Southwest into a new urbanism. The shift from public to private transportation which began in the early twentieth century, for example, facilitated this process and linked rural inhabitants with the metropolis. Streetcars stopped operating in Phoenix in 1948 and car drivers rejected dealing with the severe lack of downtown parking. Automobile travel encouraged the development of shopping centers outside downtown. They appeared in response to the changing urban demographic catering to the affluent, automobile-oriented suburban customers. Goldwater’s, for example, relocated in 1957 to Park Central, a major new shopping center that had opened two years earlier at the corner of Central and Osborn. Uptown Plaza, at Camelback and Central, and Town and Country Mall at Camelback and 20th Street, opened for business in 1955 and 1956 respectively. Paradoxically, the automobile carried the city’s vitality from its center to the periphery. By 1960 in Phoenix, “urban hood triumphed while urbs declined, and urban and rural elements fused into a new form.” Phoenix provided the best and worst examples of this new form, for it seemed a collection of suburbs in search of a city. One chronicler used an unusual comparative analogy to describe Phoenix during the middle decades of the twentieth century: “It had built Long Island without building Manhattan.”

Metropolitan Phoenix, in its steady and purposeful expansion from 1945 to 1960, embodied the economic growth and political ambitions reflected in the rise of the “Sunbelt,” the term coined by former Republican political strategist Kevin Phillips in the late 1960s. Phillips’s “Sunbelt” described a postwar alloy that united voters across the southern rim of the

---

country, including Phoenix and Arizona, into a new and powerful force. Sunbelt citizens favored corporate entrepreneurialism and a conservative ethos that helped forge the Sunbelt’s industrial-labor relations, military spending, education systems, suburban development, and migration patterns that ensured that these developments worked in concert with the individual’s quest for work, family, community and leisure. In the Phoenix version of the Sunbelt political economy, inhabitants could glimpse the American dream reconfigured and the Big Three—Frank Snell, Walter Bimson, and Eugene Pulliam—united in their mutually reinforcing quest to achieve a common Sunbelt destiny. There was room for all as Phoenix flourished during this unprecedented era of population growth and economic expansion.54

In this era of Cold War affluence Phoenix had quadrupled in size to over 439,000 people and the value of its major growth industry, manufacturing, had soared nearly 1,500 percent. Large federal expenditures for a vast technological military complex had initially sparked this growth. The increased geographic mobility of the American people, by automobile and airplane, exposed unprecedented numbers of visitors and travelers to Phoenix. Many sought homes and recreation amid the beautiful scenery and healthful climate of the region. Sophisticated air conditioning systems made year-round residence a reality and civic leaders actively encouraged industrial and metropolitan expansion. Phoenix in the 1950s effectively shed its pioneer image and took its place among the major metropolitan centers of the nation. The area’s water and electrical energy needs had been addressed in a constructive fashion and their continued response to population growth and needs became a selling point for the Valley.

54 Snell oral history interview with Johnson, September 22, 1977. In discussing his broader historical view, Snell recalled, “We were on the seventh floor of the Heard Building, the same floor as Howard Pyle and the KTAR radio station where I met Will Rogers. We were very busy. New things popping all the time in the legal field; Mark began to take over the trial work and I began digging into the corporate line and from then on the separation occurred.”
In the longer view, wartime developments transformed Phoenix by creating facilities, experiences, and new ideas. While air bases and manufacturing plants offered new economic opportunities, the emerging metropolis had to support training and technology to attract skilled workers and professionals. The role of government, also, assumed new importance as the impact of federal spending reinforced the role in Arizona’s congressional delegation in seeking federal largess. The Bureau of Reclamation, the water and power dams along the Salt and Verde rivers, and the Valley’s success in obtaining war facilities and their Cold War iterations, demonstrated the benefits of planning and of cooperation between local government and the private sector. Clearly, the growth that characterized central Arizona from 1920 through the 1970s could not have taken shape without the development of the region’s water and power resources and the stewardship of the Salt River Project.