Moderating Power: Municipal interbasin groundwater transfers in Arizona

by

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ABSTRACT

The act of moving water across basins is a recent phenomenon in Arizona water policy. This thesis creates a narrative arc for understanding the long-term issues that set precedents for interbasin water transportation and the immediate causes—namely the passage of the seminal Groundwater Management Act (GMA) in 1980—that motivated Scottsdale, Mesa, and Phoenix to acquire rural farmlands in the mid-1980s with the intent of transporting the underlying groundwater back to their respective service areas in the immediate future. Residents of rural areas were active participants in not only the sales of these farmlands, but also in how municipalities would economically develop these properties in the years to come. Their role made these municipal "water farm" purchases function as exchanges. Fears about the impact of these properties and the water transportation they anticipated on communities-of-origin; the limited nature of economic, fiscal, and hydrologic data at the time; and the rise of private water speculators turned water farms into a major political controversy. The six years it took the legislature to wrestle with the problem at the heart this issue—the value of water to rural communities—were among its most tumultuous. The loss of key lawmakers involved in GMA negotiations, the impeachment of Governor Evan Mecham, and a bribery scandal called AZScam collectively sidetracked negotiations. Even more critical was the absence of a mutual recognition that these water farms posed a problem and the external pressure that had forced all parties involved in earlier groundwater-related negotiations to craft compromise. After cities and speculators failed to force a bill favorable to their interests in 1989, a re-alignment among blocs occurred: cities joined with rural interests to craft legislation that grandfathered in existing urban water farms and limited future water

farms to several basins. In exchange, rural interests supported a bill to create a Phoenix-area groundwater replenishment district that enabled cooperative management of water supplies. These two bills, which were jointly signed into law in June 1991, tentatively resolved the water farm issue. The creation of a groundwater replenishment district that has subsidized growth in Maricopa, Pinal, and Pima Counties, the creation water bank to store unused Central Arizona Project water for times of drought, and a host of water conservation measures and water leases enabled by the passage of several tribal water rights settlements have set favorable conditions such that Scottsdale, Mesa, and Phoenix never had any reason to transport any water from their water farms. The legacy of these properties then is that they were the product of the intense urgency and uncertainty in urban planning premised on assumptions of growing populations and complementary, inelastic demand. But even as per capita water consumption has declined throughout the Phoenix-area, continued growth has increased demand, beyond the capacity of available supplies so that there will likely be a new push for rural water farms in the foreseeable future.

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Writing a thesis is a challenging task; doing so on a topic that I had only become familiar with during my second semester of graduate school is exponentially more difficult. But were it not for the assistance of and feedback from others, this thesis would remain a confused mess with only a weak narrative to provide some semblance of structure.

I came to this topic through Dr. Melanie Sturgeon, Director of the Arizona State Archives, and I will forever remain indebted to her for offering me the opportunity to interview lawmakers who have shaped Arizona's political history. The three years that I worked on this project were profoundly educational, and I continue to reflect on the lessons these lawmakers imparted to me. I am equally thankful to my former colleagues for their good humor and endless insights which helped me navigate the confusing maze of water-related records.

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The most difficult component of my research was conducting oral interviews. While I cited a fraction of these interviews, I appreciate everyone who shared their recollections of an issue which is at least as old as I am. Your anecdotes helped me tease out the emotional weight and relevance from the extensive details of this complex issue.

My committee deserves tremendous praise for helping me realize this thesis. Dr. Smith, you advised me from the beginning to focus on the basic elements—the who, what, where, when, and why—of my thesis. That initially struck me as a self-evident proposition, but as I waded deeper into this issue, it became a useful guide for determining the scope of my research and writing. Dr. Vandermeer, you always emphasized the importance of crafting a well-structured narrative. While it gave me many headaches, the ability to understand an argument's underlying mechanics and their intersection with a larger narrative has proven invaluable. I look forward to further honing this ability in future endeavors. Dr. Hirt, you have always reminded me that writing history is, above all else, the art of storytelling. Your patience in reviewing my early drafts and encouragement to find the compelling narrative amidst piles of dry legal doctrines, overlapping historical events, and tangential legislative spats made this thesis possible.

Though not a member of my committee, I would be deeply remiss to not acknowledge the extensive mentoring I that have received over the years from Dr. David William Foster. Beyond encouraging me to attend graduate school, Foster's indefatigable energy and penetrating insight into how we construct gender continually inspires me to re-evaluate many assumptions that have underpinned my worldview. I can only hope that more students have the opportunity to cross paths with him.

My ultimate gratitude rests with my parents, Jana, and especially Alicia. Thank you all for your patience and understanding as I pulled all-nighters, sequestered myself in libraries, randomly drove off to places afar, and mumbled incoherently while typing at my laptop for hours at a time. Most people would have sent me to a mental institution; instead, you all have been nothing short of loving and supportive as I have worked through this project.

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CHAPTER 1: REFLECTIONS

I drove to Willcox, Arizona with a vague idea of what to expect. Though I was a native Arizonan, twenty-three years living in the suburbs of Phoenix amounted to knowing little about this small, southeastern Arizona town. As I headed towards the sunrise on the I-10, I could occasionally turn my head and take in the scenery of Texas Canyon and the Dragoon Mountains. What struck me then, and continued as I took Exit 336 towards the Kansas Settlement, was how someone could make a living farming in an area that seemed nothing more than dry grasslands. My answer lay with Gus Arzberger.

Three months earlier, I had begun working on the Arizona State Archives Legislative Oral History Project. Since those who had worked on this project before me had gravitated towards interviewing Phoenix-area lawmakers, Dr. Melanie Sturgeon encouraged me to focus on those who represented areas outside this urban sprawl. I drew up a list, poured over legislative journals and newspapers, and made several phone calls. Fortune had it that the first interviews I secured were with Gus and his wife, Marsha, in early March.

The Arzbergers together represented twenty-four years of legislative service to southeastern Arizona, most of which had come from Gus's tenure in the House of Representatives (1984-1994) and Senate (1994-2000). What mattered as much as his political career was that Gus was born and continued to live in the Kansas Settlement. Now at eighty-nine years old, he had witnessed every shift and change in economy that impacted his community. What he revealed during the course of my interview was a microcosm of the history of western Anglo-settlement. His father, who was a Kansas farmer, migrated to Willcox to take advantage of generous land grants intended to bring

the desert into production. After securing a 160-acre plot and groundwater rights in 1909, he moved his young family out to Willcox where they and many Kansas families pumped groundwater to reclaim the desert lands. It was the defense of his father's land that drew him to legislative politics. When the state legislature passed the Groundwater Management Act of 1980, he feared that it would threaten his water rights, and therefore, his livelihood. As he recalled beginning his political career in 1984, he became agitated and mentioned a related issue that caught me off guard. What followed over the next twenty minutes were his memories of Arizona's water wars.

Between 1984 and 1986, Scottsdale, Mesa, and Phoenix purchased parcels of rural, agricultural farmland in La Paz and Pinal Counties with the intention of extracting and transporting the groundwater beneath those farms back to their respective service areas to satisfy future demands based on predictions of explosive urban population growth in undeveloped areas. None of these water farms yet existed in southeastern Arizona, but for Gus and many of his legislative colleagues who represented rural areas, they marked a fundamental shift in the relationship between water and political power. Their efforts over the next six years ensured that these transfers never occurred. However, the lessons of how the state's political system dealt with these water farms, and the rural-urban transportation they anticipated, are profoundly relevant to the history of Arizona and of the southwestern United States.

What spoke to me then, and continued to resonate when I interviewed more rural legislators, was the emotional weight that these properties held. Transporting groundwater is an inherently disruptive act. Nearly all of the water farms anticipated withdrawing groundwater from basins whose aquifers had gradually collected water for

millions upon millions of years. Once that water left the basin, those remaining would have to contend with the land subsidence, higher pumping costs, and degraded water quality that came with a lowered water table. What little rains there were to recharge their aquifers would never be sufficient to raise the water level to its previous level. Those who remained lacked the means as well as the capital and institutions necessary to better their well-being. Like Owens Valley before them, their lives would be condemned to economic ruin as their lands were drained of their water. All that would remain was Phoenix: a monolithic metropolis so hell-bent on growing that its population had doubled five times since the end of World War II. Rather than face the reality that their pro-growth mantra had surpassed the natural capacity of their natural surroundings and needed to be restricted, city leaders instead turned to outlying areas as fuel for their dreams.[1] Buying these water farms implied subjugating rural areas: they were tantamount to imperialism.

But having researched and spoken with those involved in this issue, I have found that complex relationships between different state, regional, and national institutions and laws—not to mention the willingness of some rural landholders to sell their lands during a period of agricultural recession—has muddled my once succinct opinion. While my research still enforces my conviction that water flows uphill towards power, I have come to see power less as a monolith towering over the land and more as the varied valleys, basins, and mountain ranges that define Arizona. This issue, in other words, was not simply a story of Phoenix elites acquiring rural lands; it was a continuous negotiation

[1] I borrow this term from the title of Doug Kupel's book, *Fuel for Growth.*

with those in outlying areas that began when these water farms were purchased and ended with a legislative compromise which satisfied nearly all interests involved.

WATER AND POWER

Though I was born and raised in Arizona, I spent the first twenty-two years of my life unaware of water policy. I first became interested in this topic when I bought a used copy of Marc Reisner's *Cadillac Desert* (1986). It was a seminal work with a cutting narrative that portrayed the West as a land conquered by heavily-subsidized dams and irrigation works that were promoted by elites and enabled through pork barrel legislation. Reisner posited that the goal of western settlers, and their "federal archangels, the Bureau of Reclamation and Corps of Engineers, has long been to double, triple, quadruple the amount of desert that has been civilized and farmed." The ability of these two agencies to create a perceived plethora of cheap water sustained the mirage of a land of bountiful development. Reisner acknowledged the inevitability of this development: "[a]s long as we maintain a civilization in a semi-desert with a desert heart, the yearning to civilize more of it will always be there." The end of these efforts can be seen in California, where "virtually every drop of water in the state is put to some economic use before being allowed to return to sea."[2]

Reisner's thesis seemed to complement those of two other scholars that several professors encouraged me to explore once I entered graduate school. Donald Worster argued in *Rivers of Empire* that water is controlled by a conspiracy among the powerful. Because water was and remains scarce, development for a growing population required

[2] Marc Reisner, *Cadillac Desert: the American West and its Disappearing Water* (New York: Penguin Books, 1993), 5, 9, 12, 14, 480, 484-485.

an "intensive, large-scale manipulation of water" resulting in a "coercive, monolithic, and hierarchical system, ruled by a power elite based in the ownership of capital and expertise." Worster saw western water history as an extension of Karl Wittfogel's thesis: that as societies remake nature, they remake themselves. The manipulation of water in desert societies required increasingly elaborate infrastructure projects that enshrine elite, centralized control. As the products of the modern capitalist state, these "hydraulic societies" are governed from the top-down by an amalgam of capitalists, technocrats, and state planners whose power derives from two sources. On one hand are the private agriculturalists that reap profits from subsidized water and migrant labor while "designing and controlling the hydraulic means of production." On the other hand are government bureaucrats who, through the Bureau of Reclamation, wielded the capital and technical expertise necessary to re-engineer the West while serving as the arbiter for determining what claims to water are valid. Necessity and a vision of the West as a land of exploitative production united these potential rivals in their efforts to control the region.[3]

At the other end of this nexus of powerful interests were those disadvantaged by the manipulation of water. F. Lee Brown and Helen Ingram argued in *Water and Poverty in the Southwest* that the poor and powerless have not participated in, and consequently not benefited from, many of the legal compacts that have allocated water and infrastructure projects that have transported it. Based on economic statistics matched with demographic data and patterns of water use, Brown and Ingram identify these groups as

[3] Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon Books, 1987), 7, 22-23, 27, 48, 51-53.

rural Hispanic and Indian populations. Despite the recognition of pre-1848 water rights, indigenous "reserved rights" in *Winters v. United States* (1908), and water rights in the Colorado River Compact, many of these rights were never quantified or adjudicated. Hydrological development then has deprived these communities of their traditional water rights. Hispanic *acequia* communities in the Upper Rio Grande Valley of northern New Mexico and southern Colorado similarly have been denied recognition of their pre- and post-1848 rights, not to mention the benefits of storage facilities that the Bureau of Reclamation constructed for extra-regional interests. Both of these populations depended on agricultural economies that provided a degree of independence while fortifying a link to their place and their past. Water has a value not as a commodity, but instead as communal property that allows these marginalized peoples to participate and locally govern their lands.[4]

All three of these scholars portrayed the hydraulic West as land divided been the powerful and powerless. I also found scholars who agreed with this understanding of water and power, but emphasized the power of local elites who had less cohesive relationships. Norris Hundley's history of water manipulation in California, *The Great Thirst*, maintained that the very interests that drove California's economic development did so for their own agendas. The proliferation of vast infrastructure projects and the inequalities in water distribution they reflected were nonetheless consequences of competing factions. By the 1980s, new interests in the appropriation process, particularly environmentalists, have been able to exert some pressure by shifting public policy away

[4] F. Lee Brown and Helen M. Ingram, *Water and poverty in the Southwest* (Tucson: University of Arizona Press, 1987), 3-4, 7, 9, 29, 32-33, 36-37, 39-40.

from private interests. Hundley maintains that the end of agricultural subsidy pricing, the failure of the Peripheral Canal to gain voter approval, and efficient management of existing resources, whether through conservation or reuse programs, have diluted the influence of agri-capitalists and urban districts that had dominated the state's water allocations. This turn reflects greater public involvement and more democratic allocation of water resources.[5]

Robert Gottlieb and Margaret Fitz-Simmons came to similar conclusions about the role of six southern California water agencies in *Thirst for Growth*. They insisted that those in charge of these districts were firmly invested in the politics of growth that fell in line with the interests of local elites. Subsidizing and importing water—first from federal projects, and later through state agencies—ensured a steadily growing economy. Gottlieb and Fitz-Simmons place the Metropolitan Water District (MWD), which serves 127 cities in six counties, at the center of their narrative. Under the Laguna Declaration of 1952, the MWD stated that it would expand its access to water supplies to meet future demands; their members, in return, would have to forgo independent arrangements in favor of water distributed through the district. Other water agencies responded to the rise of the MWD by staking their own claims to sources of water. The San Diego County Water Authority, Imperial Irrigation District, and Kern County Water Authority all formed in the 1940s to secure their Colorado River and State Water Project allocations. But the MWD's clout declined when it failed to secure passage of the Peripheral Canal; environmental and water quality concerns forced the district to rely on conservation measures to meet future

[5] Norris Hundley, *The Great Thirst: Californians and Water: A History* (Berkeley: University of California Press, 2001), 4-12.

demands. As federal water projects became more politicized in the 1970s, increased public participation and calls for more environmentally sensitive practices and demand management led to similar changes in the mission of these agencies.[6]

In contrast to the decentralized elite thesis are those scholars who argue that water allocations have been subject to a more open and democratic process supposedly common to the rest of the United States. Donald Pisani's work on early reclamation projects up to 1935 pointed to how political realities distorted the U.S. Reclamation Service's goals of democratic agrarian capitalism. The ambiguous mission and lack of central control left it susceptible to influence from Western states in the form of congressional representatives who lobbied for particular projects and state engineering offices that developed plans for elaborate projects. Local elites distributed dam and canal projects as patronage, ignoring any questions as to whether the projects in question were cost-effective or agriculturally viable. That 51 percent of funds raised through public lands sales had to be spent in the same state further guaranteed these spoils. But while reclamation projects did not necessary benefit small farmers, the dispersion of projects among variable elite groups—ranging from private land, electric power, and canal conglomerates—ensured that power could not be concentrated in any one demographic of people.[7]

Though he confined his argument to Arizona, Doug Kupel in *Fuel for Growth* put forth a thesis that was similarly at odds with scholars in the first two groups. The arid

[6] Robert Gottlieb and Margaret FitzSimmons, *Thirst for Growth: Water Agencies as Hidden Government in California* (Tucson: University of Arizona Press, 1991), 2-9.

[7] Donald J. Pisani, *Water and American Government: The Reclamation Bureau, National Water Policy, and the West, 1902-1935* (Berkeley and Los Angeles: University of California Press, 2000), 60, 117-118, 119, 138, 143, 292-294.

nature of the West does not make its cities all that different from those in the eastern United States. Like the western metropolises of San Francisco, Los Angeles, and Phoenix, both New York and Boston have transported water from distant regions to keep pace with their projected population growth. Water allocations furthermore are only one of several factors like technology, economy, and politics that dictate the scope and pace of urban growth. Kupel maintained that elite interests were not conceiving, engineering, and operating water works that set the pace for urban expansion. Urban leaders instead were reacting as responsible public officials to popular demands—and not those of a select, powerful group—for new water sources.[8] I agree with Kupel that urban water policy in Phoenix has largely been a reactive affair, but the distinction between elite interests and public demands over water augmentation is largely a moot point. The prime concern has been whether enough water existed to support growth—be it for more farmlands, residential housing developments, or industrial facilities—in the immediate future.

CONSEQUENCES OF MOVING WATER

The inherent controversy in water transfers is their impact on nearby communities and third parties. For many residents of rural Arizona, the memory of Owens Valley governed their understanding of water transfers: any rural area which sold any of its water rights to a metropolitan city risked complete ruin. Gary Libecap argued in *Owens Valley Revisited* that this image belied reality. Through a meticulous analysis of sales records, he persuasively made the case that groups of farmers banded together to exercise

[8] Douglas E. Kupel, *Fuel for Growth: Water and Arizona's Urban Environment* (Tucson: University of Arizona Press, 2003), xv-xx, 222-223.

more power in negotiating the terms and price of land sales. While the Los Angeles Department of Water and Power (LADWP) could wait out farmers in these negotiations, one or two large water holders could set the timetable and pace for discussions. In response to the purported destructive nature of these transfers, Libecap maintained that Inyo County's population did not collapse and that its property values remained comparatively higher than those of neighboring counties. The agriculture within Owens Valley was at odds with the area's high elevation and short growing season; its continued existence had largely depended on nearby mining towns as buyers. Those that remained pushed for reparation claims that were intended to inflate urban land values within Inyo County; when the LADWP purchased these lands as a settlement, local landowners profited. From Libecap's economic and property rights-centric view, the opportunity to have one's lands purchased brought with it the possibility of a better life in a city.[9]

Others contended that removing water from irrigated agriculture has limited negative impacts. Regional income from farming and its link to employment, according to Maurice Kelso, Bill Martin and Lawrence Mack, is rather insignificant. Since modern irrigated agriculture is capital intensive, there is considerably less demand for workers or local services. Considering Arizona's rapidly growing non-agricultural economy, any overall job losses from retiring agricultural land would be minimal.[10]

Others have observed that the economic impact of groundwater transfers varies greatly depending on location. Charles Howe and Christopher Goemans, who focused on

[9] Gary D. Libecap, *Owens Valley Revisited: A Reassessment of the West's First Great Water Transfer* (Stanford, CA: Stanford Economics and Finance, 2007), 43-47, 64, 87, 109-110, 112-114.

[10] Maurice E. Kelso, William E. Martin, and Lawrence E. Mack, *Water Supplies and Economic growth in an Arid Environment: An Arizona Case Study* (Tucson: University of Arizona Press, 1973), 164-167.

transfers within Colorado, noted that those from the South Platte Valley to urban areas and the Northern Colorado Water Conservancy District, which began in the 1930s with Denver acquiring cattle ranches and continued into the 1980s when Aurora and Thornton acquired many remaining ranches and water rights, were comparatively small (the median amount was 367 acre-feet) and continuous in nature. Though sometimes referred to as Colorado's Owens Valley, the area's economic diversity and connections to the state's economy minimized many negative impacts.[11]

The case of water transfers in the Lower Arkansas Valley in southeastern Colorado, conversely, showcased their deleterious potential. Water rights that were part of these transfers were usually sold in large swaths that had been historically dedicated to higher-valued crops like sugar beets. When the land was retired from productive use, the local economy and the people who relied upon it—older Hispanic communities that preceded Anglo-settlement and have been among the most impoverished in the state—suffered.[12] A similar situation occurred with transfers from the agricultural Arkansas Valley, which has historically been economically depressed, were incredibly large and went outside the basin. Economic losses incurred from transfers from this valley were likely to persist over a longer period of time; when combined with the area's sparse population, they calculated that per capita losses were eight times greater than those in

[11] Charles W. Howe and Christopher Goemans, "Water Transfers and Their Impacts: Lessons Learned from Three Colorado Water Markets," *Journal of the American Water Resources Association* Vol. 39, No. 5 (June 8, 2007): 1056-1058, 1060; Teresa A. Rice and Lawrence J. MacDonnell, *Agricultural to urban water transfers in Colorado: an assessment of the issues and options*: *Completion Report No. 177* (Fort Collins, Colorado: Colorado Water Resources Research Institute, 1993), 3.

[12] John M. Nielsen, "The Economic Impacts on Southeastern Colorado of Water Transfers from Local Agriculture to Cities Outside the Region," B.A. Honors Thesis, Department of Economics, University of Colorado-Boulder, 1986.

the South Platte Valley. That most farmers who sold their water rights had to use the money earned to pay off debts meant that Arkansas Valley did not economically benefit from these transfers.[13]

REGIONAL TRENDS

Interbasin water transportation has figured prominently in the history of nearly every southwestern state. In some cases, like California, they are so extensive that they practically create artificial watersheds. In other states like Nevada, New Mexico, and Arizona, they singularly exist to bring water to the most populous and economically dynamic area of their respective states. There are two noteworthy observations that I would like to offer for understanding their role and impact in the region. First, nearly all instances of interbasin water transfers either came about through Bureau of Reclamation projects or have been facilitated by their infrastructure. Within New Mexico, the San Juan-Chama Diversion Project, which was authorized in 1961 and completed a decade later, moves over 90,000 acre-feet of water from the San Juan River and its three tributaries—the Rio Blanco, Navajo, and Little Navajo Rivers—through 27 miles of tunnels to the Heron Reservoir. Most of the water is then released to the Rio Chama—a major tributary of the Rio Grande—for use by municipal and irrigation interests along the Rio Grande north of the Elephant Butte Reservoir.[14] The Colorado-Big Thompson Project, which was completed in the 1950s, diverted water from the western slope of the Rocky Mountains through a 13.2 mile tunnel that crossed the continental divide to feed

[13] Howe and Goemans, 1061, 1062-1063.

[14] Ira G. Clark, *Water in New Mexico: A History of its Management and Use* (Albuquerque: University of New Mexico Press, 1987), 262-263.

bustling agriculture along the Front Range. Irrigated agriculture in Churchill County, Nevada benefited from an early Bureau of Reclamation Project that transported water 31 miles from the Truckee River. Instances in which states or cities have covered the infrastructure costs for transporting water, such as Los Angeles's infamous aqueduct to Owens Valley or the creation of the massive State Water Project, are anomalies limited to California and—in the case of the Windy Gap Project—Colorado.

Most interbasin water transfers were largely intended to support irrigated agriculture. When the Colorado-Big Thompson Project was originally authorized in 1937, it was intended to buttress irrigated agriculture along the Front Range that had relied on surface waters from the South Platte River Basin. California's State Water Project was authorized in 1959 to support farmers in the San Joaquin Valley. The Central Arizona Project and the Truckee-Carson Project in Nevada were likewise designed primarily to benefit farmers. Occasionally, some transfers simultaneously supported both growth in cultivated acreage and urban areas like the San Juan-Chama Project and Newlands Reclamation Project. But by the 1980s, accelerating municipal and industrial water demand began to collide with the sizeable water rights of rural irrigated agriculture. In Colorado, where irrigated agriculture accounted for nearly 85 percent of all water usage in 1980, cities began to purchase tracks of land. Aurora, which had earlier relied on Denver and the South Platte River, initially acquired irrigation rights from the Rocky Ford Ditch in the Arkansas River Basin and an interest in the Colorado Canal on the main portion of the Arkansas River in 1986. Over the next two decades, city officials moved forward with purchasing irrigation rights from four ranches in the upper Arkansas Basin and interests in two transmountain diversion projects. Thornton, another suburb of

Denver, purchased 89 farms in the two northern Colorado counties for their water rights on the Cache la Poudre River at a cost of $57 million.[15] And in Arizona, three Phoenix area municipalities purchased tracts of rural agricultural land from 1984 to 1986 for their water rights.

MY NARRATIVE

Many of those involved in Arizona water policy have told me that their job is to find the "next bucket of water" that will ensure our state's continued growth. This goal is not new; in fact, the overarching struggle throughout Arizona's existence has been how best to utilize its limited water supplies so that economic growth can continue. The entire history of state water policy then can be seen as a series of crises that are brought on when one of the state's major water users and economic drivers cannot locate that proverbial next bucket. From this perspective, Arizona's experience with interbasin water transfers was simply another crisis created by the Phoenix metropolitan area out of a perceived scarcity of future supplies.

The struggle for adequate supplies actually antedates the creation of the creation of the state. The two major civilizations which settled the area—the Hohokam, and later, the Spanish—struggled to divert and store sufficient surface waters to maintain their settlements. Where they succumbed to nature, Anglo-settlers who brought with them industrial technologies began to fashion nature to their whim. Groundwater, which until this point had only percolated in springs or been harvested in shallow wells, became a

[15] Carl Abbott, *Colorado: A History of the Centennial State* (Boulder: Colorado Associated University Press, 1976), 387; Aurora Water, "Water Supply Fact Book, 2010-2011," Accessed September 13, 2012, https://www.auroragov.org/cs/groups/public /documents/document/001772.pdf; *City of Thornton v. Bijou Irrigation Co.*, 1996 Colo. LEXIS 492 (Supreme Court of Colorado cir. 1996).

commodity that pumps pulled from deep within the earth. The territory's early set of the laws, the Howell Code, encouraged this activity by enshrining a fallacy dating back to Spanish settlement that groundwater and surface water were distinct bodies of water.

Phoenix and its neighbors were founded as agricultural communities. The availability of subsidized water and power through the Salt River Project (SRP) enabled their continued growth. As Phoenix became more urban at the turn of the century, demand for additional water pushed city officials to pump groundwater and arrange an agreement with the nearby Yavapai Indians to divert water from the Verde River. The establishment of manufacturing and industrial enterprises in Phoenix during World War II, and the mass migration to the growing metropolitan area that followed, further stressed its water supplies. A shortage in surface water supplies during the summer of 1953 led city officials to annex nearby SRP lands for their water rights. Many surrounding cities also began annexing additional lands in the 1960s and 1970s. Since many of these new acquisitions were farmlands, their conversion to less-consumptive urban or residential uses resulted in a net gain in available water for the cities. The fact that these areas were being absorbed, thus offering residents the opportunity to politically and economically participate in their new surroundings, minimized whatever harm might have come to rural residents at the edge of the cities due to this transition.

At the same time the Phoenix-area was expanding and urbanizing, Prescott and Tucson were facing the limits of their surroundings and looking beyond their boundaries for new sources of water. The appurtenant groundwater in Chino Valley for Prescott and Avra Valley for Tucson offered one solution. The "water farms" these cities established by acquiring and retiring lands from agricultural use were a minor extension of what

Phoenix cities were already pursuing. After all, the land was in the same county, so property tax impacts were internalized; both Prescott and Tucson incorporated the purchased land into their respective service areas, thereby ensuring an adequate future water supply for local residents. The groundwater, for that matter, was in the same hydrologic basin as these cities. Above all, the water transportation these farms enabled were ultimately limited in scope and driven by an immediate need for water.[16]

But crises in ground and surface water supplies during the 1970s and 1980s pushed the logic of these water farms to a new level. One legacy of the proliferation of irrigated agriculture throughout the state was overdrafting of groundwater. Where no surface waters were available, farmers simply drilled wells and pumped up groundwater that had been collecting over millions of years at a rate that far exceeded what rains and flooding could replenish. By the 1940s, falling water tables and land subsidence made it apparent to the state's political leaders that groundwater regulation was necessary. The fierce pushback from farmers, however, diluted any regulations that the state legislature passed. The 1948 Groundwater Code allowed the State Land Commissioner to designate areas with critical overdraft, but only provided weak regulations for limiting groundwater pumping. It took a threat from the Secretary of Interior in 1979 that Arizona would be denied its allocation of the Central Arizona Project (CAP), which could divert 1.5 million acre-feet of Colorado River water to the Salt River Valley, for Arizona's political leaders to hammer out the Groundwater Management Act (GMA) of 1980, which sought to restrict groundwater withdrawals around Arizona's three major urban areas to sustainable

[16] Woodard, Gary. C et al. *The Water Transfer Process in Arizona: Analysis of Impacts and Legislative Options* (Tucson: University of Arizona, College of Business and Public Administration, 1988), 28.

levels by 2030. Uncertainty over how the Arizona Department of Water Resources would gradually reduce water consumption and how it would define the GMA's goals to achieve a "safe yield" of groundwater and a "one-hundred year assured water supply" for new developments in the regulated basins promoted insecurity as the act entered its implementation phase in 1984. At the same time, Phoenix-area cities experienced substantial growth in areas without access to surface waters from SRP or CAP.

With no viable surface supplies in sight and groundwater pumping potentially limited, Phoenix-area cities began looking for new sources of water to make up for projected future shortfalls. Irrigated agriculture, which had been the lifeblood of Arizona's economy and had exercised a near-monopoly on water rights, was gradually declining in prominence. With the recession of the early 1980s looming over their heads, many farmers began to contemplate selling their lands. The proximity of these farmlands in La Paz and Pinal Counties to the CAP, which would serve as the infrastructure for transporting the water, was too enticing. Between 1984 and 1986, Scottsdale, Mesa, and Phoenix purchased farmlands in these counties for their water rights. Rather than unitary actions, those in rural areas excised agency not only in the terms of sales, but also in how these properties would be economically developed. Despite the negotiated nature of these acquisitions, these municipal water farms—and more importantly, the wave of speculators who followed in their wake—became a political controversy. State lawmakers struggled for six years to reach an agreement on this issue. Two major political scandals, a lack of urgency that had driven previous negotiations on water issues, and ongoing difficulty in determining the value of water removed from basins allowed talks to breakdown frequently. The resolution the legislature eventually reached

in 1991 consisted of two pieces of legislation. One established compensation rates for water transported and drastically reduced the basins from which these transfers could occur, while the other laid the foundation for a Phoenix-area groundwater replenishment district that allowed members to collectively manage their water resources. Since this resolution, no city has transported water from their rural properties: the creation of a newer and larger groundwater replenishment district; lackluster enforcement of the GMA; the conclusion of the Fort McDowell Indian Community Settlement (1990), San Carlos Apache Tribe Settlement (1992), and the Arizona Water Rights Settlement Act (2004) which enabled tribal water leases to urban areas;[17] broader application of reclaimed effluent, and greater acceptance of water conservation measures have sustained metropolitan water supplies, and in the process, effectively rendered these water farms superfluous.

[17] Daniel Killoren, "American Indian Water Rights in Arizona: From Conflict to Settlement, 1950-2004" (PhD diss., Arizona State University, 2011), 281, 295, 319-320, 324.

CHAPTER 2: FOUNDATIONS

FIRST PEOPLES

Arizona's early inhabitants were at the mercy of nature. They settled where water flowed, with most early communities taking root along the state's interconnected central river systems. Where the Black and White Rivers join in the White Mountains of eastern Arizona, the Salt River emerges. From there, it flows 200 miles west to its confluence in the Gila River. The Verde River, one of Arizona's few perennial rivers, flows from the Del Rio Spring in Chino Valley south for 150 miles until it joins the Salt River. The Gila River begins in the Mogollon Mountains of western New Mexico and bisects Arizona as it flows east-to-west until it joins the Colorado River north of present-day Yuma, Arizona. Along its 600-mile journey, it picks up water from the Santa Cruz, San Pedro, and Salt Rivers, which effectively makes it the largest watershed in Arizona.

Indigenous settlement along this system began over 15,000 years ago, but water resource manipulation did not occur until permanent communities with early forms of agriculture appeared around 1000 BCE. Though four indigenous civilizations defined Arizona, only one is worthy of mention for its hydraulic works. The Hohokam shaped the Salt and Gila River as well as their tributaries over 500 years (900 to 1400 ACE) through a complex and extensive system of canals and reservoirs. This system grew in what would become the Phoenix-area during the Classic Period (1100-1358) and was defined by extensive distribution canals and lateral networks that diverted Salt River water at points where underlying bedrock pushed water upwards. Where the canal intakes were

more generous, the grander villages and irrigation communities flourished.[1] Though limited to growing crops during the spring and summer, their irrigated agriculture nonetheless could sustain a sedentary population surpassing 40,000 people spread over 100,000 square kilometers.[2]

The sudden decline of the Hohokam around 1450 has been the subject of intense scholarly debate. Some point to intensified warfare over available sites; others argue that a prolonged drought quickly followed by the most intense flooding in three-hundred years destroyed their communities.[3] But the most common theory emphasizes how the Hohokam managed their environment. They had fully constructed their farmlands along the Salt and Gila Rivers by 600 ACE and adopted equitable practices for distributing water throughout their communities to cultivate crops ranging from maize to squash.[4] As their farming intensified, their populations at sites along floodplains became more concentrated and pushed the productive capacities of the environment beyond its natural limits.[5] Where all scholars agree is that the resulting environmental degradation from their activities probably contributed to rapid decline of the Hohokam.[6]

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[1] W. Bruce Masse, "The Quest for Subsistence Sufficiency and Civilization in the Sonoran Desert," and David A. Gregory "Form and Variation in Hohokam Settlement Patterns," in Patricia L. Crown and W. James Judge, eds. *Chaco & Hohokam: Prehistoric regional systems in the American Southwest* (Santa Fe: School of American Research Press, 1991), 178, 220-221.

[2] Determining populations based on archaeological data is an endeavor rife with assumptions. Some scholars put the estimated population of the Hohokam within the now-Phoenix-area at 100,000. I have used the lower estimates based on more recent scholarship.

[3] Gregory, 183-184, 186-187.

[4] Glen Rice, "War and water: an ecological perspective on Hohokam irrigation," *Kiva* Vol. 63, No. 3 (1998): 268.

[5] James M. Bayman, "The Hohokam in Southwest North America," *Journal of World Prehistory*, Vol. 15, No. 3 (2001): 291-292.

[6] Beyond the collapse of the Hohokam, researches have noticed a similar movement in regional population. On study of settlements calculated a millennia of steady growth until the population peaked between

The next major settlers, the Spanish, never reached Phoenix. They instead remained close to the Santa Cruz River in southeastern Arizona. The river emerges from the numerous creeks and streams that color the San Rafael Valley and initially flows south before curving north until it reaches present-day Tucson. It briefly heads underground and continues to the northwest where, if the rains are generous, it may reach the Gila River.[7] Rooted in the arid Iberian Peninsula, Spanish legal codes treated water and land as public commodities. Since water was a communal property, corporate and municipal rights had priority over individual and private rights. The Crown owned all lands and waters and distributed them through nineteen lands grants. Most of the water in question was surface flows; groundwater existed only in springs and the seepages that flooded mineshafts. What defined that Spanish legal legacy was that while diversions on riparian parcels were limited to domestic purposes, the owner of land featuring a well or spring had unrestricted rights to its underlying water. This fallacy, that surface and groundwater are distinct bodies, would persist into Anglo water law.[8]

Like the Hohokam before them, the early 18th century Spanish economy strained the surrounding environment. Stock animals quickly outnumbered their human counterparts and consumed excessive quantities of water. As they stripped away grass from the lands before it could regenerate, top soil lost its absorptive character and turned

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100,000 to 160,000 people. But 150 years before the first Europeans arrived, the population of the entire southwest rapidly shrunk. J. Brett Hill et. a. "Prehistoric Demography in the Southwest: Migration, Coalescence, and Hohokam Population," *American Antiquity* Vol. 69, No. 4 (Oct. 2004): 693-694.

[7] Barbara Tellman, Richard Yarde, and Mary G. Wallace, *Arizona's Changing Rivers: How People Have Affected the Rivers* (Tucson: Water Resources Research Center, College of Agriculture, University of Arizona, March 1997), 17, 43, 59, 97, 123.

[8] Michael C. Meyer, *Water in the Hispanic Southwest: A Social and Legal History, 1550-1850* (Tucson: University of Arizona Press, 1984), 20-22, 55, 86, 120; J.J. Bowden, "Spanish and Mexican Land Grants in the Southwest," *Land & Water Law Review* Vol. 8, No. 467 (1973): 472-473.

to dust. Animal excrement occasionally contaminated communal canals called *acequias*. Since pastures were sparse, supporting every animal demanded more grazing lands. Stock animals edged out native wildlife and sporadic water shortages were common in Arizona and New Mexico during Spanish settlement (1521-1821). Early mines required enough water for six towns; that many were close to urban areas and polluted water with heavy metal tailings only worsened matters.[9]

Agriculture, however, caused the most environmental strain for the Spanish and indigenous communities. When Father Eusebio Kino founded San Xavier del Bac in 1692 in Tucson, he drew the mission's water supply from the Santa Cruz River and nearby springs that tapped into the river's water table. The small agricultural plots on the mission's grounds were intended to entice indigenous peoples towards reliance on the mission. The new crops and livestock grazing on these lands unintentionally altered the fertile grasslands of the Santa Cruz Valley. In dry years, the mission's diversions hurt the Pima communities that lay downstream. The military Presidio of San Agustin de Tucson, which the Spanish moved from Tubac to the eastern bank of the Santa Cruz in 1775, and its system of land grants also drew from the river. The mission lands, the presidio on the eastern bank, the Pima settlements on the western bank (which technically held 75 percent of the river's water rights), and new, water-consumptive forms of economic activity soon overburdened the Santa Cruz River. As early as 1761, authorities reported that it did not have enough water to support current users. While competing claims were arbitrated in courts, none of the parties could curtail consumption patterns or re-engineer

[9] Meyer, 50-51, 68, 80, 84-86, 92; Michael F. Logan, *Desert Cities: An Environmental History of Phoenix and Tucson* (Pittsburgh: University of Pittsburgh Press, 2006), 28-31.

the river to meet their needs. All parties remained at the mercy of the river's meager flows.[10]

The armed strife and emigration which defined Mexican control of Arizona wore away at many Spanish settlements. When the sparse territory changed hands to the United States with the signing of the Treaty of Guadalupe Hidalgo, two peoples had tried and failed to continually inhabit it. As pre-industrial peoples who lacked the technology, capital, and organization necessary to productively and efficiently use their surroundings, they instead fell victim to them.[11]

TERRITORIAL CAPITALISM

Anglo settlement redefined the hydraulic paradigm. Where the indigenous peoples and the Spanish came to water, the industrial technologies empowered settlers to bring water to them. Arizona's complex of system of groundwater basins, which had developed over millions of years and had remained largely untapped, became a viable resource. As more farmers and miners pumped groundwater, their activities proliferated beyond the spaces the Hohokam and Spanish had once inhabited.

The area's territorial status meant that most executive officials were presidential appointments largely unfamiliar with what was a sparsely populated territory of four-thousand souls. Where residents could exercise influence was in electing delegates to their territorial legislature. With the assistance of federal judge William T. Howell, this

[10] Meyer, 55, 56; Tellman, Yarde, and Wallace, 18; Michael F. Logan, *The Lessening Stream: An Environmental History of the Santa Cruz River* (Tucson: The University of Arizona Press, 2002), 46-48, 59.

[11] Meyer, 57; Logan, *The Lessening Stream*, 62-77.

body wrote the first set of laws in 1864.[12] All running waters under the Howell Code were public waters for the purposes of mining and irrigated agriculture.[13] The doctrine of prior appropriation, under which the first water user had senior rights to any who would follow, governed all surface water diversions so that water became a fungible commodity for economic growth.[14] The code's failure to address groundwater sparked a lawsuit fifty years later over who owned a plot of land. Determining its ownership depended on who held rights to its underlying, and potentially legally unrecognized, water. The Arizona Territorial Court essentially created two distinct categories of groundwater. That which percolated upwards was sole property of the overlying landowner, while subterranean streams were subject to prior appropriation.[15]

In the time it took to resolve this case, the agricultural community of Phoenix had come into existence. Led by Jack Swilling, a morphine-addicted Civil War veteran, farmers began excavating and renovating Hohokam ditches to divert enough of the Salt River to irrigate 5,000 acres of wheat, barley, and corn by 1868. Citrus trees took root as Phoenix, a name Swilling chose to represent a revitalized desert civilization, began to rise. Congressional passage of the Desert Lands Act in 1877, which increased homestead

[12] David R. Berman, *Arizona Politics & Government: the Quest for Autonomy, Democracy, and Development* (Lincoln and London: University of Nebraska Press, 1998), 16, 25-27.

[13] *The Howell Code*, Chapter LV, "Of Acequias or Irrigating Canals," §1 ,422.

[14] If their intention was not clear enough, the territorial legislature amended the code in 1887 to state that riparian water rights, which viewed waters as common property, "shall not obtain or be of any force or effect in the State." Section 5 of this chapter also created a hierarchy of uses. No inhabitant could divert water except for "mining purposes or the reduction of metals…that may impede or obstruct the irrigation of any lands or fields, as the right to irrigate the fields and arable lands shall be preferable to all others." Ibid., §17, 425.

[15] Howard v. Perrin, 8 Ariz. 349-351, 353, 354 (S.C. AZ 1904), LexisNexis.

allotments in arid regions to 640 acres, attracted more settlers who built twelve canals to irrigated 30,000 acres of valley farmland by 1900.[16]

Men like A.J. Chandler and William J. Murphy made irrigated long-staple cotton the area's economic driver. The favorably warm climate and minimal precipitation allowed for longer growing seasons, while fertilizers made continued cultivation possible.[17] Developers worked with farmers to lobby cotton usage for the military and the Goodyear Tire Company, which relied on long-staple cotton for the belting in their new tires. The 8,000 acres of farms south of Chandler and 16,000 acres along the Agua Fria River were among the most productive during World War I. Increased vertical integration of business suppliers, processors, and distributers further enabled cotton to become a profitable business crop. The Southern-Pacific Railroad's connection to Maricopa in 1879 and the Atchison, Topeka & Santa Fe's connection to Phoenix in 1895 opened more new markets for valley farmers.[18]

Even as irrigation expanded under the aegis of the Salt River Canal Company (SRCC) and Maricopa Canal Company (MCC), Phoenix's planners began looking for additional water supplies. Before incorporating in 1881, domestic supplies came from wells, pumps, and tanks of wealthy individuals and businesses. When a municipal franchise that the city council had awarded proved inadequate, private investors created the first water works system. But even their system could only accommodate consumer

[16] Logan, *Desert Cities*, 47, 49-53, 57-59; Thomas Sheridan, *Arizona: A History* (Tucson: University of Arizona Press, 1995), 132, 133, 199, 200,

[17] An acre of this cotton also consumed as much water (3.75 AF) as other irrigated crops.

[18] Erik-Anders Shapiro, "Cotton in Arizona: a historical geography" (M.S. thesis, University of Arizona, 1989), 50, 52, 54, 56-57, 61, 63, 85-86; Philip VanderMeer, *Desert Visions and the Making of Phoenix, 1860-2009* (Albuquerque: University of New Mexico Press, 2010), 19-20, 32.

demand to a point; by 1892, it had reached capacity as residents consumed 700,000 gallons a day.[19] Since most residents still depended on their irrigation ditches or wells, the city council began directing them to apply in advance for municipal ditch water which the city would purchase from the SRCC. When the SRCC canal ran dry, the city contracted with the MCC for additional water, only to have a drought show limits of these companies in maintaining water supplies. Progressive reformers also pushed for municipal ownership of utilities by lobbying congress to amend the Harrison Act to lift the restrictions on bond indebtedness for the public works projects of territorial municipalities. Phoenix began expanding the capacity of this new system and initiated negotiations with the Yavapai Indians at Fort McDowell to divert additional water from the Verde River.[20]

The city's increasing population enabled the area's territorial delegates to gain several institutions and the territorial capital by 1889. This new political clout also enabled Phoenicians to utilize the newly passed Newlands Reclamation Act of 1902. As an exemplar of the Progressive Era, the act was intended to lay the foundation for a more democratic capitalism by funding irrigation works that would support small farms in the arid West. For Salt River Valley farmers, the Reclamation Service could realize the infrastructure necessary for continued growth. After determining the priority of users' water rights through a friendly suit, the federal government purchased all canal companies and had Phoenix assume control of all irrigation water within its limits. As the

[19] Kupel 84-86, 88-89, 91, 93, 95-96, 100-102, 107, 110, 114-115.

[20] Douglas E. Kupel, "Urban water in the arid west: Municipal water and sewer utilities in Phoenix, Arizona" (PhD diss., Arizona State University, 1995), 48-51, 54-56, 58, 63, 70, 107, 123-125.

first venture of its kind, the Salt River Project (SRP) faced hurdles over how to balance federal and local control in a multipurpose waterworks. The governmental crusade of reclamation gave way to practical realities when reclamation officials recognized the Salt River Valley Water Users Association (SRVWUA) on February 9, 1903. The association, which would assume control of SRP, was comprised of business-oriented farmers with large landholdings. To control flooding and generate electricity, planners constructed the Roosevelt Dam on the Salt River at its confluence with Tonto Creek, approximately 70 miles northeast of Phoenix. While the dam, which came online on March 18, 1911, provided power, the water deliveries that the city council began contracting for on March 20, 1919 would serve as the foundation for unifying control and distribution over much of the area's surface water supplies in the coming years.[21]

But Arizona's water situation on the eve of statehood was perilous. Aside from requiring that an appropriator place a notice of location and quantity of a diversion, any over-arching water regulations were non-existent. According to historian Dean Mann,

> Many appropriators ignored the legal requirements concerning filing notices of intention to appropriate. The courts concurred in bypassing these requirements by deeming the application of water to beneficial use sufficient to establish a water right. The failure by the courts to require adherence even to these minimum requirements led to considerable litigation over rights. The courts were often not competent to make judgments since the decisions depended on factual information which the litigants were frequently unwilling or unable to provide. There was often confusion concerning the land to which the rights applied, and seldom was there any hydrographic data which was necessary for a proper judgment.[22]

[21]Karen L. Smith, *The Magnificent Experiment: Building the Salt River Reclamation Project, 1890-1917* (Tucson: University of Arizona Press, 1986); Kupel, *Fuel for Growth*, 58-62; Logan, *Desert Cities*, 58.

[22] Dean E. Mann, *The Politics of Water in Arizona* (Tucson: University of Arizona Press, 1963), 39.

STATEHOOD

The progressivism that dominated Arizona at statehood manifested in the 1919 State Water Code. Beyond building on the Howell Code by declaring all surface waters and underground channels[23] public and limited to beneficial use, it created the State Water Commissioner to manage applications for new appropriations. The state legislature also fashioned the Arizona Resources Board for statewide water management. While it had the power to create plans for water development, utilization, storage, and conservation, it could only recommend policies to the governor.[24]

Statehood also marked the beginning of an obsession with the Colorado River, which formed the boundary between Arizona and its western neighbors and was the repository for almost every major river in the state. But only those farmers near its banks had benefited from its flows. One engineering firm had proposed to divert part of it to the Gila River, where it could feed 3 million acres of farmland in Yuma and western Maricopa counties. Others like Phoenix booster George Maxwell dreamed of bringing the river to Maricopa and Pinal counties. Fear that southern California's exploding population would leave little of the river leftover united these aspirations. The legislature had refused to ratify the 1922 Colorado Compact because their 2.8 million AF allotment seemed paltry.[25] Most legislators sided with Fred Colter, a prominent cattle rancher who

[23] According to one of the code's authors, too little was known about groundwater to include a blanket provision that would allow the State Water Commissioner to regulate it. Water politics instead focused on appropriating surface water. G.E.P. Smith, "Groundwater Law in Arizona and Neighboring States," *University of Arizona College of Agriculture Technical Bulletin No. 65* (December 29, 1936), 49.

[24] This board only issued one report during its lifetime. Mann, 23, 31-32, 38-39, 69; Chapter 164, Laws 1919, §1-2, 4-8.

[25] One legacy of the CRC was that it enshrined the Colorado River's annual flow at 15 million AF per year. This number was based on a decade of stream flow measurements at Lee's Ferry with inaccurate

reasoned that since the Colorado formed the state's boundary, Arizonans should have the right to use whatever amount they desired.[26] Leaders instead pushed Colter's proposal to divert the river's water to the Verde River through a complex chain of forty different projects. While this feat of engineering could never get a fraction of the funding it required, leaders nonetheless persisted in opposing the compact.[27]

While this obstinacy persisted, the Phoenix Union Station became the main connection to the transcontinental Southern-Pacific Railroad in the 1920s, and with it, heralded more connections to the national economy and brought more agricultural processing facilities and warehouses.[28] From 3,048 farmers at statehood to 5,501 farmers cultivating 205,000 acres of land seven years later, Arizona hosted diverse crops ranging from alfalfa to citrus fruit. But cotton remained pivotal, particularly when the British export embargo in 1916 increased domestic cotton prices. The SRWVUA pushed the crop, which would help pay off the debt owed to the federal government for construction costs, to the point that total acreage tripled in Arizona to 243,000 acres within a year (1919-1920). The association also pursued three more dams on the Salt River to bring another 34,000 acres into cultivation.[29]

Cotton farming in the Phoenix-area also brought about a significant water case. A subsidiary of the Goodyear Tire Company sought an injunction against a water

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instruments during a particularly wet period. At most, only 13.5 million AF of water flows down the river every year. Rich Johnson, *The Central Arizona Project, 1918-1968* (Tucson: University of Arizona Press, 1977), 13-15.

[26] Ibid., 15-17.

[27] Ibid., 15-17.

[28] Vandermeer, 33, 40-41, 44, 113.

[29] Shapiro, 64-65; Sheridan, 217.

conservation district and land company. In diverting water from Agua Fria River, the subsidiary claimed these two entities were diminishing the flow of an underground stream. Since the 1919 Water Code did not distinguish between surface and underground flows, the case hinged on the relationship of the water in question to the river: was it merely sub-flow that paralleled the river's movement, or percolating groundwater separate from the river? In determining an answer, the Arizona Supreme Court introduced a test for determining whether sub-flow existed based on whether withdrawing groundwater water would "diminish appreciably and directly" any surface flows. The court thus introduced the first legal mechanism for curbing groundwater withdrawals.[30]

Phoenix's urbanization did not change its water consumption patterns. City leaders continued to react to demands instead of planning for the future. Though officials considered looking to the Verde River for supplemental supplies since 1886, it took nearly thirty years of studies, planning, and negotiating with representatives of the Fort McDowell Yavapai before the Phoenix City Council submitted a bond issue for a gravity supply system from the river in 1919. When Verde River water began flowing through its domestic system in 1922, city leaders pushed for eliminating all irrigation ditches within the city. The completion of an additional concrete pipeline in 1931 and fiscal hardship of the Great Depression pushed them to favor a municipal distribution system of pipes over the costs of maintaining irrigation canals. Supply augmentation measures, which included renegotiating an agreement with the Yavapai to operate a 120-acre well field, aided the

[30] *Maricopa County Municipal Water Conservation District Number One v. Southwest Cotton Company*, 39 Ariz. 99 (S.C. AZ 1931), LexisNexis.

municipal system. This shift, which manifested during World War II, marked the completion of Phoenix's transition from an agricultural to urban community.[31]

Regional shifts pushed Arizona into an aggressive stance over its rights to the Colorado River. When Congress passed the Boulder Canyon Project Act in December 1928, it consented to the Colorado River Compact—which Arizona had refused to ratify—and authorized the construction of a reservoir for diversions for southern California.[32] Representatives from the area's seven prominent irrigation and water districts concluded an agreement three years later that gave the Metropolitan Water District (MWD), which oversaw the Los Angeles metropolitan area, junior water rights.[33] The MWD began planning to construct diversion projects to supply a population that had doubled over the past decade to 1.2 million residents. The only option for Arizona, which lacked a sufficient state water agency and remained obstinately opposed to ratifying the CRC, was to petition the U.S. Supreme Court to rule on California's Colorado River diversions. The court refused three times. There was no justiciable issue: Arizona had no plan for the river's water and any interstate controversy required the federal government to be a party.[34]

State leaders clung-on to their opposition until another set of regional negotiations forced their hands. Disputes between the United States and Mexico over rights to the Colorado River had perpetually flared and simmered since the CRC, which provided no

[31] Kupel, "Urban Water in the Arid West," 64-65, 67-68, 70-72.

[32] *Boulder Canyon Project Act,* Pub. L. No. 642. 70th Congress, December 21, 1928., §13(a).

[33] *Boulder Canyon Project Implementation Agreement*, August 18, 1931, Article I, §4-5.

[34] Johnson, 18-20.

allocation to Mexico, entered into effect. At the direction of President Franklin Roosevelt, whose Good Neighbor policy towards Latin America sought to undermine Axis involvement in the western hemisphere, the United States resumed negotiations with Mexico over several international rivers in 1939. The resulting treaty that was signed into law on February 3, 1944 guaranteed an annual allocation from the Colorado River of 1.5 million AF to Mexico.[35] Losing more of the Colorado crippled the stubborn mindset that the river was Arizona's exclusive domain. Within a week, the state legislature had ratified the CRC and contracted for delivery of the state's allocation and also provided $200,000 to the Bureau of Reclamation to investigate how the state could fully utilize this allocation. The results would be the forerunner to the largest trans-basin diversion project in Arizona's history.

The statehood experience (1912-1945) brought three critical changes in Arizona's hydraulic arrangement. It first marked the greatest expansion of irrigated cotton in the Salt River Valley, and consequently, increased diversions of the Salt River. Beyond the valley, cotton use thrived in Pinal County, where farmers zealously pumped groundwater with little consideration of the consequences. It also signaled the rise of Phoenix as a political and economic center within the state. Finally, the Colorado River, which had once been a mere political boundary, now became an active component of Arizona's future. While Arizona's political leaders came to terms with the CRC, the long-term viability of the river meant resolving the ongoing dispute with California over the river's water.

[35] *Treaty of Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande*, February 3, 1944, Treaty Series 994, III-Colorado River, Art. 10 (a).

POLITICS OF POSTWAR GROWTH

The Second World War revolutionized Phoenix. The valley's dry air and stable climate was ideal for airplanes. The inflow of federal funding for aviation inland facilities to train pilots, as well as upgrading Sky Harbor Airport, provided more economic connections. Developer Del Webb also sought out contracts to build military facilities throughout the state while companies like Alcoa and Goodyear built new manufacturing plants. These new connections and opportunities, as well as the experience of those who had been stationed there combined with the availability of cheap land and the provisions of the G.I. Bill and FHA loans attracted many newcomers to the valley. Widespread adoption of air-conditioning made the hot summers escapable. Before the century's end, the population of Phoenix and those cities which surrounded it would double five times over.[36]

This exponential postwar growth took city leaders by surprise. Within one year (1945-1946), domestic water consumption had increased by 5 million gallons so that Phoenicians were consuming 59 million gallons daily. Diversion from the Verde River could only provide 45 million gallons a day; the rest came from either alkaline wells or reservoirs that lacked the capacity to meet peak demand. While a committee contemplated new well fields and system improvements, the city council contracted with SRP to use a well for six months. After Phoenix had renewed this contract several times, SRP officials proposed that Phoenix help cover the construction of new headgates on the spillway of the recently finished Horseshoe Dam in return for more Verde River water.

[36] Vandermeer, 97-99, 102-103, 109.

Two years of negotiations and a bond campaign established the rights to 25,000 AF that could ensure the city's future.

But an eight year-long drought left little water available in these reservoirs. At the beginning on an intensely hot July in 1951, SRP informed Phoenix officials that they had less than ten days of Verde River water left. A summer monsoon spared the city, but the brief crisis set the city manager on the path to acquire new supplies at any cost. Within a year, officials concluded an agreement with SRP. In return for covering all reclamation-related fees and assessments for subdivided lands that were within city limits, Phoenix would receive the irrigation water that had once been used for agriculture. Since a residential user always consumed less water than a farmer's field, every acre converted from farmlands to residential houses yielded a net-increase in water. The wave of annexations that followed made SRP the supplier for 85 percent of Phoenix's water by 1959.[37]

This new growth increasingly strained the area's surrounding water resources. Nearly all surface waters, save the Colorado River, had been diverted. State leaders began mobilizing to seek federal funding for a project that could divert the river's waters to the center of the state. The ensuing struggle for the state's first and largest interbasin transportation of water would last twenty years and require lengthy litigation. The postwar era also signaled the beginning of a Sisyphean struggle with groundwater overdrafting. Between 1940 and 1948, groundwater pumping had doubled to 3 million

[37] Logan, *Desert Cities*, 151-157; Vandermeer, 143-145; Kupel, *Fuel for Growth*, 137, 138-139, 140, 157-159.

AF annually; annual recharge, at best, was at most a third of that amount.[38] Political resolution of these surface and groundwater issues would impact how interests sought and acquired water resources for years to come.

Surface Tension

Diverting the Colorado River shifted from fevered dream to reality after Department of Interior planners singled out an ideal route for a canal through Parker in 1947. As negotiations with California over the Bridge and Glen Canyon Dam sites authorized in the Colorado River Basin Act had deadlocked, Phoenix civic leaders formed the Central Arizona Project (CAP) Association to promote the project. State legislators led by Sidney Kartus even considered making CAP a state endeavor, but could never muster enough support to move forward with the costly project. Instead, Arizona Senators Hayden and McFarland began recruiting congressional support for a CAP authorization bill in 1947. Maneuvering and lobbying allowed their measure to clear the Senate twice, but overwhelming opposition from California's delegation in the House of Representatives doomed it. Their lawmakers and legal team insisted that Arizona's diversions from the Colorado River's tributaries should count towards its overall allocation; adding the CAP would cause Arizona to exceed its allocation. They pressed Arizona's delegation to again request the Supreme Court to determine water rights on the Colorado River. Fears that a ruling would limit their diversions gave way to Arizona's resigned petition for the court's mediation on August 13, 1952. In order to protect the

[38] Dean E. Peterson and Larry L. Deason, "Arizona's Groundwater Problem and Proposed Legislation," *Arizona State University Law Review* (n.d.): 77.

reserved water rights to five Indian reservations, the federal government intervened; Nevada, Utah, and New Mexico would soon follow.[39]

The Supreme Court began its proceedings in *Arizona v. California* by appointing a special master to review evidence, establish pertinent facts, and make recommendations to the court. After the first one abruptly died, Simon H. Rifkind assumed the position and continued taking testimony from over 340 witnesses as forty-eight attorneys made their case over three years. Rifkind then turned over his findings to the Supreme Court Justices for their evaluation in 1961.[40] It took them two more years to author a ruling which declared that Arizona's 2.8 million AF allocation from the Colorado River excluded any tributary water.[41]

The ruling paved the way for congressional authorization of the Central Arizona Project which, in the eyes of Senator Hayden, would be a lifeline for irrigated agriculture. After the enabling legislation, the Colorado River Basin Project Act (CRBPA), was signed into law in 1968, the Secretary of Interior determined that the project's sizeable costs would be repaid through a political subdivision within Arizona. The state legislature created the Central Arizona Water Conservation District (CAWCD) in 1971 to manage repaying the costs of constructing, operating, and maintaining the CAP as well as to

[39] *Arizona v. California*, 1953 U.S. LEXIS 2471 (Supreme Court of the United States cir. 1953); *Arizona v. California*, 1954 U.S. LEXIS 1994 (Supreme Court of the United States cir. 1954); *Arizona v. California*,1955 U.S. LEXIS 1119 (Supreme Court of the United State cir. 1955); Johnson, 17, 20, 23-25, 28-29, 86.

[40] Johnson, 87, 89, 92; Norris Hundley, Jr., *Water and the West: The Colorado River Compact and the Politics of Water in the American West* (Berkeley and Los Angeles: University of California Press, 1975), 302-304.

[41] *Arizona v. California*, 1963 U.S. LEXIS 2417 (Supreme Court of the United States cir. 1963).

subcontract water deliveries—which were generously subsidized—to users within its three-county service area.[42]

But even with a legally recognized access to the Colorado and the CAP authorized, problems loomed for the CAWCD. Congress had only passed the CRBPA after Arizona's delegation agreed that CAP water would have the lowest priority of diversions within the lower basin in the event of future water shortages. The agency also would have to come to terms with the claims of Indians whose own water rights had been marginalized. In response to the pleas from lawyers of the federal government to determine Indian water rights, the Supreme Court in *Arizona v. California* also set aside a million AF of Colorado River water for all irrigable acreage on five reservations along the river and established that the rights to this water were superior to non-Indian water. This ruling, however, did not address the claims of Indians living along the river's tributaries. Only negotiations in the years to come would validate those claims at the expense of other users.[43]

Grounded Anxieties

The lower energy costs, introduction of more efficient pumps, and high cotton prices that defined the 1930s expanded groundwater-dependent agriculture. And it also raised concerns about overdrafting. Several studies from researchers at the University of Arizona and the U.S. Geological Survey which started in 1939 had confirmed that groundwater levels statewide were in rapid decline. Despite insistently prodding the rural-dominated legislature, Governor Sidney Osborn could only get proposals to create a

[42] The CAWCD encompasses Maricopa, Pinal, and Pima Counties.

[43] Hundley, 302-303.

study committee that would draft a new code—none of which passed. Even the Arizona Farm Bureau's efforts in 1942 and the Arizona Agricultural Post-War Planning Committee's grim prediction in 1944 that abandoned farmlands were inevitable without more pumping restrictions could not generate any political action. Opposition from farmers and real estate developers eager to turn a profit stymied any discussion.[44]

In an announcement that would echo decades later, Osborn warned the legislature in 1945 that the Bureau of Reclamation would not support the CAP unless Arizona could control overdrafting. The legislature rallied to pass a meek bill that required well owners to provide information about their pumping and plans for future wells to the State Land Commission. While the Groundwater Act of 1945 did not curb pumping, the information collection it enabled provided Osborn with enough justification to call the legislature into special session two years later to draft a new groundwater code. The law, which took three tense special sessions to pass, vested the State Land Department with the power to designate basins that lacked enough groundwater to provide for irrigation at the current rate of withdrawal. But declaring a "critical groundwater area" only forbade drilling new wells; it did not restrict pumping from current wells. The State Land Commissioner only declared one such area before 1951. That the act turned a blind eye to deepening or widening irrigation wells that had been in service for the past five years and exempted wells for stock, domestic supplies, industry, and transportation underscored how ineffective it was in reducing groundwater overdrafting.[45]

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[44] The University of Arizona-U.S. Geological Survey initiated these studies at behest of the State Water Commissioner. Mann, 48-49, 50-51.

[45] ARS 45-301; Peterson and Deason, 73-75, 77, 78; Mann, 51-52.

The failure of Congress to authorize the CAP in 1951 drove newly elected Governor Pyle to appoint a study committee to investigate remedies to the code. They recommended placing all groundwater in public ownership and applying a rights system similar to the prior appropriation doctrine. Where this system differed from the current scheme was in its recognition of the shared nature of aquifers. Later users could exercise correlative rights which would entitle them to a reasonable share of the aquifer while limiting usage for senior users. The state would then establish criteria for pumping groundwater unique to each basin. The committee transmitted these recommendations to the legislature, only to have the Arizona Supreme Court fundamentally change the legal status of groundwater before it could make any headway.

The dispute involved two landowners in Laveen, a town southwest of Phoenix that was so small that it escaped the most recent census. Bristor had been building homes since 1916 that were supplied by an underlying aquifer. Arman Decondo Cheatham, the town's postmaster, purchased land west of Bristor to expand what soon became one of the state's largest dairy farms. Rather than rely on suppliers, Cheatham decided to grow his own hay and, starting in 1948, he sunk eleven wells that tapped into the aquifer on which Bristor had relied. When Bristor's wells went dry, he sued to stop Cheatham from withdrawing any more water. Cheatham argued in court that he could pump as much as he wanted, regardless of its effect on Bristor, because the water in question was an underground stream and therefore not private property. The court, he maintained, should

consider it public water which would limit any withdraws to reasonable use.[46] In a 3-2 decision, the Arizona Supreme Court declared that all groundwater was public water subject to the doctrine of prior appropriation and remanded Bristor's case for reconsideration. It noted that

> To permit the present underground water race to continue unabated, without regulation or control, would inevitably lead to exhaustion of the underground supply and consequently to economic disaster. The common-law concept that the owner of land owned everything to the center of the earth below and to the sky above became a part of the body of that law under conditions wholly different from those which obtain anywhere today.[47]

The ruling enabled the state legislature to take a more active role in governing groundwater usage. Major irrigation districts and the SRVWUA quietly accepted the ruling and began pushing for a new groundwater code. But farmers, especially from Pinal County, virulently protested what they considered a death knell for their business. When the legislature resumed for the 1952 session, there was little enthusiasm to take up Pyle's recommendations for a new groundwater code. Any hopes for a negotiated solution further crumbled when the state supreme court announced that it would rehear *Bristor v. Cheatham*. Legislators instead created of a new commission consisting entirely of farmers to study the issue again. Hearings throughout the state led the Underwater Study Commission to issue a report in January 1953 endorsing local administration to curb groundwater pumping and the adoption of correlative water rights, which would

[46] *Bristor v. Cheatham I.*, 73. Ariz. 228, 232-233 (S.C. AZ 1952), LexisNexis; Walter Rusinek, "Bristor v. Cheatham: Conflict over Groundwater Law in Arizona," *Arizona and the West* Vol. 27, No. 2 (Summer 1985):148-149.

[47] Bristor v. Cheatham, 73 Ariz. 235 (S.C. AZ 1952), LexisNexis.

apportion groundwater pumping rights according to the amount of land each user owned above the given aquifer.[48]

Before this system could be considered, the Arizona Supreme Court released its new ruling. A new justice and another's misgivings led to a dramatic reversal of its earlier ruling. A majority now determined that because of the investment required to develop land, the groundwater underneath should be considered a property right. They therefore placed groundwater under the doctrine of reasonable use, which allowed anyone to make withdrawals to meet the "reasonable" demands of improving his or her lands.[49]

With economic realities now dictating the pace of pumping, divisions among legislators over how to restrict overdrafting intensified. Every proposal in the ensuing session had exemptions carved-out. The only accomplishment was passing a stop-gap measure that temporarily prohibited drilling additional wells in critical areas until April 1954. When the following session yielded no breakthroughs, legislators hastily cobbled together two bills. One extended the drilling ban by another year, while the other mildly enhanced the powers of the 1948 Groundwater Act: the State Land Commissioner could now create larger critical areas and deny permits for new irrigation wells for lands within critical areas that were not already being cultivated. It became law without the signature of Governor Pyle, who branded it a "sorry, weak, and confused ending" to any meaningful negotiations for securing an adequate groundwater code.[50]

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[48] Mann, 57-60.

[49] Bristor v. Cheatham, 75 Ariz. 227 (S.C. AZ 1953), LexisNexis; Mann, 61.

[50] Chapter 86, Laws 1954; Chapter 160, Laws 1954, §2 (a-d); Mann, 62-63.

Apart from declaring critical groundwater areas, the commissioner was powerless to stop groundwater overdrafting. One case reinforced this flaw. In 1957, the State Land Commissioner had declared a critical groundwater area in Pima County that included the Anway family farm. They continued to withdraw groundwater, but channeled it to previously uncultivated land. The declining water table forced neighboring farmers to take a crop out of rotation. They, along with the attorney general, asserted that in pumping more water to bring this land—which lay in a critical groundwater area—into production, the Anways had violated this 1954 law. The court, however, thought that if the legislature had intended to limit groundwater use in these critical groundwater areas, it would have written the statute to express that sentiment. The Amways and others were free to use groundwater however they thought most beneficial for their property.[51]

While the *Anway* decision limited pumping restrictions, a shift in the state's political structure all but ensured that the state legislature could not make any further changes to groundwater law. In June 1964, the Supreme Court ruled that state legislative districts had to be roughly equal in population. Gary Peter Klahr, an eccentric and tenacious University of Arizona law student, filed a lawsuit that year arguing that the composition of the state legislature violated this "one-man, one vote" standard. A federal court agreed, and when the rural-dominated legislature failed to pass a new apportionment plan that met this standard, the court imposed its own. In declaring that the legislature would now be composed of thirty legislative districts of equal population, each of which would send two representatives and one senator, the court effectively

[51] *Arizona v. Anway*, 87 Ariz. 207-213 (S.C. AZ 1960), LexisNexis.

swept away the foundation of the old "cowboy legislature." Where it once had to senators like every county, Maricopa County, which cradled the Phoenix-area, now had sixteen senators. The November 1966 elections brought urban Republicans to majority positions in both houses of legislature.[52] Empowered and eager to solidify their political standing, these legislators embarked on an aggressive reform crusade that stretched for over a decade: to list but a few of their efforts, lawmakers created a more professional process for writing the state budget, either eliminated many state boards that crowded the regulatory landscape or combined them into professional agencies, wrestled with resolving disparities in capital funding for school construction, and erected a novel healthcare program to administer federal Medicaid funds. Most of this agenda aligned with the concerns of these urban legislators. Though they were known issues that were becoming more problematic for rural districts, groundwater overdrafting and transportation never generated enough interest within the state legislature for its members to push through any reforms in the next decade.[53]

In this policy vacuum, Tucson's actions in the Avra and Altar Valleys and the ensuing litigation shaped the framework for transporting groundwater. Developers had profited from the WWII economic boom by constructing neighborhoods that, while outside Tucson's service area, could nonetheless be supplied through private wells. Tucson started expanding its water service area in 1938 by acquiring these systems to

[52] David R. Berman, *Arizona Politics and Government: The Quest for Autonomy, Democracy and Development* (Lincoln and London: University of Nebraska Press, 1998), 52-53, 94-95; Elizabeth Tandy Shemer, *Sunbelt Capitalism: Phoenix and the Transformation of American Politics* (Philadelphia: University of Pennsylvania Press, 2013), 174; *Klahr v. Goddard* 254 F. Supp. 537 (1966).

[53] A cursory review of groundwater legislation between 1966 and 1976 reveals two or three measures that were introduced in each session. Most never received a committee hearing, and none ever passed.

meet the needs of a growing population; it operated forty-three wells that supplied 200 water companies and 250,000 customers by the 1960s. But this mounting dependence on groundwater also caused the water table to drop precipitously. With the nearby Santa Cruz River already strained, Tucson initially adopted conservation measures as a remedy. Even after Congress approved the CAP, the immediate fears of water shortages prompted city official to look west for new supplies in Avra Valley.[54]

This valley formed a north-south groundwater area confined by mountains on the east and west. The alluvium of valley floors absorbed the run-off from the mountains that totaled 16.5 million AF of water. But the excessive pumping to feed burgeoning farmlands above led the State Land Department to declare the valley a critical groundwater area in 1954. Tucson purchased Avra Valley farmland and drilled six wells from which officials planned to convey 30,000 AF per year 15 to 18 miles back to the city's service area. While their lawmakers unsuccessfully pushed for a bill to open up groundwater transportation, the city applied for a right-of-way over a patch of state lands. The city's actions did not sit well with those remaining who irrigated 33,000 acres of Avra Valley lands. After failing to negotiate a solution with Tucson's attorneys, W.W. Jarvis and four farmers sued the State Land Department to prevent Tucson's right-of-way. The appeals mounted, leading the Arizona Supreme Court to rule on the case.[55]

The court favored the injunction. Continual pumping by irrigators and natural drainage had depleted the aquifer by 15 percent of its capacity and dropped the water

[54] Logan, *Desert Cities*, 149-151; Kupel, *Fuel for Growth*, 177-178.

[55] Groundwater use and transportation for non-agricultural purposes provided, SB 185, 29th Legislature, 1st Regular Session (1969); *Jarvis v. State Land Department (Jarvis I)*, 104 Ariz. 528, 532 (S.C. AZ 1969), LexisNexis.

table eighteen feet, thus meriting the Avra Valley's declaration as a critical groundwater area. Since Tucson's additional pumping would amount to 25 percent of that which was already being withdrawn, it was clearly violating the state's groundwater code. The court issued an injunction against the right-of-way until the Avra and Altar Valleys were no longer critical groundwater areas.[56] The court did say Tucson could use eminent domain so long as it compensated farmers for their losses. But the combination of irrigated lands, the 8,000 acres of state trust lands under cultivation, and the remaining 81,000 acres of desert land that would be harmed by additional pumping made it impossible for Tucson to "adequately compensate" farmers.[57]

Less than a year later, both parties found themselves before the Arizona Supreme Court with new grievances. Before the court issued its *Jarvis I* decision, Tucson had completed a $3 million pipeline to convey water. Instead of abandoning the pipeline, the city continued pumping water but delivered it to Ryan Field and several residences that, while outside the critical groundwater area, were within the larger Avra Valley drainage area. Tucson insisted that no water was leaving the valley; farmers countered that the city's actions violated the spirit of the court's earlier ruling. Since "additional users would necessarily deplete the supply of existing users," the court again ruled that Tucson could not transport water outside of the critical groundwater area.[58] Perhaps out of foresight, Tucson asked the court where it could acquire cultivated lands within the critical groundwater area from which it could then withdraw groundwater. The court

[56] Ibid., 530.

[57] Ibid., 531-532.

[58] *Jarvis v. State Land Department (Jarvis II)*, 106 Ariz. 507, 509 (S.C. AZ 1970), LexisNexis.

looked to the State Water Code's prioritization of domestic and municipal uses over irrigation and stock watering to conclude that Tucson could do so, provided that the water withdrawn would be "an amount equal to the annual historical maximum use."[59] *Jarvis II* in effect created the precedent for allowing a city to purchase and retire farmland for its water rights.

Tucson began acquiring and then retiring Avra Valley farmland within the critical area while requesting to have the court modify its *Jarvis I* injunction. After a special master delivered a study, the court tackled the delicate task of quantifying the "historical maximum use" in *Jarvis II* that would dictate how much water Tucson could extract. The city argued that the rate should be 4.4 AF per year, which was the amount farmers had traditionally withdrawn. Those opposed to this rate reasoned that since half of the water withdrawn for local agriculture returned underground, Tucson should be limited to the consumptive amount—the portion that did not return to the water table—rather than the total amount taken out. The court sided with Jarvis in interpreting "historical use" as consumptive use.[60] The *Jarvis* cases established important precedents for water farms and rural-urban water transportation. But the court's decision in a simultaneous case that consolidated groundwater disputes quickly rewrote many of these protocols.

The Farmers Investment Company (FICO) had irrigated 7,000 acres of pecan groves in the Santa Cruz Valley with 38,500 AF of percolating groundwater that the State Land Commissioner declared part of the Sahuarita-Continental Critical Groundwater

[59] Ibid., 510.

[60] By the time of its ruling, Tucson had purchased 12,412 acres. Adrian Haxley Griffin, "An Economic and Institutional Assessment of the Water Problem Facing the Tucson Basin" (PhD diss., University of Arizona, 1980), 46-48; *Jarvis v. State Land Department (Jarvis III)*, 113 Ariz. 231, 233 (S.C. AZ 1976), LexisNexis.

Area on October 14, 1954. Three mining companies—the Pima Mining Company, Anamax Copper Mining Company, and the Duval Mining Company—began mining low-grade copper ore in the Sierrita foothills east of FICO's lands and outside the critical area in the 1960s. Since purifying copper ore was a water-intensive process, all three companies purchased land within the critical area to pump and transport groundwater to their mills. By the late 1960s, they were pumping out 25,000 AF per year. Tucson had been pumping 10,000 AF a year from a well field within this same critical area since the 1950s for its customers elsewhere.

FICO first sued Anamax in November 1969, charging that the company's transportation activities had lowered the water table and therefore increased pumping costs. Anamax countered that any depletion in the critical groundwater area was surely the fault of FICO, Tucson, and other users who pumped from this area. After the case worked its way through Superior Court, FICO amended its complaint to include the other mining companies as well as the State Land Commissioner in November 1973.[61] Tucson also filed an injunction against FICO and the mining companies out of concern that the fertilizers and industrial chemicals they used were contaminating groundwater within the critical area. The mines countersued and argued that Tucson had no right to transport water from its wellfields outside the critical groundwater area.[62]

All three parties in this intricate case were surprised when the Arizona Supreme Court announced its ruling on August 26, 1976. The court reduced the three cases to a simple legal issue: did the doctrine of reasonable use permit someone to use percolating

[61] *Farmers Investment Company v. Bettwy*, 113 Ariz. 522-524 (S.C AZ 1976), Lexis Nexis.

[62] Ibid., 524-525.

waters off the land from where they were withdrawn if it damaged others who relied on this common supply? In answering yes, the court effectively banned any injurious groundwater transportation.[63] Mining and municipal lawyers swiftly petitioned for a rehearing only to have the court deny them. The only viable option was to turn to the state legislature. At the insistence of legislative leaders, mining, municipalities, and agricultural representatives came together to draft a temporary bill that would protect current groundwater pumping until more comprehensive legislation could be passed. But each side sought a different result. The mines aimed to continue transporting water; if not, their industry would face certain demise.[64] City representatives pushed for more comprehensive groundwater conservation measures that would free up additional water resources for their continued growth. Both shared a conviction that irrigated agriculture operated a water monopoly—one amounting to 89 percent of the water in the state—that had precipitated the groundwater crisis. Agricultural negotiators, on the other hand, wanted to find a way to permit water transportation without infringing on the rights of farmers. The resulting bill, which the legislature passed without alteration, reflected the compromise between all three interests.[65]

The Groundwater Transfer Act of 1977 sanctioned transporting groundwater outside of critical areas while trying to minimize any harm. Any landowner injured by the transportation could sue to recover damages. Transporting groundwater from lands within a critical area required Certificate of Exemption from the State Land Department.

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[63] Ibid., 527.

[64] "Copper Mines Worried Over Water Shortage," *Arizona Legislative Review,* April 6, 1977, pg. 1.

[65] Desmond D. Connall, Jr., "A History of the Arizona Groundwater Management Act," *Arizona State Law Journal* (1982): 319-320.

Emulating the foolhardy logic of the 1948 Groundwater Code, the department would grant a certificate to any party that had transported groundwater before January 1, 1977 at the rate it had transported before that date. It would also issue a comparable certificate if the requesting party had bought, leased, or retired the farmland from which it would withdraw the water. As with the previous criteria, the requesting party would be entitled to withdraw as much water as had been pumped and applied to lands in question.[66]

The act's provisions reflected the intention of its authors; it would serve as a temporary measure until a twenty-five member commission—consisting of legislators and lobbyists who had participated in negotiations thus far—authorized in its last provision could draft legislation to enable more efficient groundwater use. Even before this commission began meeting in 1978, many of its members had become more committed to reforming Arizona's groundwater laws. President Carter's unsuccessful proposal to cut CAP funding in February 1977 nearly meant that the state's future depended on their efforts. Several Arizona Water Commission (AWC) studies directed them on future water usage trends and introduced twelve groundwater management schemes. While participants agreed to limit groundwater consumption in the three most urban basins (the Salt River, Upper Santa Cruz, and Little Chino), they differed on approach. The AWC study had recommended reducing groundwater overdraft by purchasing and retiring 9 percent of irrigated agriculture land (approximately 128,000 acres) in the Upper Santa Cruz and Salt River Basins. Mining and municipal

[66] Griffin, 54-55; Connall, 320.

representatives maintained that this approach denied the public nature of groundwater while rewarding the very farmers who had produced this crisis.[67]

By January 1979, negotiations shifted in venue and purpose. Now gathered at Castle Hot Springs, members began putting together the schema that would shape the most comprehensive groundwater legislation Arizona had yet seen. Beyond an initial divide over the scope of the law, when they sided with urban interests on regulating only the most overdrafted areas, agriculture representatives were constantly outnumbered. The initial draft recommended a system that quantified, and therefore limited, groundwater rights which would be severable from the land. Cities and mines could then purchase and retire farms to maintain their activities. The report's management scheme focused on local control with an overriding agency to retire groundwater right by purchase or condemnation. The shrill cries from farmers at public hearings that September killed its passage. Only Secretary of Interior Cecil Andrus's threat in September 1979 that he would not allocate any CAP water until Arizona had passed a groundwater code that would remedy ongoing overdrafting could revive talks.[68]

When private negotiations the following month failed to reach a consensus on all points of contention, those involved asked Governor Bruce Babbitt to step in. Over coffee and cheap donuts, Babbitt and this "rump group" of lobbyists and legislators spent six months hammering out an agreement. Even with a draft bill in place by April, negotiators took two months to scrutinize the 175-page bill, line-by-line, until they had reached a

[67] Connall, 320, 324-325.

[68] Political lore has it that Babbitt, who was determined to resolve this issue, requested that Andrus send his letter. Connall, 326-329.

livable compromise. Within a week in early June 1980, the commission had approved, the Arizona State Legislature had passed without debate, and Babbitt had signed into law the Ground Water Management Act (GMA).[69]

The act created the Arizona Department of Water Resources (ADWR) to oversee its implementation and enforcement through five management periods beginning in 1985. By gradually curtailing groundwater pumping in four active management areas (AMA) through each period, the state would reach safe-yield—the point at which groundwater withdrawals equaled natural and artificial recharge—by 2025. Beyond covering previous critical groundwater areas, these four AMAs contained 80 percent of the state's population and 69 percent of its economic activity. Three of them encompassed the groundwater basins that cradled the urban centers of Prescott, Phoenix, and Tucson. Any new subdivided land within these AMAs required showing access to a 100-year assured water supply (AWS) which could be easily satisfied by contracting for CAP water or other "renewable" surface supplies.[70] A fourth AMA that covered five sub-basins in Pinal County followed alternate criteria. To preserve the agricultural foundation of the area, the GMA permitted current farming to continue for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.[71]

Within the AMAs, the GMA established three tiers of water rights. One grandfathered existing uses of irrigated groundwater and could be transferred with its

[69] Connall, 340, 343.

[70] ARS §45-576.

[71] ARS §45-431.

corresponding land.[72] Another, a type 1 groundwater right, applied to land permanently converted to non-irrigation use under which someone could withdraw up to 3 AF per year. Like the irrigation grandfathered right, this right was paired with the land overlaying the groundwater.[73] The final right, the type 2 right, is the most flexible. Though limited to non-irrigation use, it amounts to the maximum quantity of groundwater pumped between 1975 and 1980 for non-irrigation use. Unlike the previous two rights, a user can transfer a type 2 right without selling the land—including withdrawing water from a different spot that is still within the same AMA.[74] In allowing a user to convert water rights, the GMA relaxed the restraints on groundwater transportation.

To discourage any legal challenges, a non-severability clause tied the GMA together. If the courts struck down any portion, the entire act would collapse. While its approach—which the Ford Foundation lauded as one of the most innovative programs in state government—was intended to reflect a comprehensive consensus, several unresolved issues lingered. What exactly constituted a 100-year AWS? Why rely on gallons per capita per day (GPCD) limits—which measured total water consumption—as the metric for reaching safe-yield, and not simply limit the amount of groundwater withdrawn? Finally, how likely was it that epicenters of growth—in crops harvested, population, and industrial production—would submit to restrictions on water consumption? The GMA put in place tenuous criteria for reducing overdraft while

[72] ARS §45-452; ARS §45-465.

[73] ARS §45-463.

[74] ARS §45-464.

providing those subject to them with an escape mechanism through transporting groundwater.

FOUNDATIONS FOR MOVING WATER

Within half a millennium, the inhabitants of Arizona went from coming to water to making water come to them. The increased ability to divert and transport water—in effect, to sever it from its place—changed its value. Where indigenous consensus regarded it as a community good, Spanish mercantilism made water a centrally managed public commodity. The industrial capitalism Anglo-settlement brought rendered water a private commodity whose legal ownership depended on whether a user could apply it to economically productive activity. Farmers in central Arizona zealously diverted rivers and plundered ancient aquifers for profit. Political clout enabled those in the Phoenix-area to obtain one of the first federal reclamation projects and negotiate diversions from the Verde River; city leaders similarly created a franchise that pulled more water from the depths of the earth. Annexing and retiring SRP-served agricultural lands became the new mantra when existing water supplies proved incapable of maintaining urban and industrial growth. When faced with a similar crisis, Tucson pushed this rationale by acquiring then retiring farmlands in Avra Valley, land that while in a separate drainage basin was still geographically close. While the CAP promised more fuel for growth, increasingly severe groundwater overdrafting, a ruling which threatened the future of groundwater transportations, and federal demands for comprehensive reform forced state leaders to confront a crisis wholly of their own making. Their solution, the GMA, simply fashioned loopholes for groundwater transportation that shoved Arizona headlong into another crisis.

CHAPTER 3: ACQUISITIONS

INSTITUTIONAL FRICTION

Insecurity hovered over the Phoenix-area after the passage of the Groundwater Management Act (GMA) in 1980. While it had ensured the viability of the Central Arizona Project (CAP), the lifeline for an area rapidly outgrowing the capacity of its local water resources, no one knew how rigorously it would be enforced. The GMA was many things to many people, but unease about what lay ahead united them. The following year passed with little indication of how the newly established Department of Water Resources (ADWR) would act. But when the agency began announcing requirements, anxiety intensified.

Its declarations of active management areas (AMA) triggered two challenges to the GMA's constitutionality. In the first, a continuation of an ongoing case, the small town of Chino Valley sued to stop its larger neighbor, Prescott, from transporting water from wells the city owned that were within the boundaries of the Chino Valley. Since both municipalities were within the Little Chino Sub-basin of a proposed AMA, the GMA sanctioned this transportation. Chino Valley lawyers therefore argued that the GMA was unconstitutional because it amounted to taking property, in the form of groundwater, without due process of law or just compensation.[1] The other case, which several companies and residents in the Upper Agua Fria Sub-basin of the same AMA initiated, claimed that the GMA's restrictions on groundwater pumping decreased the value of the lands, which overlay an aquifer, without any compensation. [2]

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[1] *Town of Chino Valley et. al. v. City of Prescott (Chino Valley II)*, 131 Ariz. 79, 80 (1981).

[2] *Cherry v. Steiner*, 716 F.2d 689 (1983).

The court upheld the GMA using the same precedent that had struck down earlier challenges to the 1948 Groundwater Code and its 1977 amendments: the state legislature had the power to declare groundwater as something that could be used and not owned.[3] Equally important as these rulings was who defended the GMA. Representatives from a range of agricultural, mining, and municipals interests filed supportive *amici curae* briefings in *Chino Valley II*.[4] Whatever qualms some had, few dared to risk the disruption that would ensue if the GMA was struck down.

The First Management Plan (1980-1990) for the Phoenix AMA that the ADWR released in December 1984 established moderately stringent measures for reducing per capita consumption.[5] As the product of extensive reviews and stakeholder meetings, no one should have been surprised that it curtailed municipal groundwater withdrawals to 1980 levels. By the provisions of this metric, municipal providers consumed 418,000 acre-feet (AF), 44 percent of which came from groundwater. While this consumption only accounted for 20 percent of the AMA's total water use, the ADWR predicted that by 2025 cities would consume over half of their underlying groundwater. The agency therefore implemented requirements to shift users towards "renewable" supplies like the CAP. They proposed that by 2025 mined groundwater would only account for 13 percent of the Phoenix AMA's total water supply. To accomplish this ambitious task, the ADWR

[3] *Southwest Engineering Company v. Ernst*, 79 Ariz. 403 (1955); *Town of Chino Valley v. State Land Department*, 119 Ariz. 243 (1978).

[4] *Town of Chino Valley et. al. v. City of Prescott (Chino Valley II)*, 131 Ariz. 78 (1981).

[5] The gallons per capita per day (GPCD) is calculated by dividing the gallons a municipality withdrew in 1980 by its population in 1980, then multiplying the quotient by 365. It is worth noting that the gallons withdrawn includes groundwater withdrawals and surface water diversions (but not effluent), which makes the management plan an overall water conservation measure rather than simply a regulation for curbing groundwater withdrawals.

divided large municipal providers into low (less than 140 GPCD), medium (141-350 GPCD), and high (350+ GPCD) users. High consumers would need to reduce their GPCD by 11 percent while medium consumers could either reduce GPCD by 6 percent or reach 140 GPCD. Low consumers were free of any restrictions except complying with their new assigned maximum GPCD by December 31, 1986. Most of these requirements fell on the medium users that supplied 95.6 percent of the AMA's 1.45 million people.[6]

The First Management Plan placed modest constraints on the ability of these cities to provide enough water for their growing populations. Despite an economic recession in the early 1980s, Scottsdale, Mesa, and Phoenix—the three most populous cities in the Phoenix metropolitan-area—had already surpassed the population upon which the GPCD standards were calculated by 1984.[7] Predicting future water consumption, when all three cities were at least 40 percent undeveloped, would be difficult. But if they could not supply their growing populations, they feared that growth moratoriums could bind their future.

Where groundwater had once been considered insurance against future droughts, cities now looked to CAP for security. The state legislature had expanded the authority of the Central Arizona Water Conservation District (CAWCD) so that it could contract with the Department of Interior to operate and maintain portions of CAP. But even as the CAWCD began negotiating individual subcontracts in the fall of 1983, uncertainty crept in. The Ak Chin Indian Community and Tohono O'odham Nation had already completed

[6] Arizona Department of Water Resources, *Phoenix Active Manage Area, Management Plan for First Management Period, 1980-1990* (Phoenix, Arizona: December 1984), 24, 63-64, 67-69, 72-73.

[7] See Figure 1: Municipal Population Growth (in millions), 1930-1990.

negotiations for their reserved rights which brought them 112,800 AF annually of Colorado River water, and two other sets of negotiations were still underway.[8] Any water rights that would inevitably be granted to these tribes could have a higher priority over other CAP users, increasing the possibility that the project could not deliver enough water to fulfill the demands of those who had planned on utilizing it.

Future scarcities became present realities by 1984. While the GMA did permit groundwater transportation within AMA sub-basins, the notion that any of the twenty-three cities within the Phoenix AMA would permit any groundwater transportation away from them was ludicrous. Encumbered by GMA requirements that limited how they could increase their supplies, the only solution for Phoenix-area cities was to search out new sources of water, most likely in farmlands with well-established water rights.

WATER FARMS

Water rights sales pitches intensified as the GMA implementation drew near. Sam Steiger, a former congressman known for his colorful bluster, began marketing options to 46 wells from Wine Glass Ranch in Big Chino Valley in 1983. Since the underlying aquifer was outside of the Prescott AMA, it was free of pumping restrictions; Prescott was already drawing 4,000 AF (about 90 percent of its water) from the nearby town of Chino Valley. Steiger planned to sell at least 3,500 AF at $150 per AF to Prescott. The remainder he would market to Phoenix, Mesa, Scottsdale, and Glendale with the caveat that they would be cut off if the water table dropped more than 10 percent over a five-year period. If it had gone into action, 50,000-100,000 AF would have left the Big Chino

[8] *An Act Relating to the water rights of the Ak-Chin Indian Community*, Pub. L. No 98-530, 98 Stat. 2698, 98th Congress, (October 19, 1984); *Southern Arizona Water Rights Settlement Act*, Pub. L. No 97-293, 96 Stat. 1274, 98th Congress, (October 12, 1982).

Valley each year. But no one bought into his plan. Uncertainty over the natural recharge of the valley, increased costs for transporting this water to the Verde River, and the risks that diminishing the river's flow would incur legal challenges from the Salt River Project, stopped Steiger's scheme.[9]

Corporations and current owners of other rural lands took an interest in marketing their water. Arizona Public Service Company, a private utility, had originally acquired 12,550 acres of La Paz County land and water rights in 1980 for a 1,500 megawatt coal-fired power plant. When it became clear that the plant would not be needed until 2000, the utility leased the land to tenant farmers and began marketing its water rights. James Fullmer, a rancher who acquired 3,961 acres of farmland and desert land along the La Paz-Maricopa County line in the late 1970s, listed his properties and their groundwater reserves for $9.6 million.[10]

Many farmers were still reeling from the 1981 recession. Depressed prices from international competition met higher operating costs of pumping groundwater and the realities that younger generations had little interest in continuing the business. Agricultural representatives had based their position during GMA negotiations on the understanding that their role within Arizona's economy—and with it, their near

[9] Roger Manning, a former Executive Director of the Arizona Municipal Water Users Association, recalled Steiger pitching this deal to him. When Manning asked for a written agreement, Steiger blanched. Carolyn Anderson, "Council to consider Steiger water offer; But can Big Chino Valley aquifer replenish pumped groundwater?" *Prescott Courier*, October 9, 1983, 1A, 10A; Carolyn Anderson, "Steiger presents proposal to sell Big Chino water to city of Prescott," *Prescott Courier*, December 6, 1983, 1A; Joseph Pomento, "Big Chino water costs to increase, Steiger says," *Prescott Courier*, February 9, 1984, 1A, 16A.

[10] "Elizabeth Checchio, *Water Farming: The Promise and Problems of Water Transfers in Arizona* (Tucson: Water Resources Research Center, University of Arizona, January 1988), 8, 9, 10; Gary Woodard et. al., *The Water Transfer Process in Arizona: Analysis of Impacts and Legislative Options* (Tucson: Division of Economic and Business Research College of Business and Public Administration, the University of Arizona, April 1988), 134, 143-144.

monopoly on water rights—would decline. Farmers within Maricopa County had hoped that the GMA would compel Phoenix-area cities to purchase their land for its appurtenant groundwater. At almost $10,000 per acre, such a sale would afford a comfortable retirement.[11] Few realized that the proverb of developers going for cheap dirt also applied to cities, many of which were scouting rural areas while trying to figure out how they would transport groundwater back to their service areas. One emerging area caught their attention.

Discontent with county government had always existed in Yuma County. The county seat in Yuma was closer to California and Mexico than to many residents in the county's north. The paltry funding for quality roads and tax burden for services that northern residents would never reap—namely indigent healthcare for migrant workers—reinforced this sense of neglect and roiled them to political action. Don Moon, the son of a prominent family and a politically ambitious lawyer, discovered a loophole in state law that allowed residents to secede and form a new county. Within a year of circulating petitions, northern residents had voted to create La Paz County in 1983 with Moon serving as its first county attorney. But the county quickly fell into debt. The start-up costs of assembling a new government, current operating expenses, and a lawsuit with Yuma County to divide resources demanded more than its tax base—less than 5 percent of which was private land—could support. It took a legislative bailout for the county to regain fiscal solvency two years later.[12] All the while, construction of the Granite Reef

[11] Roger Manning, personal interview on February 7, 2013.

[12] Jan Mohr Meng and Marc Meng, *The County of Peace* (Parker, Arizona: Jmar Productions, 1984), 3; "La Paz County Is Now Officially Out of Debt," *Parker Pioneer*, November 8, 1984, pg. 1.

Aqueduct, which would divert Colorado River water into the Granite Reef Aqueduct of the CAP, had snaked through the new county on its way to Phoenix. The project, which provided the infrastructure to transport water from rural lands to the Phoenix-area, would soon come online.

Planet Ranch

Planet Ranch occupied a curious position within La Paz County. Resting along the Yuma-Mohave County line formed by the Bill Williams River and 20 miles upstream from its confluence with the Colorado, the ranch had been formed from two small homesteads that George L. Gibbons had purchased and combined into a 4,525-acre swath in 1955. Five years later, Arizona Ranch and Metals Company (ARMCO), a Salt Lake City-based mining and stock company, began constructing a copper mine and mill in nearby Mineral Wash. Since processing copper ore was water-intensive, ARMCO purchased Gibbon's land and water rights as well as those surrounding them in 1961.[13] The first hint of the company's plan came in a commissioned study the following year which concluded that 16,800 AF could be pumped for crops every year.[14] After the Alamo Dam was built 20 miles upstream in 1968, the company acquired more farmlands within the river's floodplain so that Planet Ranch enveloped 8,400 acres of deeded land and over 175,000 acres of federal and state grazing land by 1970.[15] ARMCO

[13] Included in this purchase were two other ranches, Lincoln and Rankin Ranch, were respectively 8 and 13 miles upstream from Planet Ranch. Albert C. Martin and Associates, *Planet Ranch: Development Master Plan Report Prepared for Arizona Ranch and Metals Company* (Los Angeles, California: October 1970), 6.

[14] Samuel F. Turner, "Water Resources of the Planet Ranch on Bill Williams River, Mohave and Yuma Counties, Arizona," August 1962, pg. 45. Arizona State Archives, RG 142 Department of Water Resources, Box 13, Folder 16, Dept Office Files (32-F-02) 003 Bill Wms River – Planet Land Exchange 1962, 1974, N.D.

[15] "The History of Planet Ranch," General Ranch Info, Planet Ranch Files, City of Scottsdale.

commissioned a development plan that year for creating a residential retreat for wealthy Southern Californians. Planners saw no irony when they proclaimed that the "natural landscape should be held basically sacrosanct" by planning two golf courses and using groundwater to create a 745-acre artificial lake that featured a marina and an exclusive set of island homes in its center.[16] ARMCO went a step further by pursuing a three-way land swap with the Bureau of Land Management and the State Land Department to create this city. Opposition from numerous state agencies, including the Arizona Water Commission, dragged out proceedings for three years. While the resolution in October 1977 limited their plans, the GMA passage offered an alternative avenue for marketing their lands.[17]

As water demand in the Phoenix-area grew, the company started to plan for selling their water rights. Instead of spending millions to construct a behemoth delivery system to Phoenix, ARMCO determined that the CAP could do nearly all the work for them if they could overcome the legal hurdles of transporting non-project water through it. When the company queried the Bureau of Reclamation (BOR) whether it could let its Bill Williams River water flow into the CAP intake from Lake Havasu for later withdrawal, the agency pointed out that doing so was contrary to the law of the river, but

[16] Albert C. Martin and Associates, *Planet Ranch: Development Master Plan Report Prepared for Arizona Ranch and Metals Company* (Los Angeles, California: October 1970), 31, 39, 62-63, 68, 72.

[17] Among the complaints against ARMCO were that its application lacked any land planning or any discussion of the environmental impacts of development. The deal that came in October 1977 consolidated ARMCO's holdings. They sold off a 1,575 acre-parcel of land to the Nature Conservancy which was added to the Bill Williams National Wildlife Refuge further downstream. Robert G. Worden, Department of Economic Planning and Development, to Constance LaMonica, Arizona State Clearinghouse, "Planet Townsite – Draft Environmental Statement State Application Indentifier: 73-80-0024," June 11, 1973; Wesley Steiner, Arizona Water Commission, to Constance LaMonica, Department of Economic Planning and Development, May 2, 1973, Arizona State Archives, RG 142 Department of Water Resources, Box 13, Folder 16 Dept Office Files (32-F-02) 003 Bill WMS River – Planet Land Exchange 1962-1974, N.D.

suggested—along with the ADWR—that ARMCO would not be legally encumbered if it would transport its water directly to the CAP.[18] At the same time, the company requested that the CAWCD comment on transporting non-project water. In what was the first official statement on CAP wheeling, the board endorsed "the concept of transporting water surplus from outlying areas of the state into the District for use within its boundaries."[19] Within a year, ARMCO had sold Planet Ranch.

Scottsdale officials had originally negotiated a two-year lease with ARMCO that they had hoped would make the ranch pay for itself. When that agreement collapsed, the city quickly bought Planet Ranch and its 13,500 acre-feet of Bill Williams River water rights in March 1984 for $11,600,000.[20] The city, which had heavily relied on groundwater, also had a 20,488 AF CAP allocation and planned to contract for a 5,061 AF SRP allocation. As it stood, the groundwater and CAP supply were enough for 210,000 residents. Yet by their calculations, which assumed a usage rate of 325 GPCD and growth rate of 5,000 people annually, most of which would occur outside of the SRP boundaries, this allocation would be fully committed by 1987. A 30 percent demand reduction would only provide a four-year delay.[21] Buying Planet Ranch was not a cheap venture. Scottsdale initially paid $2,222 per AF to acquire 12,150 AF of water rights that

[18] Letter to Frank C. Brophy Jr. from N.W. Plummer, Regional Director of Bureau of Reclamation, June 30, 1983, Arizona State Archives, RG 142 Department of Water Resources, Box 13, Folder 21 Dept Office Files (32-F-02) 006 BWR; PR Apps, Permits, Certs, etc, ca 1975, 1983.

[19] Letter from Wallace Walker, President of ARMCO, to Executive Directors and Directors, Central Arizona Water Conservation District, November 22, 1982; Central Arizona Water Conservation District Minutes, March 5, 1983, pg 3, CAWCD files.

[20] Payments were broken down into $2,850,000 payment at the close of escrow and remainder would be paid off over 8 years at 9% interest. See "Scottsdale's Planet Ranch," Planet Ranch Files, City of Scottsdale.

[21] City of Scottsdale Water Resource Department. *1985 Water Resource Plan*, 21, 27-28.

it would transport from Planet Ranch. It would cost the city an additional $15 million (approximately $1,250 per AF) to treat this water before it could be used.[22] Since the Bill Williams River would provide a continual water supply, City Manager Roy Pederson spoke for many Scottsdale officials when he claimed that it "could virtually assure Scottsdale of adequate water supplies consistent with quality growth and development for the foreseeable future."[23]

Once the ARMCO shareholders approved the sale and the property changed hands on May 24, 1984, Scottsdale began planning. The alfalfa farming that ARMCO had relied on to maintain their water rights would continue for at least another fifteen years. Officials intended to sell this alfalfa to local horse owners. By fiscal year (FY) 1988-1989, they calculated that their alfalfa profit would almost cover the $1.3 million needed for every year for operating costs and capital improvements.[24] In the meantime, the city contracted with Boyle Engineering Corporation to file applications for the certificates necessary to transfer the ranch's water rights.[25] Pederson also followed up

[22] City of Scottsdale Water Resource Department, *1984 Water Resource Plan*, 36-39.

[23] Even after acquiring Planet Ranch, Scottsdale was also considering additional water ranches which would have run another $56.4 million. Ibid; Roy R. Pederson, City Manager, to the Honorable Mayor & City Council, "Acquisition of Planet Ranch," Agenda Item No. 19, March 1984, Planet Ranch Files, City of Scottsdale.

[24] Scottsdale hired 19 full-time and 6 part-time employees, some of whom had staffed Planet Ranch under ARMCO, to manage Planet Ranch. Interview with Roy R. Pederson, February 5, 2013; City Council Action Report from Field Operations/Fleet Management to Mayor and City Council, "Planet Ranch – FY 84/85 Budget, Positions and C.I.P Projects – Ordinance No. 1657," July 16, 1984.

[25] City Council Action Report from Leonard Dueker, Community Development, to Mayor and City Council, "Award Engineering Contract for Applications to Transfer & Change Water Rights & Permits," Agenda Item No. 41, February 4, 1985, Planet Ranch Files, City of Scottsdale.

with CAWCD about wheeling non-project water, only to be told that any such agreement would have to wait until the district had completed all CAP subcontracts.[26]

A tepid response greeted this unprecedented action. ADWR Director Wesley Steiner, who maintained that the intention of the GMA was to liberalize groundwater transportation, endorsed the sale.[27] Scottsdale Mayor Herb Drinkwater had vowed that nothing would be done to "spoil the way of life" of La Paz County. Once ranching operations ended, he predicted that Planet Ranch would become a wildlife refuge. The following year, Scottsdale officials began talks with La Paz County for an intergovernmental agreement to cover lost revenue. It would take the city two more years before it began making any payments in-lieu of property taxes.[28] While *The Parker Pioneer* announced the purchase above its masthead, none of state legislative candidates who ran for office that year—Senator Jones Osborn and Representatives Bob McLendon and Frank McElhaney— mentioned the sale in any political advertisements. No one, it seemed, cared much about the state's first municipal water farm that would transport water across county and basin lines.

Eloy Sub-basin

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[26] Letter from Roy Pederson to Thomas Clark, CAWCD General Manager, November 15, 1984, CAWCD files; Letter from Thomas Clark to Roy Pederson, December 12, 1984, No. 69091, CAWCD files.

[27]Many regard Steiner as the godfather of Arizona's water development. After working in his native California on the development of a state water plan and becoming an expert on Colorado River water issues in the 1950s and 1960s, Steiner came to Arizona in February 1969 to serve as Executive Director of the Interstate Stream Commission. Steiner drafted the first statewide water plan, agitated for more restrictions on groundwater pumping, and oversaw negotiations for Plan 6 funding. By 1981, he was the Director of the newly created Arizona Department of Water Resources. Steiner, Wesley. "Oral history interview on December 3, 2003. Central Arizona Water Conservation District. http://www.capaz.com/Portals/1/Property Agent/1228/Files/1187/Interview%20with%20Wes% 20Steiner.pdf.

[28] La Paz County Board of Supervisors Minutes, "Scottsdale/La Paz County IGA," March 18, 1985, pg. 850042-850043, RG 106 La Paz County, Roll 1, Arizona State Archives; La Paz County Board of Supervisors Minutes, "Executive Session," December 21, 1987, pg. 870274 [870282], RG 106 La Paz County, Roll 2, Arizona State Archives.

Once a modest agricultural community, Mesa's population had tripled between 1975 and 1985 to almost 300,000 people, making it the second-fastest growing city in the United States. Most of this growth came from aggressive annexation eastward between 1970 and 1980 which increased its geographic size 232 percent to 65.38 square miles. By the next decade, the East Valley suburb would comprise 113.2 square miles. But this growth brought burdens. Groundwater accounted for nearly 27 percent of its supplies (14,738 AF) by 1985. While Mesa planned to shift to SRP and CAP water as it grew, these sources would only cover two-thirds of its 200,000 AF need by 2025. Even with the projected decrease in GPCD, utilizing reclaimed water, and implementing other conservation measures, city officials predicted that they would face a 30,000 AF shortage (15 percent of the projected water supply) by the turn of the millennium.[29]

While Scottsdale was in negotiations for Planet Ranch, Mesa officials led by Water Resource Manager Karl Kohlhoff were considering Pinal County farmland for supplemental supplies.[30] Like Scottsdale's endeavor, purchasing and developing these water rights was expensive. The estimated total cost of $500 per AF was twice that of reclaiming effluent ($250), at least 2.6 times the cost of CAP water ($190), and over 11 times the cost of SRP water ($45).[31] But the high quality of the groundwater, its proximity to Mesa and the CAP, and its location in a planned depletion AMA justified

[29] Karl F. Kohlhoff, "Urban Use of Arizona's Rural Groundwater," *Journal American Water Works Association* (March 1988): 47-48.

[30] A native Arizonan, Kohlhoff was Mesa's longtime water resource management coordinator when the city underwent exponential growth. Well, Huish & Associates to Dick Rosa, Administrator for Real Estate Services, December 20, 1984, "Pinal County water farms – acquisition," Real Estate Services Department, City of Mesa.

[31] Included in this cost is the price for acquiring and delivering that water, along with any costs associated with operations, maintenance, and repair.

acquisition. Mesa purchased 32 parcels of land from 13 farmers totaling 11,606 acres in the Central Arizona Irrigation and Drainage District and Hohokam Irrigation and Drainage District. Most of these farmlands had produced upland and Pima varieties of cotton in addition to wheat, barley, and alfalfa that consumed 55,000 AF per year. These lands would soon yield 28,919 AF of groundwater annually for a city that became the largest landowner in the county.[32]

Mesa officials intended to trade their groundwater for a portion of Tucson's CAP allocation. After converting existing grandfathered water rights to a type 1 non-irrigation water right, which would allow its use on any lands, Mesa would deliver this groundwater to the CAP in return for an equal delivery of Tucson's CAP allotment. The city would then use the CAP water to irrigate the farmland until 2000. At that point, farming would end and Mesa would begin withdrawing 2.7 AF of groundwater per acre which they would then exchange with Tucson for an additional CAP allotment. Before making this purchase, the city ran this proposal by the CAWCD. The district's board thought that the idea complemented its support for transporting non-project water, but insisted that it would need the proposal "completely described" before approving it.[33] Even though Mesa never established a formal agreement with Tucson—the city only had a tentative letter of support from Tucson City Manager Joel D. Valdez—when it submitted its plans to the ADWR, the agency nonetheless approved it in April 1987.[34]

[32] Kohlhoff, 47-49.

[33] Letter from CAWCD General Manager Thomas C. Clark to Mesa Public Workers Manager Dean Sloan, April 10, 1985, Real Estate Services Department, City of Mesa.

[34] Kohlhoff, 48-49.

While Mesa owned these lands, those within Pinal County exerted some influence over their future. Intergovernmental agreements with both irrigation districts hosting water farms bound Mesa to pay assessments until their respective debt obligations were repaid. The city also agreed that if it sold any lands to another tax-exempt entity, it would require the purchaser to abide by similar agreement.[35] To head-off future concerns, Mesa commissioned an economic development plan for its properties and created an intergovernmental committee with representatives from the nearby towns and the Pinal County Planning Department to implement it. The study viewed Mesa's activities as part of the county's transition away from agriculture. When it would begin transporting groundwater in 2000, Mesa would devote 1 AF of CAP water per acre to the industrial development of the land. They predicted that the water and lands would be foundations for six mid-sized industries (including a regional jet port), a shopping center, and two RV parks. The Pinal County Board of Supervisors unanimously approved the plan, which Mesa Mayor Peggy Rubach and Community Development Manager Wayne Balmer personally presented to them, on October 10, 1989.[36]

McMullen Valley

Phoenix foresaw the oncoming groundwater restrictions before they arrived. Groundwater had supplied almost half of the city's water in 1975 but within ten years, as

[35] "Intergovernmental Agreement between the City of Mesa, Arizona and the Hohokam Irrigation and Drainage District, Pinal County, Arizona" 85-A38, August 29, 1985, pgs. 3, 6; "Intergovernmental Agreement between the City of Mesa, Arizona and Central Arizona Irrigation and Drainage District, Pinal County Arizona," November 17, 1987

[36] Greiner Engineering, Inc, *City of Mesa/Pinal County Water Farm Project*, June 10, 1988, Section 2. Economic Analysis, 2-4; Wayne Balmer, Community Development Manager, to Mayor Rubach, "Responses to the size issues raised by the Pinal County Governmental Alliance, Inc.," January 29, 1991, Real Estate Services Department, City of Mesa; Pinal County Board of Supervisors, "Minutes for October 10, 1989," Book 18, Resolution PZC-11-88.

the GMA was entering into effect, it accounted for only 27 percent of the city's supplies. Officials had offset this decline by contracting with SRP for two-thirds of their waters and planned for the CAP filling out the rest.[37] But the city's 1985 water resource plan, which was the first comprehensive plan that the city had produced, forecasted that current supplies would not last. Even though Phoenix would begin receiving CAP water in 1986, rapid population growth outside the CAP and SRP service areas would surpass available supplies by the millennium—even with a 20 percent demand reduction. Though planners contemplated numerous improvements in water system efficiency, they found that "conservation alone will not suffice if rapid growth continues." The implementation schedule recommended acquiring at least 20,000 AF of additional water within the next two years for use by 2004.[38]

Phoenix arrived late to acquiring a rural water farm. Official were well aware that these properties were becoming increasingly controversial; rural lawmakers were already pushing for moratoriums on any future purchases.[39] Any acquisition they made would carry numerous liabilities with it. They hired George Britton, a Babbitt administration natural resource economist who had helped draft the GMA, to lead the search for a water farm and gave him two criteria: first, any site under consideration had to be close to the CAP aqueduct; second, any underlying groundwater had to be in a self-contained aquifer

[37]City of Phoenix, Water & Sewers Department, "Water Production and Consumption in Million Gallons," Annual reports for the years 1975 to 1985.

[38] *Phoenix Water Resource Plan, 1985: a plan developed by the Phoenix Water and Wastewater Department to meet long-range water resource requirements* (Phoenix: City of Phoenix, Water and Wastewater Department, 1985), 6-7, 9, 21, 22, 26, 31, 32, 34, 52-53, 66-67, 77, 78; David R. Garcia to Michael Gritzuk, "McMullen Valley History/Status Summary," December 14, 1994, Law Department, City of Phoenix.

[39] "Thorny issues await legislators," *Arizona Capitol Times*, January 8, 1986, pg. 18.

to limit the impact on surrounding lands. As Britton and his team were getting their search underway, a delegation from the McMullen Valley Water Conservation and Drainage District (MVWCCD) led by President Mary Urrea approached them with an offer in hand.[40]

Located in northeastern La Paz County, McMullen Valley cradled the towns of Salome and Wenden which were the hub of nearby farming and mining operations. Residents drilled the first wells in the early 20th century for local cattle ranchers, the recently completed Arizona and California Railroad, and the nearby Bonanza Mine in Harrisburg Valley. Irrigated agriculture had taken root when the Harquahala Livestock Company drilled four wells in 1917, but only five other wells popped-up in the Salome-Harrisburg Valley area by 1954. Only when farmers sank the first deep irrigation well into the Aguila Valley that gushed 2,000 gallons every minute did irrigated agriculture take off. Within seven years, 23 new irrigation wells were tapping into the deep underlying aquifers.[41] Twenty-five years of bountiful cotton farming crashed with the 1980s recession. Rising power costs made irrigation prohibitively expensive: one farmer paid $250,000 a year to irrigate his 1,200-acre cotton field.[42] Concerned residents formed the MVWCCD in 1984 to spread the water costs associated with crop irrigation and to get a slice of cheaper, subsidized Hoover Preference Power. But as negotiations

[40] George Britton, personal interview, March 9, 2013; Jay I. Moyes, personal interview, April 8, 2013.

[41] William Kam, *Geology and Ground-Water Resources of the McMullen Valley, Maricopa, Yavapai, and Yuma Counties, Arizona: Water Resources Report Number Eight* (Phoenix: Arizona State Land Department, 1964), 10, 13.

[42] Scott Armstrong, "Western cities buy out farmers for water; Will rural areas survive if they sell their precious resource?" *Christian Science Monitor*, April 21, 1987, pg. 3.

continued, the district had to rely on more expensive power from APS. Within a year, the district's representatives were offering their lands and water rights to Phoenix.[43]

Britton's team proceeded cautiously. They hired an engineering consulting firm, James M. Montgomery, Consulting Engineers,[44] to analyze the costs and benefits of acquiring thirty different rural agricultural plots for their water rights. Though the study selected McMullen Valley as the most promising source, officials looked to three sites in La Paz County that were close to the Granite Reef Aqueduct as potential water farms. Only two areas, Aguila Farms and McMullen Valley, offered, according to the study, the "opportunity to virtually control the use of the groundwater resource in these areas since the acquisition of lands being offered comprise over 80 percent of total existing irrigation areas."[45] There was little geographic difference: McMullen Valley and Aguila Valley formed part of the McMullen Valley Basin. The perched aquifer which contained 7.3 million AF underneath the district (enough to serve 150,000 residents for 200 years) made McMullen Valley the favored site, even though the 20 miles that separated it from the Granite Reef Aqueduct of the CAP meant $34 million in transportation

[43] In 1987, the Arizona Power Authority, the principal negotiating body for Hoover Dam hydropower, allocated 12,974,000 kilowatt hours (KH) of Schedule A power and 5,970,000 KH of Schedule B power to the MVWCDD. La Paz County Board of Supervisors Minutes, "Arizona Public Service Applications, Gas and Electric Public Service Franchises," March 19, 1984, pg. 429, RG 106 La Paz County, Roll 1, Arizona State Archives; La Paz County Board of Supervisors Minutes, "Public Hearing, Proposed McMullen Valley Water Conservation and Drainage District," January 23, 1984, pgs. 376-377, RG 106 La Paz County, Roll 1, Arizona State Archives; La Paz County Board of Supervisors Minutes, "McMullen Valley Canvas," May 7, 1984, pgs. 475-479, RG 106 La Paz County, Roll 1, Arizona State Archives; Michael Gritzuk to David R. Garcia, "McMullen Valley History/Status-Summary," December 14, 1994, pg. 3, Law Department, City of Phoenix; Jay I. Moyes, personal interview, April 8, 2013.

[44] James M. Montgomery, Consulting Engineers Inc. worked with two other firms, Franzoy-Corey Engineers and Architects as well as Landry and Associates, to create their study.

[45] James M. Montgomery, Consulting Engineers Inc., *City of Phoenix Water Resources Study McMullen Valley: Executive Summary*, 1, 2, Law Department, City of Phoenix.

infrastructure.[46] The closest this report came to addressing the third-party effects of this water farm was an acknowledgement that "[s]ince natural recharge is very low in the desert area of western Arizona, any groundwater development project would undoubtedly result in mining of the groundwater basin." But the impact of removing groundwater seemed remote: "[l]ike Aguila Valley, McMullen Valley is remote and it is doubtful that significant development pressures will materialize in the foreseeable future." [47]

Before agreeing to the purchase, city officials, district representatives, and the La Paz County Board of Supervisors met several times to smooth over any concerns. Fiscal matters dominated these meetings, though the supervisors also pushed Phoenix officials for an economic and hydrologic impact study.[48] Phoenix officials assured the supervisors that they would cover any loss in property tax base and compensate La Paz County for any economic losses.[49] After the purchase, they helped create the McMullen Valley Chamber of Commerce to attract new businesses to the area and made a point of hiring local workers for all maintenance activities. They hoped to replace agriculturally dependent jobs while pursuing 3-5 percent employment growth. Goodwill gestures abounded: officials donated ambulance, made $54,000 in donations to the nearby Tri-Valley Medical Clinic, and arranged to lease a building to the clinic to store emergency

[46] The data on which James M. Montgomery, Consulting Engineers based their findings were the Arizona Water Commission's "Inventory of Resources and Uses," which would later serve as the basis for the GMA. The inventory listed McMullen Valley as a Category I basin, meaning that enough data existed to provide a reasonable estimate of water balance. William L. Chase, Jr. to Betsy Rieke, May 13, 1991, Law Department, City of Phoenix.

[47] James M. Montgomery, Consulting Engineers Inc., 11-12, Law Department, City of Phoenix.

[48] La Paz County Board of Supervisors Minutes, "McMullen Valley Study Committee," May 18, 1987, pg. 870079, RG 106 La Paz County, Roll 2, Arizona State Archives.

[49] Ray Schultze, "Water agreement spawns 'mistrust'," *The Phoenix Gazette*, November 2, 1987, pgs. B1-B2.

equipment at a dollar. At one point, they even purchased animals from the Tri-Valley 4-H, slaughtered them, and then donated the meat to the McMullen Valley Food Bank.[50]

The purchase in December 1985 was the largest and priciest water farm in Arizona's history. For $30,567,990, Phoenix bought 23 farms totaling 13,129 acres of MVWCDD farmland and leased 2,720 acres of state land. After commissioning another report to evaluate its options, the city decided to gradually phase out cotton farming for less water-intensive crops until 2005, by which time would it began withdrawing 30,000 AF per year.[51] During wet years, it would recharge aquifers with excess CAP water. In drier times, it would transport McMullen Valley groundwater via CAP to recharge aquifers within the Phoenix AMA.[52]

Phoenix met little local opposition. The report that the La Paz County Board of Supervisors requested from Phoenix found that most residents believed their future lay beyond agriculture; nearly all respondents in fact favored some form of economic diversification. The most criticism came from local water companies that fretted over lowered water tables and decreased opportunities for commercial and residential expansion.[53] But outside of McMullen Valley, some viewed this purchase with

[50] William L. Chase Jr., "Background information on the City of Phoenix' McMullen Valley Property," May 1989, Law Department, City of Phoenix.; Frank M. Ales to William L. Chase, Jr., "McMullen Valley Information for Legislation – Response," March 11, 1991, Law Department, City of Phoenix; Robert E. Moore, P.E. Resource Management Associates, *City of Phoenix McMullen Valley Operations; Initial Farm Plan, September 1988*, 29, Law Department, City of Phoenix.

[51] This was a change from the 1985 water resource plan, which had anticipated that Phoenix would need supplemental sources comparable with what McMullen Valley offered by 2015.

[52] Elizabeth Checchio, "Water transfers in Arizona: Measuring effects on areas of origin." (MS thesis, University of Arizona, 1990), 102; Robert E. Moore, P.E. Resource Management Associates, *City of Phoenix McMullen Valley Operations; Initial Farm Plan*, September 1, 1988, Law Department, City of Phoenix.

[53] James M. Montgomery, Consulting Engineers, 4-11.

trepidation. As tone La Paz County lawmaker put it, if Phoenix, the urban leviathan that dominated the state, could pull water from distant lands, all rural Arizona could be fertile ground for water farms.[54]

A QUESTIONABLE CONTROVERSY

The act of moving water across basins is loaded with consequences. But as the water farms stood during the time that legislative negotiations were underway, there was no legal way for these cities to transport groundwater. Scottsdale and Phoenix had never resolved how to transport their waters through CAP. Under the doctrine of prior appropriation, if Scottsdale's Bill Williams River allocation was left to flow into the Colorado River, it became water subject to more senior users. And if it chose to directly pump it to the CAP, as Phoenix planned, it would need to work out a wheeling agreement with the CAWCD—something that no entity had accomplished and that neither city had begun to negotiate. Though Karl Kohlhoff had created an ingenious exchange arrangement to sidestep this legal issue, Tucson city officials had only "conceptually approved the proposed exchange"—provided they could resolve any number of considerations such as determining acceptable water quality to obtaining approval from the CAWCD.[55] Kohlhoff's plan, like those of Scottsdale and Phoenix, required more negotiation and fine-tuning before it could come to fruition.

Yet it is worth mulling over the potential effects of municipal water farming. All three cities chose to lease their newly acquired lands to farmers. How they reconciled the

[54] Personal Interview with Herb Guenther, March 20, 2013.

[55] "Water Exchange" letter from Tucson City Manager Joel D. Valdez to Mesa City Manager Charles K. Luster, February 25, 1985, Real Estate Services Department, City of Mesa Files. Kohlhoff also ran the legality of the proposed exchange by Bill Stephens, a prominent water attorney. Letter from Bill Stephens to Karl F. Kohlhoff, September 28, 1984, Real Estate Services Department, City of Mesa.

health of a rural economy with the risks of continued groundwater overdrafting could be challenging. But when it came time to transition lands to exporting groundwater, three issues arose. First, land retired from agricultural use could be reclassified to a lower valuation which would further constrain the fiscal solvency of rural governments. Since municipal property is tax-exempt under the Arizona Constitution, merely transferring ownership of these lands had significant consequences for surrounding communities.[56] Rural counties would lose property tax revenue, have smaller debt and bonding capacities, and therefore receive a proportionally smaller share of state revenues. The state legislature partially resolved this issue when it passed a bill in 1986 that allowed cities to make voluntary payments in-lieu of property taxes on remote municipal property "from which water is withdrawn or diverted and transported for use on other property."[57] Scottsdale, Phoenix, and Mesa all began making in-lieu payments the following year. Yet this legislation did not resolve the issue of reduced bonding capacity which would curb a community's ability to govern itself.

The second, and more complex issue, was what impact retiring agricultural lands would have on rural economies that were more limited. Between 1980 and 1984, rural counties lost 73,000 non-agricultural jobs. A survey by the Arizona Department of Economic Security revealed that by 1984, the average unemployment rate of rural counties was 9.6 percent.[58] Retiring farmland directly put those working the land out of

[56] Arizona Constitution, Article 9, §2 (1).

[57] Remote municipal property; taxation, water, HB 2264, 37th Legislature, 2nd Regular session (CH 146 E, 1986).

[58] College of Agriculture, University of Arizona, *Arizona Agriculture*: *Now and a Vision for the Future: Executive Report* (Tucson: College of Agriculture, University of Arizona, 1986), 21, 51, 53.

work, while those who processed and distributed crops would face diminished work. And the lessened pay for these workers could induce economic changes throughout a county.[59] But the linkages between agricultural employment and regional income could be tenuous. Fewer workers were needed as irrigated crop production became more capital-intensive and mechanized. More important was the role and viability of agriculture as an economic engine. By the late 1970s, rising power costs and foreign competition meant that irrigated agriculture was venture at the margins. Considering how marginally profitable many of these lands were reputed to be, some municipal representatives argued that these lands would have been abandoned in due time. Perhaps under municipal ownership, they reasoned, there would be capital available to shift the area's economic base.[60]

But the third and ultimate issue that animated the transfer, ownership, and export of rural water was the value of water. When farmers sold their lands to cities and developers, water was a simple commodity that could be exchanged among consenting parties. But for those living in surrounding communities, water took on a larger value; it was a communal good that could not be severed from its lands. Many residents feared that removing water from these areas would psychologically condemn them—by those living outside and from within—as communities deprived of any future. While quantitative data can provide some approximation of the impact these water farms would have on the surrounding communities, they can never approximate how residents felt

[59] Between 1975 and 1980, six rural counties had a net emigration of individuals 15-29 years of age. Ibid, 81-82.

[60] Gary C. Woodard et. al., *The Water Transfer Process in Arizona: Analysis of Impacts and Legislative Options* (Tucson: the University of Arizona, Division of Economic and Business Research, College of Business and Public Administration, April 1988), 58.

about the future of their communities. The water farms would endure as monuments to lost sovereignty.

The only empirical indication of their impacts was Avra Valley. The three court cases these 22,878 acres of farmland generated in the 1970s and 1980s set precedents for all future water farms.[61] Even after the passage of the GMA, Tucson continued acquiring farmlands to assert control over the area and any competing groundwater users so that it controlled over half of the valley's lands and 60,000 AF in groundwater by 1988. Russian thistle embodied the consequences of municipal ownership. As Tucson quickly retired 17,200 acres of cultivated lands without any cover crop to ease the transition to native vegetation, these plants sprung up from the rapidly drying soil and formed tumbleweeds that bounced across the valley. For some remaining residents, the sight of tumbleweeds and Tucson's decision not to develop the valley confirmed that growth was not in their future. But for others the tumbleweeds also signaled that farmlands were reverting to their natural surroundings and the overdrafting that had sunk the water table 70 feet started to ebb. During the 1970s, Tucson withdrew 14,000 AF per year—far less than the estimated 136,300 AF farmers pumped in the years before the city began acquiring their lands.[62] This abstract analysis can reveal all possible consequences, but what actually mattered to residents in the surrounding communities varied depending on each farm.

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[61] See *Jarvis v. State Land Department (Jarvis I)*, 104 Ariz. 527 (S.C. AZ 1969), LexisNexis; *Jarvis v. State Land Department (Jarvis II)*, 106 Ariz. 506 (S.C. AZ 1970), LexisNexis. *Jarvis v. State Land Department (Jarvis III)*, 113 Ariz. 230 (S.C. AZ 1976), LexisNexis.

[62] Woodard et. al., 136-137; U.S. Department of Agriculture, Soil Conservation Service, Economic Research Service, Forest Service, in cooperation with Arizona Water Commission, *Santa Cruz-San Pedro River Basin Arizona Resource Inventory* (Portland, OR: USDA-SCS, 1978), 4.23, 4.25; U.S. Geological Survey, *Arizona Water Commission Bulletin 7: Annual Report on Ground Water in Arizona; Spring 1972 to Spring 1973* (Phoenix: April, 1974), 25-26; Checchio, 115.

La Paz County

The fiscal impacts of municipal water farms most worried the La Paz County Board of Supervisors.[63] Though municipal-owned water farms accounted for 18,200 acres of land which was 2.56 of the county's assessed valuation, the small population and limited tax base would amplify the fiscal impacts of water farms.[64] Two researchers calculated that every 1,000 acres of retired agriculture would deny Parker, the county seat, $2,564 in revenue while the county would lose $11,517. Another, Elizabeth Checchio, investigated how these farms could potentially affect the fiscal and economic health of counties of origin. She determined that La Paz County would be 37 times more vulnerable to the fiscal impacts of retiring municipally owned agricultural land than Pima County had been when Tucson acquired its Avra Valley farmland.[65] In practical terms, Phoenix and Scottsdale's water farms (assessed at $929,658) denied La Paz County $18,896 in property taxes and $77,878 in total taxes in 1987 which the county had to make-up by raising their property tax rate by 0.02 cents. Phoenix's McMullen Valley farms also contracted the assessed valuation of several nearby school and fire districts.[66] For a county that emerged from debt in November 1984 and was planning to annex a

[63] La Paz County Board of Supervisors Minutes, "Call to Public," September 21, 1987, pg. 870195, RG 106 La Paz County, Roll 2, Arizona State Archives.

[64] With 14,300 residents in 1980, La Paz County was Arizona's second least-populous county. Before the water farm purchases, only 140,571 of the county's 2.8 million acres were in private ownership. Federal lands and the Colorado Indian tribal land accounts for 88% of all land in La Paz County. State lands account for an additional 7%.

[65] Charney, Alberta H. and Gary C. Woodward. "Socioeconomic Impacts of Water Farming on Rural Areas of Origin in Arizona." *American Journal of Agricultural Economics* Vol. 72, No. 5 (December 1990): 1196; Checchio, 161, 169.

[66] Most of the declines in assessed valuation ranged between 3% (Bicentennial Union High School) and 7% (Wenden Elementary School District). The notable outlier was the Wenden Fire District, whose assessed valuation plummeted 63%. La Paz County Board of Supervisors Minutes, "Call to Public," pg. 870215, 870216, RG 106 La Paz County, Roll 2, Arizona State Archives.

portion of the county seat, Parker, that lay within the Colorado River Indian Reservation to offset the falling revenues brought by municipal water farms less than a year later, retiring this land would have made La Paz's fiscal state even more tenuous.[67]

While over 107,000 acres of farmland formed the county's prominent agricultural base which accounted for 26 percent of total personal income, all but 35,000 acres were concentrated on reservations for Colorado River Indian Tribes (CRIT).[68] Phoenix and Scottsdale's holdings, in other words, comprised over 45 percent of this non-Indian agriculture. One study calculated that retiring 1,000 acres of the most agriculturally productive lands would cause La Paz County to lose seventeen jobs. Geography could partially moderate the impact of this retirement: eastern La Paz County is entirely agricultural, while the economic base of the western portion along the Colorado River is divided between tourism and sales to the CRIT. But the county's small economy meant that it "cannot absorb the labor force released from the agricultural industry as a larger economic area could."[69] Checchio similarly determine that agricultural incomes within the county were 79 times more sensitive to retiring farmlands than Pima County had been when Tucson acquired its Avra Valley properties. Overall incomes in La Paz County were, according to her comparative index, 39 times more sensitive to retiring municipally owned lands.[70] Yet farming was not the sole economic driver. La Paz County Manager

[67] La Paz County Board of Supervisors Minutes, "Annexation," July 1, 1985, pg. 850115, RG 106 La Paz County, Roll 1, Arizona State Archives.

[68] Cotton and alfalfa accounted for 76% of cultivation in 1986, with fruits, vegetables, and nuts making up the remainder. Checchio, 128; La Paz County Board of Supervisors Minutes, "Call to Public," October 5, 1987, pg. 870212, RG 106 La Paz County, Roll 2, Arizona State Archives.

[69] Charney and Woodard, 1195, 1196, 1197.

[70] Checchio, 143, 146.

Neta Bowman credited the rise of light industry with 6.8 percent decline in the county's unemployment rate between May 1986 and May 1987. While this rate still hovered around 9.1 percent, it spoke to the tenuous role of agriculture in the county's future.[71]

The McMullen Valley farmland reflected this larger framework. The valley's residents were poor: nearly 46 percent had household incomes below $10,500 and almost a third of the 373 jobs there were in agriculture or agricultural-linked industries that were slowly declining.[72] The city leased their lands to the CRIT which farmed 3,725 acres of cotton that, at $1000 per acre in supply and labor, contributed $3,750,000 to the economy. When combined with the increasing cotton cultivation to 5,000 acres, Phoenix officials calculated that they had contributed $18.75 million to the local economy.[73] The area's two elementary schools and one high school, which were the next largest source of jobs, saw their enrollment drop by a third between 1982 and 1984 because of the recession.[74] While legislation in the early 1980s shifted maintenance and operations to a state equalization formula, schools districts still relied on the total assessed valuation of property for bonding. Phoenix's farmlands, in other words, would undermine the capacity of these schools to service their communities. The fact that these two economic drivers, which constituted over half the area's jobs, were limited meant that McMullen Valley's future hinged on the abilities of Phoenix and the McMullen Valley Chamber of

[71] Only Santa Cruz (14.1%) and Yuma (13.1%) Counties, both of which had agricultural economies, featured higher unemployment rates. Both had agricultural economies. Arizona Agriculture, 87; Checchio, 128; La Paz County Board of Supervisors Minutes, "Call to public," October 5, 1987, pg. 870217, RG 106 La Paz County, Roll 2, Arizona State Archives.

[72] James M. Montgomery, Consulting Engineers Inc., 4-4, 4-5.

[73] Frank M. Alas to William L. Chase, Jr., "McMullen Valley Information for Legislation – Response," March 11, 1991, Law Department, City of Phoenix.

[74] James M. Montgomery, Consulting Engineers Inc., 4-5, 4-6.

Commerce it created to attract business. Even after political resolution of the water farm issue, officials were still fretting that they had "found it difficult to attract money and new businesses."[75]

Planet Ranch, conversely, had been intended as a water farm well before Scottsdale acquired it. The city simply maintained the 2,400 acres of alfalfa cultivation ARMCO put in place as a placeholder for surface water rights when it was trying to market Planet Ranch. The fifteen full-time and two part-time employees, nearly all of whom lived on the ranch, were a temporal anomaly. The only real harm in exporting Planet Ranch's water was it could potentially harm the Bill Williams River National Wildlife Refuge immediately downstream. The refuge, which was created in 1941 and expanded to 6,501 acres in 1981, hosted 250 species of birds and an array of reptiles and mammals like bighorn sheep. Scottsdale's expanded alfalfa farming pulled water from a deep aquifer which filled the Bill Williams River's subflow and acted as a shock absorber in droughts. When releases from the Alamo Dam declined in the summer of 1991, the trickling river flow could not support much of the cottonwood-willow galleries that served as the foundation for the riparian habitat on which most wildlife at the refuge depended.[76] If diversions to Planet Ranch continued as Arizona's climate warmed, the potential damage to the refuge would have increased in severity.

Pinal County

[75] Michael Gritzuk to David Garcia, December 14, 1994, pg. 4, Law Department, City of Phoenix.

[76] Jeannie Wagner, *Proposed addition of Planet Ranch to the Bill Williams unit of the National Wildlife Refuge System* (Albuquerque: U.S. Fish and Wildlife Service, 1991), 1, 2, 5, 6; Peggy Shaw, "Bill Williams River is drying up below Planet Ranch," *The Parker Pioneer*, January 30, 1991, pgs. 1, 3, 8, 15.

Pinal County shared many of La Paz County's vulnerabilities. Public lands, whether in the form of three Indian reservations or parts of two national forests, dominated the landscape. Over 60 percent of the county's population were "dependents"—either children under fourteen or seniors—who were more vulnerable to cuts in government spending.[77] But it was more fiscally solvent and economically diverse than La Paz County. With 22 percent of land in private hands, an amount over four times greater than La Paz, Mesa's holdings accounted for only 0.26 percent of the county's primary assessed valuation ($812,000).[78] This statistic does not deny the negative fiscal impact of Mesa's purchase, but clarifies the potential damage. Checchio's index showed that the loss of Pinal agricultural lands from tax rolls would be six times more severe than Avra Valley. But when compared with La Paz County, the county's high assessed valuation minimized the potential fiscal impact.[79]

Mesa entered Pinal County at a moment of economic transition. Agriculture defined the western side. As the fastest growing cotton district during the 1930s and 1940s, it had produced more of this lucrative crop than the entire state combined. But the cost of this activity was born in increased overdrafting of aquifers: the average Pinal County farmer would have to drill 325 feet before hitting the water table in 1956.[80] Even the tepid 1948 Groundwater Code designated most of the County farmland as a critical

[77] Arizona Agriculture, 91. In contrast, 34.7% of Maricopa County's population was children while 17.6% were senior citizens. Arizona as a whole was 36.4% children and 17.3% seniors.

[78] Arizona owns 35% of county lands, three Indian reservations comprise 23% of lands, the U.S. Forest Service and Bureau of Land Management oversee 14%, and the remaining 6% is dedicated to miscellaneous public lands usage. Checchio, 161.

[79] Checchio, 163, 165, 167.

[80] Erik-Anders Shapiro, "Cotton in Arizona: a historical geography" (M.S. thesis, University of Arizona, 1989), 62, 66, 297-298.

groundwater area by 1951.[81] Falling water tables, rising energy costs, the designation of the Pinal AMA, the recession, and the creation of corresponding federal payment-in-kind program—which required growers to fallow one-third of their acreage in return for surplus cotton equal to what they would have cultivated on this acreage—in 1983 all restrained cotton cultivation. Though 212,700 acres remained cultivated in the mid-1980s, farmers had already abandoned 45,000 acres.[82] More would follow.

The eastern mountainous side featured mines, many of which antedated statehood. At their peak in 1981, mining companies brought in $400 million to the county economy while employing more workers than the agricultural sector. The Arizona Bureau of Mines estimated that 10 mining jobs indirectly created 14 other supply and service jobs. But prolific foreign production had begun to decrease demand and prices by 1975. The price of copper had lost almost half of its peak value by 1984. As copper mining shrunk to 1960s production levels across the nation, the Phelps Dodge Corporation which powered Arizona's copper industry lost $400 million between 1982 and 1984. Only five copper mines remained open by 1991.[83] While Arizona still accounted for 70 percent of national copper output in 1986, the industry would not return to its former prominence in Pinal County's economy.[84]

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[81] Dean E. Mann, *The Politics of Water in Arizona* (Tucson: University of Arizona Press, 1963), 52-53.

[82] Between 1978 and 1992, agricultural employment decline by at least 1.5% annually. Arizona Agriculture, 53; Shapiro, 208.

[83] See Table 1: Number of Pinal County Establishments, 1971-1991. One difficulty in articulating the economic impacts of the mining industry is that companies declined to provide any employment information to the U.S. Census Bureau.

[84] U.S. Congress, Office of Technology Assessment, *Copper: Technology and Competitiveness*, OTA-E-367 (Washington, D.C.: U.S. Government Printing Office, September, 1988), 5, 12, 13, 40, 67.

The decline of its two largest industries affected the county's population. Nearly one-in-five residents were living below the poverty line in 1982; two years later, one in ten was unemployed.[85] Within this shifting context, water farms occupied a prime slice of agriculture lands. At one point, the 31,607 acres negotiated for water farms would have taken up 9.8 percent of the county's cultivated acreage.[86] Even at the aftermath of the recession, direct agricultural incomes accounted for almost $83 million in county incomes and comprised 15 percent of estimated total personal income for the county. According to Checchio's index, Pinal County would have been 10 times more sensitive to incomes lost if all proposed water farms were retired from agricultural use.[87] If the same formulas are strictly applied to Mesa's water farms, which represented 3.5 percent of cultivated acreage, Checchio's sensitivity index drops to 3.55 times. A separate study that assumed 22,095 acres would be immediately retired forecasted a 3 percent drop in county employment and public school enrollment as people moved elsewhere. But within thirty years, these declines would reduce to less than a percent of the county's total employment and population.[88]

Within this context, Mesa's management of its water farms mattered. Because of Pinal County's ongoing problem with overdrafting, the city required the farmers to whom it was leasing its lands to cut their cultivation to a third and cut water usage by 80

[85] Arizona Agriculture, 87.

[86] Included in this acreage are Mesa's water farms and an additional 20,000 acres that several Maricopa County cities were in discussions to purchase. Checchio, 130, 137.

[87] Checchio, 143, 146.

[88] Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc. *Draft Water Transfer Study Phase II Report. Hydrologic and Socioeconomic Profiles,* August 26, 1987, Part B: 5.1-5.2, Table 5.1.

percent. This drastic reduction in cultivated acreage should have manifested economically, but increased integration to the state's economy likely mitigated some of these impacts. Though it had grown at 2.6 percent per year since 1950 and lacked any metropolitan area, state planners since the 1960s had proclaimed that the county would eventually be a component of a megapolitan area stretching from Phoenix to Tucson that would later be touted as the "Sun Corridor."[89] This integrated vision had not borne fruit by the 1980s, but new growth was taking root along the three major highways that crisscrossed the county which had economic implications. The retail sector rebounded from the recession: by 1983, total sales had tripled in value from eleven years earlier. Between 1984 and 1991, when the legislature was in negotiations over water farms, the number of retail employees increased 71 percent to 5,577 people—more than any other economic sector—with over $60 million in annual payroll.[90]

Manufacturers, who had consistently employed about 2,400 workers since the early 1970s, were slower to expand. In the early 1980s, new capital expenditures were barely half of what they had been a decade earlier. That situation rapidly changed. Abbott Laboratories constructed a plant in Casa Grande in 1985 that employed 400 people to manufacture nutritional products. Frito-Lay also set down an 188,000-square foot plant to turn half-a-million potatoes into saturated snack foods every day.[91] In fact, the number of

[89] Mark Muro and Robert Lang, "Mountain Megas: A Profile of Arizona's Sun Corridor," *Metropolitan Policy Program at the Brookings Institution*, November 21, 2008: http://www.brookings.edu/~/media/events/2008/11/21%20mountain%20mega/sun_corridor_event%20pdf.pdf

[90] See Table 2: Pinal County Sector Employment, 1971-1991; Figure 3: Pinal County Sector Employment, 1971-1991; and Figure 4: Pinal County First-Quarter Payroll (in $1,000s), 1971-1991 for a partial portrait of the county's shifting economy.

[91] Pinal County Department of Economic Development, "Why Pinal County?" Accessed February 12, 2013, http://pinalcountyaz.gov/ed/whypinalcounty/Pages/Home.aspx.

food-related manufacturing facilities and jobs, which were indirectly hit in retiring farmlands, increased.[92] To their credit, Mesa also recruited the Sunbelt Refining Company to one of its tracts of land which contributed $2.2 million a year to the county economy.[93] By 1991, manufacturers employed over 3,600 people with a $98 million payroll.[94]

Beyond these economic facts lay the realities of Pinal County's agricultural economy. Over fifty years of prolific farming had dramatically reduced groundwater levels in Pinal County. Estimates from when Mesa purchased its water farms figured groundwater storage at 80.3 million AF (down from 91 million AF in 1975) with a one-million AF annual overdraft. The GMA attempted to balance concerns about the economic well-being of the agricultural economy with hydrologic realities by creating a unique water management goal called planned depletion. In curbing any expansion in cultivated acreage, this goal sought to open up the county for non-agricultural users while preserving future water supplies. If the Pinal AMA followed the conservation requirements established in its management plan, overdrafting would have halved by 2025. But by that point, nearly two-thirds of groundwater would be gone.[95] Assuming it capped its acquisitions at 11,606 acres, Mesa's water farms would have been no worse than current farming. Where once 55,000 AF of groundwater had been pumped to cultivate these lands, Mesa would be limited to only 28,919 AF per year. The Eloy Sub-

[92] The number of employees increased 16% annually between 1971 and 1991. See Table 4: Pinal County Food and Kindred Product Manufacturing, 1971-1991.

[93] "State of the City." N.D. Real Estate Services Department, City of Mesa.

[94] See "Table 3.4: First-Quarter Payroll (in $1,000s) in Pinal County, 1971-1991."

[95] Checchio, 137; Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., Part A: 5.2.

basin that hosted these farms had the most severe ground subsidence in the Pinal AMA (9.2 feet between 1948 and 1980, according to one monitoring line) and a water table that declined by over three-feet per year.[96] Even taking into account the 10-15 percent recharge from irrigated agriculture, Mesa's activities would reduce groundwater overdrafting.[97]

CAP water deliveries could also hydrologically benefit the area. A legislative study predicted that as irrigation districts shifted to CAP, groundwater overdrafting county-wide would decline to less than 300,000 AF per year. Any decline in water levels by 2010 would be less than 3 feet per year, if that. Mesa's water transfers would amount to just a percent of these activities. The only hydrologic harm from transporting groundwater, in fact, was the significantly less incidental recharge from farmlands that would be retired from agricultural uses. At the time Mesa became a landowner in Pinal County in 1987, the agricultural recharge was 205,000 acre-feet per year. The study estimated that by 2025, water transfers would cut this rate to between 102,000 and 122,000 AF annually. But these very statistics were premised that anywhere from 58,000 to 258,000 AF of water would be transported by 2025. At the bare minimum, this was twice what Mesa had planned to transport.[98]

Pinal County's groundwater crisis was brought on by half-a-century of the reckless attitudes and activities that had made it an agriculture powerhouse. The

[96] Arizona Department of Water Resources, *Pinal Active Management Area Management Plan for First Management Period, 1980-1990* (Phoenix: Arizona Department of Water Resources, December 1985), 26, 29.

[97]Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., Part A: Table 5.1.

[98] Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., Part A: 5.2-5.4, Table 5.1.

untenable nature of irrigated agriculture coupled with the overall decline of its commodity prices had led farmers to begin abandoning or selling their lands by the 1970s. A similar decline in copper mining, the nascent presence and growth of manufacturing and service industries, and the initial realization of a megapolitan area stretching from Phoenix to Tucson, signaled a drastic reorientation in the area's economy. Mesa's intentions to retire and redevelop 11,606 acres of Pinal farmland fit seamlessly within this changing context. Whatever fiscal loss its activities would generate was comparatively small, while the hydrological impacts were mere drops compared to the groundwater pumping from local residents that would continue even after CAP deliveries began.

SPECULATORS AND PROFITEERS

Following the lead of these cities, several developers and speculators scoured La Paz County. Charles Keating, then head of American Continental Corporation (ACC), acquired Crowder-Weiser Ranch near Vicksburg in 1985 with the hope of selling its water to Phoenix for $60 million. ACC simultaneously bought two farms in western Maricopa County to supply lavish swimming pools at the Phoenician, Keating's swanky resort, and the Estrella mixed-use development. The following year brought several more La Paz purchases so that Keating controlled 13,936 acres with groundwater rights estimated at 51,000-60,000 AF per year.[99] The Santa Ana, California-based Birmingham Investments also acquired 4,703 acres that year.

[99] A champion swimmer and anti-pornography activist, Keating moved to Phoenix in 1976 to turn-around American Continental Homes, a subsidiary of his larger business corporation. Keating rechristened his operations American Continental Corporation and became a prolific developer through numerous shady financial dealings. His grandiose displays of his wealth also made him a focus of the social scene. Keating's money touched numerous prominent political figures at the municipal, county, or state level in

Don Moon, who had only recently retired as the first La Paz County Attorney to work as a lawyer and lobbyist for Phoenix-area developers like Richard Shaw and David Finch, joined R.A. Homes Vice-President Ron Ober to create AgriCom Management Inc. in July 1987.[100] With financial backing from R.A. Homes, they had rapidly acquired the titles to virtually all of the land in the Ranegras Plain, which contained 80 percent of La Paz County's groundwater, in pursuit of financial fortune by March 1988. Their plan was to sell the underlying groundwater on each parcel to smaller cities incapable of purchasing a large water farm, but that were nonetheless in need of future supplies. One estimate figured that their annual profits from transporting water could reach $150 million.[101]

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the 1980s including Arizona's two senators. When Keating's financial fortunes crumbled from years of deceitful practices, the Resolution Trust Corporation seized over 7,000 acres of La Paz lands. J.W. Casserly, "Steiger raps Hays on water," *Prescott Courier*, June 25, 1989, 5A; Woodard et. al., 142-143; Randy Kull, "Well runs dry for water-rich landowners," *Phoenix Gazette*, June 4, 1991, Metro, B1; Jerry Kammer, "Keating deals fake, jury told sham land sales and profits," *Arizona Republic*, November 6, 1992, Front, A1.

[100] Ron Ober has an extensive history in Arizona politics. After graduating with his bachelor's degree in political science at the University of Arizona, Ober ran Dennis DeConcini's campaign for Pima County Attorney in 1973. As the scion of Evo Anton DeConcini, who served as Arizona Attorney General (1948-1949) and a justice on the state supreme court (1949-1953), Dennis seemed set on higher office. After serving one term as county attorney, Ober ran DeConcini's successful campaign for retiring Senator Paul Fannin's seat in 1976. Ober served as his chief-of-staff for a decade before returning to Arizona. During that time, Ober and DeConcini became acquainted with Charles Keating, Jr. After returning to Arizona to run R.A. Homes, a company that his father Harold had run, Ober amassed almost $97 million in loans from Keating. Federal prosecutors alleged that these loans were used to buy land from Keating's Lincoln Savings and Loan—including Continental Ranch, a potential water farm outside of Tucson—in order to inflate the company's earnings reports. After the collapse of Keating's empire, Ober faced lawsuits from bondholders. It is unclear whether Keating's money directly financed Agri-Com's acquisitions. "Paradise Valley Fighting to keep its borders secure," *Arizona Republic*, March 9, 1987, Extra-Southeast, 6F; Jerry Kammer, "Keating deals fake, jury told sham land sales and profits," *Arizona Republic*, November 6, 1992, Front, A1; Jerry Kammer, "Settlements cut defendants to 15 from 100; 3 accounting firms, 1 law group among those left for trial," *Arizona Republic*, March 8, 1992, Front, A10; Agri Com Management, Inc. Articles of Incorporation. July 8, 1987. 001577. Arizona Corporation Commission.

[101] Tom Spratt, "Water bill: beginning of end for rural areas," *Phoenix Gazette*, May 9, 1989, Front, A3.

Yet AgriCom's hold on its properties remained shaky. Within two years of acquiring its lands, several owners foreclosed on the company for failing to make good on its promises. Even as it renegotiated contracts and expanded its grip to 26,000 acres of La Paz County lands, the initial $3.5 million from R.A. Homes was insufficient to all expenses. At the height of its power in 1989, the beleaguered company had not paid taxes on 92 percent of the 8,065 acres for which it had a title. It defaulted on 700 acres and faced foreclosure proceedings on nearly 1,000 additional acres that same year. Efforts to secure additional funding from other firms had failed, leaving the future of Arizona's first large-scale water speculator in doubt.[102]

When former-ADWR Director Wesley Steiner declared at October 1987 meeting of the Arizona League of Cities and Towns that Phoenix-area cities were 100,000 AF per year short of their 2025 needs and recommended that they acquire at least 400,000 AF for future growth, but insisted that any future water farms should be limited to western Arizona, developers and speculators took out options on 47,000 acres of La Paz land.[103] The swiftness with which they acquired land meant that over 90 percent of proposed water farms were occurring inside La Paz County. Assessing the plans, or lack thereof, for what each of these profiteers pursued in La Paz County is beyond the scope of this story. Moon and Ober publically stated that since they would not put in place any land-

[102] "Water speculator calls firm sound despite 2 foreclosures," *Arizona Republic*, March 23, 1989, Business, C2; Bill Goodykoontz, "Phoenix firm finds difficulties as 'water farming' fevers cool; endures defaults as battle wanes on urban needs," *Arizona Republic*, May 7, 1991, Front, A1; Agri Com Management, Inc., 1989 Annual Report. April 12, 1990. 1-0533-021-031. Arizona Corporation Commission.

[103] In justifying water farms in western Arizona, Steiner cited the small population and "negligible" potential for urban development. At the time of this speech, Steiner was working as a consultant to AgriCom Investment, Inc. "Rules on 'water ranches' proposed by ex-regulator," *Arizona Republic*, October 18, 1987, Valley & State, B1; Woodard et. al, 12.

use changes AgriCom would help farmers stay in business. Their attorney, former ADWR Director Kathy Ferris, insisted that even if AgriCom transported water from all of its holdings, enough water would remain in La Paz County to support half-a-million people—nearly fifty times greater than its current population.[104] But their activities, which tactlessly handled groundwater without any of consideration of third-party impacts or future economic development that the cities had furnished, ignited an already brewing political issue over water farms into a statewide controversy. It would be the duty of state legislature that had enabled these water farms to wrestle with the fallout from the GMA.

CLOSING THOUGHTS

Immediate necessity compelled Scottsdale, Mesa, and Phoenix to acquire rural lands. All moved rapidly to acquire lands through municipal development corporations or exchanges to avoid lengthy campaigns for bond approval. Their plans were in the formative stages at the time of purchase: Mesa only had a tentative exchange agreement from Tucson while Scottsdale and Phoenix lacked a CAP wheeling agreement. In all likelihood, the future crisis they were anticipating would provide the leverage to put this mechanism into place.

The limited economic and fiscal data available can only speculate the potential harm of exporting water from these municipal farms. Rural areas, particularly the newly

[104] Statements arguing that sufficient groundwater exists to support a significant population should be treated with skepticism. The core problem is accessing that amount of groundwater. For example, most residents of Bouse lived on less than $6,000 a year and depended on wells that could only reach down 400 feet before encountering hard rock. Industrial drilling equipment which would have been accessible to AgriCom would enable the firm to plunge to depths twice as great to tap more of the underlying aquifer. Even if residents' wells could reach that deep, questions remain about the water's brackish quality and what affect pumping it would have on overlying lands. "Agri-Com meets with Bouse residents," *The Parker Pioneer*, February 1, 1989, pg. 1; "Legislature may leave La Paz County high and dry in new water measure," *Arizona Republic*, April 17, 1989, Valley & State, B1; "Community fears water-swap bill," *Arizona Republic*, May 15, 1989, Valley & State, B1.

created La Paz County, lacked the staff and infrastructure to collect data or pursue any economic planning. Since only portions of this information were immediately accessible, the emotion surrounding water farms transformed them into a political issue. The fact that even a legislative study committee could not approximate the hydrologic and socio-economic impact of these properties on counties-of-origin based on available information is a testament to the dearth of sufficient data. It also suggests why the negotiations to resolve the water farms issue would take such a circuitous path.

One could argue that the presence of irrigated agriculture in rural areas determines that community's value of water. That a community would base their economy on the excessive use of groundwater to the point that overdraft occurs and it becomes a "non-renewable" resource could speak to the indifferent attitude farmers in Pinal and La Paz had for their surroundings. Many, after all, were selling their lands because the costs associated with farming—such as the price of electrical power to pump water from ever deeper in a declining aquifer—wiped out any reasonable profit margin. In this sense, retiring farmlands for limited groundwater exportation seemed hydrologically responsible.

But fully accepting this proposition seems uneasy. While the belief in irrigated agriculture as a sustainable economic sector has been the enduring fallacy of southwest settlement, the question at the heart of the water farm issue—insofar as Mesa and Phoenix are concerned—is whether it is fair for an outside entity to buy up water that is inherent to a community. Whatever good intentions these municipalities had could not remedy the sentiment that La Paz County Attorney Steve Suskin captured when he fumed that:

> "[G]ood neighbor" has become a term of art in La Paz for describing a large, tax-exempt entity which functions under the arrogant assumption that it is more enlightened than La Paz, that its future is more important than that of La Paz and that its obligation to La Paz is discharged when it performs the wholly charitable function of paying what it thinks is fair as in-lieu payment.[105]

For many rural residents, water farms were monuments to lost sovereignty. No amount of data can clarify this feeling or the questionable motive for exporting water to simply enable more metropolitan growth.

Yet municipal water farms were but only one component of this issue. Jim Derouin, a lawyer who represented Phoenix in its purchases, asked me during an interview to imagine firing a shotgun at a wall. If the wall represented the water farm issue, the municipal properties only amounted to a missing chunk.[106] Separating these farms and their consequences from the ravenous activities of speculators is nearly impossible. What united municipal and speculator acquisitions was the tacit acknowledgement that growth in La Paz County and agriculture in Pinal County—not to mention other rural areas throughout Arizona—had reached their limit. And both would struggle—together, and later, separately—to make their case to the state legislature.

[105] Letter from Steven Suskin to George Britton, Deputy City Manager, November 9, 1988, Law Department, City of Phoenix.

[106] Personal interview with Jim Derouin, February 11, 2013.

CHAPTER 4: NEGOTIATIONS

"Another year has passed in Arizona's water war,
And to put it most frankly, it's become somewhat a bore.
It's become bureaucratic, with rules and regs stacked high,
So that even our lawyers have been heard to sigh:
'Dear Lord, what have we created? What is this unholy mess
That even Wesley Steiner has found difficult to bless?'"[1]

The initial water farm purchases did not garner much attention from the state legislature. Only when Phoenix and water speculators like AgriCom became involved after 1986 did they explode into a controversy requiring political remedy. The six years it took the legislature to create a compromise were among its most tumultuous. Lawmakers had to contend with losing key members who had shepherded consensus in drafting the Groundwater Management Act (GMA), the poisonous atmosphere created by Governor Evan Mecham's scandalous behavior and impeachment, and a sting operation that turned them against each other.

But differing opinions over the value of water for rural communities, which were largely expressed in emotional rhetoric, above all else prolonged resolution. When legislators could not hash-out differences through a temporary committee, they created a study committee to generate several reports that would quantify the impacts of water farms on rural communities, and therefore clarify the value of water for these areas. That study's inability to establish mutually acceptable numbers helped push negotiations to an informal body of prominent water stakeholders called the "rump group." As the default body for resolving water-related issues, the rump group had a collective knowledge and experience that vastly surpassed the capabilities of the legislature; that nearly all

[1] Author Unknown, Arizona Municipal Water Users Association files.

members were seasoned negotiators meant that this group had more potential to coolly craft compromise. Yet the water farm issue created such an impasse within this body that cities and speculators opted to force through their own bill that would have enshrined their water farms. The emotional burnout from that measure's failure ironically created the calm that had eluded "rump group" negotiations: rural representatives came to terms with providing the Phoenix-area with some of their water, while urban interests realized that any workable compromise needed the blessing of their rural counterparts. Though negotiations took another two years, this understanding set the foundations for a compromise that restricted the amount of water that could be transported across basins and created a replenishment district to better manage the Phoenix-area's water supplies.

THE LEGISLATURE[2]

Legislative politics is an inherently complex and intertwined affair heavily moderated by personality. How the Arizona State Legislature has functioned since its creation owes much to the characters who crafted consensus. In the post-World War II legislature, Yuma Senator Harold Giss acted as the focus of power within the heavily Democratic body. Because legislative districts were apportioned largely along county lines, most legislators were from outside the Phoenix-area and stayed with major lobbyists in the Adams Hotel during the legislative session. Giss oversaw deliberations

[2] I have accrued some of the information conveyed in this section over nearly three years of interviewing former state legislators. While few were directly involved in water transfers, all have offered insights and recollections into the complex nature of legislative politics during the time in which this issue was being negotiated. While these memories do not form an entirely uniform narrative, many struck similar themes. I have highlighted those themes throughout this chapter.

and deals at the hotel's bar, where acrimonious behavior could be concealed from the public. The legislature would then civilly ratify these agreements.[3]

Giss's influence reflected political realities: while politically progressive at statehood in 1912, the Democratic Party that now dominated state politics was rural and conservative. Two events changed this dynamic. Postwar migration brought Midwestern and Eastern Republicans to Phoenix and Tucson, which became the epicenters of Republican activity. As moderate and liberal Democrats began to gain control of their party, conservative members either changed their affiliation or became "Pinto" Democrats who would vote Republican in general elections, thus realigning the state's political parties to mirror their national counterparts. The Supreme Court's 1964 *Reynolds v. Sims* ruling that state legislative districts had to be approximately equal in population also shifted the state's political system. Though they initially joined with Democrats in denouncing the Warren Court's decision, Arizona Republicans supported litigation in federal court arguing that the composition of the legislature violated this "one-man, one vote" standard. The court agreed, and when the legislature failed to pass a new apportionment plan to meet this standard, it imposed its own. The legislature would now comprise thirty legislative districts of equal population, each of which would send two representatives and one senator. Where each county once had two senators, Maricopa County now had sixteen and an equally great number of representatives. The 1966

[3] Ronald J. Watkins, *High Crimes and Misdemeanors: The Term and Trials of Former Governor Evan Mecham* (New York: William Morrow & Co., 1990), 29.

elections marked a seismic shift in Arizona politics as urban Republicans came to majority positions in both houses.[4]

This political landslide also represented the end of Giss's power and the ascension of Republican Burton Barr, who would go on to serve as House Majority Leader for twenty years. By the time Giss collapsed from a heart attack in 1973, Barr had become the pivotal force in legislative affairs. An energetic, persuasive, humorous, and consummate dealmaker who embodied the reformer-impulse of the "Gung-ho 27th" legislature to professionalize government and address the state's serious policy questions, Barr worked with Senate President Stan Turley, Minority Leader Alfredo Gutierrez, and Gov. Bruce Babbitt on passage of the GMA in 1980. Five years later, this group tackled another vexing water issue.[5]

Grassroots frustrations over the mining and agriculture industries' stonewalling of stricter groundwater protection measures throughout the early 1980s and reports of trichloroethylene contamination of Tucson's groundwater fueled a coalition of environmental and public interest groups to circulate petitions for an initiative in October 1985 that was more comprehensive than any bill the legislature had considered. While its advocates insisted that their goal was to spurn legislators into action, favorable media coverage and Babbitt's endorsement forced industry representatives to enter negotiations. Private meetings led by two Tucson-area legislators, Larry Hawke and Greg Lunn, created an initial working draft. When the Governor's Ad Hoc Water Quality Committee

[4] David R. Berman, *Arizona Politics and Government: The Quest for Autonomy, Democracy and Development* (Lincoln and London: University of Nebraska Press, 1998), 52-53, 94-95.

[5] Among the early achievements of Barr's legislative class were new smog-control laws and reforms to the Liquor Control Board which had been plagued with scandals. "Gung-Ho Legislators," *Time* Vol. 89, No. 10 (March 10, 1967), 37.

convened, there was enough agreement to move legislation forward. As with the GMA, Babbitt acted as a mediator between parties in closed-door meetings. Reputations were on the line: Barr had already announced his intention to run for governor in 1986 and Babbitt was making plans for his 1988 presidential run. Both recognized that passing this legislation could bolster their image as pragmatic policy makers, even though the issue was potentially volatile and politically dangerous. In the meantime, Lunn and Hawke each ran a subcommittee to broaden the interest groups involved in negotiations. With political pressure and momentum on their side, the legislature negotiated, produced, and passed the Environmental Quality Act (EQA) in nine months.[6]

What their success could have meant for water farms remains speculative. Babbitt quickly focused on boosting his national profile. Evan Mecham, an ultra-conservative politician known for shrilly denouncing his opponents as members of a monolithic establishment, shockingly defeated Barr in the Republican primary and proceeded to win a plurality of the vote (39 percent) in a three-way general election that pitted Democrat Carolyn Warner against politically moderate Independent Bill Schultz. A virulent critic of Babbitt, to whom he had lost the 1978 gubernatorial election, Mecham's entrance brought the exodus of several Babbitt administration officials who had been involved in water policy discussions. Neither Mecham nor the replacements he selected had the standing and ability to tackle water farm negotiations.[7]

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[6] Gordon Meeks, Jr., "Negotiating a state Environmental Quality Act: the Arizona Groundwater Case," *Mediation Quarterly* Vol. 20 (Summer 1988): 65-70. See Cody Ferguson, "'This is Our Land, We Have the Right to be Heard': Community-based Environmental Activism in the Late-Twentieth Century," (PhD diss., Arizona State University, 2012), 170-209.

[7] Watkins, 53-56.

Beyond the massive hole created by Barr's and Babbit's absence, two other legislators involved in the GMA negotiations left in 1986. A jovial sage whose twenty-two years of service marked him as one of the few to serve as Speaker of the House and President of the Senate, Stan Turley was a child of rural Arizona whose close connections to agriculture that made him a pivotal force in water matters.[8] His retirement from politics combined with the decision by Alfredo Gutierrez—who had been a student activist before coming under Barr's tutelage, and then rose to serve as Senate Minority Leader—to leave and create his own lobbying firm, left substantial holes in the legislature's leadership. But their style of legislative politics nonetheless endured. Five veterans of the GMA negotiations, ranging from John Hays to Jim Hartdegen, remained in the legislature, and the absence of term limits and relatively low turnover in the 1980s allowed these legislators, as well as many of their colleagues, to form personal connections that continued beyond the legislative session. The end result was a more conciliatory atmosphere: when measures failed, the possibility of returning next session to mollify opposition and try again smoothed over bruised egos.

Many water lobbyists from the GMA negotiations also remained active. Bob McCain and Roger Manning continued to be the point men for the Arizona Municipal Water Users Association (AMWUA)—a growing group that represented the cities of Tempe, Scottsdale, Mesa, Chandler, Glendale, and Phoenix—just as Jim Klinker served as the legislative liaison for the Arizona Farm Bureau. In addition to Jack DeBolske of

[8] Turley, Stan. "Oral history interview on November 4, 2004. Central Arizona Project Oral History Project. Accessed October 1, 2013. http://www.capaz.com/Portals/1/PropertyAgent/1228/Files/1189/Interview%20with%20Stan%20Turley .pdf.

the Arizona League of Cities and Towns, some cities had their own lobbyists. While all of these lobbyists curried favor with legislators, they also informally met in a "rump group." Their meetings, which the ADWR Director hosted, functioned as forums for discussing and resolving potential problems before they became ensnared in the legislative process. The unanimous consensus that came from their negotiations—which the legislature sanctioned by creating formal committees during the creation of the seminal GMA and later, the EQA—would then be sent to the legislature from ratification. That little debate over or dissent of the rump group's consensus occurred reflected its unwritten authority. Any attempt by legislators to pre-empt or amend the agreements which the rump group had approved would incur the wrath of the myriad stakeholders who comprised this body.[9] The hegemony of this system had been challenged once with the creation and passage of the EQA, and it would face a similarly fierce challenge with water farms.

INTERESTS

Despite its outward appearances, the water farm issue went beyond being an urban-rural conflict. It pitted rural municipal and county governments against large landholders who had profited from selling their lands to cities and private firms, and it would reveal fissures between usually solid rural opposition.

[9] Frank Gregg has called this system, where negotiations among a narrow range of directly interested parties and public officials would produce agreements that formal policy-making bodies subsequently ratified with little debate and dissent, the "Arizona style" of water management. Frank Gregg, "The Widening Circle: the Groundwater Management Act in the Context of Arizona Water Policy Evolution," in *Taking the Arizona Groundwater Management Act into the Nineties: Proceedings of a conference/symposium commemorating the tenth anniversary of the Arizona law* (Tucson: University of Arizona Water Resources Research Center, 1990), 2.

Lawmakers from the two districts hosting municipal water farms took the lead in negotiations. The LD 5 team that represented Yuma and La Paz Counties, where 90 percent of all proposed water farms were taking place, was tight-knit group. All were long-serving Democrats who not only lived in Yuma, but also carpooled together whenever they went to district meetings. Yet neither Sen. Jones Osborn—a newspaper publisher who served alongside with, and later replaced, Harold Giss—or Rep. Bob McLendon, a high school teacher, had much knowledge on water policy. While Rep. Frank McElhaney was a farmer familiar with water rights, he passed away in 1985, just as the water farm issue was igniting into a political controversy. As it turned out, his replacement would be the pivotal figure in resolving this issue. As a biologist who conducted environmental impact analyses, Herb Guenther became acquainted with Arizona water law and policy before becoming a manager for the Wellton-Mohawk Irrigation District outside of Yuma. He was not a political man: he became a Democrat on the advice of the woman registering him because that party had significantly more voters in Yuma County. But when Frank McElhaney passed way, Guenther's name circulated as a replacement. Though he did not know why, his extensive water knowledge likely boosted his profile. It was only after the Yuma County Board of Supervisors appointed him that he came to understand the magnitude of water farms in his district.[10] As the legislator most conversant on water policy, Guenther, a political neophyte, would begin operating as powerbroker.

[10] Personal Interview with Herb Guenther, March 20, 2013.

Legislative district (LD) 6, which spanned nearly all of Pinal County and parts of Maricopa and Pima Counties, was represented by a more politically diverse delegation. Though Sen. Alan Stephens and Rep. Henry Evans were Democrats, they fell on opposite ends of the political spectrum. Stephens was traditional East Coast Democrat who lived in Phoenix and was planning to run for a congressional seat. Evans, on the other hand, was a farmer from Tolleson—a small agricultural community west of Phoenix—who held convictions more in line with the Democratic Party that ruled Arizona prior to World War II; he was consistently ranked as one of the most conservative members in the legislature. Republican Jim Hartdegen of Casa Grande sat between them. A mine safety inspector recognized for his frank demeanor and willingness to buck the more conservative elements of his party, Hartdegen had participated in negotiating the GMA early in his legislative career and was one of the few to oppose the bill. The three together had a tenuous relationship, though on the water farm issue, they seldom differed.

A contingent of Arizona's rural eastern and northwestern legislators joined these two delegations in seeking to limit present and future water farms. Many, like Reps. A.V. "Bill" Hardt and Gus Arzberger, were cattlemen who felt that the current water farms, if not stopped, would set a precedent that would threaten their districts. They were a bipartisan group in which the dividing line between Republicans and Democrats was largely indistinct; most would have identified as moderate-to-conservative. The differences instead emerged in personality, such as the contrast between Sen. John Hays and his seatmate, Rep. Don Aldridge. Hays was a genial and good-humored Yarnell cattle rancher known for his earnestness to craft compromise. Aldridge was a foul-tempered, often vindictive realtor from prosperous Lake Havasu City who led an unabashedly

partisan group called the "Mean Thirteen" that opposed non-smoking areas in government buildings and requiring car seatbelts.[11] Many Tucson-area lawmakers sympathetic to the potential plight of rural Arizona would also frequently support this group's bills to limit water farms. But what separated them, their rural counterparts, and even LD 6 lawmakers from their La Paz County colleagues was willingness to compromise on water farms if it meant that their districts would be spared from future water farm speculation. These differences seldom flared during negotiations; nearly all remained united in their grievances against the "state of Maricopa," which held a majority of seats.

This alliance also reflected the consortium of interest groups opposed to water farms. Many—ranging from the Arizona Farm Bureau, the Arizona Cattlemen's Association, to the Arizona AgriBusiness Council—were affiliated with agricultural interests. Others, like the Pinal County Governing Alliance and Yuma County Water User's Association, represented areas that were either directly affected by, or were potential sites for, water farms. To bolster their profile in the legislature, the La Paz County Board of Supervisors hired Doug Nelson, an environmental lawyer and resource economist, to represent the Arizona Rural Water Association (ARWA). This catch-all organization coordinated lobbying efforts in Phoenix and held informational sessions throughout La Paz County to raise awareness of the water farms, and educate residents on

[11] Amy Silverman, "He's been mean for 14 years!," *The Phoenix New Times*, December 19, 1996, accessed October 5, 2013, http://www.phoenixnewtimes.com/1996-12-19/news/he-s-been-mean-for-14-years/.

the nuances of Arizona water law.[12] Where Nelson's efforts were intellectual, Citizens for Water Fairness (CWF) fired-up residents for grassroots political action. La Paz County Manager Neta Bowman encouraged those who attended CWF meetings to read Marc Reisner's *Cadillac Desert*. La Paz County, she warned, would be the next Owens Valley unless they took action.[13]

The default position of these rural interests was to emphasize the profound costs transporting water would bring to the environment, economy, and lives of people in the surrounding areas. It was an argument grounded in the morality of collective rights: no entity should be able to remove "non-renewable" water from a basin with established communities that depended upon it. As negotiations progressed, rural lawmakers also began focusing on urban water practices. Their stance gradually shifted from insisting that Scottsdale, Mesa, and Phoenix did not need water farms, to addressing the concerns Phoenix-area cities had about GMA's safe-yield and AWS requirements through groundwater recharge legislation.

Phoenix-area interests like the AMWUA countered that they had paid generously to legally acquire their water farms from consenting farmers. They opted to stall any legislation that would threaten the status quo and their investments. The sheer number of Phoenix-area legislators, which had been increasing with every decennial census and legislative redistricting, and the teams of experienced lobbyists to corral votes meant that they could control the pace of legislation and easily stop unfavorable bills. Yet nearly all

[12] La Paz County Board of Supervisors Minutes, "Legal Services Agreement," January 6, 1986, pg. 8600061-8600063; La Paz County Board of Supervisors Minutes, "Arizona Rural Water Association," January 20, 1986, pg. 860010, RG 106 La Paz County, Roll 2, Arizona State Archives.

[13] Personal Interview with Doug Nelson, February 5, 2013.

of their legislators were ignorant of water policy; few had the intimate connection to water that their rural counterparts experienced. As negotiations and media coverage negatively portraying these water farms intensified, many of these urban legislators and their interest groups began to reconsider their ardent opposition to rural-backed measures. Limits on future water farms became permissible so long as current properties remained secure with favorable compensation rates. They also became more amenable to creating a Phoenix-area replenishment district that would resolve the projected water shortages that drove water farm acquisitions, even as differences between groundwater-dependent West Valley cities and their CAP- and SRP-supplied neighbors would surface over the nature of this district.

The role of developers like Charles Keating's American Continental Inc. and the R.A. Homes-backed AgriCom Management Inc. in negotiations is less than clear. Their desire to protect future profits as well as keep Arizona open to future water farms, a belief that all three of their principal lobbyists (former ADWR Directors Wesley Steiner and Kathy Ferris, as well as AgriCom CEO Ron Ober) espoused, coincided with the long-held stance of the Arizona Mining Association. Refining mineral ore required at several stages freshwater. Since many mines were located in rural areas without a significant water source nearby, mining companies were the first proponents of water transfers in Arizona. Any limitation on rural water transfers could potentially harm their industry. In the early stages of negotiations, this group formed a bloc with Scottsdale, Mesa, and Phoenix, which stressed that their activities were entirely legal and wielded the clout to stall any harmful legislation. But after trying to force through legislation that would have protected their investments, this bloc dissolved. As rural and municipal

negotiators came to a workable solution, American Continental and AgriCom would find themselves increasingly marginalized.

RAISING AWARENESS

The push within the legislature to address water farms began after Mesa purchased its Pinal County lands. While the EQA dominated the 1985-1986 session, leadership nonetheless acknowledged the water farm controversy. Sen. Stan Turley considered it unfair that municipally owned farmland would undercut an area's property-tax base, and Majority Leader Burton Barr thought that legislation guarding against indiscriminate water farm purchases should be introduced. While neither believed that water farms should be banned outright, they were certain that the legislature could address and remedy this issue when the next session began in January 1986.[14]

All the while, the water farm issue followed a trajectory like many legislative issues during the 1985-1986 session which began in early January. Rural lawmakers introduced measures to ban transfers outright, all of which died in committee, but they succeeded in creating a temporary committee to focus on this issue. Perhaps to get leadership on board and generate interest in this issue, they broadened its focus to include groundwater recharge. Many Phoenix-area cities were interested in artificially storing or "recharging" groundwater for future use, but Arizona lacked the necessary legal and institutional framework to facilitate it. The Joint Interim Committee on Groundwater Recharge and Transfer (JICGRT) functioned like many interim committees; it simultaneously raised the profile of both issues while providing a forum between sessions

[14] "Rural Water-Rights Safeguards Eyed," *Arizona Capitol Times*, July 24, 1985, pgs. 2, 3.

for discussion and possible consensus. Although JICGRT was co-chaired by two rural legislators, Sen. John Hays and Rep. Jim Hartdegen, and comprised largely of representatives from outlying areas, it also had two Tucson-area legislators and Senate Majority Leader Robert Usdane of Scottsdale on board which allowed for some discussions on initial steps to take for handling water transfers.

After four months of meetings and testimony that ended in January 1986, all committee members signed on to a temporary solution. House Bill (HB) 2264 mandated that any city with a water farm must file a development plan with the ADWR when it converted that farm's irrigation grandfathered groundwater rights to a non-irrigation grandfather right. This plan, at the very least, would prepare rural counties for the hydrological and economic changes that would occur once groundwater transportation became possible. It also allowed, but did not require, cities to make payments in lieu of lost property tax revenue from water farms.[15] AMWUA supported this bill, but wanted its provisions to also apply to properties purchased by developers like AgriCom. Behind-the-scenes lobbying from AgriCom perhaps killed this provision: the final measure only applied to cities and towns. Even as it sailed through both houses, one senator wondered outloud whether this bill made any difference for rural communities. Hartdegen, who had introduced it, admitted that voluntary in-lieu payments were "less than half a loaf" for

[15] The original version also directed cities to fully utilize their CAP allocations before pumping and transporting any groundwater from their water farms and limited withdrawals to no more than 2 acre-feet (AF) of water per acre every year. Betsy Rieke complained that the measure was lousy for water conservation: a farm could still continue pumping while a city withdrew additional groundwater.

areas affected by water farms, but maintained that it was the best agreement rural legislators could expect at the moment.[16]

The groundwater recharge side of JICGRT, however, had considerably more success. Before the session began, Phoenix-area cities were beginning to explore how groundwater recharge, storage, and recovery could firm their existing supplies. These methods had been used in California for the past forty years for droughts and had some precedent in Arizona. Phoenix had experimented with groundwater recharge in the 1960s and Tucson had successfully lobbied the legislature to authorize a project for their area. Since subcontracts for CAP water had not reached the project's full capacity, AMWUA, Phoenix AMA officials, SRP, CAWCD, agricultural and industrial interests formed a group to explore how the state could use CAP water to recharge aquifers. Tucson Sen. John Mawhinney in the meantime secured passage of a measure that would allow CAWCD to study recharge and recovery projects. The biggest concern about groundwater recharge, as ADWR Chief Counsel Betsy Rieke pointed out to the JICGRT, was that neither case law nor statutes applied to recharged groundwater. In the absence of any such regulations, the ADWR and many Phoenix-area cities preferred that legislators draft a solution rather than rely on expensive and extensive litigation which would remove crafting any new legal doctrines from their control. Three groundwater recharge measures were introduced in the next session and later harmonized into a bill that created the necessary legal framework for groundwater recharge. What appealed to urban

[16] "Water Transfer Bill Embraced," *Arizona Capitol Times*, January 15, 1986, pg. 22; "Water-Transfer Bill Passes House," *Arizona Capitol Times*, March 5, 1986, pgs. 1-2; "Water Farm Bill Sails," *Arizona Capitol Times*, April 9, 1986, pg. 4; "The Water Farmers," *Arizona Capitol* Times, December 10, 1986, pg. 6; Remote municipal property; taxation, water, HB 2264, 37th Legislature, 2nd Regular session (CH 146 E, 1986).

interests was the process this measure created for using CAP water and water transported from outside an AMA (such as water farms) for recharge, storage, and recovery so long as it was consistent with that AMA's management plan. These groundwater replenishment measures, which were later signed into law in May 1987, would have important ramifications for the water farm issue moving forward.[17]

One frequent refrain during the JICGRT meetings was that many involved could only speculate on how water farms would affect rural areas. The absence of hard data encouraged emotional rhetoric to guide discussions; impasse was inevitable. The most those involved could pursue was creating a study committee for the following session that would begin in January 1987. At Rieke's recommendation, the committee would develop guidelines for and oversee a study that would assess the hydrologic impact and socioeconomic consequences of water farms. Nearly a third of the legislature signed on as its sponsors rushed it through both houses as the session drew to a close. They could accomplish little more: September primaries were approaching and a gubernatorial election loomed on the horizon. Most political observers wagered that Burton Barr would ascend to the governor's office. All three living former Republican governors and the chair of the Arizona Republican Party broke precedent to publically endorse him, simultaneously reflecting the considerable political clout he had accrued over twenty-two years of wheeling and dealing and deepening fears that Evan Mecham would win and

[17] Groundwater recharge and recovery, HB 2345, 37th Legislature, 2nd Regular sessions; Jurisdiction over exotic wildlife (NOW: waters; groundwater recharge; underground storage), HB 2209, 37th Legislature, 2nd Regular session (CH 289, 1986); Joint Interim Committee on Groundwater Recharge and Transfer, Minutes for October 7, 1985, 1-2; House Committee on Natural Resources and Energy, Minutes for March 10, 1986, 1-2; Jack Lavelle, "Committee OKS bill for water shortage," *Phoenix Gazette*, March 13, 1987, E10; House Committee on Natural Resources and Energy, Minutes from the March 9, 1987, 3-5; Groundwater recharge; district authority, HB 2401, 38th Legislature, 1st Regular session (CH 353, 1987).

make a second unsuccessful run for governor. Just as he had managed with the GMA and EQA, the possibility of consensus and compromise through Burton Barr seemed cause for optimism. Then Evan Mecham won the primary.

ESTABLISHING FACTS?

From his first comment about repealing the state's Martin Luther King, Jr. holiday, Evan Mecham's time in office perpetuated controversy and scandal that jammed the political process. Beyond callous remarks like "I'm not a racist. I've got black friends. I employ black people. I don't employ them because they're black. I employ them because they are the best people who applied for the cotton-picking job," were more serious charges of financial impropriety and corruption of office.[18] Before a criminal investigation could even begin, a campaign to recall him was underway and rapidly growing in popularity. The change in administration also meant mass exile of many Babbitt-era officials, including ADWR Director Kathy Ferris, who had been instrumental in crafting water policies.[19] Though several of Mecham's replacements—such State Liquor Board Superintendent Alberto Rodriguez, who was under investigation for his role in the death of a Mexican citizen and charges that he sexually assaulted a woman—were controversial, Ferris's successor, Alan Kleinman, was less so. His sentiment that the ADWR should favor planning over enforcement did reflect Mecham's view of

[18] Mark Siegel, *The World According to Evan Mecham: A Collection of Quotes, Observations, and Editorial Cartoons* (Mesa, Arizona: Blue Sky Press, 1987), 50.

[19]Ferris came to Arizona fresh-out of law school to work as research staff for the Senate Natural Resources Committee in 1976 when negotiations for a new groundwater code began. Beyond becoming intimately involved in drafting the Groundwater Management Act, she worked as an attorney for ADWR to implement it and was a protégé of then-Director Wes Steiner. By all accounts, she was the right choice to succeed him. Rumored differences with Sam Steiger, one of Mecham's closest advisors, likely motivated her firing. Mary A.M. Gondhart and Sam Stanton, "State's water chief quits due to Mecham," *Arizona Republic* December 18, 1986.

government. But the former U.S. Bureau of Reclamation economist made a favorable impression with Senate Natural Resource Committee Chairman John Hays, whose committee unanimously confirmed him. He also revealed his sympathies on water farms when he criticized the current in-lieu payments scheme as "just of the tip of the iceberg" for justly compensating rural communities.[20] But he could not rival either Ferris or Steiner in their expertise. Now out of public service, Ferris entered private practice, where she would re-emerge as a key player in water farm negotiations.

As Mecham's political career began to implode, news of Phoenix's McMullen Valley acquisitions infused negotiations with newfound urgency. The prospect of Arizona's largest city securing water farms pushed rural legislators to introduce measures ranging from a moratorium on water farm purchases to block Phoenix from fulfilling this exchange to curtailing a city's ability to exercise eminent domain beyond its corporate limits. None passed.[21] Amidst this tumult, the Joint Legislative Committee on Groundwater and Surface Water Exportation (JLCGSWE) began working on a three-part study into the impacts of proposed water transfers. The resulting data would hopefully

[20] Sam Steiger, Mecham's special assistant, later alleged that the governor appointed Kleinman as ADWR Director at the behest of Mormon Church President Ezra Taft Benson, who was one of Mecham's mentors. In doing so, Mecham overrode Steiger's favored candidate, agri-business executive Bob Moore. "GOP planning close look at Mecham picks," *Arizona Republic*, January 25, 1987, A1; "Transfer of water to cities hurts rural area economy," *Arizona Republic*, April 9, 1987, F1; "Commerce nomination, others advance; 1 rejected," *Arizona Republic*, April 16, 1987, Valley & State, B2; The Associated Press, "Steiger: Church leader advised Mecham," *Prescott Courier*, August 4, 1988, pg. 1.

[21] "City Plans War Farm Purchase," *Arizona Capitol Times*, December 17, 1986, pg. 23; Moratorium until 30 June 1988 on municipal and political subdivision purchase of property to obtain water rights, HB 2153, 38th Legislature, 1st Regular session, 1987.

calm passions by providing legislators with a clearer understanding of the potential impacts of water farms and perhaps lay some paths for a solution.[22]

From the release in May 1987 of its first phase report, which profiled eight areas that would likely host water transfers, the study was headed towards difficulties. These areas combined hydrologically distinct basins which risked distorting the specific hydrologic, economic, and fiscal impacts within each basin. Nor did the report mention Planet Ranch, which the committee agreed would be included in the next study. Researchers initially relied on three hydrologic criteria, as well as "soft" criteria like an area's water quality and its capacity to transport 120,000 AF per year, to determine which areas would be candidates for water transfers. Any areas that could not satisfy these hydrologic criteria they discarded.[23] The first phase report recommended five areas—including the Pinal AMA and Harquahala-McMullen Valley-Butler Valley area, both of which were significantly overdrafting groundwater—for further study largely on the basis of current water farm activities.[24]

As the summer heat and Mecham recall campaign intensified, La Paz County Manager Neta Bowman began working with ARWA on a constitutional amendment to

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[22] The committee's enabling legislation stated that ADWR would carry out the hydrological analysis. The agency's director, Kathy Ferris, selected three firms (Franzoy Corey, Econotrend, and Mountain West Research) to carry out the socio-economic dimension.Joint Legislative Committee Groundwater and Surface Water Exportation, Minutes for September 5, 1986, pg. 1, 3.

[23] One criterion demanded that an area's water supply be able to support future municipal and industrial water demands. It reflected the researchers' view that agriculture would not be economically significant in the future. The other two respectively required complete adjudication of surface water rights and that the legal and engineering mechanisms to "feasibly" transport water were in place. Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., *Water Transfers Study Phase I: Baseline Hydrologic and Socioeconomic Profiles*, May 13, 1987, 1.1-1.4. They clarified good water quality as having less than 1,500 mg/L of total dissolved solids.

[24] Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., 12.2; Joint Legislative Committee on Groundwater and Surface Water Exportation, Minutes for May 13, 1987, pg. 4.

exempt municipal water farms from being taxable property. If the legislature would not approve it for referendum, Bowman planned an initiative campaign. CWF was also filming a video narrated by Rex Allen, a celebrated cowboy and native son of Willcox, to highlight the potential rural plight from water transfers. The JLCGSWE's announcement of its report on the hydrologic and socioeconomic impacts of water farms only their intensified sentiments.[25]

The report that came before them in late August was disappointing for those who hungered for adequate data. Frenzied acquisitions of more rural lands had compelled the ADWR to radically hike its estimated transfer volumes from these water farms, but even these intensified scenarios could not provide the clarity legislators wanted.[26] The potential hydrologic impacts varied greatly, from nearly none on the Mogollon Rim, to nominal in the Yuma-Wellton Corridor-Cibola Valley area, to significant in the case of the Harquahala-McMullen-Butler Valley area. The contrast between the two areas hosting municipal water farms also displayed the range of socioeconomic impacts. While retiring farmland would have a "moderate to strong" effect in the Pinal AMA, any consequences would rapidly diminish as the area's economy diversified. Moreover, any fiscal impacts would be "relatively modest considering the overall size of the tax base in Pinal County." Researchers in contrast predicted that even at the lowest estimated

[25] "Water farm property tax law sought," *Parker Pioneer*, July 8, 1987, pgs. 1-2; "UA economist tells impact of water loss on counties," *Parker Pioneer*, July 15, 1987, pg. 5; "Water transfer video prepared," *Parker Pioneer*, July 15, 1987, pg. 6; Sheryl Drew, "Economic growth plan needed, tied to water availability," *Parker Pioneer*, August 26, 1987, pg. 1, 6; "State slates hearing series on new water transfer study," *Parker Pioneer*, August 26, 1987, pg. 1.

[26] The first report had set low, medium, and high estimates at 60,000 AF, 90,000 AF, and 120,000 AF, respectively. These values were increased to 100,000 AF, 200,000 AF, and 300,000 AF in the second report.

volumes, water farms in the Harquahala-McMullen-Butler Valley area might reduce the area's jobs by a third and drop school enrollment by at least 40 percent as residents fled. In light of these uneven predictions, the report's only overall conclusion was that if an area was geographically small and was economically dependent on a large portion of its agriculture lands, then converting them to water farms would cause severe social and economic impacts in the local communities.[27]

For five hours JLCGSWE members and speakers alike grilled the researchers. Some, like Jim Cumming of the Yuma County Irrigation District, pointed out factual inaccuracies. Others, like Rep. Don Aldridge, assailed them for being heavy on generalities with few concrete facts. Researchers admitted that they did not consider any quality of life indicators or how retiring particular crops would affect an area's economy. For Rep. Hartdegen, the study was "worthless" because it did not answer how removing groundwater from an area would affect its future growth. The only reasonable defense researchers offered—one which all the legislators should have known—was that their contracts required them to use existing data, not conduct original research.[28]

The following month, as thousands of adoring people jammed the streets of Phoenix to catch a glimpse of Pope John Paul II on his visit to Arizona, JLCGSWE members faced hostile crowds in statewide hearings. These hearings were originally

[27] Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc. *Draft Water Transfer Study Phase II Report. Hydrologic and Socioeconomic Profiles,* August 26, 1987, Part A. Hydrologic impacts, 1.1, 8.1, 8.2; Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc. *Draft Water Transfer Study Phase II Report. Hydrologic and Socioeconomic Profiles,* August 26, 1987, Part B. Socioeconomic Impacts, 3.1-3.2, Table 3.1, 5.1-5.3.

[28] Joint Legislative Committee on Groundwater and Surface Water Exportation, Minutes for August 31, 1984, 3, 4, 6, 7.

intended to review data and take suggestions for future legislation. Members instead faced torrents of criticism. At their first meeting in Parker, Neta Bowman slammed both reports for failing to consider how future speculative purchases could impact La Paz County. Officials at a later meeting in Casa Grande fumed that the second report had not considered how water transfers would affect nascent industries, and speakers at an icy reception in Show Low decried the report's finding that 70,000 AF annual transfers in the Mogollon region would have a "negligible" socioeconomic impact. One audience member summed up rural sentiments when she declared, "We may be paranoid, but have reason to be paranoid. We're talking about our life's blood—our water." No legislator defended the report. Chairman Aldridge proclaimed that he had "learned more from the people in these public meetings than I did from this damned study."[29]

Out of disgust, the committee unanimously reassigned the third and final report to the ADWR and legislative staff. Since the second report had "polarized rural and urban factions" by not sufficiently addressing the socioeconomic impacts, they decided to develop solutions from their report and feedback from public meetings and hearings.[30] This final report, which arrived on the day that the committee expired, offered solutions ranging from writing statutes to protecting areas of origin to creating water planning regions within basins not covered by the GMA. In a nod towards ongoing recharge

[29] "County voices heard by legislative group," *Parker Pioneer*, September 9, 1987, 1, 8; Jim Fickess, "Legislature Comes to Casa Grande: Public, Panel Blast Water Farm study," *Casa Grande Dispatch*, September 11, 1987, 1, 5; Andrew Walker, "Big city water transfers attacked," *White Mountain Independent*, September 15, 1987, 1, 14.

[30] Joint Legislative Committee on Groundwater and Surface Water Exportation, Minutes for October 5, 1987, pgs. 1, 4; Franzoy Corey Engineers and Architects, in association with Mountain West Research, Inc. and Econotrend, Inc., *Final Water Transfer Study Phase III Report: Legislative Alternatives*, December 1987, 4, 30.

efforts, the report also suggested programs for firming urban supplies—like developing an augmentation district within the Phoenix AMA or a credit system for underground water storage and recovery—which could address the urban water demand that fueled water farm acquisitions.[31]

The study committee's failure to thoroughly quantify the impacts of water farms—and the larger failure to reach a consensus on the value of water—left all sides to return to their rhetorical positions they had adopted before the study: three rural lawmakers called for a ban on interbasin water transportation, while Roger Manning of AMWUA bluntly stated that any prohibitions or direct taxation on water farms were unacceptable.[32] Like the previous session, the most that legislators could accomplish with the little time available was push through a bill to count water farms as taxable property—only for county debt limits and state sales tax distribution, which upset no one—and plan to restart efforts in the next legislative session.[33]

But even this plan was in jeopardy. The recall petition signatures that opponents of Governor Mecham had turned in on November 2nd surpassed the number of votes that had carried him to office. Though the recall election was only a matter of time, revelations in October that Mecham had failed to report a $350,000 campaign loan—combined with an ongoing investigation into whether he had used public monies to support his financially ailing Pontiac dealership—brought a hearing before a grand jury. Speaker Joe Lane immediately hired a special counsel to investigate these charges. The

[31] Ibid., 16, 17-18, 20, 23-25, 27-29.

[32] "Water Transfer Bills Awaited," *Arizona Capitol Times*, December 30, 1987, 5.

[33] Remote municipal property; fiscal impacts, HB 2462, 38th Legislature, 1st Regular session (CH 268, 1987), §35-451.02; §42-301 (L); §42-1341 (A).

growing prospect of impeachment proceedings against Mecham, a nearly $300 million budget deficit, and the coming September primaries left committee members helpless and frustrated that they would be able resolve the issue in the next session. "We do not have time for a hiatus," complained Rep. Jim Hartdegen. "We've opened the door, and the burglars are outside waiting to come in." ADWR Director Alan Kleinman, who insisted in numerous public hearings that committee members would form a unified front and push for concerted action in the coming session, fumed over the dim prospects for resolving this issue soon. Chairman Don Aldridge joined him and glumly predicted that "we're going to see this issue for a long time to come."[34]

FORCING RESOLUTION

A week into 1988, the grand jury had indicted Mecham and his brother on three counts of perjury, two counts of fraud, and one count of failing to report a campaign contribution. Speaker Joe Lane's special counsel delivered his report a week later and the House promptly began impeachment proceedings. There are few descriptions that could adequately capture the intensity of these hearings; the divisions lingered long after the House voted on February 8th for impeachment. An equally intense malaise hung over the Senate, where proceedings dragged out for over a month before they threw Mecham out of office. Deliberations had halted in the face of this unprecedented event, leaving those mostly outside of the legislature to continue water farm negotiations.

The out-of-sight nature of rump group and the fact that many of the lobbyists who comprised it were seasoned negotiators on complex water issues, ranging from the GMA

[34] "Panel created to solve water-transfer problem to disband," *Phoenix Gazette*, December 24, 1987, Metro, B3.

to Plan-6 funding, meant that it could serve as a less-heated forum for negotiations as the poisonous proceedings for Governor Mecham's impeachment began. Since December 1987, when the third study committee report was published with little solution in sight, rump members had been discussing solutions with little success. The gradual realization that any agreement they could reach would face opposition from those not involved prompted Chairwoman Betsy Rieke to expand the group in July to include four legislators (Speaker of the House Joe Lane, and Reps. Herb Guenther, Jim Hartdegen, and Jenny Norton) and fifty other people representing seventeen different interests. To streamline discussions, they divided into three committees that focused on transportation limits, determining compensation to rural counties, and taxing and bonding for areas with water farms. That each committee had generated several proposals by September gave Guenther hope that if they could reach agreement, the legislature would be able to pass a compromise the following year.[35]

But by December 1988, negotiators could not reach consensus on the value of water; those involved remained divided over how much water should be set aside for counties and how much compensation these areas would receive. For rural lawmakers who had to balance these negotiations with fending off fierce electoral challenges from Mecham's followers, who defeated Speaker Joe Lane and six others who voted for impeachment in the primary election and threatened countless others, this breakdown

[35] "Water Farm Negotiators Target '89 Regular Session," *Arizona Capitol Times*, July 27, 1988, 1; "Water Farm Negotiators' Progress Trickling Ahead," *Arizona Capitol Times*, September 21, 1988, 10.

made the session's end a bitter experience.[36] Even when a group of six representatives from various interest groups renewed negotiations at the beginning of the next session in January 1989 and reached agreement on closing some basins to future transfers, they remained in the same impasse as the rump group after four months. The municipal team was dead set on paying $2 per AF transported, while the rural interests wanted ten times as much. The closest agreement was over how much water could be removed from a basin: the rural team had offered 55 percent while the municipal team wanted 65 percent.[37]

Since the 1989 session began, everyone within the legislature seemed anxious to resolve the water farm issue. Stories in the state's largest circulating papers, *The Arizona Republic* and *The Phoenix Gazette*, were generating public awareness and opposition to water farms. In northern Arizona, a proposed transfer from an area near Flagstaff to a resort town at the entrance of the Grand Canyon National Park brought the district's lawmakers, who had previously been ambivalent on this issue, into strident opposition. When negotiations among the group of six fell apart, the interested parties coalesced into separate cliques and introduced four different comprehensive bills in late January.[38]

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[36] "Water Farm Talks Dammed by Transportation, Compensation Issues," *Arizona Capitol Times*, December 14, 1988, 1-2; "Vote breathes new life into Mecham; victory balanced by some defeats for ex-governor," *Arizona Republic*, September 14, 1988, Front, A2.

[37] The rural delegation consisted of Guenther, Gene Fisher of CWF, and Bruce Babbitt. Roger Manning of AMWUA, Jim Derouin of the City of Phoenix, and Kathy Ferris, who was now representing AgriCom, formed the urban delegation. When negotiations broke down, all had agreed to close the Parker and Little Colorado Basins to future transfers while leaving the basins holding Bouse, Wenden, Salome, and McMullen Valley—all of which comprised Phoenix's water farms—open to transfers.

[38] Transporting groundwater; county approval, HB 2032, 39th Legislature, 1st Regular session (1989); Groundwater; exempt wells, Fort Valley, HB 2030, 39th Legislature, 1st Regular session (1989).

AMWUA, together with Tucson, AgriCom, and the Arizona Mining Association introduced a bill that divided and conquered by limiting water transfers to ten mostly southwestern Arizona basins. Many rural interests ranging from Prescott to the Navajo, Apache, and Coconino Counties Little Colorado River Basin Water Conference saw this as their opportunity for a future free of water farms. They, along with nearly every Phoenix-area legislator, backed the legislation.[39]

La Paz lawmakers Herb Guenther and Jones Osborn proposed an alternate package that created an agency to manage transfers and limited transfers to existing water farms. Beyond applying to ADWR for a permit to transport, those operating water farms could not withdraw more than 40 percent of a groundwater basin's existing groundwater.[40] A coalition of rural and urban legislators introduced a similar bill that required ADWR to approve all transfers and cities to make in-lieu payments for what the land would have been worth in private hands. Where it differed was in expanding the number of reserved basins and setting more generous terms for withdrawing groundwater.[41]

In an effort to establish order, House Natural Resources and Agriculture Committee Chairman Jim Hartdegen refused to hear these three measures and introduced his own comprehensive package that inverted the approach of the other three bills. This ARWA-backed measure closed all AMAs and four environmentally sensitive basins to water farms while keeping the rest open to transfers. While the per-acre transportation

[39] Water transfers; AMWUA consensus, HB 2653, 39th Legislature, 1st Regular session (1989).

[40] Water transfers; G, HB 2427, 39th Legislature, 1st Regular session (1989).

[41] Water transfers; water plan, SB 1450, 39th Legislature, 1st Regular session (1989).

limits mirrored those in Guenther and Osborn's bill, it featured a lower limit for how much total water could be transported out of these basins. When little overlap emerged from a massive, collective meeting in February of three house and senate committees to discuss these four bills, leaders nominated yet another committee to continue negotiations.[42]

When this new committee remained deadlocked with less than a month of the session to go, the mounting frustration with endless committees rehashing the same points provoked radical action. Speaker Hull and President Usdane pulled this new committee's draft bill, gathered a list of sponsors, and threw it before the legislature. Like the earlier AMWUA-backed measure, HB 2666 (the "Beast Bill")[43] limited interbasin transfers to nine basins largely within La Paz and Yuma Counties. The $12 in compensation for each AF transported was closer to the $15 rural negotiators in the previous committee had desired, but the bill's remaining provisions revolted them. Any entity could transport water unabated until 35 percent remained in these basins. Beyond protecting city- and speculator-properties, HB 2666 granted priority transportation rights to them with a provision for entities that had spent over $300,000 preparing their water farms for transportation. Many of the rural legislators outside the affected basins who joined in sponsoring this legislation—including Sens. John Hays, Gus Arzberger, and Alan Stephens, as well as Reps. Jim Hartdegen and Henry Evans—had previously

[42] "First Water Transfer Bills Hit House; Hartdegen Holds Them For Own Act," *Arizona Capitol Times*, January 25, 1989, 1; Water transfers; ARWA, HB 2635, 39th Legislature, 1st Regular session (1989); Joint Senate Health, Welfare, Aging and Environment; House Natural Resources and Agriculture; House Environment Committees, Minutes for February 22, 1989, RG 97, SG1, S3, Box 36, NRA (2/4).

[43] Revelations 13:15-13:18 describes a red, seven-headed leviathan rising from the sea in the End Times. The number associated with the beast is 666.

opposed water farms. But the prospect of sparing their districts and resolving this issue was too attractive to pass-up. Legislative leadership gave the La Paz Board of Supervisors a day to formally reply. However they responded, HB 2666 had enough support from speculators, cities, and most rural legislators to pass.[44]

This abandonment by legislative leaders was a wake-up for the La Paz County delegation. When leaders turned down their pleas to delay introducing HB 2666, they rallied their supporters to halt what Herb Guenther decried as the "rape" of La Paz County. Concerned residents organized petition drives, letter-writing campaigns, and flooded the House's switchboard while CWF mobilized caravans of cars and buses for residents to Phoenix. Scores protested outside of AgriCom's Central Avenue office and the Salt River Project's headquarters for the utility's support of the measure. Even more headed to the capitol to confront legislators. The bill's first hearing before the House Natural Resources and Agriculture Committee on May 8th dragged on for fourteen hours as many Yuma and La Paz residents plead their opposition. Kathy Ferris, now representing AgriCom and perhaps those—like one former county supervisor—who had sold their lands to the company, favored the bill. Herb Guenther, Parker Mayor Sam Davis, and Gene Fisher offered a compromise that would allow 50 percent of groundwater to remain in each basin. No one took it. Sponsor Sen. Hays, who two years earlier had chaired the study committee that patiently listened to Parker residents'

[44] The nine reserved basins under HB 2666 were the Big Chino, Harquahala, Ranegras Plain, Clara Peak, Lower Gila, Tiger Wash, and Gila Bend basins as well as Child's and Dendora Valleys; Jim Tiffin, "Supervisors ask delay in water transfer legislation," *Parker Pioneer,* May 3, 1989, 1; "Legislature may leave La Paz County high and dry in new water measure," *Arizona Republic,* April 17, 1989, Valley & State, B1; "Rural-to-city water rights plan offered," *Phoenix Gazette,* April 29, 1989, Front, A1; Groundwater transportation act of 1989, HB 2666, 39th Legislature, 1st Regular session, 1989, §9-435, §42-257, §45-464.64 (G).

apprehensions over water farms, now defended a bill that embodied their fears. He confessed, "I don't think anyone is real happy with it, but it's something. This is like King Solomon chopping the baby in half." For better or worse, he argued that HB 2666 could be the last opportunity for rural areas to exert control over their rights. If not, water farms would continue unregulated.[45]

By nighttime, committee members had grown restless with testimony and started hashing out details. After some initial amendments, Guenther seconded by his seatmate Bob McLendon proposed fourteen different amendments to soften portions of HB 2666. However fair they may have been, all failed. In what likely represented the feelings of all committee members outside La Paz County, Rep. Hartdegen defended his vote saying, "AgriCom has joined the pack of one for all and all for one. If they are not happy, they will withdraw their support, and that would kill the bill." When the committee adjourned at half-past-midnight, it had passed HB 2666 with only three opposing votes.[46]

The publicity generated by the House hearings weakened support for HB 2666. The weekend before the hearing, the *Arizona Republic* ran an extended commentary from Gary Woodard, a University of Arizona policy expert, who ripped HB 2666 for failing to articulate a "coherent policy" for water resource management. After the committee hearing, it ran another story highlighting the how the measure would favor AgriCom and American Continental while harming the value of state trust lands. The editorial board's

[45]Joyce Barker, "Bouse area residents oppose water transfer bill at state legislature," *Parker Pioneer*, May 24, 1989, 3; "Groups protest water measure," *Phoenix Gazette*, May 25, 1989, Metro, B4; House Committee on Natural Resources and Agriculture, Minutes for May 8, 1989, 2, 5, 6, 9, 10, 12.

[46]Martin Van Der Werf, "Water-swap 'rights' in bill fire opposition," *Arizona Republic*, May 10, 1989, B1; House Committee on Natural Resources and Agriculture, Minutes for May 8, 1989, 14-16, 17.

statement that day acknowledged that La Paz County was "being sacrificed to the interests of other areas." While little could be done to alter the legislation, "the public is entitled to know why two private businesses—AgriCom Management Inc. and American Continental Inc. that together own about 40,000 acres—are slated to receive preferential rights."[47]

House leadership did agree to hold HB 2666 for a week so that Guenther could line-up support for an earlier measure that would create an agency to regulate groundwater transfers. Any city applying to transfer groundwater would need to demonstrate that its population growth demanded new supplies. Representatives from Phoenix, Scottsdale, Mesa, and Glendale supported the measure, but Guenther could not round-up enough votes for the legislature to consider it. Negative press coverage and opposition from the State Land Department pushed sponsors to remove the preferential transportation language.[48] But they tacked on an amendment that allowed any city transporting water to override any local ordinance on the placement of pipelines or canals. After killing seventeen of his proposed amendments, the House silenced two-and-a-half hours of pleas from Guenther by passing HB 2666, 43-18.[49]

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[47] State trust lands were federal lands granted to territories upon statehood to fund their development. Most of the revenue from selling or leasing Arizona's 9.2 million acres of lands is dedicated to K-12 public schools. Gary C. Woodard, "Pumping a county till it's dry," *Arizona Republic*, May 7, 1989, C1-C3; "Water transfer legislation: Urban vs. rural interests," *Arizona Republic*, May 10, 1989, A16.

[48] Speaker Hull and House Majority Leader Jim Meredith accused Phoenix, which had been the first city to support Guenther's statewide agency, of trying to scuttle HB 2666 simply to leverage another amendment to grant them broader transportation rights. "Water-sway 'rights' in bill fire opposition; 2 firms, 2 cities are singled out in transfer measure," *Arizona Republic*, May 10, 1989, Valley & State, B1; "Chances for water-transfer bill dwindling La Paz County, Phoenix propose statewide agency," *Arizona Republic*, May 16, 1989, A1.

[49] "Another Hitch Delays House Water Transfer Action," *Arizona Capitol Times*, 2-3; Martin Van Der Werf, "House OKs water transfer to big cities; La Paz lawmaker decries 'atrocity'; bill faces Senate," *Arizona Republic*, May 20, 1989, Valley & State, B1-B2.

Even after clearing the House, the steady crescendo of media scrutiny began whittling down support for the measure before the Senate could consider it. Rumors circulated that Phoenix Mayor Terry Goddard, who was planning a gubernatorial run, told his staff to support Guenther's proposal. As demonstrators descended on the capitol for HB 2666's hearing before the Senate Health, Welfare, Aging and Environment Committee (HWAE), Chairman John Hays was shoring up support for an amendment to include a study committee exploring Guenther's proposal.[50] But the pinnacle event on the day of the bill's hearing came from a child. The following morning, *Arizona Republic* readers were greeted with an image of Amber Cappi on the front page of the "Valley & State" section. The two-year old from Quartzsite, exhausted from the summer heat, looked disconsolate as she slumped next to a sign reading "What will my kids drink daddy?" Though the image was undoubtedly staged, it spoke to a sense of injustice inherent in the water farms. Because some large landowners opted to reap the profits from selling their property and water rights to distant cities, those left behind would face the consequences of a declining water table—degraded groundwater quality, higher

[50] When the House of Representatives passes a bill out of the Committee of the Whole, it is transmitted to the Senate for further deliberation. The bill was required to pass through the Rules Committee, which was responsible for determining whether it was constitutional; in actuality, the Rules Committee mostly exists to kill bills. Chairwoman Jan Brewer would have likely obeyed the dictates of leadership in certifying that it was proper for consideration. If not, she had six Republican votes to overcome the committee's four Democrats (which include Gus Arzberger and Alan Stephens). As Senate President, Robert Usdane could decide which other committees would hear HB 2666; the fewer committee assignments it received, the more likely it was to pass. Politics likely dictated why Usdane assigned HB 2666 to the Health, Welfare, Aging and Environment (HWAE) Committee over the Natural Resources and Agriculture (NRA) Committee. HWAE Chairman John Hays had been committed to passing HB 2666 and likely had the votes lined-up to do so; the committee's six Republican members—all of whom, barring Hays, hailed from urban areas—outnumbered its four Democratic members. The NRA Committee, in contrast, was evenly split between Republicans and Democrats; in the event of a tie vote, the bill would be considered dead.

pumping costs, and overall economic decline—and the prospect that their future was limited.[51]

The turn in public opinion manifested when the Senate HWAE Committee approved every amendment La Paz legislators introduced: the amount of water removed from a basin was reduced, and the revised measure now contained the framework for a statewide agency to acquire water rights and regulate transfers. But these provisions likely outweighed any benefit that cities and developers saw in passing it. Three Republican Senators representing Mesa and Phoenix joined with four Democrats to kill the bill in committee. For Chairman Hays, who had shepherded HB 2666 to almost being a workable compromise, the defeat was tragic. Sen. Jones Osborn, who had been resigned to the passage of this improved bill, scoffed that "The cities apparently don't think they need the bill." Since any member could resurrect this measure with a strike-everything amendment, legislators remained on guard into the final days of the session in June. None came, nor did Governor Mofford—who had replaced Mecham after his impeachment—call a special session to forge an agreement. All involved were left emotionally drained and uncertain of how to move negotiations forward.[52]

CRAFTING COMPROMISE

The failure of HB 2666 was the pivotal turning point in negotiations. City representatives realized they could not strong-arm a bill through the legislature; they

[51] Jim Tiffin, "Water water bill passes house; to senate Thursday," *Parker Pioneer*, May 24, 1989, 1; "Water watch," *Arizona Republic*, May 25, 1989, pg. B1; "Group protests water measure," *Phoenix Gazette*, May 25, 1989, Metro, B4; "Senate Sent Water Bill; Hays Wants Study Added," *Arizona Capitol Times*, May 24, 1989, 1.

[52] "Senator meets with demonstrators," *Parker Pioneer*, May 31, 1989, 1; Michael Ging, "Water bill is killed by Senate panel," *Arizona Republic*, June 3, 1989, Valley & State, B1, B4; "Water bill still kicking after committee defeat," *Arizona Capitol Times*, June 7, 1989, 1.

would need the support of La Paz lawmakers—and with it, more favorable compensation and limitations on transportation—for any agreement to last. And La Paz County leaders, including CWF members and the Board of Supervisors, accepted that they would have to provide the Phoenix-area with water in the future.[53] None of the negotiating parties had formally met since the end of the last session seven months before. But the consensus that emerged from the embers of HB 2666 set a new tone for the new session in January 1990. Negotiators split into three groups to resolve which water farms would be grandfathered into law, which basins would be designated for future urban demands, and what costs would be tied to transporting water.[54] Though Sen. Hays introduced a bill similar to HB 2666 that could easily be re-amended to include a compromise, negotiators could not reach a clear agreement by the end of session in May 1990.[55]

While those talks simmered with the oncoming 1990 elections, many of the involved parties were also re-evaluating the GMA's safe-yield and AWS requirements. Criticism of the law had been growing over the past two years. After completing an audit of the ADWR, long-time Auditor General Douglas Norton criticized safe-yield for being wholly unnecessary, since Phoenix and Tucson had enough groundwater to last several hundred years. He also faulted the AWS standards for igniting a hasty rush to secure groundwater pumping rights well before they were needed. His findings carried over to the Arizona Farm Bureau's convention in November 1990, where members backed a

[53] Jim Tiffin, "Parker and Quartzsite mayors, councils meet; discuss water issues," *Parker Pioneer*, November 15, 1989, 1.

[54] Personal interview with Herb Guenther, March 20, 2013.

[55] Jim Tiffin, "Water transfers legislation passes committee; bodes watching," *Parker Pioneer*, March 14, 1990, 1; Minutes of the Committee on Health, Welfare, Aging & Environment, February 27, 1990, 5, 6, 8, 11.

resolution to throw out the GMA. Andy Kurtz, the Bureau's Executive Secretary, began feeling out support for using an initiative to change the AWS requirements if water farm negotiations stalled again in the coming session. [56]

The calls to re-examine the GMA also shifted attention toward creating a metropolitan district that, instead of allowing individual cities and water companies to independently acquire their own supplies, would coordinate planning for future water demand. It was an idea that had been in practice in Los Angeles for several decades and was not entirely new in Arizona; it was simply an extension of groundwater recharge legislation that urban lawmakers had pushed in earlier sessions and embodied one of the recommendations of the study committee's final report.

Congressional pressure provided the initial push for a prototype district. Many irrigation districts that had contracted for CAP water realized that they could no longer afford it to the point that looming underutilization accompanied the CAP as it came online in 1987. A General Accounting Office report to Congress in February found that Department of Interior accounting practices had allowed congressional spending for the CAP to exceed its authorization ceiling by $493 million.[57] A Congress increasingly opposed to costly western water projects would need to approve the project's greater ceiling. This uncertainty pushed a sizeable urban contingent to allow the Central Arizona

[56] Norton also criticized the ADWR for lacking the statutory authority to halt entities that have pumped excessive groundwater and noted, as many other would with time, that neither the Tucson or Phoenix AMA would be able to reach safe-yield by 2025. "Water Code's Safe Yield Goal Said Unrealistic, Unnecessary," *Arizona Capitol Times*, September 6, 1989, 1-2; "Farmers Rap Water Transfers, Threaten Initiative Campaign," *Arizona Capitol Times*, November 28, 1990, 2-3; Arizona Office of the Auditor General, *Performance audit, Department of Water Resources, Arizona Water Commission; Report to the Arizona Legislature by the Auditor General*, August 1989, http://azmemory.azlibrary.gov/cdm/singleitem/collection/statepubs/id /6789/rec/8, 14-17, 18.

[57] U.S. Government Accounting Office, B-223725, February 20, 1987, accessed on May 3, 2013, http://www.gao.gov/products/457067#mt=e-report.

Water Conservation District (CAWCD) to operate underground water storage facilities. It could therefore utilize more project water by storing previously unused amounts underground for use in drier times.[58]

The announcement of new AWS guidelines for the Second Management Plan (1990-2000) in November 1988 generated more momentum for creating a metropolitan water district. The initial guidelines for providing water for new subdivided lands that the ADWR had released in September 1982 focused on tepidly limiting the depth of groundwater pumping. Developers had anticipated that the ADWR would allow grandfathered irrigation rights that could be converted into moveable Type 1 rights to satisfy the AWS requirements. They could continue acquiring older farmlands for their underlying groundwater to demonstrate an AWS. But instead the ADWR's new AWS guidelines reduced groundwater withdrawals to half-an-AF per acre on undeveloped land. The department was effectively limiting development on non-urban lands to 1-1.5 residences per acre to that point that most future growth would occur in areas with access to surface waters. The wave of fury from the development community, farmers who saw the value of their lands they were marketing drop, and cities without CAP or SRP allocations forced ADWR to retreat from these guidelines in less than three months.

[58] Groundwater recharge; district authority, HB 2401, 38th Legislature, 1st Regular session (CH 353, 1987), § 48-3713 (B)(5); § 48-3713 (C); § 48-3713.01; House Committee on Natural Resources and Agriculture, Minutes for March 9, 1987, 3-5; "Those dry years are coming," *Phoenix Gazette*, March 11, 1987, A-12; "Water For Dry Years," *Arizona Republic*, March 11, 1987, A-8; Jack Lavelle, "Committee OKs bill for water storage," *Phoenix Gazette*, March 13, 1987, E-10.

Rather than wait for additional regulations from ADWR, these interests began looking towards groundwater replenishment as solution to their problems.[59]

Their efforts, and ongoing favorable discussions from a variety of sources on creating a metropolitan water district, came to fruition when the legislature convened in January 1990.[60] Tucson Sen. John Mawhinney had been working for seven years with local water groups to create a water augmentation authority to help the Tucson AMA, which was one of the largest groundwater-dependent areas in the country, reach safe-yield. The authority's framework would allow it to acquire now-unused CAP allocations to farmers and offer interested parties a full portfolio of water rights that qualified as AWS. Its prohibition on importing groundwater gained the enthusiastic support of rural lawmakers. Several involved in water farm negotiations drew up a similar measure for the Phoenix AMA, but its exclusive focus on groundwater replenishment, dearth of protections for smaller communities' water supplies, and mandatory membership soured support. The underlying idea would nonetheless return next session.[61]

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[59] Water Resources Research Center, University of Arizona, "Debate, Discussion Mark Ten-Year Anniversary of Arizona's Groundwater Management Act," *Arroyo*, Vol. 4, No. 3 (October 1990): 4-5.

[60] Norton's audit had suggested that a metropolitan district could enhance management of existing supplies, conservation efforts, and augmentation for the Phoenix-area. Roger Manning of AMWUA had flown several legislators to visit the Metropolitan Water District to shore up support within the legislature. Arizona Office of the Auditor General, *Performance Audit, Department of Water Resources, Arizona Water Commission; Report to the Arizona Legislature by the Auditor General*, August 1989, http://azmemory.azlibrary.gov/cdm/singleitem/collection /statepubs/id/6789/rec/8, 19; Personal interview with Roger Manning, February 26, 2013.

[61] AMA water augmentation authority, SB 1556, 39th Legislature, 2nd Regular session (CH 181, 1990); David Michael Gillilan, "Institutional Alternatives for Managing Water Resources in the Upper San Pedro River Basin, Arizona," (MS thesis, University of Arizona, 1992), 65-66, 67, 68; Paul Allvin, "Legislature ponders Tucson water bill, it may help La Paz County," *Parker Pioneer*, April 18, 1990, 1; Enric Volante, "Panel considered to manage water in Tucson area," *Arizona Daily Star*, March 22, 1990, Metro/State, 1B, 2B; Enric Volante, "Mofford OKs Tucson-area water agency," *Arizona Daily Star*, May 5, 1990, Metro/State, 1B, 4B; Groundwater replenishment districts, SB 1558, 39th Legislature, 2nd Regular session (1990).

Even as water farm negotiations subsided with the coming elections, a spat erupted that summer. Mesa and Phoenix lobbyists were pushing Congress, which was debating the Fort McDowell Indian Water Rights Settlement Act, to repeal a clause within the Colorado River Basin Project Act. To shift Arizona's water consumption from finite groundwater to "renewable" CAP water, the act had restricted any entity contracting for project water from pumping non-surplus groundwater across the CAWCD's boundaries. Since the Pinal AMA was a planned depletion area under the GMA, Rep. Jim Hartdegen argued that there was no such water available. He, Guenther, and new ADWR Director Bill Plummer persuaded a joint committee that rescinding this clause would be detrimental to ongoing water farm negotiations.[62] They returned home successful and prepared for another round of elections.

The returns that came in throughout the night of November 6th revealed two electoral bombshells. First, since neither Democrat Terry Goddard nor his Republican opponent, J. Fife Symington III, secured a majority of votes, they had to face-off in a run-off election.[63] The second surprise was that Democrats, for only the second time since legislative reapportionment, had won control of the Senate. Alan Stephens, who had been an active participant in water farm negotiations, became Majority Leader and while Sen. Pete Rios—who represented parts of Graham, Gila, and Pinal Counties—assumed the

[62] Colorado River Basin Project Act, 43 U.S.C. 1524, PL 90-537, §304(C)(3); *Fort McDowell Indian Water Rights Settlement Act of 1990*, Joint Hearing before the Committee on Interior and Insular Affairs, House of Representatives, and the Select Committee on Indian Affairs, United States Senate, 101st Cong., 2nd sess., July 17th, 1990, 149-150, 325, 369-370, 372-373, 374; Tamara Hatzinger, "Federal Water Law Survives Cities' Lobby for Repeal," *Arizona Capitol Times*, August 8, 1990, 1.

[63] One legacy of Governor Evan Mecham's tumultuous time in office was that the legislature, in an effort to ensure that neither he nor any candidate like him would win gubernatorial office, amended the state constitution in 1988 so that a candidate needed at least 50% of the vote to win. Symington received 49.7% of the vote, while Goddard fell half-a-percentage point behind at 49.2%. The legislature rescinded this change after the 1990 election.

Presidency. They, along with Speaker Jane Hull, eagerly pressed for resolution of the issue. The onset of another economic recession in July had already cooled water farm speculation and the atmosphere for negotiations. What took shape as the session began was a two-part package that would limit groundwater transportation to certain basins while laying the foundation for a Phoenix-area water district.[64] A scandal at the beginning of the session temporarily derailed negotiations. Acting on rumors that legislators were taking bribes, Phoenix Police Chief Ruben Ortega and Maricopa County Attorney Rick Romley launched a sting operation. Operating under the alias "Tony Vincent," former mobster J. Anthony Stedino hustled legislators and lobbyists for their help in setting up casino-style gambling in Arizona and doled out over $300,000 for their efforts. Seven legislators either resigned or were thrown-out of the legislature to face their indictments from "AZScam." Among them was Hartdegen, who was one of the central legislators involved in negotiations.[65]

Despite the loss of a pivotal member, a consensus was crystallizing among negotiators. While the details remain muddled, municipal and rural interests turned against AgriCom and American Continental. Part of the compromise measure (SB 1055) that Willcox-area Senate Natural Resources and Agriculture Chairman Gus Arzberger

[64] "Stephens Gives Nucleus Club Peek at Democrat Senate," *Arizona Capitol Times*, December 5, 1990, 1; "Committees Will Consider Everything From Collective Bargaining to AHCCCS Transplants: House Natural Resources & Agriculture," *Arizona Capitol Times*, January 9, 1991, 40, 42; "Rios, Hull Interview," *Arizona Capitol Times*, January 9, 1991, 26; Jane Crichton, "Water transfer legislation planned for legislative session," *Parker Pioneer*, January 2, 1991, 1-2.

[65] Of the nine who resigned, Hartdegen was least culpable. Recordings showed Stedino continually pushing to the point of almost bullying a reticent Hartdegen into joining his scheme. When he finally acquiesced, it seemed that Hartdegen had done so simply to get Stedino to let up. Though he had to resign his seat as part of a plea agreement, Hartdegen's tearful goodbye speech was greeted with a standing ovation. He has since been allowed to return to the legislature as a lobbyist, a privilege not accorded to any of the other AZScam legislators. Jean Novotny, "'AzScam': A triumph and a milestone," *Arizona Republic*, June 10, 1991, A5.

introduced in late February grandfathered in the municipal water farms and limited future groundwater transportation to three additional basins, none of which held the properties of speculators. Beyond attaching an amendment that established the framework for a Phoenix-area replenishment district—one that was supposed to be introduced separately in the House as part of this compromise—to ensure urban support, Arzberger held two informational meetings to ensure that everyone was onboard.[66]

There was urgency in the air as his measure was set for a final Senate vote in late February. The runoff election between Goddard and Symington was scheduled for the 26th. The two were neck-in-neck in all polls leading up the election. Rumors circulated that the Senate Democrats—seven of seventeen of whom hailed from rural districts—were trying to push SB 1055 through before the runoff election in hopes that it would boost Goddard's polling in rural areas. Their concerns were warranted. Symington's campaign had dispersed fliers proclaiming "Terry Goddard Advocates Transfer of Rural County Water to Big Cities" throughout La Paz and Yuma Counties. Goddard had shot back with promises that he would fight alongside Herb Guenther, who had only endorsed him in this run-off election, for equitable water farm legislation. The efforts of Senate Democrats and Goddard were futile: the former Phoenix mayor received 48 percent of the vote, losing the runoff election—including La Paz County—to Symington.[67]

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[66] "Replenishment Accord Clears Way For Water Transfer Limits Bill," *Arizona Capitol Times*, February 27, 1991, 1-2.

[67] During the campaign, Goddard initially ripped into AgriCom for depriving rural areas of their future. When Ron Ober, AgriCom's principal and a prominent figure within the Arizona Democratic Party, threatened to stop fundraising for Goddard, all mention of the company vanished from Goddard's speeches. Keven Willey, "Last-minute slinging muddles voters' vision on way to ballot," *Arizona Republic*, November 4, 1990, Valley & State, B2; Personal interview with Herb Guenther, March 20, 2013; Jim Tiffin, "Goddard vows to fight 1991 water transfer legislation," *Parker Pioneer*, January 23, 1991, 1-2.; Jay Levine, "Symington says 'raids' on rural water are wrong," *Parker Pioneer*, January 23, 1991, 1-2;

While SB 1055 unanimously cleared the Senate, it collapsed upon arriving in the House in late March. Rather than admit defeat, Hull and Rios pulled together twenty-two urban, rural, and agricultural representatives to hammer-out their differences in the chamber's basement. When talks fizzled again after a month of meetings, the determined pair created one last committee of five legislators to try for consensus before the session ended. It was an interesting mixture of personalities. House Majority Leader Mark Killian, a straight-laced, longtime Mesa resident with deep ties to farming, was an obvious selection. The same was true of Herb Guenther and Henry Evans, both of whom had been active in negotiations as representatives of areas with municipal water farms. While he was a retired stockbroker known for his outspoken conservative views, Rep. Stan Barnes's childhood in Queen Creek and his district—which covered most of the agriculturally active East Valley—marked him as a successor for Jim Hartdegen's chairmanship of the House Natural Resources and Agriculture Committee, and consequently, as the chairman of this five-member committee. The most interesting selection, however, was Phoenix Rep. Sue Gerard. A blunt New Jersey native interested in healthcare issues, Gerard—who chaired the House Government Operations Committee—was largely unfamiliar with Arizona water policy. She agreed to be a member as a favor to her seatmate, Speaker Hull, which gave her appointment symbolic

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Christine A. Gow, "Water transfer issues could decide rural counties vote in election," *Parker Pioneer*, January 2, 1991, 1, 3; John Kolbe, "Water-transfer bills inspire political statesmanship," *Phoenix Gazette,* June 3, 1991, Front, A2; Jim Tiffin, "Symington carries La Paz County in governor's race," *Parker Pioneer*, March 6, 1991, 1.

heft. What Gerard possessed, and what every committee member shared as well, was resolve to craft a workable compromise.[68]

This tenacity became evident as this group, which came to be known as "Mrs. Gerard and the Four Farmers," spent the next week overhauling Arzberger's bill. Since only two members were acquainted with water policy, they worked to develop an understanding of the facts with help from new ADWR Director Betsy Rieke—who had run earlier rump group negotiations—that was largely independent from the influence of the established interests that usually involved water negotiations. Stress still flared. Every interest group and member loudly complained about these revisions, one of which AWMUA Executive Director Roger Manning branded as "agricultural blackmail." Hull continually prodded members back to the table at these moments, but as one member observed, it was rare to see these people labor to pass a bill they loathed. The maxim for their work seemed, according to Gerard, that "If everyone's pissed, you know you've got a good compromise." Determination carried the amended version of SB 1055 through the House and the groundwater replenishment district bill (HB 2499) through both chambers within ten days. The only dissent came from Maricopa County's West Valley legislators who questioned why they should be taxed for a district from which they would reap little benefit. But their objections could not derail negotiations for another year. Governor

[68] Ed Foster, "Conservative becomes diplomat on water transfer," *Arizona Republic*, June 3, 1991, B2; Brad Christensen, "Water Talks Halted; Legislators To Go Solo," *Arizona Capitol Times*, May 1, 1991, 1-2; Joint Legislative Study Committee on Achieve Groundwater Management Goals (Authorized by Laws 1991, Chapter 211 and amended by Laws 1991, Chapter 266); Personal interview with Sue Gerard, February 17, 2013.

Symington signed both measures into law and proclaimed the water farm issue resolved on June 10, 1991.[69]

Rural and municipal interests alike benefited from this resolution. One bill halted interbasin groundwater transportation except for grandfathered municipal water farms and three, smaller basins.[70] Any entity with a CAP subcontract was forbidden from transporting water to an AMA until it was using at least 80 percent of its project entitlement and had shown the capacity increase this usage to 95 percent.[71] Beyond mandating payments in-lieu of property taxes to counties of origin, SB 1055 established progressive transportation fees based on the cumulative amount of water moved from these areas. The fees started at $3 per AF transported and increased to ten times that amount for transporting over 5 million AF. These compensation rates were also tied to GDP so that they would remain more generous than any previously proposed legislation.[72] The other bill laid the foundation for a Phoenix-area groundwater replenishment district that—if approved by over 51 percent of the entities supplying the AMA's population—would facilitate more orderly water planning.

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[69]Jim Tiffin, "Water transfer bill set for debate, vote this week," *Arizona Capitol Times*, May 15, 1991, 1; Kevin Willey, "Warring factions find peaceful end to water legislation," *Arizona Republic*, May 23, 1991, B2; Jim Tiffin, "Water legislation passes house," *Parker Pioneer*, May 29, 1991, 1-2; John Kolbe, "Water-transfer bills inspire political statesmanship," *Phoenix Gazette*, June 3, 1991, Front, A2; Personal interview with Sue Gerard, February 17, 2013; Jim Tiffin, "Water legislation expected to be signed by governor," *Parker Pioneer*, June 9, 1991, 1.

[70] ARS § 45-553; ARS §45-554; ARS § 45-555.

[71] ARS §9-432 (B); ARS §455-57.

[72] Two of these basins, Butler Valley and the Harquahala Irrigation Non-expansion Area, lie largely within La Paz County. The CAWCD had conducted a hydrologic feasibility study of Butler Valley in 1987 to determine whether the area could host a large-scale groundwater recharge project. While the agency has not pursued this project, the thinking at the time was that this sparely populated, 99% government-owned valley would become a site for future recharge. The Big Chino sub-basin, which borders the Prescott AMA, was included as a concession to Yavapai County lawmakers. Officials in Prescott had been interested in pumping groundwater within the sub-basin since the 1950s. ARS §45-556, A-D.

Water speculators like AgriCom and American Continental, who had been marginalized in negotiations, witnessed the value of their properties decline as the basins which hosted them were closed to future transportation.[73] But unresolved issues inherent in creating the Phoenix Groundwater Replenishment District meant that more work lay ahead for the legislature. The solution they fashioned would become a boon for many of the developers who had propelled water farm speculation.

THOUGHTS ON PROCESS

The legislative process is by nature arduous and incremental, especially for issues as multifaceted and emotionally polarizing as groundwater policy. Lacking a consensus on whether these water farms even posed a problem and the external pressure that had forced all sides to coalesce around a workable solution and draft the GMA and the EQA, it seems small wonder that the route lawmakers took towards consensus was so nonsensical.

The water farm issue was a new experience for the legislature. The initial motive for addressing this issue was the desire of rural legislators to see water farms restricted, if not eliminated. The gradual momentum generated from their continued efforts sparked concern in cities and speculators that unless they acted, their investments could be lost. These divergent motives drove negotiations, and consequently, none of the parties involved could consistently agree on what form a resolution would take. Absent this coherence, all options for regulating water farms—whether through a statutory frameworks or creating statewide agencies—were always on the table.

[73] Randy Kull, "Wells run dry for water-rich landowners," *Phoenix Gazette*, June 4, 1991, Metro, B1.

With such a broad spectrum of solutions and no reliable information to ground disagreements over how these measures would affect rural areas, the only guide was the consensus of the moment. Negotiations therefore frequently broke down even when a workable compromise seemed within grasp. Only the grinding attrition of these repeated failures and obdurate determination of rural lawmakers could compel a compromise that completely satisfied no one but that all could accept. Some would insist that the long journey to resolution reflects poorly on republican governance. But the fact that the legislature was able to reach broad consensus independent of any significant outside pressure shows that this system could still function. Whether this will remain true for the daunting water supply challenges awaiting the Phoenix-area is debatable.

CHAPTER 5: APPREHENSION

The legislative package that curbed interbasin water transportation (SB 1055) and provided a framework for a Phoenix-area replenishment district (HB 2499) seemed to resolve the water farm issue and its underlying causes. While the Groundwater Transportation Act confined future water transportation to five basins, the replenishment district would facilitate a more organized approach to managing urban water resources. Developers, however, wielded enough influence that the resulting district became a weak entity which subsidized, rather than managed, growth. Subsequent legislation has enabled the district to more proactively affect the pace of growth, but it, along with the creation of a water bank to fully utilize the Central Arizona Project (CAP), has increased the Phoenix-area's reliance on the "renewable" Colorado River. The river's declining flows will bring future difficulties. For those living outside of the Phoenix-area, the resolution was a truce borne from their concerted labors which practically exhausted the legislative process. Yet the disparities in continued growth have only increased, making this hard-fought resolution more tenuous with each passing year.

NEW INSTITUTIONS

HB 2499 only laid the foundation for the Phoenix Groundwater Replenishment District (PGRD). The cities, towns, and private water companies supplying a majority of the Phoenix Active Management Area's (AMA) population had to adopt resolutions supporting its creation for it to be established. Phoenix, which contained almost 49 percent of the AMA's population, now opposed the district's creation on the grounds that it would subsidize growth on the periphery of the valley. Joining it were West Valley municipalities had consistently opposed the district when it was nascent legislation; a

1991 study which projected that district pumping fees could increase water bills by 50 percent (or $6.84 per 12,000 gallons a month consumed) buttressed their fears. Many East Valley cities and developers had misgivings that the district's mandatory membership would burden current residents and businesses.[1] For the next two years, a group of West Valley legislators supported by the Del Webb Corporation and the Western Maricopa Coalition tried to repeal the district; others sought to split it up into two separate districts for East and West Valley cities.[2]

As the PGRD remained unrealized, developers fretted over new assured water supply (AWS) draft rules that the Arizona Department of Water Resources (ADWR) released in October 1992. In order to remain compliant with the Groundwater Management Act (GMA), new subdivided land could no longer simply rely on groundwater to demonstrate that it had access to a legal and continuously available AWS that could last a century. The ADWR instead planned to completely phase-out groundwater dependence within fifteen years in favor of surface supplies largely from the underutilized CAP.[3] Though two University of Arizona economists, Bill Martin and

[1] One notable outlier in this study by Willdan Associates was the exclusion of Glendale, which was largely weaned from groundwater. Lori Baker, "West Valley could bear brunt of water district's tax; residents in the East Valley may pay less," *Arizona Republic*, December 2, 1991, 7-8; David Michael Gillilan, "Institutional Alternatives for Managing Water Resources in the Upper San Pedro River Basin, Arizona," 73; Arizona Water Resources Research Center, University of Arizona, "Developers, Private Water Companies Team Up for Assured Water Supply Legislation," *Arizona Water Resource*, Vol. 2, No. 1 (February 1993): 1-2.

[2] Jeff Nelson, "Taxpayer group joins coalition; WESTMARC battles ground-water tax," *Phoenix Gazette*, April 10, 1992, Community Northwest, 1; Lori Baker, "Governor plans town hall talks in Sun Cities," *Arizona Republic*, May 19, 1993, Northwest Community, 1; T.H., "Water Recharger Repealers Run Aground in GOP Caucus," *Arizona Capitol Times*, March 5, 1993, 1-2; Groundwater replenishment district; split, HB 2103, 41st Legislature, 1st Regular Session (1993); Groundwater replenishment district; repeal, HB 2100, 41st Legislature, 1st Regular Session (1993).

[3] The only exemption for these AWS draft rules were indirectly recharge groundwater or supply credits that developers and cities could earn by retiring farmland. "New Rules To Restrict Developers' Groundwater Use," *Arizona Capitol Times*, November 18, 1992, 7-8.

Robert Young, had foreseen it twenty-five years earlier, water policymakers were realizing that agricultural users could not afford project water.[4] Irrigation districts had already taken on $150 million in debts to cover the construction costs for infrastructure to divert project water. Once the Department of Interior declared the CAP "substantially complete," these districts would need to repay these debts, cover the cost of their diversions, and help cover the $2.6 billion in project construction costs as their sector was becoming less profitable. Project water diversions in 1991 revealed this financial hardship: within a year, irrigation district use had plummeted from 745,000 AF to 421,000 AF. By the following year, ADWR Director Betsy Rieke warned that several districts were facing imminent bankruptcy. The larger fear for state water policy makers was that this unused allocation would be an open invitation for California and Nevada to divert more water from the Colorado River.[5]

The initial solutions for remedying CAP underutilization were sporadic. Agricultural interests pushed for a state subsidy to lessen the cost of project water, which drew protests from municipal representatives who insisted that they should not have to

[4] Martin and Young's original article generated so much controversy that the Dean of the College of Agriculture tried to have the findings rebutted in the state's newspapers. A later report from agricultural economist Paul Wilson vindicated their findings. Wilson noted that many of the studies supporting CAP were "fundamentally flawed" in how much they overestimated farmers would be willing to pay for project water that was more expensive than pumping groundwater. R.A. Young and W.E. Martin, "The Economics of Arizona's Water Problem," *Arizona Review* (March 1967): 9-18; "Editorial: Timely Rebuttal to Article," *Arizona Daily Star*, April 5, 1967, 7; Paul Wilson, *An Economic Assessment of the Central Arizona Project Agriculture: A Report Submitted to the Office of the Governor and the Arizona Department of Water Resources* (Tucson: Department of Agricultural and Resource Economics, College of Agriculture, University of Arizona, 1992).

[5] Arizona Congressman Mo Udall resigned from office on May 4, 1991 from complications of Parkinson's disease. In doing so, he also left his Chairmanship of the House Committee on Interior and Insular Affairs, where he had defended the CAP against a growing hostility towards western water projects. California Congressman George Miller assumed the committee's chairmanship and promptly began inquiries into the CAP. "CAP Swimming In Woes State Water Chief Says," *Arizona Capitol Times*, October 14, 1992, 1-2.

bear the entire burden of paying for the project. The ADWR briefly entertained leasing Arizona's unused allocation to California while the CAWCD paid the federal government $28.8 million to acquire the CAP rights of the insolvent Harquahala Valley Irrigation District in November 1992. The valuable suggestion, which came from a task force Governor Symington formed in the summer of 1992, was to create a replenishment district to inject unused project water underground.[6]

This idea resonated with developers and groundwater-dependent West Valley cities. Since many lacked CAP subcontracts and were operating outside the boundaries of municipal water providers and the Salt River Project (SRP), they had no immediate access to surface waters that would guarantee an AWS. They instead would face the costly task of purchasing and treating water from elsewhere—now made all the more difficult by the Groundwater Transportation Act. The increased burden of the AWS standards and unwillingness of more established cities to create the PGRD had already sparked rumors of a developer-led campaign to repeal the GMA. But the addition of ongoing CAP underutilization created the momentum for a new institution to replace the exiled PGRD. A coalition of developers and groundwater-reliant cities, led by Robson Communities CFO Karl Polen along with Jim Johnson, one of the lawyers who had represented mines in the GMA negotiations, proposed a new replenishment district that would offset the hydrologic burden of new development. Their district's voluntary membership gained the backing of PGRD opponents, its use of project water appealed to policy makers insecure about losing part of Arizona's Colorado River allocation, and by

[6] "Irrigation District 'Bailout' Okayed By CAP Management Board," *Arizona Capitol Times*, November 4, 1992, 8; "Water Leases To California Eyes By Arizona Water Agency," *Arizona Capitol Times*, June 17, 1992, 19; "CAP Water Leases Rejected By Task Force," *Arizona Capitol Times*, August 19, 1992, 52.

undercutting the AWS rules, it allowed for continued development. After little legislative debate, Governor Symington signed the Central Arizona Groundwater Replenishment District (CAGRD) into law on April 22, 1993.[7]

Unlike the PGRD, this district operated within the boundaries of CAWCD, making its services available to users within Maricopa, Pinal, and Pima Counties. It allowed municipal water providers or individual subdivisions that were members to pump groundwater in exchange for paying a variable assessment fee to the district. The revenue generated would cover the district's obligation to use surface waters (primarily excess CAP) to replenish the amount of groundwater a member withdrew in excess of their AMA's management plan. The district did not have to recharge the same aquifer from which members had withdrawn groundwater; it only had to pump it into the same AMA within three years.[8] The district, in other words, guaranteed its members paper rights for an AWS without ensuring that the actual water supply was available. While the CAGRD's relationship to the CAWCD implied that it would have access to the project water necessary for its replenishment obligations, it was never required to demonstrate that it had enough water for an AWS. This flaw has been especially problematic as its replenishment obligation, which was predicted to be 50,000 AF in 1994, surpassed

[7] Karl Polen had also helped write the original PGRD enabling legislation. Groundwater replenishment district; central Arizona, SB 1425, 41st Legislature, 1st Regular Session (CH 200, 1993); Ed Foster, "Key water bills win favor; measures target transfer rights and replenishment" *Arizona Republic,* May 27, 1991, Front, A1.

[8] The Phoenix AMA is over 5,600 square miles and only contains four recharge facilities. ARS§ 48-3701.

100,000 AF by 2004 and is now edging closer to 250,000 AF—an amount that exceeds the surplus CAP water on which the CAGRD depends.[9]

At the behest of the district, the legislature has taken some corrective actions. It lengthened the district's planning horizon from 20 to 100 years and required it to increase replenishment reserves to meet immediate demands of the Phoenix, Tucson, and Pinal AMAs. The legislature has also put in place mechanisms to keep the district fiscally solvent. One measure in 2005 required water service providers entering the district to cover the delinquent expenses of their predecessors before they could qualify for replenishment. A follow-up bill effectively doubled CAWCD's bonding capacity to $500 million and, for the first time, gave the district the power to approve subdivisions for membership and required that it be a party to the agreement between a subdivision and the municipal provider that will supply it.[10] Prior to this legislation, the district's board had no say over which entities could become members. These bills together provide some optimism that the CAGRD can curb its replenishment obligations to a more maintainable level.

All the while, the potential expansion of the CAGRD and the diminishing availability of CAP water will force CAWCD board members into an uncomfortable position. Though responsible for overseeing CAP, they also serve on the CAGRD board. This conflicting obligation between established users and newer developments may force

[9] Central Arizona Groundwater Replenishment District, "Projected CAGRD Obligations," accessed October 1, 2013, http://www.cagrd.com/Portals/3/Docs/ projectednew.gif.

[10] CAWCD amendments, HB 2477, 46th Legislature, 1st Regular Session (CH 115, 2003); CAGRD; omnibus, SB 1235, 47th Legislature, 1st Regular Session (CH 198, 2005); Revenue bond; sustainability policies, HB 2448, 49th Legislature, 2nd Regular Session (CH 300, 2010).

a crisis in Arizona's future.[11] While Arizona Water Banking Authority (AWBA), which was created in April 1996 to permanently resolve CAP underutilization and store excess Colorado River water to cushion droughts, can provide excess water to cushion this crisis, its ability to do so is limited.[12] Arizona's structural debt, which has been fed by zealous tax cuts that the legislature began to pursue in 1990s, has diminished the state's general funds to the extent that the AWBA's revenues, according to one former chairman, have been a "favorite target" for state legislators looking to fund other programs since 2003.[13] Their actions, the CAWCD's retention of revenues generated from an *ad valorem* property tax, and the longtime position of the AWBA as the last user to access surplus CAP water have undermined the bank's ability to store excess CAP water for in-state uses.[14]

Increased CAP usage has further constricted the bank's capacity. Its planners had envisioned the AWBA storing up to 400,000 AF a year for a total of 14 million AF by

[11] Bill Coates, "New subdivisions being developed in Arizona's desert and beyond the reach of water system," *Arizona Capitol Times*, April 28, 2006, 1.

[12] The AWBA also stores portions of California's and Nevada's Colorado River allocation through direct and indirect recharge. Gerry Lynn Wildeman, "The Arizona Water Banking Authority: A descriptive analysis from conception to legislation" (PhD diss., Arizona State University, 2005), 68-70, 71, 82-84, 85, 88, 89, 91-92, 95, 97, 98, 100-102; Arizona Water Banking Authority, HB 2494, 42nd Legislature, 2nd Regular Session (CH 308, 1996); Arizona Water Banking Authority, *1997 Annual Plan of Operation*, accessed May 5, 2013, http://www.azwaterbank.gov/Plans_and_Reports_Documents/documents/1997PlanofOperation.PDF, 18.

[13] In response to the legislature's $18 million transfer for the Arizona Water Banking Fund in 2009, $13.9 million of which came from Nevada's subaccount, the CAWCD sued on the basis that the transfer was unconstitutional. Superior Court Judge Kreamer ruled on June 10, 2011 that the legislature actions were illegal but did not force the legislature to return the funds because CAWCD did not file its original claim in a timely manner. Arizona Water Banking Authority, *2009 Annual Plan of Operation*, accessed May 5, 2013, http://www.azwaterbank.gov/documents/2009FinalPlanofOperation.pdf, 6.

[14] The CAWCD granted AWBA equal standing with CAGRD in purchasing excess CAP water in July 2009. Arizona Water Banking Authority, *2010 Annual Plan of Operation*, http://www.azwaterbank.gov/documents/Final2010PlanofOperation.pdf, 6.

2030, when Arizona would finally utilize full its Colorado River allocation.[15] But future plans have usually fallen short of available water for most of the bank's operation. Arizona reached its full allocation in 2002.[16] Diminishing river flows coupled with CAP's low priority will place the excess water that the CAGRD relies upon in jeopardy. Though the AWBA currently has enough credits for 3.7 million AF, over 600,000 AF of that supply is earmarked for Nevada.[17] While the remaining amount is well over a one-year allocation from the Colorado River, its long-term viability is doubtful. When Lake Mead's water levels drop below 1025 feet, the AWBA will face completing obligations to withdraw water for California and Nevada and instate users too. These limiting factors collectively undermine the ability of the AWBA to bailout CAGRD and put Arizona's metropolitan areas at further risk of future water shortages.[18]

MONUMENTS

The Groundwater Transportation Act grandfathered in the water farms of Scottsdale, Mesa, and Phoenix. The creation of the CAGRD, the successful conclusion of two additional tribal gaming compacts that enabled long-term water leases to municipalities, and loosening of AWS standards set the conditions for more stable growth, and in the process, vitiated the doomsday predictions that had pushed these three

[15] Arizona Water Banking Authority, *1997 Annual Plan of Operation*, accessed May 5, 2013, http://www.azwaterbank.gov/Plans_and_Reports_Documents/documents/1997PlanofOperation.PDF, 21.

[16] Arizona Water Banking Authority, *2002 Annual Plan of Operation*, accessed May 5, 2013, http://www.azwaterbank.gov/documents/2002/Final2002PlanofOperation.pdf, 3.

[17] Arizona Water Banking Authority, 2011 Annual Plan of Operation, accessed May 5, 2013, http://www.azwaterbank.gov/documents/Final2011PlanofOperation.pdf, 4.

[18] Project ADD (Acquisition, Development and Deliver) Water, a consortium of stakeholders statewide that began meeting in 2008, is in the process of identifying future water supplies for the CAGRD. Should they succeed in doing so, they may be able to help the CAGRD meet its replenishment obligations. "Strategy for Implementation of ADD Water: Revised June 11, 2010," accessed October 2, 2013, http://projectaddwater.com/PublicParticipation.aspx.

cities to acquire rural farmland.[19] Projected population growth, according to one Phoenix report, was no longer an accurate basis for determining future water consumption. Higher water rates, smaller lots which consumed less water for landscaping by hosting larger houses, increased efficiencies through better plumbing equipment, and growing popular acceptance of water conservation measures contributed to lower water demands.[20] Mesa concluded in February 2004 that the desalination necessary to treat the saline and nitrate-heavy groundwater underlying their water farms was too costly; reclaimed water, efficient well capacity, tribal waters leases, redeeming storage credits accrued from recharging groundwater, and ongoing conservation efforts would be sufficient to make-up the difference.[21] While all three cities continued to hold onto their properties, the costs of maintaining them had surpassed their now questionable value.

During the final years of legislative negotiations on water farms, Scottsdale had lobbied Arizona Senator John McCain to get the Department of the Interior to buy Planet Ranch and incorporate it into the Bill Williams Unit of the Havasu National Wildlife Refuge. In return, Scottsdale would receive CAP water from the San Carlos Apache tribe as part of its water rights settlement in 1991. Though city leaders received the support of the U.S. Fish and Wildlife Service, La Paz and Mojave County officials, and various

[19] *Arizona Water Settlements Act of 2004*, Pub. L. No. 108-451, 118 Stat. 3478, 108th Congress, December 10, 2004.

[20] City of Phoenix Water Services Department, *2011 Water Resource Plan*, accessed July 2, 2013, http://phoenix.gov/webcms/groups/internet/@inter/@dept/@wsd/documents/web_content/wsd2011wrp.pdf, 29-30, 37, 38, 39.

[21] City of Mesa, *2004 Water Resource Master Plan*, February 2004, 3-19.

environmental groups, the deal never came through.[22] As the years wore on, the taxes and maintenance costs for Planet Ranch—even after the city abandoned alfalfa farming—exceeded $220,000 per year. After several abortive efforts at selling the ranch in the late 1990s, Phoenix-based Phelps-Dodge Corporation (PDC) offered to purchase the property for $24.6 million in 2006.[23] PDC intended to convert Planet Ranch into a wildlife habitat under the Lower Colorado Multi-Species Conservation Program. The 2005 joint agreement between several federal agencies, private entities, and tribes allowed companies to avoid environmental fines by creating new habitats elsewhere. Faced with the burdens of environmental damage claims in Morenci and the Tohono O'odham Reservation, letting nature reclaim Planet Ranch seemed like an easy way out. The Scottsdale City Council unanimously approved the deal in July 2006, only to have negotiations between PDC and state and federal agencies over conservation easements drag out for five years. The terms of sale shifted when Freeport-McMoRan Copper & Gold Inc. (FMM) acquired PDC to become the largest publically traded copper company in the world that year. Beyond paying Scottsdale $10.15 million for the ranch, FMM also provided 50,000 AF of SRP water credits that enabled Scottsdale to have a completely "renewable" water supply. FMM has leased parts of Planet Ranch to the U.S. Bureau of Reclamation for Colorado River conservation program, but water from the Bill Williams

[22] *San Carlos Apache Tribe Water Rights Settlement Act of 1991*, Joint Hearing before the Senate Committee on Affairs United States Senate and the Committee on Interior and Insular Affairs House of Representatives, 102nd Congress, 1st Session, March 21, 1991, 101-104.

[23] A 1997 deal with P&L Investments to purchase the property for $25 million fell through after a $ 500,000 down payment. PDC paid $12 million and provided 500 AF of SRP water rights valued at $12.6 million.

will be transported to its copper and molybdenum-mine 50 miles away in Bagdad, Arizona.[24]

After holding on to its Pinal properties for almost twenty years, budget shortfalls and a report from the city's water resource manager arguing that the water farms were no longer needed pushed the Mesa City Council to consider selling them in 2004. They were significant assets: neighboring lands were selling for $5,000-12,000 an acre, leading a city finance committee to suggest that Mesa could reap $300 million in land sales. The city council began marketing these farmlands in March 2006 with the goal of netting $10 million a year in sales. When they had only sold a single 120-acre parcel a year later, the city council—which had only recently paid off the bond debt from their original purchases—hired the real-estate brokerage firm Nathan & Associates to manage sales. Though the city's new mayor scrapped the $10 million a year sales goal, Nathan & Associates continued marketing the lands. Two energy companies—TransCanada and Juwi Solar Inc.—have purchased land totaling 335 acres for $12.2 million that will host a natural gas and solar photovoltaic power plant. Mesa's remaining properties are currently in escrow awaiting the conclusion of several sales agreements. It remains to be seen what changes these new owners will bring to Mesa's former water farms. Besides these two parcels that are currently supporting industrial facilities, the nearby city of Coolidge has proposed to annex almost 6,000 acres to accommodate projected "hypergrowth" in the

[24] Resource Management Office, Restoration Group, Bureau of Reclamation, "Potential Habitat Restoration: Preliminary Site Analysis and Conceptual Design," February 2005, 5, 13-15, Planet Ranch Files, City of Scottsdale; Lesley Wright, "Phelps Dodge, Scottsdale OK Deal on Ranch," *Arizona Republic*, July 12, 2006, Valley & State, B4; Memorandum to the Honorable Mayor and City Council re: Sale of Planet Ranch, from Marshall Brown, CC: Executive Team, Cliff Frey, December 14, 2011, Planet Ranch Files, City of Scottsdale; Peter Corbett, "Mining company agrees to acquire Planet Ranch," *Arizona Republic*, December 24, 2011, 8.

coming decades.[25] These parcels sales and Coolidge's proposed annexation plans, if anything, have vindicated the urban-industrial land use patterns that Mesa's planners had envisioned for these properties over twenty-five years ago.

Phoenix integrated its McMullen Valley properties into its water management plan after the passage of the Groundwater Transportation Act. Even as Scottsdale and Mesa were marketing their water farms in 2008, Phoenix officials still counted on McMullen Valley's groundwater as a lifeline against future severe droughts.[26] But the fiscal hurdles inherent in building the infrastructure necessary to transport this groundwater were too great. Within a year of advertising its 12,900 acres of farmlands in 2012, Phoenix found a buyer in Arizona Farming LLC, a subsidiary of the International Farming Corporation. The $30 million Arizona Farming paid will go towards paying off the remaining bond debts on these lands and stabilizing future rate adjustments for water service customers.[27] Phoenix, in other words, sold their McMullen Valley lands for practically the same numerical amount of money that they had paid for them twenty-six years earlier.

Thus after months of negotiating their purchases and years spent fighting in the legislature to protect their right to reap these considerable investments, none of these cities have or will ever transport a drop of water from their water farms. It would be easy

[25] Adam Klawonn, "Mesa considering sale of it Pinal water farm," *Arizona Republic*, July 9, 2004, B5; Justin Juozapavicius, "Mesa considers selling Pinal County farmland," *Arizona Republic*, December 15, 2005, Local & State, 8; Gary Nelson, "Mesa hires help to sell Pinal land," *Arizona Republic*, March 17, 2007, 10; Gary Nelson, "Mesa sells Pinal parcel for $2.2 million," *Arizona Republic*, May 6, 2011, 9; Gary Nelson, "Coolidge looks to annex Mesa-owned Pinal land," *Arizona Republic*, October 13, 2010, 9.

[26] Michael Clancy, "Lower usage urged to protect city water supply," *Arizona Republic*, July 2, 2008, Northeast Phoenix Republic, 3.

[27] Ken Kroski, "Phoenix Sells McMullen Property for $30M; Funds to Offset Future Rate Increase," last modified July 10, 2012, accessed on April 3, 2013, http://phoenix.gov/news/071012mcmullen.html.

to brand them as unnecessary with the benefit of hindsight, but the circumstances at play when Scottsdale, Mesa, and Phoenix chose to sink their money in these water farms speaks to the nature of urban water planning in the 1980s. Though Phoenix-area cities had engaged in large-scale expansion in the 1960s and 1970s, the implementation of the GMA's GPCD reductions and safe-yield requirements—which restricted traditional dependence on groundwater in favor of limited surface water supplies—marked the first time Phoenix-area cities had to focus their water planning efforts on assertive demand management.[28] The significant growth their plans projected in undeveloped areas, which lacked access to these crucial surface waters, in the immediate future could not be remedied with demand reductions. In this atmosphere, city planners confronted a future that was uncertain and rapidly approaching. The security of owning these rights seemed to mitigate the prohibitively expensive costs of transporting this water, not to mention the legal obstacles in conveying it through the CAP. These farms, in other words, were the consequence of intense urgency and uncertainty brought on by assumptions of growing populations and complementary, inelastic demand. They were the most rational choice under those assumptions and with the information immediately available to planners focused on ensuring the continued viability of their communities.

FUTURE FARMS

The creation of CAGRD, which has temporarily subsidized Phoenix-area water demand, and the declines in available water supplies have only heightened tensions

[28] *Phoenix Water Resource Plan, 1985: a plan developed by the Phoenix Water and Wastewater Department to meet long-range water resource requirements* (Phoenix: City of Phoenix, Water and Wastewater Department, 1985), 2; City of Scottsdale Water Resource Department, *1985 Water Resource Plan*, 1.

between rural and urban areas of the state. Even as per capita water deliveries for cities and water service providers have declined throughout the state, total water demand has continued to grow since 1990 from population growth. These growing municipal demands reflect a larger change within the Colorado River basin. Though they constitute only 15 percent of current river water deliveries, urban populations have grown from 10 million in 1990 to nearly 35 million by 2008; they are now the fastest-growing sector of water deliveries throughout the entire basin.[29]

One growing trend to curb metropolitan water demand is the adoption of reclaimed effluent. Considering that roughly 70 percent of household water consumption derives from outdoor water use, where potable water is not required, the potential for water savings certainly exists. In certain areas of the state such as Tucson, homes with systems that recycle gray water—waste water from sinks, showers, baths, and other basins free of human waste and chemicals—for outdoor use have become increasingly popular. But these systems, while innovative, pose several problems. Gray water used outdoors cannot be recovered for further reuse; it simply evapo-transpirates, meaning that any water savings is limited to one-time use. Large-scale acceptance of these systems would also undermine the existing contracts that many cities have in place for reclaimed water, including recharge projects that generate storage credits which are a cornerstone for their water portfolios. Nor is there a solid consensus on whether recycled gray water is safe; while the Arizona Department of Environmental Quality sanctioned use of these systems in 2001, concerns within Maricopa County government remain. Whether

[29] Michael J. Cohen, "Municipal Deliveries of Colorado River Basin Water" The Pacific Institute, June 27, 2011, accessed September 3, 2013, http://www.pacinst.org/reports/co_river_municipal_deliveries/crb_water_6_27_2011.pdf, 1, 13-16.

declines in per-capita consumption and growing effluent reuse throughout the state can continue to mitigate a growing population's demand for CAP deliveries remains to be seen.

The situation regarding groundwater, which continues to act as an easy supply source for the most populous areas of the state, is shakier. As of this writing, the Fourth Management Plan for the Phoenix AMA will have entered into effect. The ADWR has emphasized that each AWS will need to meet an "unchanging" GPCD target and that it intends to phase-out the alternative non-per capita conservation program. While the ADWR has noted that non-residential GPCD rates were lower than expected for the Third Management Period, the agency is pushing for lower residential GPCD rates. The new minimum GPCD requirements for water providers in the Fourth Management Plan are largely beyond one standard deviation from the median values the previous management plan's requirements. In practical terms, this statistical difference underscores the great difference between existing patterns of consumption and what will be necessary to move demand management forward in the coming decade.[30]

Future projections offer little cause for optimism. The three scenarios that the Phoenix AMA Groundwater Users Advisory Committee entertained in evaluating the Four Management Plan projected an overdraft between 154,629 and 497,522 AF by 2025, the year that the GMA mandated that AMAs should meet "safe yield."[31] The final

[30] Arizona Department of Water Resources, "Preliminary Draft of 4MP Total GPCD Program," PowerPoint presentation at the Phoenix AMA Groundwater Users Advisory Council, Phoenix, Arizona, September 13, 2012, accessed August 12, 2013, http://www.azwater.gov/AzDWR/WaterManagement/AMAs/documents/GUAC_4MP_GPCD_PROGRAM_PHXAMA.pdf.

[31] Arizona Department of Water Resources, "Assessment of the Assessment/ Fourth Management Plan Development: Phoenix AMA," PowerPoint presentation at the Phoenix AMA Groundwater Users Advisory

report from a statewide water commission likewise predicted that the demand within the AMA will outstrip supplies by 427,000 AF by 2035. Climate change could exacerbate this scenario by curbing CAP deliveries, and in process, amplifying this gulf between demand and supply to 703,000 AF. In less than a century from now, this overstretched demand will mushroom to 1.79-2.12 million AF—an amount that closes in on Arizona's annual diversions from the Colorado River.[32]

In the face of this widening disparity between demand and available supplies, another round of water farm seems inevitable. The compromise the legislature passed in 1991 merely restricted interbasin groundwater transportation from four basins in 1991. Some have already begun to take advantage of these parameters. Scottsdale struck up a water delivery agreement with two companies that operated seven golf courses in the surrounding area in May 2002. In exchange for 1,650 AF of water for their turf, Scottsdale asked these companies to acquire farmland in the Harquahala Valley which would provide a back-up water supply if CAP water became no longer available and contribute to an escrow account that would pay for future pipeline construction to the CAP.[33] They originally purchased a 1,216-acre farm that year which was 13.5 miles from the CAP, only to later discover another comparable farm owned by the Vidler Water

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Council, January 12, 2012, http://www.azwater.gov/AzDWR/WaterManagement/AMAs/documents/PHXAMA_GUAC_AssessmentoftheAssessment_4MP.pdf; Arizona Department of Water Resources, "Phoenix Active Management Area Water Demand and Supply Assessment: 1985-2025," last modified December 2011, accessed August 12, 2013, http://www.azwater.gov/AzDWR/WaterManagement/Assessments/documents/PhxAMA_AssessmentSummarySheet.pdf.

[32]Water Resources Development Commission, *Final Report, Volume II: Committee Reports*, October 1, 2011, accessed June 5, 2013, http://www.azwater.gov/AzDWR/WaterManagement/WRDC_HB2661/documents/WRDCFinalReportVolumeIICommitteeReports.pdf, 368, 372.

[33] Scottsdale would also get a 1,260 AF cut to use for their own purposes. Resolution No. 9262, Scottsdale City Council, December 4, 2012; Purchase Agreement and Escrow Instructions, Scottsdale No. 2012-189-COS, pgs. 1, 2.

Company located just two miles away from the project. The comparatively low pipeline construction cost from the Vidler farm—$4 million, compared with $30 million from their original property—justified paying $9.93 million for the water company's land. Pipeline construction is delayed and the wheeling agreement necessary for transporting water via CAP remains the Holy Grail for water policy makers—mythic and, for now, unrealized.[34]

But there are signs that more water farms may be on the horizon. Pressure for additional water in rural areas brought on by increasingly severe drought has occasionally flared. With the blessing of several rural lawmakers, the Arizona House of Representatives considered a bill in 2003 that would have temporarily waived the groundwater transportation prohibitions during these dry times. Beyond requiring the consent of any town, city, county, or water district from which groundwater would be withdrawn, House Bill (HB) 2478 also declared that any area receiving this transported groundwater could not be within an AMA and had to implement emergency conservation measures. Though it passed with little dissent, none of the transportation provisions have been utilized.[35] Speaker of the House Andy Tobin introduced a bill this past session that would have allowed local governments and private groups to create regional water augmentation districts that could acquire water rights and exercise some eminent domain power. The collective protest against it from the Arizona Farm Bureau, the Arizona Cattlemen's Association, water conservation groups, Yuma-area farmers, and county

[34] Ibid.

[35] Herb Guenther, whose early career as a lawmaker had been defined by the water transfer issue, served as was serving as the ADWR Director at the time this legislation was debated. As director, he now had the power to approve or strike down any proposed water transfer. Water report; DWR, HB 2478, 46th Legislature, 1st Regular Session (CH 248 E, 2003), §4 (A), §5 (A)(B)(C).

boards of supervisors forced Tobin to place it with an interim committee to smooth over differences.[36] The fate of this idea remains unclear, but like HB 2478, it nonetheless portends a gradual shift towards revisiting the consensus embodied in the 1991 Groundwater Transportation Act.

ENDURING PERSONALITIES

As tensions increase throughout Arizona over the coming of future water farms, Gus Arzberger has remained on the land his father settled over a century ago outside of Willcox. Now approaching 94 years old, he likely will not participate in a resumption of the debate over interbasin water farms. But many of those involved in the 1980s water farm issue remain active. In between two stints as attorney general and two failed gubernatorial runs, former Phoenix Mayor Terry Goddard has and continues to serve on the CAWCD Board (1996-1998, 2012-2018). Jim Hartdegen, whose fourteen-year career in the state legislature was defined by negotiating the GMA, has represented Pinal County on the CAWCD Board (1996-2008, 2012-2014) and currently is a member the AWBA. John Mawhinney, the legislative architect of the Tucson replenishment district, serves alongside Hartdegen on the AWBA and on the Tucson Active Management Area's Groundwater Users Advisory Council. Kathy Ferris, whose career began with drafting the GMA and succeeding her mentor, Wes Steiner, as ADWR Director, and continued with representing AgriCom Management Inc., has since become the Executive Director of the Arizona Municipal Water Users Association. And Herb Guenther, whose political

[36] Regional water augmentation authorities, HB 2338, 51st Legislature, 1st Regular Session (2013); Hank Stephenson, "Hearing on Arizona House Speaker Andy Tobin's comprehensive water plan delayed to address myriad concerns," *Arizona Capitol Times*, February 18, 2013, accessed March 23, 2013 http:// search.proquest.com.ezproxy 1.lib.asu.edu/docview/1310808946.

career was defined by the water farm fight, went on to serve as ADWR Director (2002-2009) and now works as a private consultant.

Though these enduring personalities continue to guide state water policy, many of their interviews with me ended in trepidation. There is reoccurring observation from this generation—the one that came of age in drafting the GMA, worked to resolve the water farm issue, and has overseen the implementation of the CAGRD and AWBA—that the same aging actors continue to be the driving forces in water policy. By 2035, when current estimates predict that CAP deliveries will no longer be sufficient to meet projected demand, and Arizona will have an overall unmet demand of 1 million AF per year, nearly all of these experts will have passed on. The lack of new blood entering state water policy at a time when climate change—which will whittle away at surface waters like the Colorado River and Verde River, and therefore, necessitate strict demand management measures—will eclipse the complexity of past issues is jarring, especially for rural areas that are facing a future of water farms and the gradual decline in the political clout of their lawmakers with every legislative redistricting. The uncertainly over future metropolitan-area water supplies and their tenuous relationship with rural areas has been an ongoing concern for Gus and Marsha Arzberger, and it is one that has stayed with me since I left their home in Willcox three years ago and headed towards Phoenix, contemplating my future.

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Water transfers; AMWUA consensus, HB 2653, 39th Legislature, 1st Regular session (1989).

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APPENDIX A

ACRONYMS

ACRE-FEET (AF)

ACTIVE MANAGEMENT AREA (AMA)

AMERICAN CONTINENTAL CORPORATION (ACC)

ASSURED WATER SUPPLY (AWS)

ARIZONA DEPARTMENT OF WATER RESOURCES (ADWR)

ARIZONA MUNICIPAL WATER USERS ASSOCIATION (AMWUA)

ARIZONA RANCH AND METALS COMPANY (ARMCO)

ARIZONA RURAL WATER ASSOCIATION (ARWA)

ARIZONA WATER BANKING AUTHORITY (AWBA)

ARIZONA WATER COMMISSION (AWC)

BUREAU OF RECLAMATION (BOR)

CITIZENS FOR WATER FAIRNESS (CWF)

CENTRAL ARIZONA GROUNDWATER REPLENISHMENT DISTRICT (CAGRD)

CENTRAL ARIZONA PROJECT (CAP)

CENTRAL ARIZONA WATER CONSERVATION DISTRICT (CAWCD)

COLORADO RIVER BASIN PROJECCT ACT (CRBPA)

COLORADO RIVER COMPACT (CRC)

COLORADO RIVER INDIAN TRIBES (CRIT)

ENVIRONMENTAL QUALITY ACT (EQA)

FARMERS INVESTMENT COMPANY (FICO)

FISCAL YEAR (FY)

FREEPORT-MCMORAN COPPER & GOLD INC. (FMM)

GALLONS PER CAPITA PER DAY (GPCD)

GROUNDWATER MANAGEMENT ACT (GMA)

HOUSE BILL (HB)

JOINT INTERIM COMMITTEE ON GROUNDWATER RECHARGE AND TRANSFER (JICGRT)

JOINT LEGISLATIVE COMMITTEE ON GROUNDWATER / SURFACE WATER EXPORTATION (JLCGSWE)

LEGISLATIVE DISTRICT (LD)

MCMULLEN VALLEY WATER CONSERVATION AND DRAINAGE AND DISTRICT (MVWCCD)

METROPOLITAN WATER DISTRICT (MWD)

PHELPS-DODGE CORPORATION (PDC)

PHOENIX GROUNDWATER REPLENISHMENT DISTRICT (PGRD)

SALT RIVER VALLEY WATER USERS ASSOCIATIONS (SRVWUA)

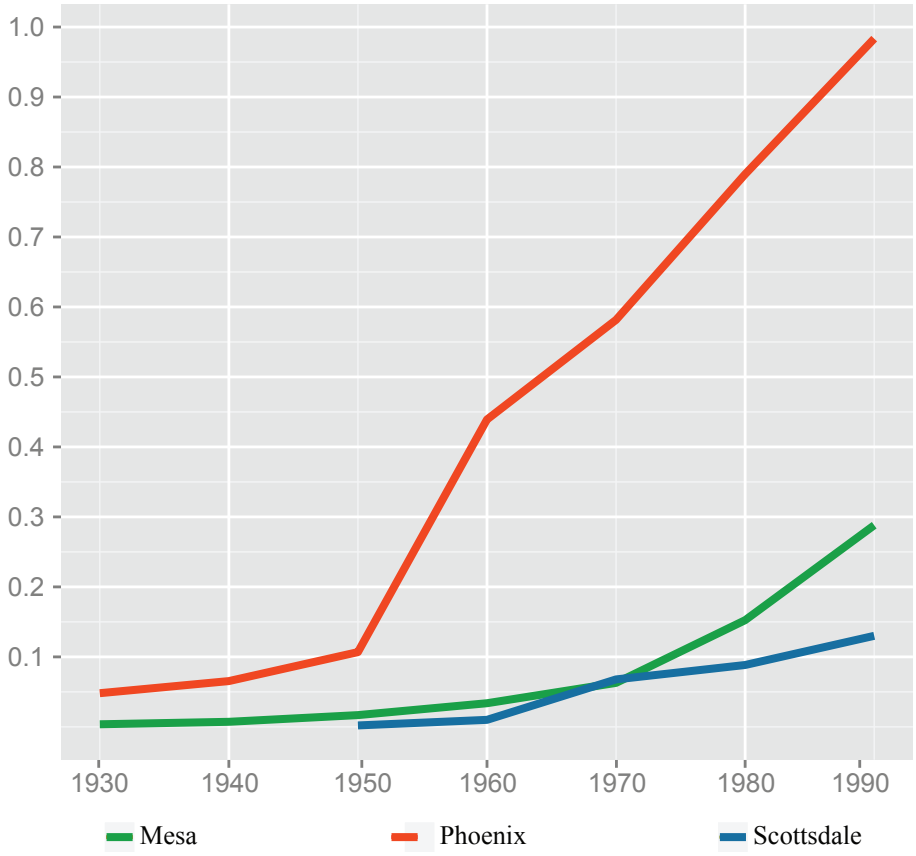
SALT RIVER PROJECT (SRP)

SENATE BILL (SB)

APPENDIX B

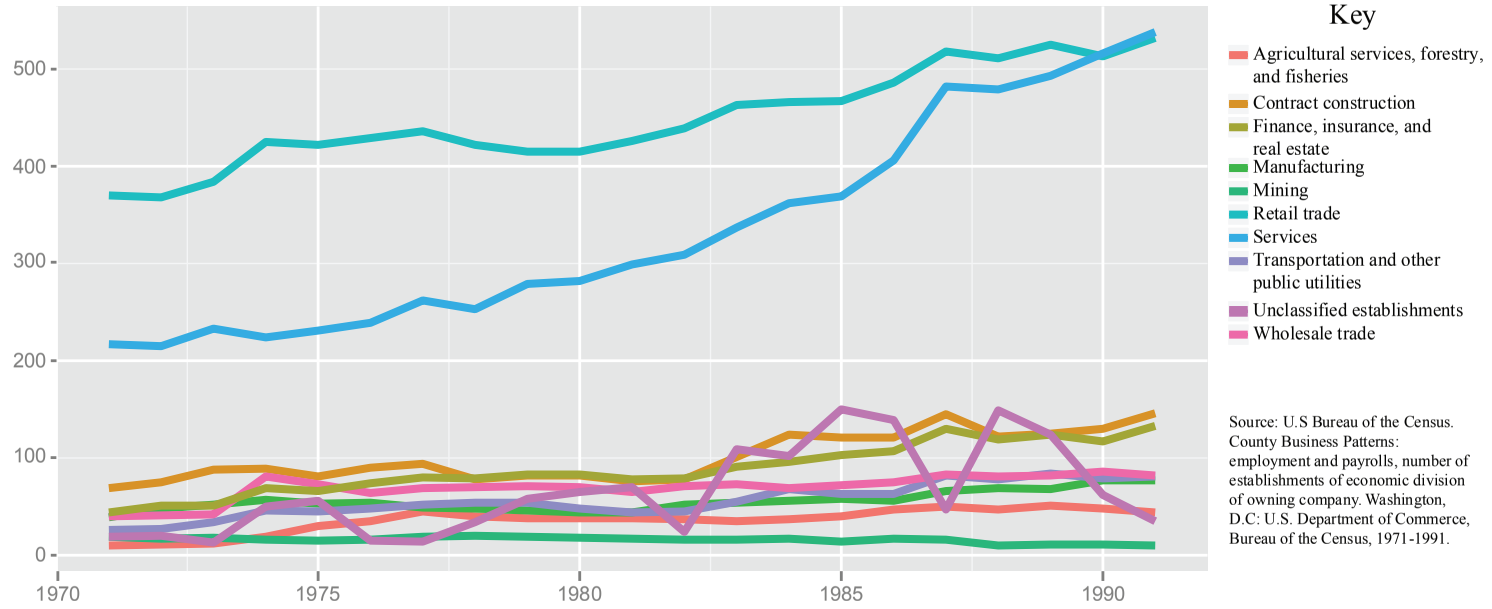
FIGURES

FIGURE 1: MUNICIPAL POPULATION GROWTH, 1930-1990



Sources: U.S Bureau of the Census. Census of Population, 1930-1990. Washington, D.C: U.S. Department of Commerce, Bureau of the Census, 1971-1991.

FIGURE 2: NUMBER OF PINAL COUNTY ESTABLISHMENTS, 1971-1991



Source: U.S Bureau of the Census. County Business Patterns: employment and payrolls, number of establishments of economic division of owning company. Washington, D.C: U.S. Department of Commerce, Bureau of the Census, 1971-1991.

FIGURE 3: PINAL COUNTY SECTOR EMPLOYMENT, 1971-1991

FIGURE 3: PINAL COUNTY SECTOR EMPLOYMENT, 1971-1991

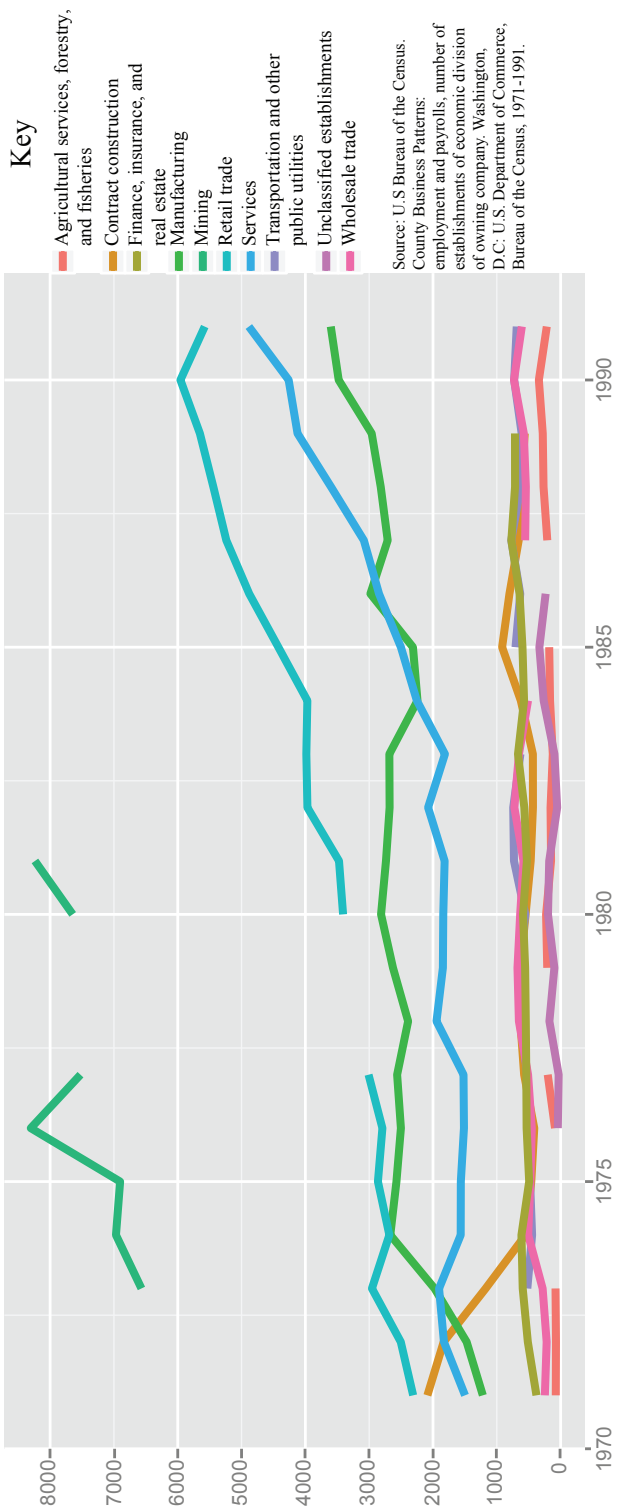
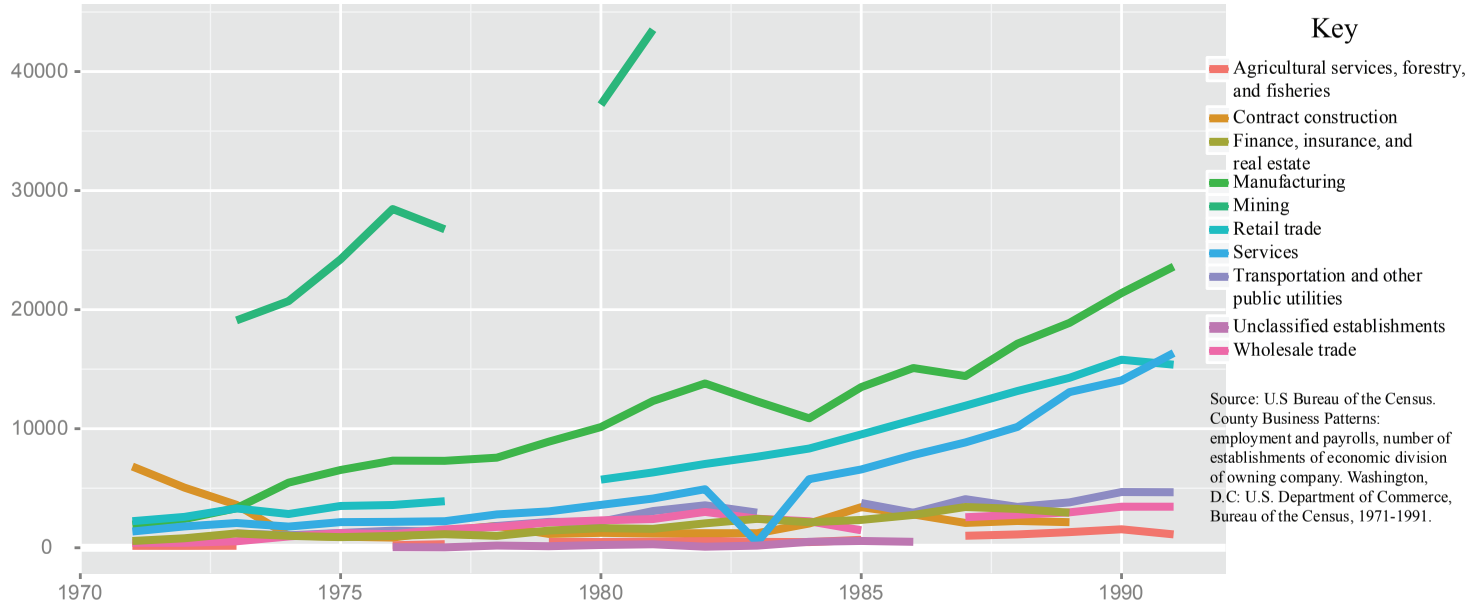


FIGURE 4: PINAL COUNTY FIRST-QUARTER PAYROLL (IN 1,000s), 1971-1991



APPENDIX C

TABLES

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Agricultural services, forestry and fisheries	10	11	12	19	30	35	45	40	38	38	38	37	35	37	40	47	50	47	51	48	44
Mining	19	17	18	16	15	16	19	20	19	18	17	16	16	17	14	17	16	10	11	11	10
Contract construction	69	75	88	89	81	90	94	78	82	82	76	78	101	124	121	121	145	122	125	130	146
Manufacturing	39	48	52	57	53	54	49	48	46	44	44	52	54	56	58	56	66	69	68	77	77
Transportation and other public utilities	26	27	34	46	45	48	52	54	54	48	44	45	55	68	63	63	82	78	84	79	81
Wholesale	40	41	42	81	73	64	69	70	71	70	65	71	73	69	72	75	83	81	82	86	82
Retail trade	370	368	384	425	422	429	436	422	415	415	426	439	463	466	467	486	518	511	525	513	532
Finance, insurance, and real estate	44	51	51	69	66	74	80	79	83	83	78	79	91	96	103	107	130	119	124	117	133
Services	217	215	233	224	231	239	262	253	279	282	299	309	337	362	369	406	482	479	493	516	538
Unclassified establishments	19	20	13	50	56	15	14	34	58	65	70	24	109	102	150	139	47	149	124	62	35

Sources: 1971 County Business Patterns, Table 2. Counties: 1971, pgs. 39-40; 1972 County Business Patterns, Table 2. Counties: 1972 pgs. 39-40; 1973 County Business Patterns, Table 2. Counties: 1973, pgs. 39-41; 1974 County Business Patterns, Table 2. Counties: 1974, pgs. 78-79; 1975 County Business Patterns, Table 2. Counties: 1975, pgs. 38-40; 1976 County Business Patterns, Table 2. Counties: 1976, pgs. 39-41; 1977 County Business Patterns, Table 2. Counties: 1977, pgs. 39-41; 1978 County Business Patterns, Table 2. Coutnies: 1978, pgs 41-43; 1979 County Business Patterns, Table 2. Counties: 1979, pgs. 42-43; 1980 County Business Patterns, Table 2. Counties: 1980, pgs. 42-44; 1981 County Business Patterns, Table 2. Counties: 1981, pgs. 42-44; 1982 County Business Patterns, Table 2. Counties: 1982, pgs. 44-45; 1983 County Business Patterns, Table 2. Counties: 1983, pgs. 42-44; 1984 County Business Patterns, Table 2. Counties: 1984, pgs. 43-45; 1985 County Business Patterns, Table 2. Counties: 1985, pgs. 45-46; 1986 County Business Patterns, Table 2. Counties: 1986, pgs. 47-49; 1987 County Business Patterns, Table 2. Counties: 1987, pgs. 48-50; 1988 County Business Patterns, Table 2. Counties: 1988, pgs. 52-55; 1989 County Business Patterns, Table 2. Counties: 1989, pgs. 52-55;1990 County Business Patterns, Table 2. Counties: 1990, pgs. 52-55; 1991 County Business Patterns, Table 2. Counties: 1991, pgs.
53-55.

TABLE 1: NUMBER OF PINAL COUNTY ESTABLISHMENTS, 1971-1991

TABLE 2: PINAL COUNTY SECTOR EMPLOYMENT, 1971-1991

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Agricultural services, forestry and fisheries	76	73	80	C	B	88	202	C	210	228	150	158	123	166	179	C	209	268	280	341	217
Mining	D	D	6569	6968	6903	8303	7524	I	I	7646	8238	I	3930	H	H	H	H	H	H	H	H
Contract construction	2088	1833	1175	550	460	413	572	632	632	549	469	434	435	624	917	802	657	620	562	F	F
Manufacturing	1219	1473	1976	2669	2573	2503	2562	2390	2627	2814	2737	2680	2684	2243	2314	2981	2710	2819	2961	3478	3602
Transportation and other public utilities	D	D	522	447	479	512	524	627	660	553	731	743	630	F	707	633	774	626	611	728	688
Wholesale	247	219	282	508	475	452	510	654	676	634	582	725	653	511	F	F	556	545	577	731	608
Retail trade	2311	2505	2957	2684	2863	2793	3010	H	H	3409	3473	3968	3985	3969	4423	4480	5239	5442	5653	5958	5577
Finance, insurance, and real estate	379	514	594	614	493	533	538	546	556	589	529	569	668	573	598	644	772	714	715	F	F
Services	1498	1829	1905	1566	1564	1515	1522	1945	1845	1839	1818	2077	1813	2253	2503	2846	3084	3598	4123	4262	4886
Unclassified establishments	D	D	116	C	C	44	31	176	98	198	179	54	97	266	333	235	B	C	E	B	B

Note: Entries marked “D” are incomplete because of a significant refusal of business establishments to share their payroll information. When estimates are availabe, they correspond to the following code: B = 20-99, C = 100-249, E = 250-499, F = 500-999, H = 2,500-4,999, I = 5,000-9,999.

Sources: 1971 County Business Patterns, Table 2. Counties: 1971, pgs. 39-40; 1972 County Business Patterns, Table 2. Counties: 1972 pgs. 39-40; 1973 County Business Patterns, Table 2. Counties: 1973, pgs. 39-41; 1974 County Business Patterns, Table 2. Counties: 1974, pgs. 78-79; 1975 County Business Patterns, Table 2. Counties: 1975, pgs. 38-40; 1976 County Business Patterns, Table 2. Counties: 1976, pgs. 39-41; 1977 County Business Patterns, Table 2. Counties: 1977, pgs. 39-41; 1978 County Business Patterns, Table 2. Coutnies: 1978, pgs 41-43; 1979 County Business Patterns, Table 2. Counties: 1979, pgs. 42-43; 1980 County Business Patterns, Table 2. Counties: 1980, pgs. 42-44; 1981 County Business Patterns, Table 2. Counties: 1981, pgs. 42-44; 1982 County Business Patterns, Table 2. Counties: 1982, pgs. 44-45; 1983 County Business Patterns, Table 2. Counties: 1983, pgs. 42-44; 1984 County Business Patterns, Table 2. Counties: 1984, pgs. 43-45; 1985 County Business Patterns, Table 2. Counties: 1985, pgs. 45-46; 1986 County Business Patterns, Table 2. Counties: 1986, pgs. 47-49; 1987 County Business Patterns, Table 2. Counties: 1987, pgs. 48-50; 1988 County Business Patterns, Table 2. Counties: 1988, pgs. 52-55; 1989 County Business Patterns, Table 2. Counties: 1989, pgs. 52-55; 1990 County Business Patterns, Table 2. Counties: 1990, pgs. 52-55; 1991 County Business Patterns, Table 2. Counties: 1991, pgs. 53-55.Note: ing code: B = 20-99, C = 100-249, E = 250-499, F = 500-999, H = 2,500-4,999, I = 5,000-9,999.

TABLE 3: PINAL COUNTY FIRST-QUARTER PAYROLL (IN 1,000s), 1971-1991

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Agricultural services, forestry and fisheries	162	158	167	D	D	210	302	D	497	480	517	598	493	474	670	D	1007	1118	1314	1551	1122
Mining	D	D	19095	20715	24230	28452	26749	D	D	37222	43516	D	25710	D	D	D	D	D	D	D	D
Contract construction	6824	5051	3607	1026	930	855	1433	1831	1163	1252	1205	1223	1220	2036	3411	2800	2086	2250	2148	D	D
Manufacturing	1947	2411	3321	5469	6533	7137	7302	7567	8913	10138	12330	13801	12294	10875	13494	15098	14422	17140	18888	21394	23614
Transportation and other public utilities	D	D	1201	1046	1243	1434	1343	1829	2172	2186	3083	3566	2949	D	3758	2942	4081	3432	3810	4680	4663
Wholesale	418	413	542	948	1230	1136	1543	1752	2121	2300	2410	3012	2438	2224	1467	D	2561	2769	2974	3448	3449
Retail trade	2232	2592	3302	2834	3511	3590	3910	D	D	5721	6328	7037	7645	8334	9519	10732	11930	13166	14275	15795	15378
Finance, insurance, and real estate	569	796	1205	1000	892	992	1138	998	1445	1646	1588	2049	2428	2143	2338	2758	3424	3260	2943	D	D
Services	1365	1791	2079	1779	2152	2176	2230	2800	3056	2602	4135	4918	4410	5761	6577	7787	8846	10148	13073	14058	16354
Unclassified establishments	D	D	221	D	D	48	34	184	128	232	293	89	177	500	571	499	D	D	D	D	D

Note: Entries marked “D” are incomplete because of a significant refusal of business establishments to share their payroll information.

Sources: 1971 County Business Patterns, Table 2. Counties: 1971, pgs. 39-40; 1972 County Business Patterns, Table 2. Counties: 1972 pgs. 39-40; 1973 County Business Patterns, Table 2. Counties: 1973, pgs. 39-41; 1974 County Business Patterns, Table 2. Counties: 1974, pgs. 78-79; 1975 County Business Patterns, Table 2. Counties: 1975, pgs. 38-40; 1976 County Business Patterns, Table 2. Counties: 1976, pgs. 39-41; 1977 County Business Patterns, Table 2. Counties: 1977, pgs. 39-41; 1978 County Business Patterns, Table 2. Coutnies: 1978, pgs 41-43; 1979 County Business Patterns, Table 2. Counties: 1979, pgs. 42-43; 1980 County Business Patterns, Table 2. Counties: 1980, pgs. 42-44; 1981 County Business Patterns, Table 2. Counties: 1981, pgs. 42-44; 1982 County
Business Patterns, Table 2. Counties: 1982, pgs. 44-45; 1983 County Business Patterns, Table 2. Counties: 1983, pgs. 42-44; 1984 County Business Patterns, Table 2. Counties: 1984, pgs. 43-45; 1985 County Business Patterns, Table 2. Counties: 1985, pgs. 45-46; 1986 County Business Patterns, Table 2. Counties: 1986, pgs. 47-49; 1987 County Business Patterns, Table 2. Counties: 1987, pgs. 48-50; 1988 County Business Patterns, Table 2. Counties: 1988, pgs. 52-55; 1989 County Business Patterns, Table 2. Counties: 1989, pgs. 52-55; 1990 County Business Patterns, Table 2. Counties: 1990, pgs. 52-55; 1991 County Business Patterns, Table 2. Counties: 1991, pgs. 53-55.

TABLE 4: PINAL COUNTY FOOD AND KINDRED PRODUCT MANUFACTURING, 1971-1991

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Number of employees	197	158	176	224	180	169	175	191	175	187	191	160	99	171	178	419	450	533	571	514	833
Percentage of manufacturing employees	16.1	10.7	8.9	8.3	7.0	6.8	6.8	8.0	6.5	6.6	7.0	6.0	3.7	7.6	7.7	14.1	16.6	18.9	19.3	14.8	23.1
First quarter payroll (in $1,000s)	242	263	354	454	374	361	424	467	531	515	622	619	523	703	745	1911	2449	2821	3159	3396	5389
Percentage of manufacturing payroll	12.4	10.9	10.7	8.3	5.7	4.9	5.8	6.2	6.0	5.1	5.0	4.4	4.3	6.5	5.5	12.7	17.0	16.5	16.7	15.9	22.8
Number of establishments	5	6	6	6	6	7	6	5	6	6	6	4	4	4	5	6	7	8	7	8	10
Percentage of manufaturing establishments	12.8	12.5	11.5	10.5	11.3	13.0	12.2	10.4	13.0	13.6	13.6	7.7	7.4	7.1	8.6	10.7	10.6	11.6	10.3	10.4	13.0

Source: Sources: 1971 County Business Patterns, Table 2. Counties: 1971, pg. 39; 1972 County Business Patterns, Table 2. Counties: 1972 pg. 39; 1973 County Business Patterns, Table 2. Counties: 1973, pg. 40; 1974 County Business Patterns, Table 2. Counties: 1974, pg. 78; 1975 County Business Patterns, Table 2. Counties: 1975, pg. 39; 1976 County Business Patterns, Table 2. Counties: 1976, pg. 39; 1977 County Business Patterns, Table 2. Counties: 1977, pg. 39; 1978 County Business Patterns, Table 2. Coutnies: 1978, pg. 41; 1979 County Business Patterns, Table 2. Counties: 1979, pg. 42; 1980 County Business Patterns, Table 2. Counties: 1980, pg. 42; 1981 County Business Patterns, Table 2. Counties: 1981, pg. 43; 1982 County Business Patterns, Table 2. Counties: 1982, pg. 44; 1983 County Business Patterns, Table 2. Counties: 1983, pg. 42; 1984 County Business Patterns, Table 2. Counties: 1984, pg. 43; 1985 County Business Patterns, Table 2. Counties: 1985, pg. 45; 1986 County Business Patterns, Table 2. Counties: 1986, pg. 47; 1987 County Business Patterns, Table 2. Counties: 1987, pg. 49; 1988 County Business Patterns, Table 2. Counties: 1988, pg. 53; 1989 County Business Patterns, Table 2. Counties: 1989, pg. 53; 1990 County Business Patterns, Table 2. Counties: 1990, pg. 53; 1991 County Business Patterns, Table 2. Counties: 1991, pg. 53.