



# The Water Report™

*Water Rights, Water Quality & Water Solutions in the West*

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**& More!**

## ALBUQUERQUE'S WATER RESOURCES MANAGEMENT

INTEGRATED STRATEGY MEETS AREA CHALLENGES

by John M. Stomp III, P.E., Chief Operating Officer  
Albuquerque Bernalillo County Water Utility Authority

### BACKGROUND

TWO HISTORIC COMPACTS AND THE SAN JUAN-CHAMA PROJECT

During the negotiation of the Rio Grande Compact in the 1930's, it was clear that the State of New Mexico would not have sufficient "native water" (i.e., local and unaugmented from another source) for future growth and economic development in the Middle Rio Grande basin — specifically for the City of Albuquerque. Under this Compact, Rio Grande water allocation was divided in an attempt to maintain the status quo of uses that existed in the late 1800's. Technical investigations corresponding to the Rio Grande Compact included the concept of transporting Colorado River water into the Rio Grande. This transbasin water transfer (later authorized as the San Juan-Chama project, see below) would supplement the water supplies for municipal and industrial use.

Under the Upper Colorado River Basin Compact, approved in 1948, New Mexico is entitled to 11.25% of the waters of the Upper Basin. In the early 1950's, the New Mexico State Engineer, working with the US Bureau of Reclamation (Reclamation), developed two projects to utilize New Mexico's apportionment of this Compact: 1) the Navajo Indian Irrigation Project (NIIP); and 2) the San Juan-Chama project. Both of these projects were authorized together by Congress in 1956 as participating projects of the Upper Colorado River Project Storage Act.

Coincidentally, in 1956, the New Mexico State Engineer declared the underground basin in the Middle Rio Grande recognizing that the Rio Grande and the aquifer were hydrologically connected. This declaration gave jurisdiction to the State Engineer to limit appropriations of groundwater, to both protect senior water rights holders and to meet Rio Grande Compact delivery requirements. The 1956 declaration required that groundwater appropriations that cause an effect on the surface water system be offset with purchase or retirement of valid surface water rights, primarily from irrigation in the Middle Rio Grande, or other sources like imported San Juan-Chama water. In other words, municipalities that relied solely on groundwater would be required to keep the river whole — this included the City of Albuquerque (Albuquerque).

The San Juan-Chama project imports about 110,000 acre-feet per year from three tributaries of the San Juan River (which is a tributary of the Colorado River) into the Rio Grande basin just above Heron Reservoir. Construction was completed in 1971 with operations beginning in 1972.

REGIONAL WATER MANAGEMENT COOPERATION  
STUDY COMPARES FOUR CASES IN THE WEST

by Nathaniel Delano and Sharon B. Megdal (The University of Arizona)

INTRODUCTION

This article provides the results of a study of four approaches to regional water collaboration in the West. Following up on a recommendation from water thought leaders from the Tucson, Arizona area to examine regional frameworks employed elsewhere, the University of Arizona Water Resources Research Center (WRRC) investigated the following four entities: the Southern Nevada Water Authority, the San Diego County Water Authority, the Santa Ana Watershed Project Authority, and Denver Water. This article presents summary information on the history, organization, and formal powers of each specific water authority. Each water authority’s past is examined to shed light on the historical drivers that led to greater collaboration. Organization structures are outlined to show the various forms of representation these authorities utilize to give voice to their member agencies or customers. Finally, each section concludes by laying out the powers given and denied to each authority.

Not surprisingly, we find that each organization is unique. Levels of authority, funding mechanisms, and institutional scope vary across the four water entities examined. The Southern Nevada Water Authority, for example, has broad powers to safeguard continued water supply and water sustainability for Clark County, Nevada, whereas the Santa Ana Watershed Project Authority focuses on planning and environmental issues that transcend its member agencies’ boundaries. Nevertheless, there are some interesting similarities across the entities studied. In particular, both the Southern Nevada Water Authority and the San Diego County Water Authority provide wholesale water service to their member agencies, but leave wastewater treatment to those agencies and other entities. Whereas the other three authorities function as primarily independent public agencies, Denver Water is a public utility situated in the Denver municipal government. While this study represents an initial look at just a few water organizations in the West, the information and context included about each authority and Denver Water provides some blueprints for those considering enhanced regional approaches to addressing water management challenges.

BACKGROUND

WATER PROVISION IN THE TUCSON REGION AND MOTIVATION FOR THE STUDY

The City of Tucson, with a population of nearly 525,000 people covering an area of 227 square miles, is part of a larger metropolitan area of approximately 992,000 people. “Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2010 to July 1, 2012.” U.S. Census Bureau. N.p., n.d. Web. 23 Jan. 2014 (see [www.census.gov/popest/data/metro/totals/2012/tables/CBSA-EST2012-01.csv](http://www.census.gov/popest/data/metro/totals/2012/tables/CBSA-EST2012-01.csv)). In this article, we will refer to the greater region as Tucson. Reliance on groundwater defined much of Tucson’s water history, which resulted in significant overdraft of regional aquifers in the 1960s and 1970s. The WRRC publication, *Water Resource Availability for the Tucson Metropolitan Area*, explains efforts to combat this overdraft: “In 1980 Arizona adopted the Groundwater Management Act (Act) to address the serious groundwater overdraft — or mining — that was occurring in several regions of the state, including Tucson...Since 1993, Colorado River water has been delivered to the Tucson region through the Central Arizona Project (CAP) canal. In addition, treated wastewater, or effluent, has been increasingly recognized as a source of water for meeting community needs.” Megdal, Sharon, prepared with the assistance of Kelly Lacroix. *Water Resource Availability for the Tucson Metropolitan Area*. Water Resources Research Center, July 2006. Web. 23 Jan. 2014 (see [https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/megdal.az\\_water\\_resource.avail\\_for\\_tucson.pdf](https://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/megdal.az_water_resource.avail_for_tucson.pdf)).

The complex legal and geophysical history that created the challenging water situation in Tucson is further complicated by the many stakeholder and political groups involved in Tucson’s water management process. These groups include the City of Tucson (and the city’s water utility, Tucson Water), Pima County (and its regional wastewater utility), the business community, other incorporated towns, some with their own municipal water companies (Oro Valley, Marana), private water companies, water districts, Native American Nations, community organizations, and others. Figure 1 shows the largest eight water providers in the Tucson region in terms of annual water demand. Tucson Water demanded around 133,000 acre-feet in 2008, as compared to the second highest demander, the Town of Oro Valley Water Utility, which

Regional  
Water  
Management

Case Study

Unique  
Organizations

Groundwater  
Overdraft

Tucson  
Water Providers

**Regional Water Management**

**Regional Approach**

**Survey Process**

**Figure 1  
Large Water Providers in Tucson**

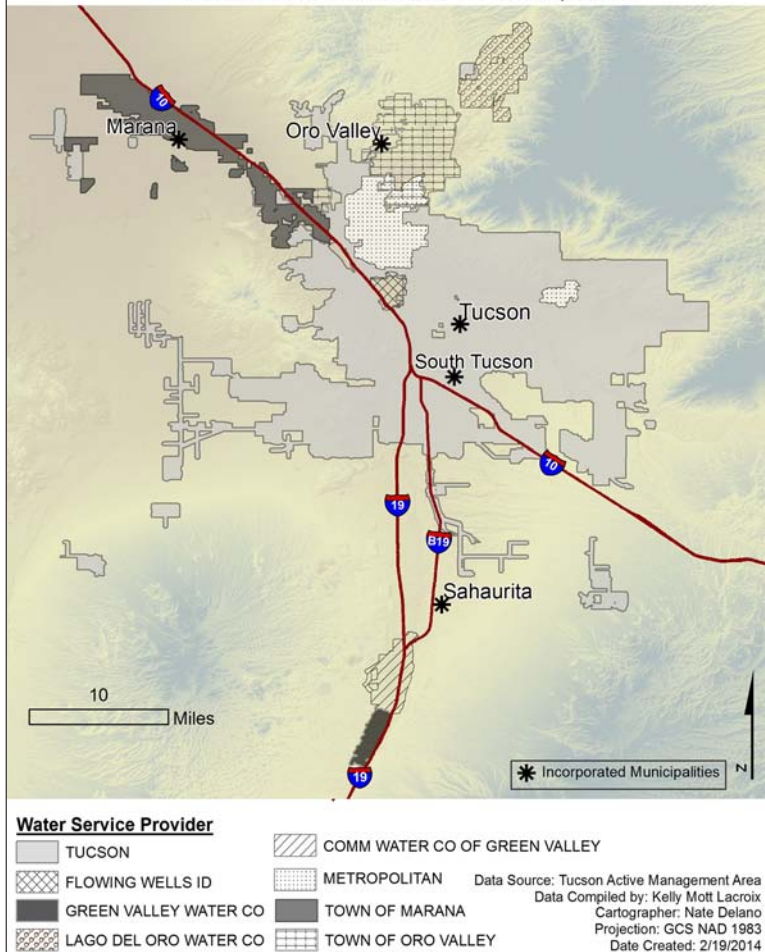
used only 43,000 acre-feet. Tucson Water has the largest customer base in the region (around 710,000), about 33% of whom live outside the city's borders. Tucson Water. "Water Rates FY 2014 Information Presentation." Tucson Water, 7, 9, 14, 15, May 2013. Web. 23 Feb. 2014 (*see* [www.tucsonaz.gov/files/water/docs/Town\\_Hall\\_Rate\\_Information\\_for\\_FY\\_2014.pdf](http://www.tucsonaz.gov/files/water/docs/Town_Hall_Rate_Information_for_FY_2014.pdf)).

The diverse landscape of water providers and stakeholders, overlaid on one of the most water-stressed regions of the United States, led to the belief by some that water management in Tucson could be conducted more effectively and efficiently if there was greater collaboration in the Tucson region to streamline infrastructure development, environmental impact analysis and mitigation, water purchasing, and other aspects of water management.

A major attempt to share information and consider a regional approach to addressing water management challenges began in 2008 with the commission of the *Water and Wastewater Infrastructure, Supply, and Planning Study* ([www.tucsonpimawaterstudy.com](http://www.tucsonpimawaterstudy.com)) by the City of Tucson Mayor and Council and the Pima County Board of Supervisors. The study collected information about the state of water infrastructure and available water supplies for the Tucson region, and worked towards creating a more comprehensive and inclusive water plan by publishing a set of joint city/county goals and recommendations. This report generated initial momentum for greater regional collaboration, but was also criticized for being too limited in its engagement of Tucson's water stakeholders, as not all interested and invested parties were given a seat at the study table.

In order to broaden the organizations involved in the discussion, the Regional Water Assessment Task Force formed in 2011. This five-member volunteer group was composed of representatives from the Community Water Coalition, WRRRC, Southern Arizona Water Users Association, Tucson Regional Water Coalition, and Pima Association of Governments. In an effort to receive broad input from a diverse group of regional participants on the future of water management in Tucson, the Task Force designed and implemented a computer-based real-time canvassing of viewpoints. This interactive and partially anonymous survey process, which utilized the software tool Think Tank, was completed by representatives of a wide range of community sectors and interest groups in the Tucson area, including: elected officials;

**Largest Water Providers in the Tucson Region  
In Terms of Annual Water Demand, 2008**



municipal managers; public utilities including water and wastewater; private water utilities; CAP Board and staff; state and federal agencies; Indian nations; agricultural interests; mining interests; the University of Arizona; environmental advocates; land management groups; economic development interests; and individuals with long-term involvement in water issues, including attorneys. Kiser, Madeline, Sharon Megdal, Mark Stratton, Vince Vasquez, and Claire Zucker. "Report of the Regional Water Assessment Task Force 'ThinkTank' Process." Water Resources Research Center, 1 Aug. 2011. Web. 1 Nov. 2013 (*see* <http://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/RWATF%20Report%20August%202011%20LowRes.pdf>).

The results of the effort, summarized in the *Report of the Regional Water Assessment Task Force "Think Tank" Process*, indicated that there was strong agreement among stakeholders in the Tucson metropolitan region that although there were existing instances of regional coordination, greater cooperation and collaboration would be beneficial for the area. As quoted in the Think Tank Report, "[P]articipants recognized that regional cooperation and coordination should be based on a shared vision regarding the desirable balance in the region of urbanization, agriculture, industry and natural desert. Coordination among political bodies, between governments and water bodies, and between entities that manage groundwater, surface water and effluent was supported by Think Tank participants." *Id.*

The enthusiasm for collaboration was tempered, however, by a lack of agreement on how it should be structured. "Some participants favored a loose affiliation of entities that would collectively uphold an agreed-upon water management framework, supporting continued primacy of individual entity's decision-making. Others favored cooperation on individual efforts, such as project-specific

**Regional Water Management**

**Conservation Needs**

**Supply Management**

infrastructure development, supply acquisition or standardized conservation programs.” This led the Task Force to recommend case study investigation of other successful instances of regional collaboration for water resource management. As stated above, this report represents work the WRRC undertook on its own to fulfill partially this recommendation. The four cases to be studied were selected by the authors as representing interesting and varied regional entities in the West. Three are actually organized as authorities; Denver Water is a large city-owned water provider that more resembles Tucson Water. Each entity is described in what follows, using publicly available information, in its own section.

**SOUTHERN NEVADA WATER AUTHORITY**

**Facts**

- Population Served: Approximately 2 million
- Area Served: Approximately 600 square miles in the Las Vegas Valley, Clark County, Nevada.

**History**

The 1970’s and 80’s were a time of rapid population growth and land development in Southern Nevada, and consequently swift development of the region’s water resources. Local leaders recognized the unsustainable nature of water use in the Las Vegas Valley, and, in 1990, Southern Nevada water providers and municipalities began a comprehensive analysis of existing water resources and facilities for the region, known as the “WRMI process,” named after the consulting group Water Resources Management, Inc. that completed the process. The results outlined a demonstrated need for regional water conservation across water providers. As outlined in the *Water Resource Plan for the Southern Nevada Water Authority*, “[T]he 1991 published results were clear — without serious conservation, Southern Nevada would reach the limit of its existing Colorado River water supply by the mid-1990s; with conservation, the limit could be extended to 2007. The WRMI Process provided the impetus for creation of the SNWA, a study of water-facility expansion, implementation of an ongoing search for new water supplies and a renewed commitment to regional water conservation efforts.” *Southern Nevada Water Authority Water Resource Plan*. Southern Nevada Water Authority, 2013. Web. 01 Nov. 2013 (*see* [www.snwa.com/assets/pdf/wr\\_plan.pdf](http://www.snwa.com/assets/pdf/wr_plan.pdf)).

The completion of the WRMI process additionally led to the temporary cessation of all new water allocation in the study area. This measure was taken to give the water providers of southern Nevada, specifically the Las Vegas Valley Water Authority, an opportunity to identify and quantify the water rights that had already been granted to users. Additionally, this cessation of new water rights “awakened the community to the gravity of the water situation. This elevated awareness contributed in large part to the subsequent success of regional water management initiatives.” *Id.* In fact, this initial shutdown of new water right allocations was the first of many instances of conservation measures and heightened water restrictions during times of reduced water supply that have come to define a portion of the SNWA’s mode of operations during its 20 plus years of existence. SNWA now employs landscape water restrictions, rebate programs for removal of traditional grass lawns and purchase of pool covers (among other types

of rebates), and water conservation public outreach in its effort to reduce municipal water demand. *Conservation*. Southern Nevada Water Authority, n.d. Web. 24 Feb. 2014 (*see* [www.snwa.com/conservation.html](http://www.snwa.com/conservation.html)).

SNWA’s role in management of existing supplies was greatly expanded in the late 1990’s through the gradual transfer of control of the Southern Nevada Water System (SNWS) from the Colorado River Commission of Nevada to the Southern Nevada Water Authority. Completed in 1971, the SNWS “consisted of intake facilities and the Alfred Merritt Smith Water Treatment Facility at Lake Mead, eight pumping stations, a pipeline to Boulder City, a four-mile-long tunnel through the River Mountains and about 34 miles of major pipelines to deliver treated water into the Las Vegas Valley.” *Id.* The facilities in this Water System have gradually expanded from their original capacity of 200 million gallons/day to over 900 million gallons/day today. The geographic extent of the SNWS is shown in Figure 2.

**Figure 2  
Southern Nevada Water System**



<b>Regional Water Management</b>
<b>Legal Entity Formed</b>
<b>Governance</b>
<b>Members</b>
<b>Major Functions</b>
<b>Powers Conferred</b>
<b>Powers Denied</b>

**Organization**

SNWA is a cooperative organization whose stated mission is “acquiring and managing water resources for Southern Nevada, constructing and managing regional water facilities, and promoting responsible water use.” *Id.* The organization was formed out of the WRMI process, and in its 1996 update to the Amended Cooperative Agreement, codified the benefit to regional collaboration by saying, “[T]he securing of additional supplies of water and the effective management of existing supplies can best be achieved through the cooperative action of the Members, operating through a separate legal entity which will undertake the conferred functions (of the SNWA).” Southern Nevada Water Authority. *1995 Amended Cooperative Agreement Among Big Bend Water District, City of Boulder City, City of Henderson, City of Las Vegas, City of North Las Vegas, Clark County Sanitation District, Las Vegas Valley Water District.* Comp. Judith Vandever. *Southern Nevada Water Authority Browsable Documents.* Southern Nevada Water Authority, 01 Jan. 1996. Web. 15 Oct. 2013 (*see* [http://water.nv.gov/hearings/past/springetal/browseabledocs/Exhibits%5CSNWA%20Exhibits/SNWA\\_Exh\\_197\\_Amended%20Cooperative%20Agreement.pdf](http://water.nv.gov/hearings/past/springetal/browseabledocs/Exhibits%5CSNWA%20Exhibits/SNWA_Exh_197_Amended%20Cooperative%20Agreement.pdf)). There are seven member water districts that work collaboratively to provide water and wastewater services to the residents of Clark County, Nevada. The names and water and wastewater responsibilities of each member organization are listed in Table 1.

A Board of Directors comprised of representatives from each member agency governs the SNWA. A joint Executive Team, shared by SNWA and the Las Vegas Valley Water District, oversees daily operations. There is additionally a 29-member Integrated Water Planning Advisory Committee which meets regularly to advise the Board of Directors and Executive Team. This is a wide-ranging group comprising officials, informed civilians, and representatives from areas where the SNWA holds water rights.

**Table 1- Water and Wastewater Responsibilities for Member Agencies of the SNWA**  
(*Southern Nevada Water Authority Water Resource Plan, supra; see* [www.snwa.com/assets/pdf/wr\\_plan.pdf](http://www.snwa.com/assets/pdf/wr_plan.pdf))

Name	Water Services To:	Wastewater Services To:
Big Bend Water District	Laughlin	None
City of Boulder City	Boulder City	Boulder City
City of Henderson	Henderson	Henderson
City of Las Vegas	None	Las Vegas
City of North Las Vegas	N. Las Vegas, adjacent parts of Las Vegas, unincorporated Clark County.	North Las Vegas
Clark County Water Reclamation District	None	Laughlin, unincorporated Clark County
Las Vegas Valley Water District	Las Vegas, portions of unincorporated Clark County	None

**Powers**

The Southern Nevada Water Authority operates as an overarching water authority, controlling the distribution and treatment of water, and conservation efforts in the Las Vegas Valley. The 1995 Amended Cooperative Agreement lays out the functions of SNWA and the powers conferred on the organization. Three major functions set SNWA’s institutional focus as one of supply acquisition and demand management: control of water rights related to providing municipal water service; modification of the SNWS; and implementation of a regional shortage sharing plan. Those major functions, along with the other roles conferred on the SNWA, are enumerated in the *1995 Amended Cooperative Agreement* (*see* website cited above).

The powers conferred on the SNWA are generally broader than those available to the other authorities examined in this report, with the SNWA controlling infrastructure, distribution, conservation planning, and playing a role in final water pricing for consumers. The powers conferred on the SNWA to complete its functions are also listed in the *1995 Amended Cooperative Agreement* (above).

Three powers are explicitly denied to SNWA: except to the extent permitted by applicable law including, without limitation, the Transfer Act, nothing in the Agreement shall be construed as authorizing the Authority to perform any function or to exercise any power that is not performable or exercisable by at least one of the Members without reference to this Agreement; absent written consent of the affected Member’s governing body, the Authority shall not (i) render any service rendered by a Member to others within the Member’s service area or boundaries, (ii) render any service which a Member has the authority to render to others within its service area or boundaries, or (iii) acquire any water right or property of a member; and the Authority shall not acquire, construct, or operate Facilities to treat municipal sewage. *Id.*

There have been major projects undertaken by SNWA that characterize the broad functions and powers listed above. As Las Vegas continues to grow, water right acquisition, supply infrastructure development,

**Regional  
Water  
Management**

**Third Intake**

**Overarching  
Powers**

and conservation practices have continued to be central to SNWA’s mission. The Water Authority has recently been involved in litigation related to the acquisition of water rights for the Las Vegas Valley totaling 84,000 acre-feet per year from four valleys straddling the Nevada-Utah state line: Spring Valley, Cave Valley, Dry Lake Valley, and Delamar Valley. Moon, David. “Las Vegas Water Rights Decision.” *The Water Report* #119 (15 Jan. 2014).

While fighting to secure additional water rights, SNWA is simultaneously working to ensure continued availability of the water rights they do control, primarily through the construction of a third, deeper intake for drinking water from Lake Mead. A final illustration of the functions and powers SNWA holds was alluded to earlier in this section — the authoritative water conservation efforts that are undertaken in the Las Vegas Valley are primarily conceived and implemented by the Southern Nevada Water Authority.

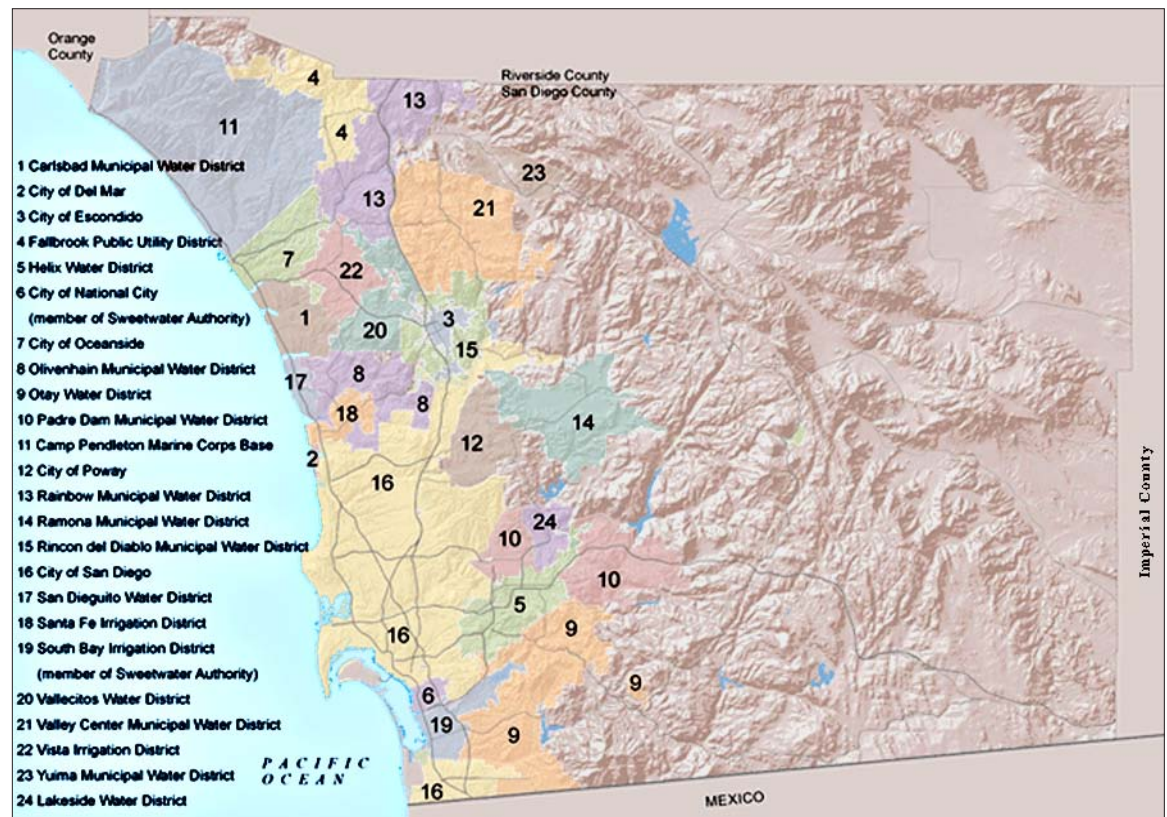
The water districts involved in the creation of the Southern Nevada Water Authority were made aware through the WRMI process of the dire situation the Las Vegas Valley was facing in the early 1990’s. This awareness spurred the need for the Southern Nevada Water Authority, an entity with overarching powers that help to ensure Las Vegas’ continued water supply availability through a variety of means.

**SAN DIEGO COUNTY WATER AUTHORITY**

**Facts**

- Population Served: Approximately 3 million
- Area Served: 1,486 square miles in San Diego County, California

**Figure 3: Water Districts in the San Diego County Water Authority**



Source: *Member Agencies*. San Diego County Water Authority, n.d. Web. 13 Nov. 2013 (see [www.sdcwa.org/sites/default/files/images/agencies-map-big-view.gif](http://www.sdcwa.org/sites/default/files/images/agencies-map-big-view.gif)).

**History**

The San Diego County Water Authority (Authority or SDCWA) was formed out of a need for greater regional collaboration because of increased water stress in the County following rapid population growth during World War II. Prior to SDCWA’s formation, the region was served primarily by private water companies that maintained individual dams, reservoirs, and distribution systems for their customers. The state legislature stepped in and created SDCWA in 1944 to ensure security of the region’s Colorado River water rights. One of the first acts of the Authority was construction of two large diameter pipelines linking San Diego County and the Colorado River Aqueduct, to supply water to a burgeoning population and bolster San Diego’s claim to that water source. “History.” San Diego County Water Authority, n.d. Web. 24 Feb. 2014 (see [www.sdcwa.org/history](http://www.sdcwa.org/history)).

**Colorado River  
Rights**

<p><b>Regional Water Management</b></p> <p><b>Desal Plant</b></p> <p><b>Ag-to-Urban Transfers</b></p>
<p><b>Voting Structure</b></p>
<p><b>Water Wholesaler</b></p>
<p><b>Facilities</b></p>
<p><b>No Wastewater Treatment</b></p>

Many major collaborative acts have been undertaken by the SDCWA in its 70-year history. As the region continued to grow over the second half of the 20th century, the Authority added three more high-diameter pipelines. In 1989, the Authority initiated the Capital Improvement Program (CIP) to plan and implement projects to meet the region’s future water needs. The CIP is designed to reduce the County’s overall reliance on Colorado River water by diversifying the water portfolio for SDCWA. This was accomplished through infrastructure development, including the planning and construction of the nation’s largest desalination plant, which continues to this day. “Construction Projects.” *Construction Projects*. San Diego County Water Authority, n.d. Web. 24 Feb. 2014 (see [www.sdcwa.org/construction-projects](http://www.sdcwa.org/construction-projects)).

In 2003, the Authority completed many years of work with other major water institutions around southern California to implement the Quantification Settlement Agreement (QSA) to enhance San Diego County’s long-term water supply reliability. The QSA utilized agriculture to urban water transfers and canal relining projects to reduce California’s overall demand to their allocated 4.4 million acre-feet (annually) of Colorado River water. *Quantification Settlement Agreement*. San Diego County Water Authority, n.d. Web. 24 Feb. 2014 (see [www.sdcwa.org/quantification-settlement-agreement](http://www.sdcwa.org/quantification-settlement-agreement)).

**Organization**

SDCWA functions as an independent public agency and water wholesaler, purchasing the majority of the water for San Diego County from the Metropolitan Water District of Southern California and the State Water Project, and then reselling the water to SDCWA’s 24-member agencies. Figure 3 (page 21) shows the location of these water agencies.

The 24 agencies shown above include six cities, five water districts, three irrigation districts, eight municipal water districts, one public utility district, and one military base. SDCWA is not part of either the city or county of San Diego governments. SDCWA is incorporated under the State of California’s County Water Authority Act, Chapter 45, section 2, which lays out the organizational structure of the Authority. Governed by a board of directors consisting of at least one member from each of the water agencies represented, decisions are made based on the number of votes allocated to each water agency. Votes are assigned based on total financial contribution to SDCWA over its entire existence, with the limitation that “no public agency shall have votes that exceed the number of the total votes of all the other public agencies,” and that “[I]f the public agency member having the largest total financial contribution to the authority has more than 38 percent of the total financial contribution to the authority, the affirmative votes of members representing more than 55 percent of the number of votes of all the members shall be necessary, except as herein provided, to carry any action coming before the board of directors.” *County Water Authority Act (As of January 1, 2008)*. N.p.: West’s Annotated California Codes, Chapter 45, n.d. *Documents & Forms | San Diego County Water Authority*. San Diego County Water Authority. Web. 22 Oct. 2013 (see [www.sdcwa.org/sites/default/files/files/CWA\\_Act.pdf](http://www.sdcwa.org/sites/default/files/files/CWA_Act.pdf)). As each agency pays more money to SDCWA, the allocation of votes is adjusted. As of 1997, Pendleton Military Reservation has contributed the smallest amount of money of all the member districts to SDCWA (\$10,921,265), and thus was allocated only 2.18 votes on the board of directors. On the high end, the City of San Diego has contributed \$1,864,642,414, and has a vote allocation of 372.97. *Id.*

**Powers**

San Diego County Water Authority is a water wholesaler, giving the many water districts in San Diego County a method to reduce purchasing and infrastructure costs for delivery of water from external sources, as well as complete large-scale institution to institution agreements that would not have been possible absent the larger authority. Standing committees that administer SDCWA’s vested powers are: Administration and Finance; Engineering and Operations; Imported Water; Legislation, Conservation, and Outreach; and Water Planning.

Many of the major recent accomplishments of the San Diego County Water Authority were already mentioned above. Since its inception, SDCWA has grown from maintaining just two major pipelines to its present day administration of five pipelines that deliver water from the Municipal Water District of Southern California and the State Water System to San Diego County. It maintains pumping stations, a dam and a reservoir, as well as a recently constructed water treatment plant. This plant, the Twin Oaks Valley Water Treatment Plant, was completed to give SDCWA greater flexibility in terms of providing treated water to its customers. Prior to the construction of this plant, all of the potable water, and approximately half of the total water that was delivered to SDCWA was treated by the Metropolitan Water District of Southern California at the Skinner Filtration Plant in Riverside County. Continued population growth in both San Diego and Riverside counties necessitated the construction of a treatment plant in San Diego County. The Twin Oaks Valley Water Treatment Plant now treats around 50% of incoming water. Local water districts currently treat the remaining half of SDCWA water across the county. *Twin Oaks Valley Water Treatment Plant*. San Diego County Water Authority, n.d. Web. 24 Feb. 2014 (see [www.sdcwa.org/twin-oaks-valley-water-treatment-plant-old](http://www.sdcwa.org/twin-oaks-valley-water-treatment-plant-old)). Wastewater treatment is not undertaken by SDCWA, but instead by multiple wastewater treatment plants maintained by the individual water districts.

San Diego County Water Authority’s control of infrastructure is expected to continue to increase as population and land development continue to rise in San Diego County. In addition to the recently negotiated Quantification Settlement Agreement — which has reduced California’s overall Colorado

**Regional  
Water  
Management**

**Desal Supply**

**Conservation  
&  
Responsibility**

**Comparison**

**Joint Powers  
Authority**

River demand and firmed San Diego’s water supply through large scale water transfers from the Imperial Irrigation District — SDCWA is currently facilitating the Carlsbad Desalination Project, which is scheduled to be completed in 2016, and will be the largest desalination plant in North America. Although a private company (Poseidon Resources) will own and operate the plant, SDCWA has signed a 30-year purchasing agreement for 56,000 acre-feet of water per year from the plant, and is currently expanding and modifying its infrastructure to accommodate this new supply.

Given its role as the water supplier to practically all of San Diego County, SDCWA plays a big role in the drought preparedness and conservation initiatives that are undertaken in the region. SDCWA has various incentive programs to encourage sustainable residential water use, and has developed a four-tiered drought response conservation plan. In contrast to the Southern Nevada Water Authority, SDCWA does not have the authority to specifically limit water use or mandate conservation practices. It merely passes the drought response recommendations on to the member agencies, and they decide whether to implement water use restrictions for their customers.

There are many similarities between the San Diego County Water Authority and the Southern Nevada Water Authority. Both agencies maintain control of Colorado River water rights, are invested heavily in firming their respective cities’ water supplies, control wholesale water pricing to their member agencies, and both are denied the authority to control wastewater treatment in their service areas. Mandating conservation measures falls under the purview of SNWA, though SDCWA is more restricted in this case. Given San Diego’s heavy reliance on water from sources outside the region, SDCWA’s role as a large scale water purchaser has helped give the county the strength to secure necessary water rights for 70 years.

**SANTA ANA WATERSHED PROJECT AUTHORITY**

**Facts**

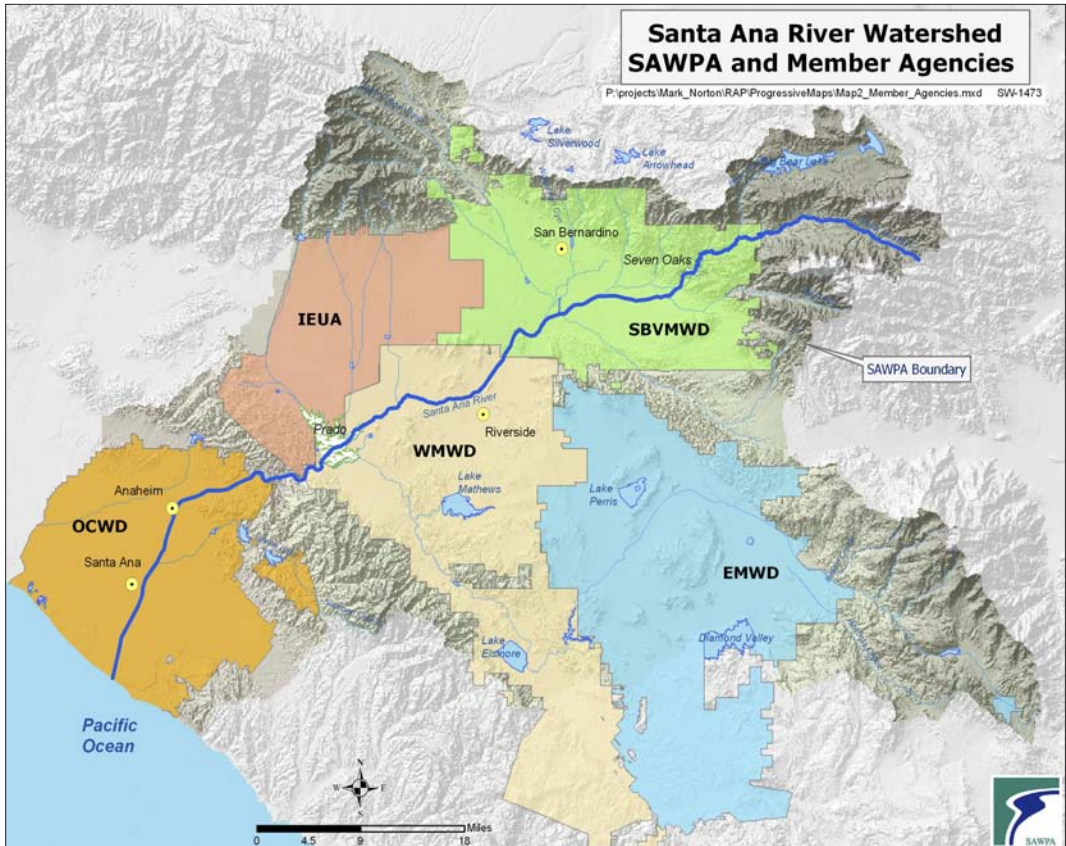
- Population Served: Approximately six million residents
- Area Served: 2,650 square miles in the Santa Ana Watershed Basin, composed of portions of four different counties in southern California: Riverside, Los Angeles, San Bernardino, and Orange counties

**History and Organization**

The Santa Ana Watershed Project Authority (SAWPA) was created in January of 1975 as a Joint Powers Authority under Article 1, Chapter 5, Division 7, Title 1 of the Government Code of California. SAWPA has five member agencies: Eastern Municipal Water District (joined in 1984), Inland Empire Utilities Agency, Orange County Water District, San Bernardino Valley Municipal Water District, and Western Municipal Water District, all five of which maintain operations within the hydrological extent of the Santa Ana Watershed. *Santa Ana Watershed Project Authority*, n.d. Web. 24 Feb. 2014 (see [www.sawpa.org/](http://www.sawpa.org/)). The locations of the watershed and the SAWPA member agencies are shown in Figure 4.

**Figure 4  
Santa Ana River  
Watershed SAWPA  
and Member  
Agencies**

Source: *Member Agencies | Santa Ana Watershed Project Authority*, n.d. Web. 13 Nov. 2013 (see [http://sawpa.org/documents/roundtable/map-1152\\_Member\\_Agencies\\_1\\_A.pdf](http://sawpa.org/documents/roundtable/map-1152_Member_Agencies_1_A.pdf))





<b>Regional Water Management</b>
<b>Environmental &amp; Planning</b>
<b>Implementation</b>
<b>Powers Granted</b>
<b>Collaboration</b>
<b>Salt Disposal</b>
<b>Competition</b>
<b>Service Area Limits</b>

A ten-person board of directors manages the authority, with a commissioner and alternate commissioner serving from each of the five member agencies. Each member agency is given one vote on the commission. There are additional task force groups that operate under SAWPA’s facilitation and address specific integrated water resource programs, beneficial use assurance, or watershed improvement. *Collaboration*. SAWPA, n.d. Web. 24 Feb. 2014 (*see* [www.sawpa.org/collaboration/](http://www.sawpa.org/collaboration/)).

**Powers**

The Santa Ana Watershed Project Authority functions primarily as an environmental and planning organization. SAWPA allows its member districts to retain purchasing power of water and infrastructure control, but gives them an avenue for collaborative environmental mitigation efforts that fall on a truly regional scale. SAWPA’s founding document explains its role by saying, “[T]he purpose of this Agreement is to create a public agency to undertake and implement the common power of undertaking projects for: water quality control; protection and pollution abatement in the Santa Ana River Watershed, including development of waste treatment management plans for the area within the Santa Ana River Watershed; construction, operation, and maintenance and rehabilitation of works and facilitates for the collection, transmission, treatment, disposal and/or reclamation of sewage, wastes, wastewaters, poor quality groundwaters and stormwaters; the construction, operation, maintenance and rehabilitation of projects for irrigation and municipal and industrial water supplies; projects for aquifer rehabilitation; projects for reclamation, recycling and desalting of water supplies for irrigation and municipal and industrial purposes.”

“These purposes may be implemented by utilizing funds contributed by the members and grants received from Federal and/or State Government, by issuing bonds, notes, warrants and other evidences of indebtedness to finance costs and expenses incidental to said projects, and by contracting with the United States pursuant to Federal Reclamation laws and the laws amendatory and supplementary thereto.” *Joint Exercise of Power Agreement Creating the Santa Ana Watershed Project Authority*. N.p.: n.p., n.d. *Santa Ana Watershed Project Authority*. Santa Ana Watershed Project Authority, 6 Dec. 1974. Web. 30 Nov. 2013 (*see* [www.sawpa.org/wp-content/uploads/2012/06/JPA1975-Amends1-5.pdf](http://www.sawpa.org/wp-content/uploads/2012/06/JPA1975-Amends1-5.pdf)).

In order to fulfill the functions described above, the joint powers authority gives SAWPA the power to: make and enter contracts; employ agents and employees; acquire, construct, manage, maintain and operate any buildings, works or improvements, both inside and outside the boundaries of the parties hereto; acquire, hold or dispose of property, both inside and outside the boundaries of the parties hereto; incur debts, liabilities or obligations; issue bonds, notes, warrants and other evidences of indebtedness to finance costs and expenses incidental to the projects of the Agency; sue and be sued in its own name, provided that the Agency shall not commence or convene in any lawsuit without the approval of all of its members; exercise jointly the common power of the parties hereto set forth; and to exercise the power of eminent domain (added in 1991). *Id.*

The forum provided by the Santa Ana Watershed Project Authority for its member agencies to meet and collaborate has yielded many regional environmental and planning projects. The recently released One Water, One Watershed 2.0 plan represented a collaborative effort between all member water agencies in SAWPA, and works to identify projects and programs that will address unique water resource challenges in the Santa Ana watershed. SAWPA additionally maintains the Inland Empire Brine Line, the largest collaborative environmental effort undertaken to date by SAWPA, which is designed to provide cost-effective disposal of salts generated by utilities and industry within the watershed.

SAWPA has a different institutional focus than the Southern Nevada Water Authority or the San Diego County Water Authority. It functions primarily as a planning and environmental organization, giving the member agencies a forum for productive collaboration and a mechanism to facilitate regional-scale environmental projects to ensure sustained water supply and water quality.

**DENVER WATER**

**Facts**

- Population served: Approximately 1.3 million
- Area served: 336 square miles in the Denver metro area and surrounding suburbs

**History and Organization**

Denver Water was born out of fierce competition between private water companies that characterized the early settlement of the Denver area from the 1860’s to 1918. As this period progressed, smaller companies were acquired or purchased by what became the dominant private water company during the time, Denver Union Water Company (predecessor to Denver Water). In 1918, the citizens of Denver voted to create a five-member Board of Water Commissioners and to purchase the Denver Union Water Company infrastructure, which at that point included a large dam and reservoir, a water treatment plant, and several miles of mains. “History of Denver Water.” Denver Water, n.d. Web. 24 Feb. 2014 (*see* [www.denverwater.org/AboutUs/History/](http://www.denverwater.org/AboutUs/History/)). Today, Denver Water serves over 1.3 million people in the Denver metro area and surrounding communities. Figure 5 below shows the service area map for Denver Water. As shown in Figure 5, there are several areas in the Denver metro area that are not served by Denver Water. These municipalities, including Englewood, Aurora, and Arvada, control and manage their water systems as divisions of their respective city governments.

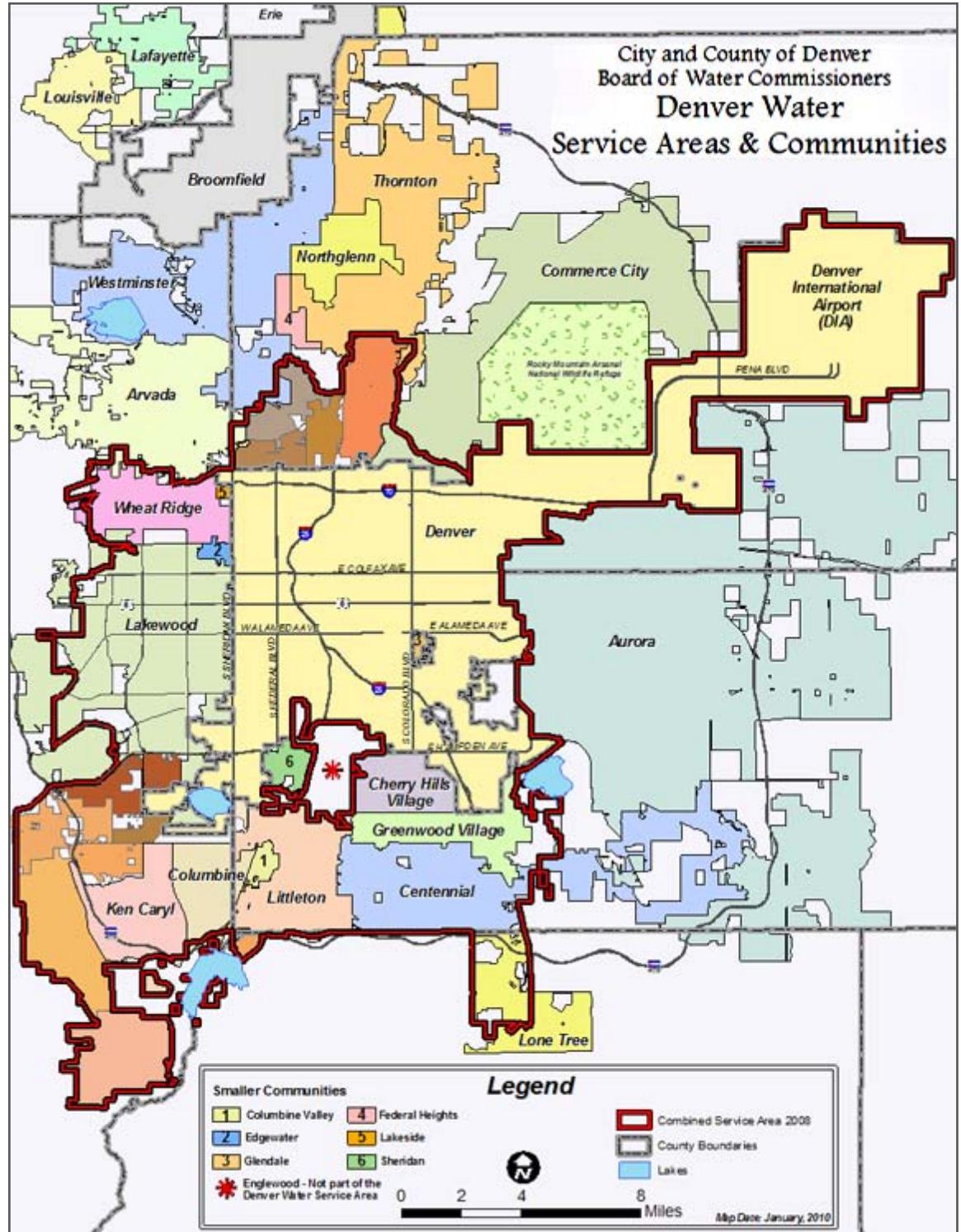
**Regional Water Management**

A five-member Board of Water Commissioners is appointed by the Mayor of Denver to staggered six-year terms, and the Board then in turn appoints a manager, who controls day-to-day operations.

Denver Water operates as a large-scale municipal operated water provider, and is responsible for collection, storage, quality control, and distribution of water within its service area. The infrastructure it manages includes three water treatment plants, 18 pumping stations, 30 underground reservoirs, and over 3,000 miles of water mains. Denver Water's funding mechanism and decision-making capabilities operate independently from Denver's city government.

**Figure 5  
Denver Water Service Area Map**

**Independent Water Provider**



Source: *Denver Water Service Area Map.*

City and County of Denver Board of Water Commissioners, 01 Jan. 2010. Web. 04 Jan. 2014  
(see [www.denverwater.org/docs/assets/3F32FA08-CF24-1D76-BEABACA2D2AC9627/csa\\_metro\\_area\\_20091.pdf](http://www.denverwater.org/docs/assets/3F32FA08-CF24-1D76-BEABACA2D2AC9627/csa_metro_area_20091.pdf))

## Regional Water Management

### City Separation

As explained on Denver Water’s website: “This arrangement allows Denver Water to operate as an independent municipal governmental agency funded by water rates, new tap fees and the sale of hydropower. We are not funded by taxes. Denver Water is an enterprise under TABOR, which means we do not derive any revenue from taxes. Under Denver’s charter, all of our revenues go into the water works fund, and the money in the fund may not be used for any purpose other than the water system. This arrangement ensures separation between City Hall and Denver Water. Denver’s city government has no access to the water works fund, and Denver Water has no access to the city’s general fund.” *Funding | Denver Water*. Denver Water, n.d. Web. 07 Jan. 2014 (*see* [www.denverwater.org/AboutUs/KeyFacts/Funding/](http://www.denverwater.org/AboutUs/KeyFacts/Funding/)).

### District Needs

## CONCLUSION

While a complete history and full description of each organization are beyond the scope of this limited investigation, it is clear and not surprising that each has unique hydrologic, demographic, and political drivers. Out of these diverse sets of drivers grew four water entities that are tailored to serve the distinct needs of their specific region. Powers given or denied to each authority help to determine each entity’s relative autonomy from city or state governments, funding mechanisms, and institutional focus. Southern Nevada and San Diego Water Authorities function as strong, overarching organizations, dedicated to supply acquisition and infrastructure management. Santa Ana Watershed Project Authority is primarily focused on planning and environmental collaborative activities, giving its member agencies a forum to express regional concerns and a method to address those concerns. Finally, Denver Water is a large-scale, municipally operated water provider serving suburban areas as well as those within the city limits. Its financial framework is separate from Denver’s city budget and ensures reliable revenue streams for the utility.

### Unique Characteristics

This article reports on an initial, self-funded, and primarily web-based study of four regional approaches to water management/collaboration. While further work could include interviewing agency representatives and stakeholders, along with additional case studies, the conclusions for Tucson — and likely other regions — from this effort are expected to be as follows. Like each of the cases studied, the Tucson region has unique characteristics, with its own political, hydrological, and demographic factors driving the development and use of water. The *Report of the Regional Water Assessment Task Force “Think Tank” Process* recommended an examination of instances of water collaboration in other locations, with the goal of discovering approaches that could enhance Tucson’s water management collaboration. This examination shows that collaborative efforts typically grow out of distinctive regional needs. Additional efforts toward greater cooperation among water stakeholders in Tucson should focus on Tucson’s unique water situation rather than an externally divined roadmap for water collaboration.

#### FOR ADDITIONAL INFORMATION:

NATHANIEL DELANO, University of Arizona, 804/ 761-3258 or [ndelano@email.arizona.edu](mailto:ndelano@email.arizona.edu)

SHARON MEGDAL, University of Arizona, 520-621-9591, [smegdal@email.arizona.edu](mailto:smegdal@email.arizona.edu)

or website: <http://wrrc.arizona.edu/sharon-megdal>

**Sharon Megdal** is Director of The University of Arizona Water Resources Research Center and C.W. and Modene Neely Endowed Professor in the College of Agriculture and Life Sciences. Her work focuses on water resources management and policy, on which she writes and frequently speaks. She also holds the titles Professor, Department Soil, Water, and Environmental Science, and Distinguished Outreach Professor. She serves as Director of the Water Sustainability Program and Co-Director of The University of Arizona Water, Environmental and Energy Solutions Program, both of which are funded by the Technology Research Initiative Fund (TRIF). Dr. Megdal places particular emphasis on how to achieve desired policy objectives in terms of institutional structures and possible changes to them. Current projects include: comparative evaluation of water management, policy, and governance in growing, water-scarce regions; meeting the water needs of the environment; groundwater management and governance; groundwater recharge; and transboundary aquifer assessment. She is the lead editor of the book, *Shared Borders, Shared Waters: Israeli-Palestinian and Colorado River Basin Water Challenges*. Dr. Megdal teaches the multi-disciplinary graduate course Arizona Water Policy. She serves as President-Elect of the National Institutes for Water Resources (NIWR) and is a member of the board of the Universities Council on Water Resources (UCOWR) and the Western Rural Development Center. As an elected member of the Central Arizona Water Conservation District Board of Directors, Dr. Megdal is responsible for the policies, rates and taxes associated with delivering Colorado River water through the Central Arizona Project. She holds a Ph.D. degree in Economics from Princeton University.

**Nathaniel Delano** is a graduate student at the University of Arizona. He is studying under Dr. Megdal in pursuit of his Master’s Degree in Water, Society, and Policy, and graduate certificate in Geographic Information Systems. He is also a researcher at the University of Arizona Water Resources Research Center. Prior to coming to Arizona, Nate earned Bachelor’s Degrees in Geography and History from the University of Mary Washington in Fredericksburg, Virginia, and served as a Peace Corps Volunteer in Paraguay. His research interests include the application of GIS to solve water management issues, sustainable water use in agriculture, and the economics of water and environmental policy.