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ACTION SHEET
PUBLIC UTILITES COMMITTEE MEETING OF 5/6/15

ISSUE NO. 12
2013 Annual Water Report. (Alan Hook)

Public Utilities Committee – 5/6/15
City Council – 5/13/15

PUBLIC UTILITES COMMITTEE ACTION: Pulled by Councilor Bushee. Approved forward to Council.

SPECIAL CONDITIONS OR AMENDMENTS:

STAFF FOLLOW UP: Reports should not be placed on Consent Agenda, they should be heard by committee.
Send the GPCD report and 2014 report back to committee this summer.

VOTE:	FOR	AGAINST	ABSTAIN
COUNCILOR RIVERA, CHAIR	Excused		
COUNCILOR MAESTAS	X		
COUNCILOR BUSHEE	X		
COUNCILOR DIMAS	Excused		
COUNCILOR IVES	X		

2013 ANNUAL WATER REPORT

CITY OF SANTA FE

APRIL 2015

WATER DIVISION

City of Santa Fe

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Brian Snyder, City Manager

City Councilors
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Patti J. Bushee, District 1
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Land Use Department
Utility Billing Division
Wastewater Division
Water Budget Office

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Cover Photo: Santa Fe River Watershed Circa 1926

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EXECUTIVE SUMMARY

The purpose of this report is to provide the Santa Fe community with an annual report that summarizes the state of the City of Santa Fe's Water Division (Water Division) and the water supplies we depend upon. This report is submitted pursuant to City Code Section 25-9.6 SFCC 1987 and summarizes information about the City of Santa Fe's Water Division including water supply, water rights, conservation, water demand, types of water use, water quality, system maintenance, energy use, climate change, and water utility management information. Information on reclaimed wastewater (treated effluent) from the City of Santa Fe's Waste Water Division is included as an important component of the Water Division's water supply portfolio. The information presented within this report contains water data through December 2013 and the anticipated 2014 water and supply projections.

In 2013, the City of Santa Fe (City) was served by four distinct sources of supply. The 17,384 acre Santa Fe Municipal Watershed provides surface water runoff to the Santa Fe River where it is stored in McClure and Nichols Reservoirs prior to treatment. Surface water from the Santa Fe River and Rio Grande is treated through conventional and advanced treatment processes at the Canyon Road Water Treatment Plant and Buckman Regional Water Treatment Plant, respectively. The City Well Field is mostly located in close proximity to the Santa Fe River and consists of 7 active wells located within the City limits of Santa Fe. The Buckman Well Field consists of 13 wells located near the Rio Grande, approximately 15 miles northwest of Santa Fe. The Water Division supplied 9,174 acre-feet of water to its water utility customers and an additional 240 acre-feet to the Santa Fe County Water Utility, for a total production of 9,414 acre-feet for 2013. Also, the Water Division met its acequia irrigation deliveries and provided 1,564 acre-feet of "Living River" flows to the Santa Fe River. Construction began in 2013 on the Reservoir Infrastructure Improvements Project at Nichols Reservoir with partial financing from the New Mexico Water Trust Board.

This annual report summarizes the state of the City of Santa Fe's Water Division and the water supplies that we depend upon.

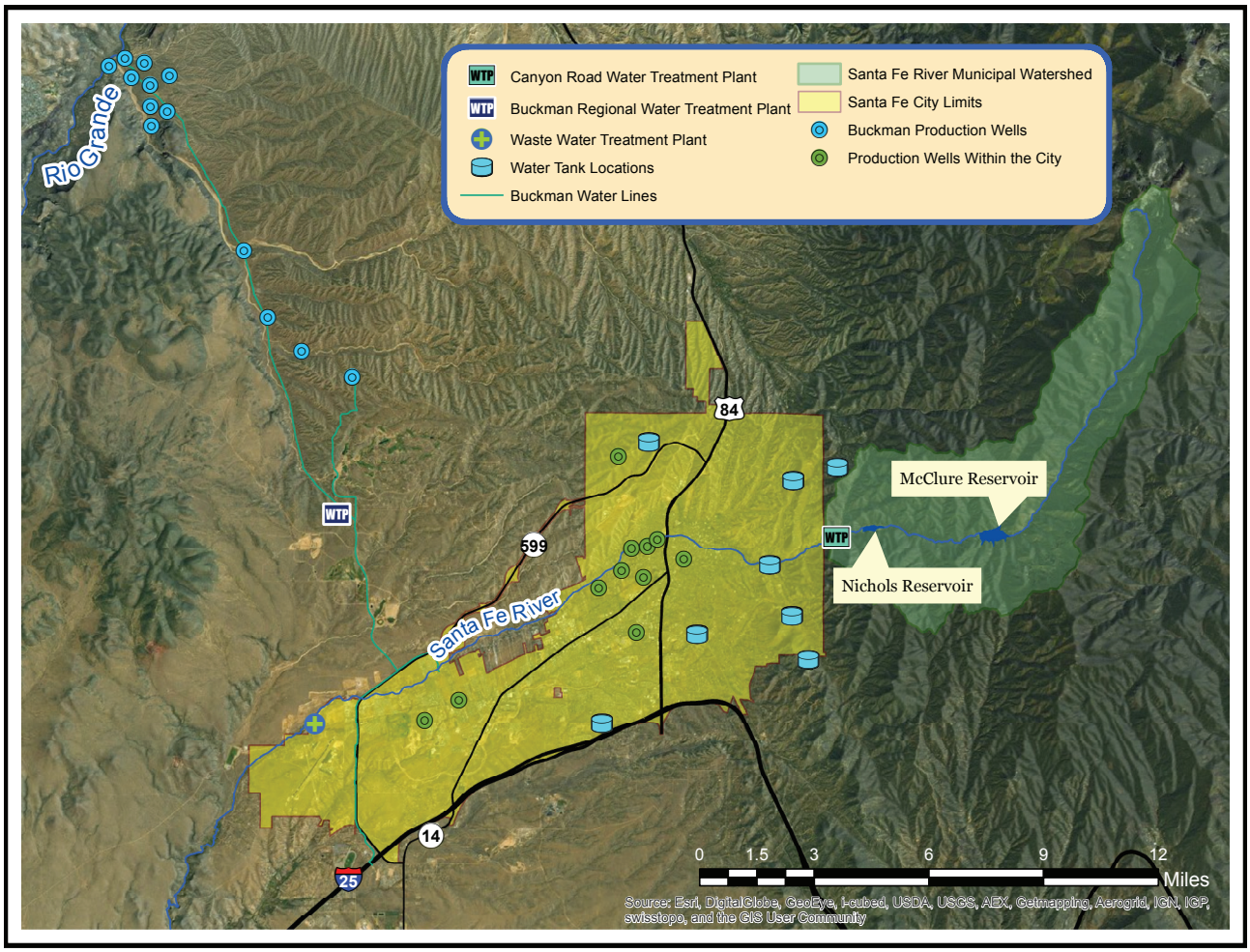
The City of Santa Fe continued its water conservation efforts with a water utility customer demand of 8,108 acre-feet, resulting in service-area gallons per capita per day demand of 101.2. These water conservation savings were achieved through the Water Conservation Office, which administers rebate and incentive programs, provides educational activities for all ages, enforces water conservation requirements of various city ordinances, provides public outreach through the media and participation in community events and leads by example with low-water use demonstration gardens. The City of Santa Fe's drinking water continues to be of excellent quality. With the addition of another, surface water source, Buckman Regional Water Treatment Plant, to the City's water supply and less frequent use of the City's well fields the result has been the lowering of some naturally occurring contaminants. The overall goal of the Water Division is to ensure that our water resources are managed and protected in an efficient and responsible manner to provide the Santa Fe community with clean, reliable and safe drinking water.

Supporting information is available on the City of Santa Fe's website at www.santafenm.gov or by contacting the City of Santa Fe Water Division directly.

Fall at Nichols Reservoir

OUR WATER SUPPLIES

The City of Santa Fe Sangre de Cristo Water Division (Water Division) produces a reliable, safe and sustainable water supply for its customers from the City of Santa Fe's (City) four supply sources: the Santa Fe River, San Juan-Chama surface water via the Rio Grande, the City well field, and the Buckman well field, all of which are all identified in the map below. Also, the Water Division utilizes reclaimed wastewater and water conservation to reduce demand on the total supply of potable water.



Water Supply Sources Map, Figure 1

History

The City of Santa Fe has been relying on the Santa Fe River for its community water needs since the founding of the City over four hundred years ago. Stream gage records dating back to 1915 identify the mean inflow (50th percentile) of the Santa Fe River in the upper watershed to be approximately 4,909 acre-feet per year. In 1881, the Santa Fe Water Improvement Company built a reservoir on the Santa Fe River to divert the City's designated surface water right with an 1880 priority date. In 1995, The City of Santa Fe purchased Sangre de Cristo Water Company from PNM and by 1999 the City began managing the declared water right of 1,540 acre-feet per year and a licensed water right of 3,500 acre-feet per year on the Santa Fe River for a total of 5,040 acre-feet per year for drinking water supply. Currently, the City of Santa Fe has a license to store up to 3,985 acre-feet (combined) per year of Santa Fe River water in McClure and Nichols Reservoirs. Both municipal drinking water supply reservoirs are located east of the City within the closed upper Santa Fe River municipal watershed (see Figure 1, above).

Operation of the Buckman Regional Water Treatment Plant commenced in January of 2011, at which time the facility started providing drinking water from the federal Bureau of Reclamation's San Juan-Chama Project's surface water supply via the Rio Grande. The San Juan-Chama Project utilizes surface water runoff of the Colorado River basin from tributaries of the San Juan River via a series of diversions and underground pipelines through the Continental Divide to the Rio Grande basin, from which the surface water is then distributed to the Project's contractors at the outlet of Heron Reservoir near Chama, New Mexico. As a contractor of the San Juan-Chama Project, the City of Santa Fe can provide up to 5,230 acre-feet per year of drinking water supply from the Buckman Regional Water Treatment Plant directly to the City's water utility customers. The Buckman Regional Water Treatment Plant and the Buckman Direct Diversion Project facilities are governed by a joint City of Santa Fe and Santa Fe County board.

Buckman Direct Diversion Intake Structure on the Rio Grande, Figure 2

The City of Santa Fe has seven active groundwater wells within the City limits, most of which are focused near the Santa Fe River (see Figure 1 on page 3). The wells within the City well field were installed in the 1940s and 1950s, and have been re-drilled or upgraded over the years. The City well field can produce up to 4,865 acre feet per year of drinking water supply for Santa Fe. The City of Santa Fe also has thirteen groundwater wells in the Buckman well field, which is located near the Rio Grande, approximately 15 miles northwest of Santa Fe (see Figure 1 on page 3). The Buckman Wells are associated with several water rights, but are operated under one permit that allows the City of Santa Fe a maximum pumping rate of 10,000 acre-feet per year for drinking water supply, although the City rarely pumps more than 1,000 acre-feet annual from these wells. The newest Buckman wells are all about 2,000 feet deep and began producing water in 2003.

City of Santa Fe Diversion Water Rights and Supply Portfolio

Source	**Water Rights** (acre feet)	**Available Water (acre feet)**	**Average Yield since 2011 (acre feet)**
Santa Fe River	5,040	Up to 5,040 plus 1,000 to living river (when available)	2,500
City Wells	3,586*/4,865	Sustainable use when needed	2,200
Buckman Wells	10,000	Sustainable use when needed	1,000
Buckman Direct Diversion	5,230**	Less water quality and/or NEPA permit restrictions	5,230

*When the City uses the Northwest Well it is limited to 3,586 acre-feet pursuant to its NM OSE permit

**City's San Juan-Chama water

City of Santa Fe Diversion Water Rights and Supply Portfolio, Table 1

Water Rights used for 'Offsets'

In addition to water rights that the City of Santa Fe can directly divert for water supply, Santa Fe maintains a portfolio of 'offset' surface water rights that are associated with the Buckman well field and the Northwest Well. The purpose of these acquired water rights is to keep the nearby stream systems 'whole' or unaffected by the impacts that pumping groundwater has on surface water. The City of Santa Fe has acquired sufficient water rights to satisfy its current obligation on the Rio Grande, Rio Tesuque, and Rio Nambe/Rio Pojoaque through a combination of acquired surface water rights and the City's San Juan-Chama surface water.

City's Surface Water Offsets (Acre-Feet)

Stream system	Water rights (af)	Offsets needed in 2013 (af)
Rio Tesuque*	49	34
Rio Nambe/Rio Pojoaque*	88	58
Rio Grande**	1,438	1,374***
La Cienega	1	2

* includes water owned by Las Campanas

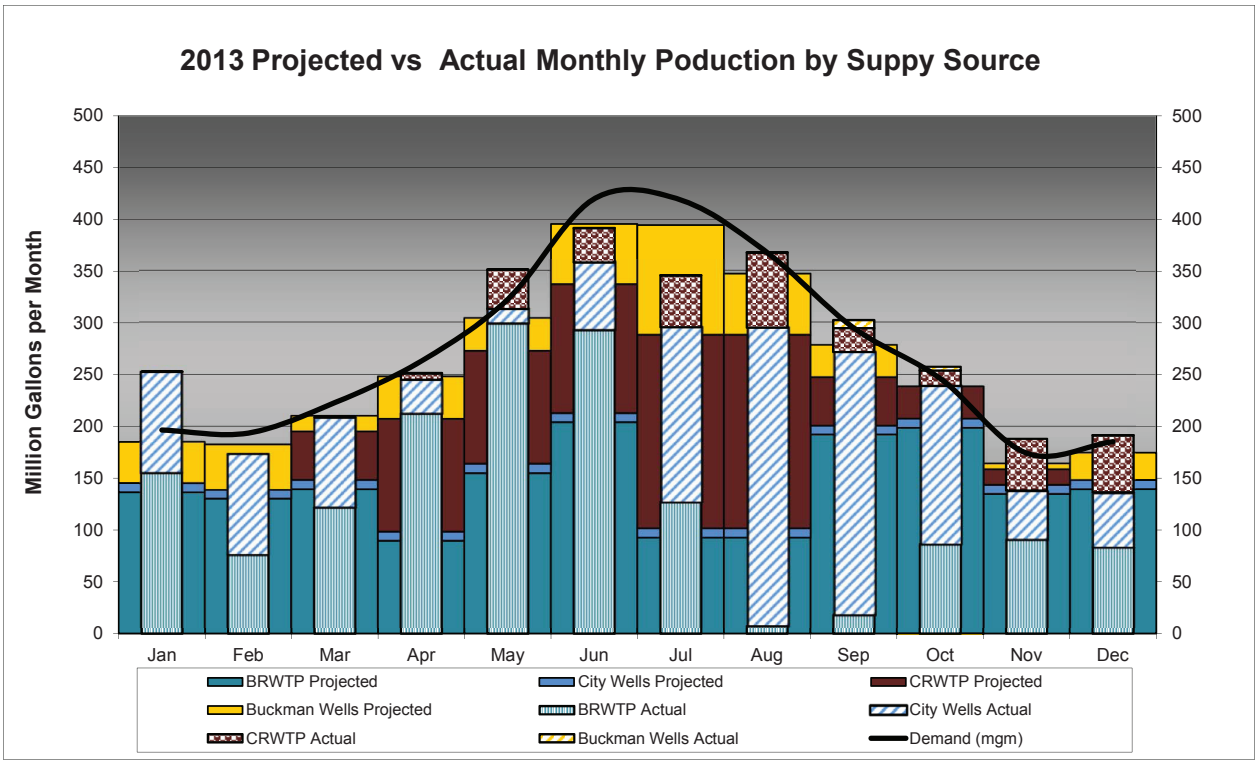
** includes water owned by Santa Fe County and Las Campanas

***Includes impacts both above and below Otowi (113 above+1261 below)

City's Surface Water Offsets, Table 2

PRODUCTION BY SUPPLY SOURCE

As shown in the 'Monthly Water Production by Source' graphs below, the City has taken advantage of increased availability of surface water from the Buckman Regional Water Treatment Plant to decrease use of the City and Buckman well fields, allowing the wells to rest for use in drier years when surface water is not as readily available. In 2013, total production for the City of Santa Fe Water Division was 9,414 acre-feet, which included 240 acre-feet for Santa Fe County Water Utility.



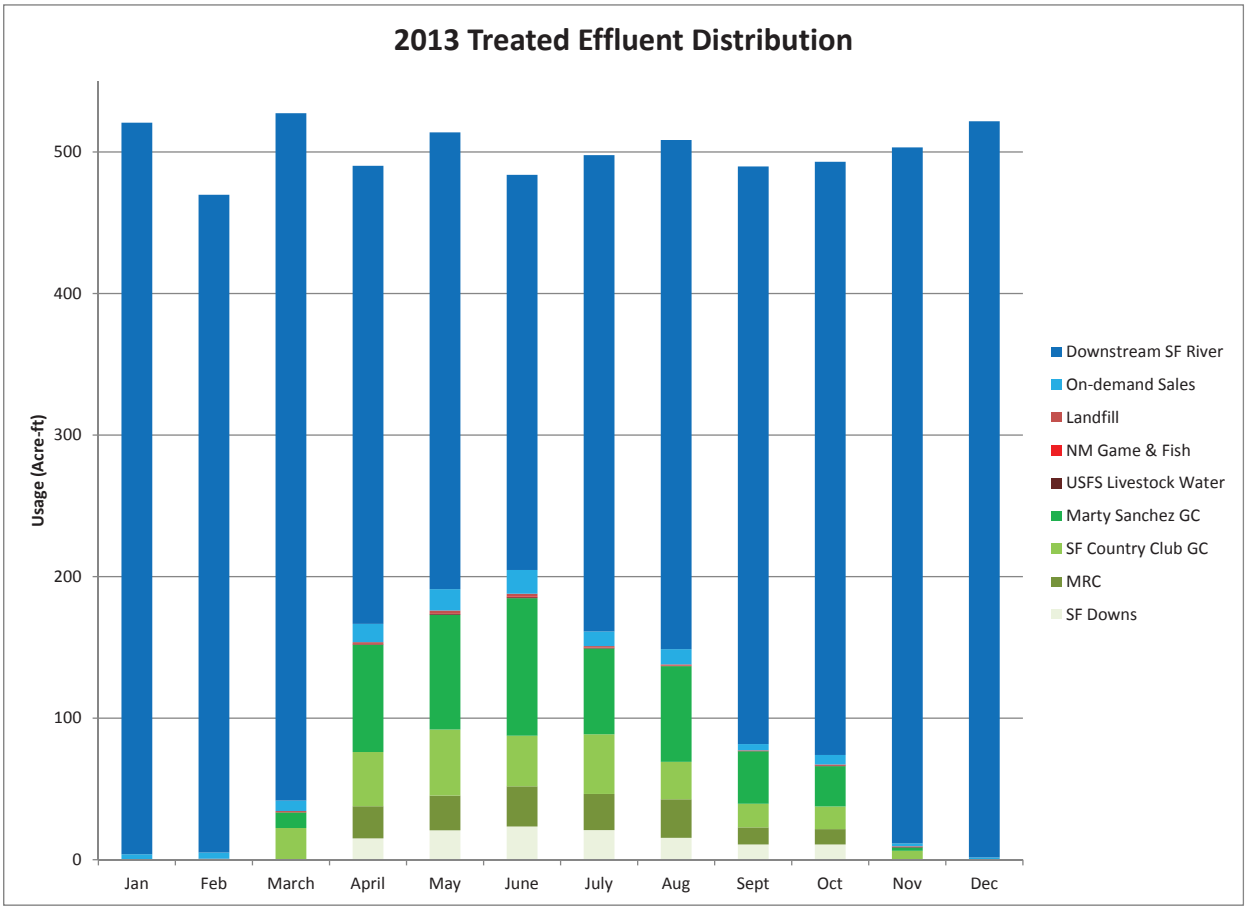
2013 Projected vs Actual Monthly Production by Supply Source, Figure 3

Conjunctive Use and Sustainability

The City of Santa Fe Water Division surface water supplies have the advantage of being renewable, high quality, and energy efficient (e.g. gravity flow and solar power). The disadvantage of surface water supplies is the extreme variability and impacts from seasonal precipitation and temperature changes. Groundwater supplies do not have the wild fluctuations in variability and are therefore more reliable as long as groundwater supplies are not overused. To have a sustainable and reliable water supply source, the City of Santa Fe Water Division conjunctively uses both surface water and groundwater. Conjunctive management is a water resources principal that espouses maximizing the use of renewable surface water as a first priority, and preserving the groundwater when needed for droughts or emergencies, allowing for its more sustainable use.

Treated Effluent Water Deliveries

The City of Santa Fe's (City) reclaimed wastewater (treated effluent) has many uses and is an important component of the City of Santa Fe Water Division's water supply portfolio. The reclaimed wastewater from the City's treatment plant is sold directly to contractors via an the onsite stand pipe. The reclaimed wastewater has many uses, including: irrigation to recreational fields and local golf courses; dust control at the regional landfill and for other construction projects; watering for livestock and wildlife on the Caja del Rio mesa; contributing to the on-site, wildlife, educational pond at the NM Game & Fish facility; and enabling flow in the lower Santa Fe River downstream of the City's wastewater treatment plant, thereby supporting the riparian ecosystem and local agriculture in the general La Cienega/La Bajada area.



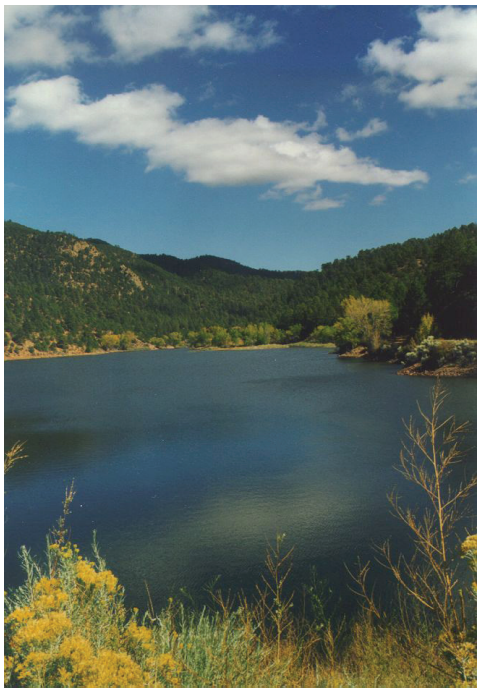
City's Treated Effluent Contractors, Figure 4

Production of reclaimed wastewater increased to 1,962 million gallons (6,020 acre-feet) in 2013 versus 1,940 million gallons (5,953 acre-feet) in 2012. In 2013, 18% of the treated wastewater was reused and the remaining 82% (1,606 million gallons) flowed into the Santa Fe River. More information on current reclaimed wastewater (treated effluent) planning efforts is available at www.santafenm.gov.

WATER STORAGE

The City stores water in three ways: within the municipal reservoirs in the upper Santa Fe River watershed, within reservoirs on the San Juan-Chama River/Rio Grande system, and by 'relinquishment' water (see explanation below).

The Municipal Reservoirs



The water utility stores Santa Fe River surface water in McClure and Nichols Reservoirs in the Santa Fe municipal watershed (see Figure 1 on page 3). Storage levels of the reservoirs for the end of 2012 were 1,132 acre-feet or 29% of the total storage capacity. While the City water utility has been targeting carry-over storage from one year to the next of 40% to hedge against drought-induced summer supply deficit, once the Buckman Direct Diversion came online, a lower carry-over storage target has been acceptable. At the end of 2013, the carryover storage within only McClure Reservoir, since Nichols remained empty, was 2,532 acre-feet or 78% of the total storage capacity.

Reservoir Improvements

Replacement of the intake towers at both Nichols and McClure Dams are needed to improve dam safety, operating personnel safety, and to improve flow control of reservoir releases. The existing intake towers at both reservoirs are 70 – 80 years old and do not meet current seismic stability requirements. Both, intake structures are located several hundred feet from the shore and can only be accessed by boat or walking on ice when the surface water within the reservoir is frozen. Furthermore, the intake towers are 80 - 100 feet high and only 4 – 5 feet in diameter and there is inadequate room for personnel to safely repair, replace, or maintain the reservoir infrastructure. Presently, the intake valves leak and only one valve at each tower is in operating condition, effecting efficient management of the reservoirs, and by extension, the City of Santa Fe's surface water supply.

Construction requires 9 months per dam and will be done one dam per year. Work at Nichols Reservoir began September 9, 2013; however, construction was slowed down by a month due to unseasonable, intense rains in the fall of 2013. Taking a reservoir out of service beginning in September allows inflows to the reservoirs to be utilized during peak summer demand for the following year. The Nichols Reservoir intake structure was completed in mid-May 2014, and filling of the reservoir resumed.

Relinquishment Credits

New Mexico receives relinquishment credits when the quantity of Rio Grande water provided to Texas is above that required by the Rio Grande Compact. Relinquishment water allows the City to store relinquishment 'credit' water in the municipal reservoirs during times when the Rio Grande Compact would otherwise limit

the City's right to store surface water. As an alternative to using relinquishment credits, the City often releases its San Juan Chama water into the Rio Grande in exchange for the permission to store Santa Fe River water, which would otherwise be prohibited by the Rio Grande Compact. The New Mexico State Engineer has granted the City a total of 7,500 acre-feet of relinquishment credits: 6,052 acre-feet in 2003 and 1,448 acre-feet in 2008. The City has a current balance of 6,207 acre-feet.

Stored San Juan-Chama Project Water

For the past decade, the City has been storing its unused portion of San Juan- Chama water in reservoirs along the Rio Chama-Rio Grande river system. As of December 2013, the City had a total of 31,297acre-feet stored, with 5,230 acre-feet stored in Heron Reservoir, 0 acre-feet in El Vado Reservoir, 9,921 acre-feet in Abiquiu Reservoir and 16,146 acre-feet in Elephant Butte Reservoir.

Precipitation

According to the Western Regional Climate Center, Santa Fe receives on average 13.84 inches annually of precipitation. National Resource Conservation Service 'SNOTEL' weather stations accurately measure snowpack and precipitation in the form of water. The snow-to-water equivalent (SWE), a measurement of how much moisture is within the snowpack, is used to predict spring runoff and watershed yield. There are two SNOTEL weather stations in the upper Santa Fe River municipal watershed: 'Santa Fe' at an elevation of 11,445 feet and 'Elk Cabin' at 8,210 feet. The 'Santa Fe' station reported a peak accumulation of 10.2 inches of SWE for March, 2013, while the 'Elk Cabin' station reported a peak accumulation of 3.1 inches of SWE for March, 2013.

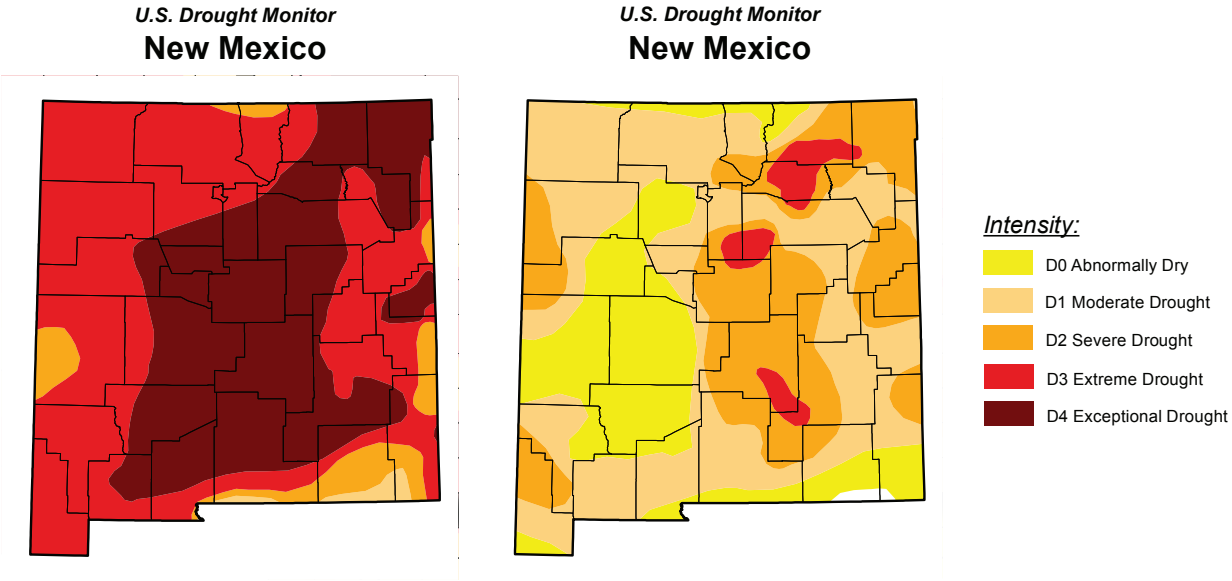
Snowpack on the Sangre de Cristo Mountains, Figure 5

Precipitation data is also gathered in two additional locations in Santa Fe. 'Santa Fe 2' (approximately 2 miles southwest from the Santa Fe plaza) reported 11.02 inches for the year of 2013. This was 80 percent of the annual precipitation of 13.70 inches for this location. Seton Village (approximately 4.5 miles south of downtown Santa Fe) reported 10.4 inches for the year 2013. This was 71 percent of the annual precipitation of 14.65 inches for this location.

While less than average, the 2013 precipitation data marks a considerable improvement from 2012, in which the City only received 47 percent of the normal, annual precipitation. According to the National Weather Service, the 24 -month period leading up to December 2012 was the warmest and driest period in New Mexico since the late 1890's.

Drought

Drought is defined by the National Drought Mitigation Center (NMDC) as a deficiency of precipitation over an extended period of time, usually a season or more. Drought is a normal recurrent feature in the desert southwest. Santa Fe has a very dry, high desert climate with intense sunlight. On average, the city experiences more than 300 sunny days per year. The highest temperatures in July and August are 80-90 °F with only 3-6 days per year with 90+°F highs.



Drought Comparisions for July 2, 2013 and December 31, 2013, Figure 6

In 2013, normal to below normal snow pack was expected across New Mexico and southern Colorado in late winter and early spring. Generally, while Colorado received a few good snow events, much of New Mexico did not receive as much precipitation through late winter and spring. Although the drought eased somewhat, the precipitation that was received was not enough to offset the pronounced and long-standing state-wide drought conditions. Historic low reservoir storage across the state is one pronounced indication of this condition. Summer monsoons were below average to average across most of the state, but record rains in September helped to ameliorate the drought to some degree. Early winter snows to close out the year did little to offset the overall drought. Reduced surface runoff due to reduced snow pack presents challenges for the Canyon Road Water Treatment Plant as well as the BDD Project.

Critically low flows in the Rio Grande are of concern to the BDD Project because the facility is required to curtail diversions during critically low flow periods pursuant to federal permit conditions associated with the Endangered Species Act. Also, when flows are below approximately 200 cfs, the facility cannot physically divert water from the river. Even if supplemental stored San Juan-Chama project water is released from upstream reservoirs there must be enough "carriage water" with adequate flows in the Rio Grande to deliver the City of Santa Fe's portion of the surface water to the BDD Project's intake structure downstream. In 2013, flows in the Rio Grande became very low during certain times of the year, but at no point was the BDD Project forced to stop diversions due to critically low flows in the river.

WATER CONSERVATION PROGRAMS

The City of Santa Fe has built a comprehensive and effective water conservation program from incremental steps that began in 1997. Currently the Water Conservation Office provides educational activities for all ages, administers rebate and incentive programs, enforces the water conservation requirements of various City ordinances, provides public outreach through the media and participation in community events, and leads by example with low-water use demonstration gardens. Tiered water rates have also played a key role in reducing consumption.

Past editions of this report have tended to focus on the rebates and incentives programs only. While these have certainly encouraged consumers to upgrade to more efficient appliances and fixtures, rebates are only part of the story of the City's successful water conservation program. Additional information about the rebates programs can be found in the Water Demand section of this report.

A number of strategies have been developed to engage the many audiences that make up the City of Santa Fe. These programs are designed to educate each audience about the benefits of conserving water as well as provide the tools and knowledge necessary to make the desired changes. Some of the most popular programs are summarized below:

Children's Conservation Programs

Calendar: The annual calendar, a favorite in the Santa Fe Community, features the winning artwork from the previous year's Poster Contest, and includes monthly water saving tips. In 2013, 4,000 copies of the Water Conservation Calendar were distributed.

10th Annual Children's Water Conservation Poster Contest: The 2013 theme for the posters and related educational activities was "Show Us Your Water Appreciation!"

- 291 posters were submitted by 1st-6th grade students
- 18 posters were selected for use in the 2014 Water Conservation calendar
- The grand prize winner's poster is featured on the back of a City bus for one year
- An awards ceremony was held at the May 8th, 2013, City Council meeting. Trophies and prize bags were distributed to the winners
- The winning posters were displayed a City Hall for a month.

11th Annual Children's Water Fiesta, April 11-12, 2013: 4th grade students attend a day of fun, hands-on activities about water.

- 636 students from 9 different Santa Fe Public Schools attended the Fiesta
- 15 different organizations donated their time and effort for this 2 day event
- 15-16 activities were presented each day, including 5 new activities

Project WET Workshop, April 27, 2013: Project WET is an international organization dedicated to educating teachers, students, parents and communities about water. The workshop provides an opportunity for teachers to

learn about the Project WET 2.0 Curriculum Guide and begin using it to enrich their students understanding of water properties and resources. Six teachers from Santa Fe Public Schools participated in the workshop.

Professional/Adult Conservation Programs

Weekly Radio Talk Show: In its 11th year, "Water Talk" is a 30 minute weekly radio show on KSWV 810 am co-hosted by Joe Abeyta and Laurie Trevizo. The program includes discussion of water conservation trends locally, regionally and globally, provides information about upcoming events and educational programs, and frequently includes guests from various organizations that participate in water conservation and environmental education.

Santa Fe attracts more than a million visitors each year. They are welcomed, however, their presence puts considerable pressure on the City's resources, especially water.

Green Lodging Initiative: More than a million tourists visit Santa Fe each year. They are welcomed and are an important part of the economy, however, their presence puts considerable pressure on the City's environmental resources—particularly water. The Santa Fe Watershed Association received an 18-month grant from the US Environmental Protection Agency for a pilot project to reduce the environmental impacts of the lodging industry in Santa Fe. The Watershed Association contracted with Hospitality Green LLC to certify participating facilities through their Green Concierge program. The Water Conservation Office was asked to participate in working group meetings for the Green Lodging Initiative, providing information about local water conservation requirements, as well as resources and incentives that are available in Santa Fe.

- The 14 lodging facilities that participated in the Initiative represent almost 50% of Santa Fe's hotel rooms
- Of those facilities, 12 earned Bronze Level certification
- La Fonda Hotel replaced 172 toilets with HET models as part of their certification and received a Water Conservation Rebate.

Fix-A-Leak Week, March 12-18, 2013: This is an annual nationwide EPA WaterSense campaign. Ads featuring the "Bad Flapper", a 1920's silent-movie style villainess, were broadcast. The campaign included:

- Commercials shown on KOAT channel 7
- Commercials in both DeVargas and Regal Santa Fe Theaters
- Newspaper ads
- Bill inserts
- Radio commericals

Santa Fe Master Gardener Association: Drip irrigation presentations to the Master Gardener Association Intern Class. A master gardener has been trained in basic horticulture by the NMSU Cooperative Extension Service, and in return, shares their knowledge with the community. The focus of the course is on sustainable gardening and topics include Soils, Basic Botany, Xeriscape, Responsible Plant Selection, Composting, and Pest Management, among others. Requirements include:

- Completing a 16 week course, including passing all 16 tests with minimum grade of 70%.
- Complete an internship of at least 30 hours of volunteer service with the calendar year in which they take the course.

Qualified Water Efficient Landscaper (QWEL) Certification Training: As the climate grows hotter and drier, the demand for "smart" irrigation technology is increasing. With it comes a need for "smart" landscape professionals who understand these technologies, local soil and weather conditions, and trends in water-efficient irrigation

systems. QWEL is an approved US EPA WaterSense Irrigation Auditor certification program.

- The City of Santa Fe, in partnership with the New Mexico Water Conservation Alliance, is the only New Mexico agency offering this training
- Classes were held in March and November, targeting landscape professionals
- 36 participants achieved QWEL certification, including
- 23 "for hire" landscape professionals, and
- 9 city employees, including 6 from parks

Mayor's Challenge for Water Conservation, April 1-30, 2013: This is a friendly competition between U.S. cities, sponsored by a non-profit organization, The Wyland Foundation, to see which city can be the most water conscious. In the 2nd year participating in this water conservation pledge campaign, the City of Santa Fe came in 6th place, demonstrating our residents' commitment to water conservation.

New Water Conservation Website Launched: On May 26, 2013, the Water Conservation Office launched a new website, www.savewatersantafe.com. This website is a clearinghouse for City of Santa Fe water regulations, rebate program information, information about source of supply and ways to save water.

Spooky Showerhead Swap, October 31, 2013: The Water Conservation Office employees dressed in costumes and gave out 74 water conserving showerheads in exchange for old, inefficient showerheads.

Public Outreach and Marketing for Water Conservation

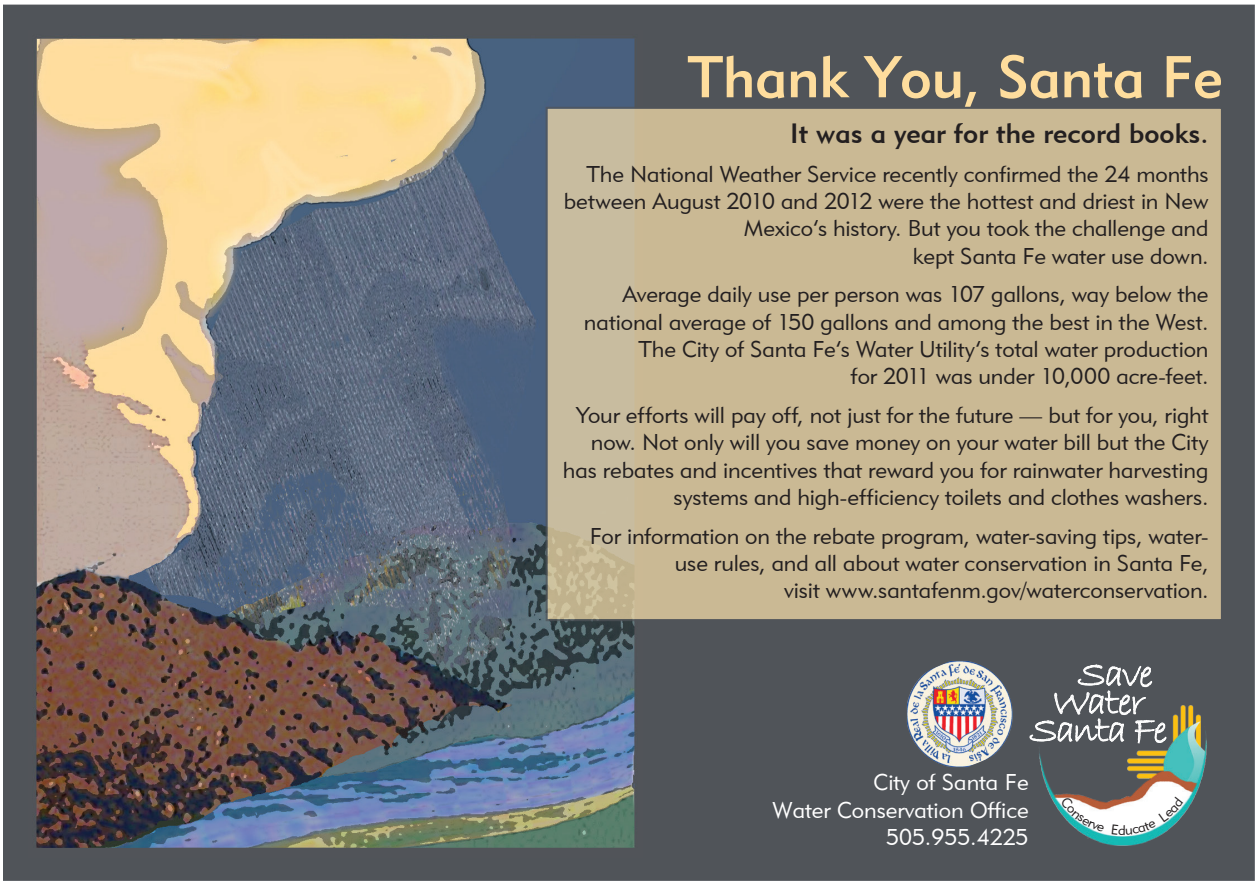
Commercial Outreach: 5,500 letters from the Water Conservation Office were included with business license renewal notices sent out in December. The letters provided the City of Santa Fe Comprehensive Water Conservation Requirements, information about rebates, and contact information to order restroom signage. As a result of the letter, local businesses requested 422 signs.

Demonstration Gardens and Water Conservation Median: As part of leading by example, the Water Conservation Office has developed several demonstration areas to showcase the many ways to make landscaping more water efficient.

- Water Division Office has a recycled water feature powered by solar, themed plantings and efficient irrigation with a weather based controller
- Water Conservation Office has an active water harvesting system with two 1,000 gallon tanks, which collect stormwater runoff from the parking lot. This water will be used on plantings at the Water Conservation Office.
- Median on St Michaels Drive at Calle Lorca was redesigned to capture 1,200 gallons of stormwater runoff and planted with drought tolerant trees and shrubs.

Earned Media and Advertisements: Both earned media and advertisement placement are strategically targeted to specific demographics based on potential impressions, gender, age and social interests. Key messages are woven into all releases, interviews and articles.

- 250 monthly PSA Prime Drive Time messages on 6 Hutton Stations including Spanish language station
- Weekly 30 minute radio show on KSWV, PSA's and commercials
- Weekly PSA's on KSFR for time of day watering reminder
- 4,000 Water Conservation Calendars distributed around the community and the state
- 8,000 Save Water Santa Fe newsletters inserted in to Santa Fe New Mexican and Thrifty Nickel
- 5,000 Save Water Santa Fe newsletters distributed around town and events
- Print media: Green Fire Times, Home Town News, Round the Roundhouse, Santa Fe Reporter, EcoSource, 2013 Visitors Guide, 2013 Annual Manual, Santa Fe New Mexican, Journal North.



2013 Annual Visitors Guide Advertisement

WATER DEMAND

Per Capita Consumption

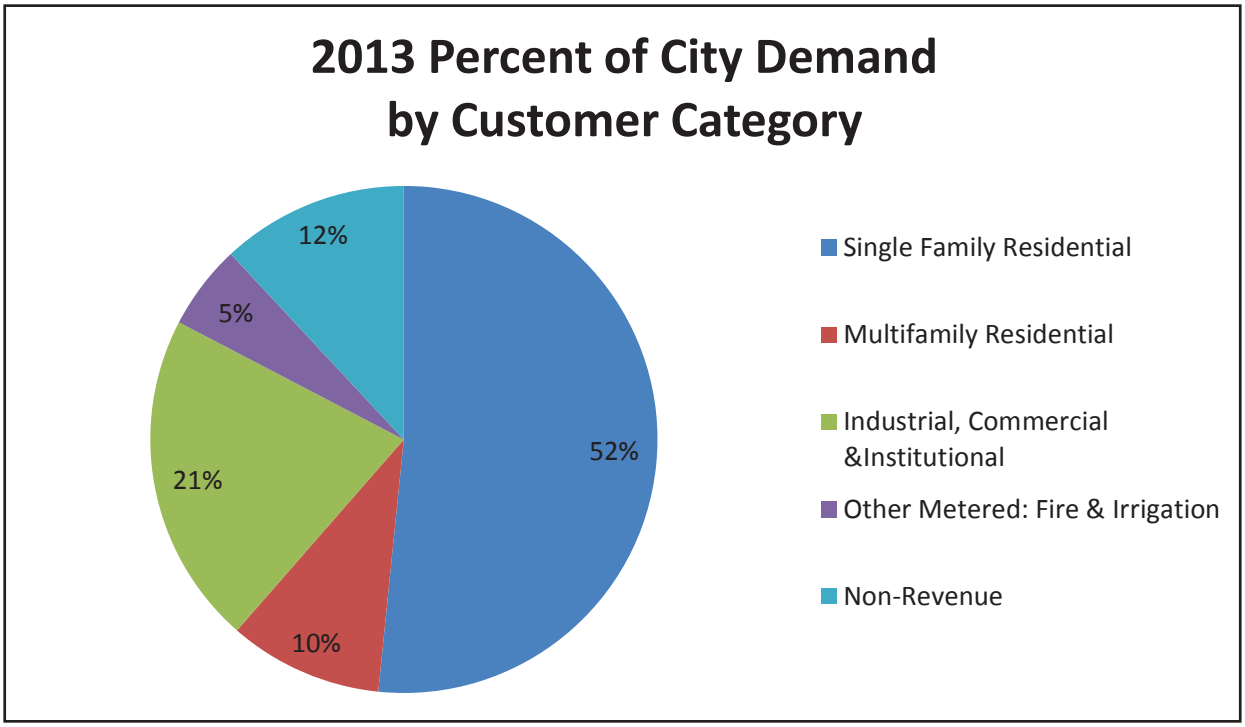
A common metric for comparing annual water use and water conservation effectiveness is gallons per capita per day (gpcd); which is derived by dividing the amount of water supplied to the City of Santa Fe by the population of water division customers served.

In 2013, the City of Santa Fe Water Division customer demand of 8,108 acre-feet resulted in a service-area gpcd of 101.2, based upon the New Mexico Office of the State Engineer's (NM OSE) methodology; this represents one of the lowest gpcd values of any comparable city in the country. The calculated gpcd *does* include deliveries to wholesale customers, such as Santa Fe County.

In 2013, the City's gallons per capita per day water demand was 101.2.

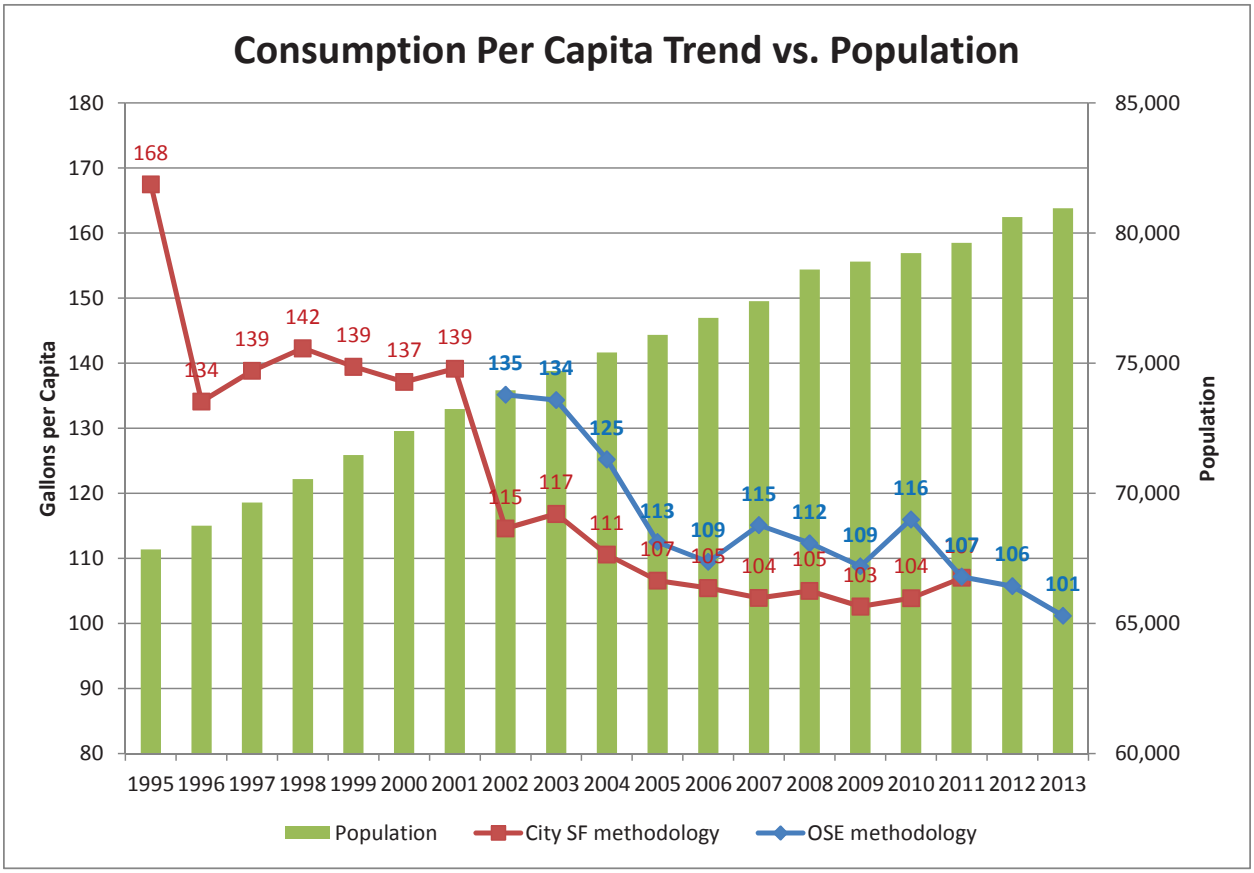
The NM OSE methodology bases the population served upon the number of water division residential customers multiplied by an American Community Survey (ACS)-derived vacancy rate, now based upon 2012 data, and an ACS-based residents per occupied household value. The submittal of the NM OSE gpcd fulfills a compliance requirement with the NM OSE's diversion permit for surface water to the Buckman Direct Diversion facility.

The creation of a multi-family billing category in 2006 caused a shift in total water usage from commercial to residential/multi-family. In 2013, the largest water usage sector for the 101.2 gpcd was single-family residences at 52%. Multi-family residences accounted for 10% and commercial accounts 21% of total water usage.



2013 Demand by Sector, Figure 7

Prior to utilizing the NM OSE gpcd methodology, the City of Santa Fe Water Division gpcd method, used for the previous seventeen years, determined the population served upon the most recent (2010) U.S. Census population data (adjusted for households that rely solely on domestic well water) and updated it annually utilizing growth rates from annual housing permits.



GPCD with Population, Figure 8

Water Bank

The City of Santa Fe (City) has a series of ordinances that require all new projects to offset their water demand to the City of Santa Fe Water Division supply. The options available for the offset of new water demand include water rights acquisition and conservation in existing development. The City's water bank tracks the inflows (credits), outflows (debits), ownership, and designated use. For detailed information, please refer to the following ordinances and city code; 2005 Water Transfer Ordinance, 2009-38 Water Budget Requirements (effective January 1, 2010), and Water Conservation provisions in City Code Chapter 25.

Water credits are derived from multiple sources:

a. Transfer of Middle Rio Grande water rights for development projects as required under the 2005 Water Bank Ordinance (and modified by 2009- 38) or for water banking;

b. Transfer of Middle Rio Grande water rights for water banking as per the 2009-38 Water Bank Ordinance

c. Water conserved through the current conservation rebate program;

d. Toilet retrofits credits verified by June 30, 2010 by Water Budget Administration Office;

e. City of Santa Fe Water Division's water right acquisition program;

f. Water conserved by City-initiated conservation programs; and

g. Water conserved via a conservation credit program.

New water demand on the City water system requires a water credit from the Water Bank in an equal amount, with the goal being no "net" demand on the water system. As defined by ordinance, development projects that require less than 10 acre-feet of water (residential), less than 7.5 acre-feet of water (mixed use), or less than 5 acre-feet (commercial) can acquire the necessary water from the alternatives "a", "b", "c", and "d" above. All projects with larger water demands must use option "a" or "b". Water credits generated through City efforts (i.e. "e" and "f " previously listed) are available for the water needs of the City (e.g. new parks, municipal buildings, convention center, etc.) or City-supported projects (e.g. affordable housing dwelling units, Santa Fe River). Once water is allocated to a project from a water credit account, the appropriate "debit" is made from the appropriate account in the water bank.

By the end of 2012, 40.73 acre-feet of water was available for allocation to the City's needs or City supported efforts (e.g. new parks, municipal buildings, convention centers, affordable housing dwelling units, and the Santa Fe River). An additional 5.34 acre-feet was available for sale to small developers due to water conservation savings. For 2013, the affordable housing unit credits are adequate. In 2013, 3.75 acre-feet was allocated to affordable housing units, leaving an ending balance of 33.16 acre-feet.

Water Bank Accounting

Affordable Housing Offsets	2009	2010	2011	2012	2013
Initial balance	-5.20	51.67	45.46	40.96	36.91
Governing body allocations to affordable housing	59.32	0.00	0.00	0.00	0.00
Annual dedications to affordable housing	-2.45	-6.21	-4.50	-4.05	-3.75
End-of-year affordable housing water credit pool balance, comprised of water rights and conserved water	51.67	45.46	40.96	36.91	33.16
Developer Offsets	**2009**	**2010**	**2011**	**2012**	**2013**
Initial balance	0.00	0.00	26.28	25.45	16.05
Conservation credits generated	0.00	32.46	9.04	7.15	5.80
Annual dedications to private projects	0.00	-6.19	-9.87	-16.54	-16.51
City revenue from sales		$100,000	$160,000	$270,000	$270,000
End-of-year conserved water credit reserve balance for sale to developers	0.00	26.28	25.45	16.05	5.34
City Water Rights Credits	**2009**	**2010**	**2011**	**2012**	**2013**
Initial balance	0.00	0.00	39.64	39.64	40.73
Deposits into water bank	9.62	39.64	0.00	1.09	0.00
Withdrawals (allocations by governing body)	-9.62	0.00	0.00	0.00	0.00
End-of-year balance of city owned water rights not yet allocated by governing body	0.00	39.64	39.64	40.73	40.73
Privately Owned Water Credits	**2009**	**2010**	**2011**	**2012**	**2013**
Initial balance	403.28	455.89	483.50	518.21	498.90
Deposits into water bank	62.74	33.32	41.75	0.00	31.05
Withdrawals (dedications by developers to their projects)	-10.13	-5.71	-7.04	-19.31	-40.00
End-of-year balance of privately owned water rights	455.89	483.50	518.21	498.90	569.95
Privately Owned Water Credits from old toilet retrofit program	**2009**	**2010**	**2011**	**2012**	**2013**
Initial balance	150.00	111.00	93.00	80.00	62.00
Withdrawls (dedications by developers to their projects)	-39.00	-18.00	-13.00	-18.00	-12.00
End-of-year balance of privately owned water rights	111.00	93.00	80.00	62.00	50.00

Water Bank Accounting table is in acre-feet except as noted

Water Bank Accounting, Table 3

Water Conservation Programs

Replacing inefficient water-using technologies with more efficient ones is one of the easiest ways to reduce demand, and the Retrofit, and Rebates and Incentives programs used over the years have greatly contributed to the City of Santa Fe's success in conserving water. These programs, and how the savings are credited have changed over the years, and they are inextricably interconnected with various regulations which have been adopted and revised in the same time period. The City's water customers continue to do an outstanding job of conserving water and reducing demand.

YEAR	PROGRAM	GPCD	Water Bank Contribution
2014	Rebate program expanded to include irrigation rebates		
2013		101	6.6061 acre/feet
2012	Rebate program continues with same devices, $ amounts as 2011	106	7.1504 acre/feet
2011	Rebate program modified due to changes in funding BDD becomes operational	107	9.0402 acre/feet
2010	New rebate program created using ARRA funding Offset requirements modified again, annual accounting required, Water Bank and Conservation Credit Programs established	104	32.4626 acre/feet
2009	City adopts OSE methodology for calculating GPCD Updates "Water Use in Santa Fe" to include additional customer sectors	103	67.26 acre/feet in water savings result from Rebate Program (2004-2009)
2008		105	
2007		104	
2006		105	
2005	1st Water Conservation & Drought Management Plan adopted by City, submitted to OSE Offset requirements modified by Water Rights Transfer Program	107	
2004	Rebate program introduced for washing machines, hot water recirculators and rain barrels	111	
2003	Toilet Retrofit Program created, resulting in retrofit of 10,000 toilets	117	
2002	New construction required to offset new demand and implement water conservation reqeuirements City distributes 1,000 75 gallon rain barrels	115	
2001		139	
2000		137	
1999		139	
1998		142	
1997	City passes Comprehensive Water Conservation Requirements Ordinance	139	
1996	City passes Emergency Water Regulations Ordinance	134	
1995	City of Santa Fe purchases water utility	168	

Water Conservation Programs History and Water Savings, Figure 9

The savings resulting from the Rebate Program are quantified and "deposited" into the City of Santa Fe Water Bank. These credits may be allocated to programs for affordable housing and for the "living river." Some credits may also be available for purchase by developers to offset new water demand within the City of Santa Fe. For the past several years, the Water Conservation Office has offered incentive rebates for the replacement of a variety of inefficient appliances and fixtures with high-efficiency models, including toilets, clothes washers, waterless urinals, and the installation of rain water harvesting equipment such as rain barrels and cisterns. Beginning January 1, 2010 the new and expanded incentives and rebates program was incorporated into the Water Bank, which will keep track of conserved water to offset new development.

More information can be found at the City of Santa Fe Water Conservation Office website at www.savewatersantafe.com.

The table below is a summary of the 2013 water conservation rebates that were deposited into the Water Bank and the conserved water savings in acre-feet (Ac/Ft).

2013

Commercial Use	Qty of Rebates		$ Amount per Rebate	Water Savings In Acre-Feet per Rebate	$ Amount for all Rebates	Water Savings In Acre-Feet for Water Bank	
Flushometer Valve HET			$500.00	0.033600	$0.00	0.0000	
Tank Type HET	1		$250.00	0.016800	$250.00	0.0168	
Hotel/Motel HET	361		$125.00	0.002200	$45,125.00	0.7942	
Water Free Urinal			$500.00	0.042000	$0.00	0.0000	
HE Clothes Washer replacement for top loading washer			$350.00	0.023300	$0.00	0.0000	
HE Clothes Washer exchange for any front loading Clothes Washer			$150.00	0.008800	$0.00	0.0000	
CPE (Commercial Process Efficiency)				0.450000	$0.00	0.0000	
				Sub Total	$45,375.00	0.8110	acre-feet
Residential Use							
HET Residential	267		$175.00	0.005300	$46,725.00	1.4151	
HE Clothes Washer replacement for top loading washer	172		$350.00	0.023300	$60,200.00	4.0076	
HE Clothes Washer exchange for any front loading Clothes Washer	30		$150.00	0.008800	$4,500.00	0.2640	
Rain Barrel 50-99 g	67		$12.00	0.000800	$804.00	0.0536	
Rain Barrel 100-199 g	2		$25.00	0.001500	$50.00	0.0030	
Rain Barrel 200-299 g	2		$50.00	0.003100	$100.00	0.0062	
		Gallons					
Water Harvesting	3	3040	$0.25	0.000015	$760.00	0.0456	
				Sub Total	$113,139.00	5.7951	acre-feet
				Total	$158,514.00	6.6061	acre-feet

2013 Water Conservation Rebates, Figure 10

Water Rate Structure

In 2007, the City of Santa Fe implemented a pricing structure that encourages water conservation. High water rates along with surcharges for water use beyond limits defined by the Governing Body have greatly influenced the success of Santa Fe's Water Conservation and Drought Management Programs.

In 2009, a 5-year series of rate increases was established to pay for the construction of the Buckman Direct Diversion, one of the City's newest sources of supply, as well as to cover increasing operating and maintenance costs for the water infrastructure which is a necessary part of a safe, reliable and sustainable water supply. The rates increased 8.2% per year, with 2013 marking the last year of rate increase.

Effective Date	First tier	Second tier
January 1, 2013	6.06 per 1,000 gallons	21.72 per 1,000 gallons

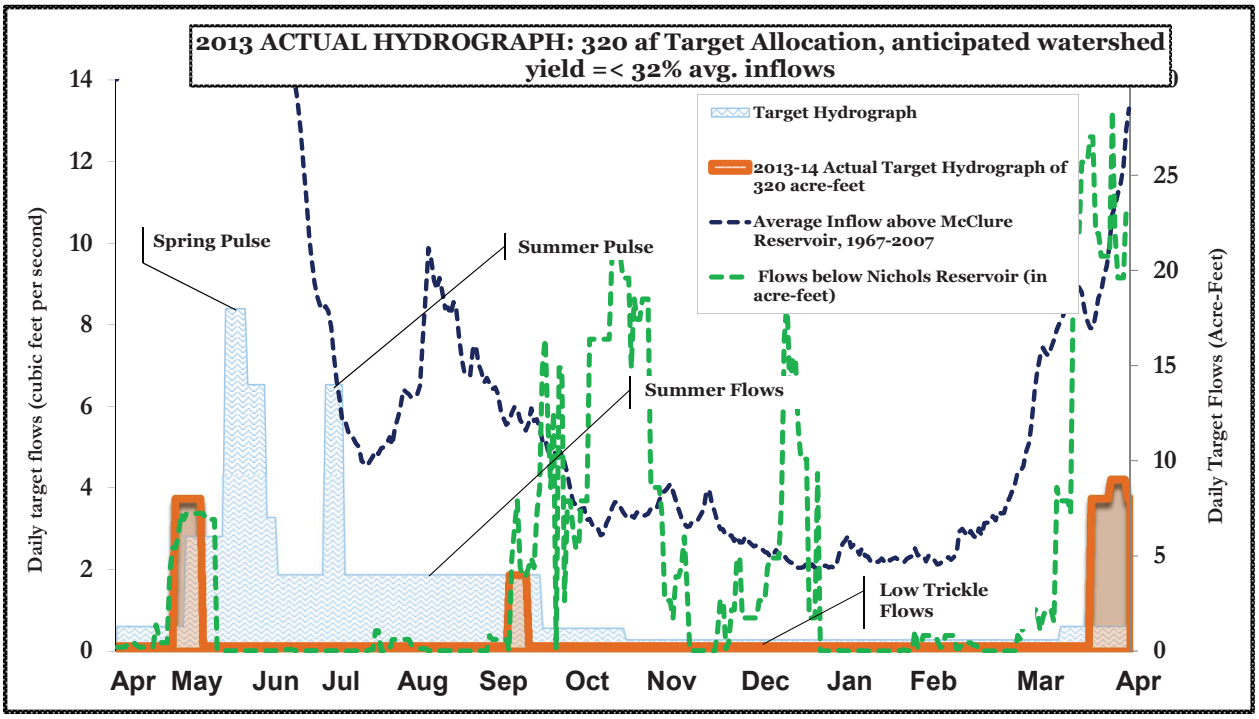
The rate structure adjusts seasonally to allow for additional water usage during the months when irrigation systems are typically in use. From May 1st to August 31st, residential water customers can use up to 10,000 gallons per month at the first tier rate, while the rest of the year only 7,000 gallons can be purchased at the first tier rate.

RESIDENTIAL TIERS by METER			
Meter Size	Months	Tier 1	Tier 2
All Meter Sizes	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
MULTI-FAMILY TIERS per DWELLING UNIT			
Meter Size	Months	Tier 1	Tier 2
All Meter Sizes	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
COMMERCIAL TIERS by METER			
Meter Size	Months	Tier 1	Tier 2
5/8" or 3/4"	September - April	0 - 7,000 gallons	Over 7,000 gallons
	May - August	0 - 10,000 gallons	Over 10,000 gallons
1"	September - April	0 - 14,000 gallons	Over 14,000 gallons
	May - August	0 - 20,000 gallons	Over 20,000 gallons
1 1/2"	September - April	0 - 28,000 gallons	Over 28,000 gallons
	May - August	0 - 40,000 gallons	Over 40,000 gallons
2"	September - April	0 - 56,000 gallons	Over 56,000 gallons
	May - August	0 - 80,000 gallons	Over 80,000 gallons
3"	September - April	0 - 112,000 gallons	Over 112,000 gallons
	May - August	0 - 160,000 gallons	Over 160,000 gallons
4"	September - April	0 - 203,000 gallons	Over 203,000 gallons
	May - August	0 - 290,000 gallons	Over 290,000 gallons
6"	September - April	0 - 448,000 gallons	Over 448,000 gallons
	May - August	0 - 640,000 gallons	Over 640,000 gallons
8"	September - April	0 - 798,000 gallons	Over 798,000 gallons
	May - August	0 - 1140,000 gallons	Over 1140,000 gallons

Residential Rate Structure by Tier, Table 4

Water for the Santa Fe River

AAs directed by ordinance, in mid- April of each year the annual target flow allocation is determined based upon projections for the year's anticipated watershed yield (Santa Fe River runoff forecasts). The 2013 flow target was set at 320 acre-feet based upon reduced moisture content in the upper Santa Fe watershed snowpack. However, due to late season monsoonal moisture and the beginning of construction on the infrastructure within Nichols Reservoir, the total flows to the Living River amounted to 1,564 acre-feet in 2013. Over the year, staff has engaged in a range of activities that are outlined in the Target Flow Administrative Procedures, e.g., establishing the annual hydrograph (flow pattern) for target flows; monitoring flows for time and distance traveled within the river channel; and record-keeping of target flow volumes. The Target Flow hydrograph has also been administered to provide flows that "support community events scheduled along the Santa Fe River" as provided for in the ordinance.

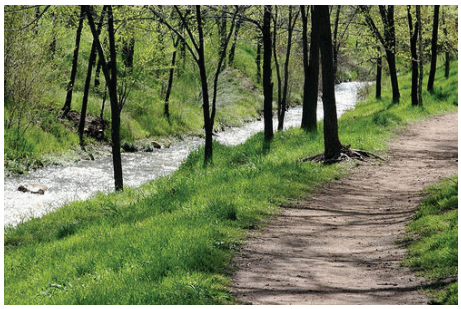


Santa Fe Living River Flow Hydrograph, Figure 11

As directed by the Target Flow ordinance, and outlined in the Target Flow administrative procedures, staff shall provide the governing body with an annual report that describes Target Flow operations and flow volumes for the preceding year, plus the planned Target Flow hydrograph for the coming year. This year's annual report on Santa Fe River Target Flow will be provided to the governing body in April, 2013.

Voluntary River Conservation Fund

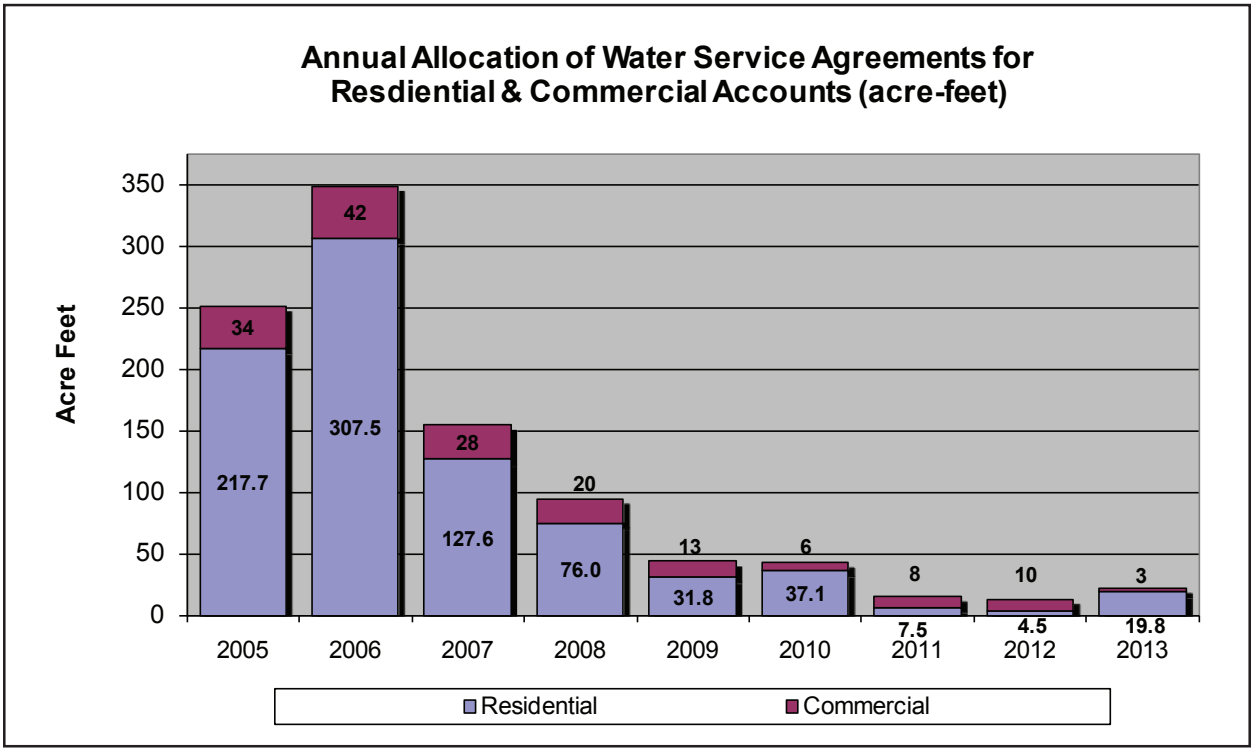
In accordance with City Code Chapter 25-8.1, the City of Santa Fe set up a voluntary river conservation fund for citizens to donate money to the City for the purchase, acquisition, and long-term leasing of consumptive water rights in quantities sufficient to sustain the total water demand for either a living Santa Fe River or for the preservation and continuation of sufficient water flowing through the Rio Grande. In 2013, volunteer donations and match provided by the City of Santa Fe, totaled approximately $254,919 for the River Fund.



The Santa Fe City Council has adopted an amendment to the Voluntary River Conservation Fund ordinance to expand the purposes for which the fund may be utilized. The amended ordinance expands "the use of the donated funds to include projects that will improve the flow of water in the Santa Fe River in ways that enhance the ecosystems of the Santa Fe River and its riparian corridor." Funds collected prior to March 16, 2013 shall be used as stipulated in the original ordinance.

Near-future Water Demands

Any entity seeking new water service within the City limits must complete either an Agreement for Metered Service (AMS) or an Agreement to Construct and Dedicated (ACD). An AMS is typically an agreement to connect a single meter or multiple meters, such as a subdivision or commercial centers, to the City of Santa Fe Water Division's distribution system. An AMS is typically used when the applicant is not seeking fire service or a main extension. An ACD is an agreement for fire service or a main extension for any size of meter. The applicant must specify the type of connection on the application from which staff establishes a water budget based on standard water usage criteria. The annual water allocation in AMS and ACD showed a sharp decrease from 2006-2007; demand for new services for 2013 stood at 22.8 acre-feet.

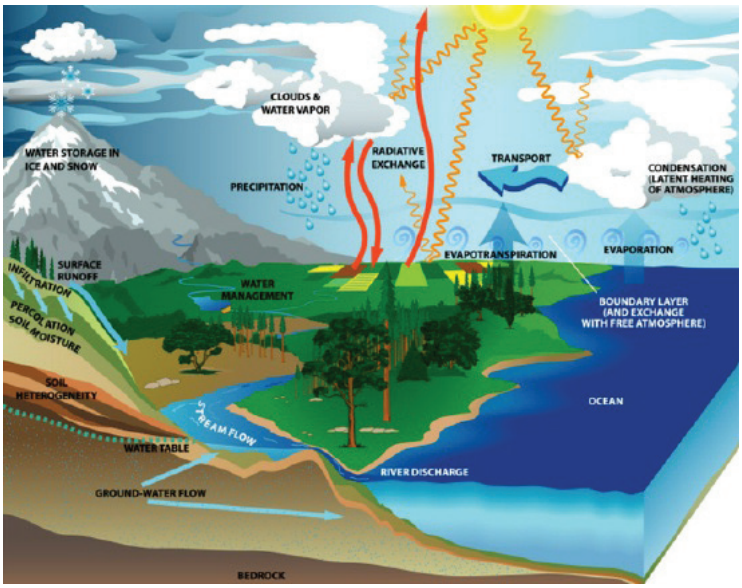


Annual Allocation of Water Services Agreements for Residential and Commercial Accounts, Figure 12

Wholesale Water Deliveries

The City has contracts to deliver wholesale water to the Santa Fe County Water Utility; however, with the successful completion of the Buckman Direct Diversion (BDD) facility in January 2011, the BDD facility has become the primary source of water for Santa Fe County's water utility. Las Campanas' potable water needs are being met by Santa Fe County's Water Utility under the terms stipulated in a bulk water agreement between Santa Fe County and Las Campanas. The 2005 City/County Water Resources Agreement provides Santa Fe County with up to 500 acre-feet per year of wholesale delivery water from the City of Santa Fe, with an additional 850 acre-feet available under drought and emergency conditions. In 2013, the Santa Fe County Water Utility took delivery of 240 acre-feet of water under the water resources agreement with the City of Santa Fe. The Santa Fe County Water Utility receives delivery of water from the City when the BDD facility is not producing drinking water due to poor water quality conditions in the Rio Grande.

WATER RESOURCES PLANNING

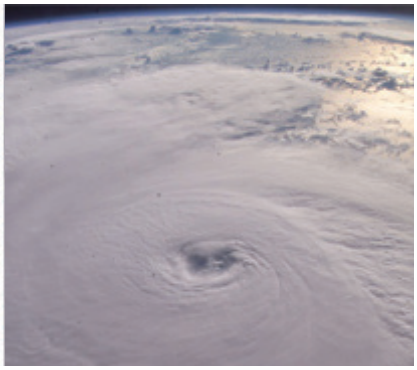


The Hydrologic Cycle and Water Management, Figure 13

The overall goal of water resources planning is to ensure that our water supplies are managed and protected in an efficient and responsible manner so that the City of Santa Fe's drinking water supply is safe, reliable, and sustainable. Planning efforts include long-range planning as well as specific near-term studies, reports and special projects. Weekly, monthly, and annual supply and demand forecasting and source of supply optimization are also included in the planning process. Part of the responsibility of water resources planning requires complex modeling and analysis of water resource and hydrologic topics. Ongoing planning necessitates the management of a suite of water rights purchasing, leasing, and permit compliance efforts. The management role of water resources planning involves administration of the City's "water bank," which seeks to tie land use development with the availability of requisite water rights. The other management responsibility is source water protection and watershed management under the City of Santa Fe's Municipal Watershed Management Program, protecting 40% of the City's drinking water supply. Water resources planning and management efforts cover a broad range of duties, including being a good steward of the precious and finite resource: water.

Preparing for Climate Change

The City of Santa Fe Water Division has the responsibility to prepare the municipal water utility for a range of conditions that might result from global climate change such as reduced alpine snowpack, earlier peak stream flows, reduction in total stream flow, increased evaporative losses, more extreme weather events, increased risk of catastrophic wildfire and increased water demand resulting from hotter, drier, and longer summers. Much of the future water supply planning that has been incorporated in the Long Range Water Supply Plan contemplates how the City's water supply needs can be met using our diverse water portfolio under a range of conditions, including drought, while continuing to strive for sustainability. The utility recognizes the need to address potential vulnerabilities in the water system under predicted conditions and to reduce our own greenhouse gas emissions. Using climate modelling and staying abreast of ongoing developments in climate change science are vital for the Water Division in order to understand the impacts that global warming will likely have on our water supplies and water utility and to communicate that understanding to the community.



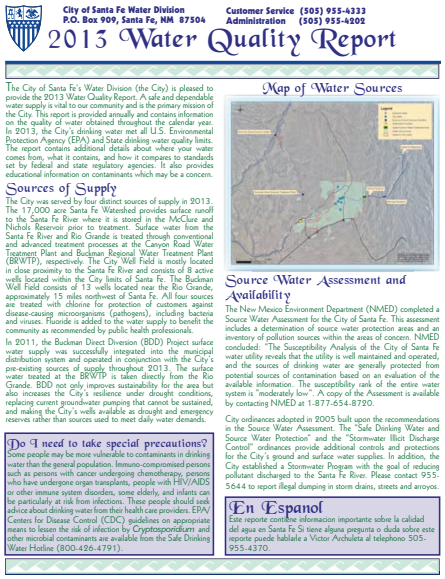
WATER QUALITY

The City was served by four distinct sources of supply in 2013. The 17,000 acre Santa Fe Watershed provides surface runoff to the Santa Fe River where it is stored in the McClure and Nichols Reservoir prior to treatment. Surface water from the Santa Fe River and Rio Grande is treated through conventional and advanced treatment processes at the Canyon Road Water Treatment Plant (CRWTP) and Buckman Regional Water Treatment Plant (BRWTP), respectively. The City Well Field is mostly located in close proximity to the Santa Fe River and consists of 7 active wells located within the City limits of Santa Fe. The Buckman Well Field consists of 13 wells located near the Rio Grande, approximately 15 miles northwest of Santa Fe.

All four sources are treated with chlorine which is used for disinfection and pathogenic microorganism removal. Surface water is further treated by the use of conventional and advanced water treatment processes including coagulation and flocculation, sedimentation, and multi-media or microfiltration. The City of Santa Fe is responsible for the Safe Drinking Water Act quality monitoring of all water introduced into its distribution system including the water received from the Buckman Regional Water Treatment Facility jointly run by the City of Santa Fe and Santa Fe County.

Monitoring Surface and Ground Water Quality

Since 2009, the City has been working with several regional partners in various collaborative efforts to characterize the occurrence of uranium, arsenic and nitrate in the regional groundwater. Over 500 private well samples have been collected and analyzed in the field and in local laboratories. In general the report shows nitrate levels above approximate background of 2mg/L in much of the municipal area, with a few wells showing nitrates above the drinking water standard of 10mg/L. The results of the 2009 study suggest that naturally-occurring uranium is present in the groundwater in the mountain zone, while arsenic is concentrated in wells along a series of north-south oriented faults in the center of the basin. More information is available on the website of the NM Environment Department at: nmenv.state.nm.us/fod/LiquidWaste/ documents/ SF.Co.09.water.test. results2.pdf.



City of Santa Fe Water Division
P.O. Box 909, Santa Fe, NM 87504

Customer Service (505) 955-4333
Administration (505) 955-4202

2013 Water Quality Report

The City of Santa Fe's Water Division (the City) is pleased to provide the 2013 Water Quality Report. A safe and dependable water supply is vital to our community and is the primary mission of the City. This report is provided annually and contains information on the quality of water obtained throughout the calendar year. In 2013, the City's drinking water met all U.S. Environmental Protection Agency (EPA) and State drinking water quality limits. The report contains additional details about where your water comes from, what it contains, and how it compares to standards set by federal and state regulatory agencies. It also provides educational information on contaminants which may be a concern.

Sources of Supply

The City was served by four distinct sources of supply in 2013. The 17,000 acre Santa Fe Watershed provides surface runoff to the Santa Fe River where it is stored in the McClure and Nichols Reservoir prior to treatment. Surface water from the Santa Fe River and Rio Grande is treated through conventional and advanced treatment processes at the Canyon Road Water Treatment Plant and Buckman Regional Water Treatment Plant (BRWTP), respectively. The City Well Field is mostly located in close proximity to the Santa Fe River and consists of 8 active wells located within the City limits of Santa Fe. The Buckman Well Field consists of 13 wells located near the Rio Grande, approximately 15 miles northwest of Santa Fe. All four sources are treated with chlorine for protection of customers against disease-causing microorganisms (pathogens), including bacteria and viruses. Fluoride is added to the water supply to benefit the community as recommended by public health professionals.

In 2011, the Buckman Direct Diversion (BDD) Project surface water supply was successfully integrated into the municipal distribution system and operated in conjunction with the City's pre-existing sources of supply throughout 2013. The surface water treated at the BRWTP is taken directly from the Rio Grande. BDD not only improves sustainability for the area but also increases the City's resilience under drought conditions, replacing current groundwater pumping that cannot be sustained, and making the City's wells available as drought and emergency reserves rather than sources used to meet daily water demands.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Map of Water Sources

Source Water Assessment and Availability

The New Mexico Environment Department (NMED) completed a Source Water Assessment for the City of Santa Fe. This assessment includes a determination of source water protection areas and an inventory of pollution sources within the areas of concern. NMED concluded: "The Susceptibility Analysis of the City of Santa Fe water utility reveals that the utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination based on an evaluation of the available information. The susceptibility rank of the entire water system is 'moderately low'." A copy of the Assessment is available by contacting NMED at 1-877-654-8720.

City ordinances adopted in 2005 built upon the recommendations in the Source Water Assessment. The "Safe Drinking Water and Source Water Protection" and the "Stormwater Illicit Discharge Control" ordinances provide additional controls and protections for the City's ground and surface water supplies. In addition, the City established a Stormwater Program with the goal of reducing pollutant discharged to the Santa Fe River. Please contact 955-5644 to report illegal dumping in storm drains, streets and arroyos.

En Espanol

Este reporte contiene informacion importante sobre la calidad del agua en Santa Fe Si tiene alguna pregunta o duda sobre este reporte puede hablarle a Victor Archuleta al telephono 505-955-4370.

The City continues its collaborative efforts to monitor the Buckman Well Field with the New Mexico Environment Department and Los Alamos National Laboratory to ensure that there is no evidence of contaminant migration from past and present Laboratory operations that could potentially threaten the regional aquifer which provides water to the City's Buckman Wells. All samples taken in 2013 from the Buckman Wells, and shallow aquifer monitoring wells within the Buckman Well Field near the Rio Grande, did not indicate the presence of contaminants which could be associated with Laboratory operations.

Operation of the Buckman Regional Water Treatment Plant commenced on January, 2011, at which time the facility started providing water from the Rio Grande directly to the City of Santa Fe's water system. All compliance samples taken by the City of Santa Fe and the New Mexico Environment Department's Drinking Water Bureau show that water treated by the facility is in compliance with all standards and provisions of the Safe Drinking Water Act during Calendar Year 2013.

The City participated in efforts during 2011 and 2012 with the New Mexico Environment Department to classify Santa Fe Lake and the two City water supply reservoirs, Nichols Reservoir and McClure Reservoir, under a separate "lakes only" classification with appropriate designated uses. The City also worked with the NMED Surface Water Quality Bureau in 2012 to classify formerly unclassified segments of the river throughout its "urban" reach and reclassify a previously classified segment below the City's wastewater treatment facility. The

City of Santa Fe 2013 Water Quality Table

Regulated Compliance Monitoring

Contaminant	Units	MCL	MCLG	City Well Field[d]	Sample Year	Buckman Tank[e]	Sample Year	Canyon Road WTP	Sample Year	Buckman RWTP	Sample Year	Violation	Typical Source
Inorganic Contaminants													
Arsenic	ppb	10	0	4.6 (1..2-4.6)	2011	1.6	2011	ND	2013	ND	2013	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium	ppm	2	2	0.8 (0.24-0.8)	2011	0.073	2011	ND	2013	ND	2013	No	Discharge from drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	ppb	100	100	ND	2011	ND	2011	ND	2013	1	2013	No	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	ppm	4	4	0.18 (0.13 - 0.18)	2011	0.25	2011	0.12	2013	0.49	2013	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Selenium	ppb	50	50	1.7 (ND - 1.7)	2011	ND	2011	ND	2013	ND	2013	No	Discharge from steel/metals factories; Discharge from plastic and fertilizer factories
Nitrate [as N]	ppm	10	10	7.1 (2.7 - 7.9)	2013	0.14	2013	ND	2013	0.19	2013	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion from natural deposits
Radioactive Contaminants 2011/2013													
Gross Alpha Emitters	pCi/L	15	0	1.3 (1.2-1.3)	2013	0.1	2013	0.6	2011	0.9 (0 - 0.9)	2011	No	Erosion of natural deposits
Gross Beta/Photon Emitters	pCi/L	50[a]	NA	4.4 (1.1-4.4)	2013	2.1	2013	0.7	2011	3.3 (1.9 - 3.3)	2011	No	Decay of natural and man-made deposits.
Radium 226/228	pCi/L	5	0	.45 (.20-.45)	2013	0	2013	0	2011	0.42 (0-.42)	2011	No	Erosion of natural deposits
Uranium	ppb	30	0	3.0 (1.0-3.0)	2013	1	2013	ND	2011	1.0 (ND - 1.0)	2011	No	Erosion of natural deposits;
Surface Water Contaminants													
Turbidity[c] (highest single measurement)	NTU	TT = 0.3	0	NA	NA	NA	NA	0.62	2013	0.4	2013	No	Soil Runoff
Turbidity[c] (lowest monthly % meeting limits)	NTU	TT = % <0.3 NTU	0	NA	NA	NA	NA	99.4%	2013	99.2%	2013	No	Soil Runoff
Total Organic Carbon[b] (TOC)	ppm	TT (35%-45% Removal)	NA	NA	NA	NA	NA	44% to 88% removal[b]	2013	NA	NA	No	Naturally present in the environment

Notes:

a. EPA considers 50 pCi/L to be the level of concern for beta particles.

b. Alternative compliance criteria used to meet TOC removal requirements.

c. Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

d. City wellfield: Alto, Agua Fria, Ferguson, Osage, Santa Fe, St. Mikes & Torreon.

e. Buckman Wells 1-13 and Northwest Well.

Key to Units, Terms and Abbreviations

ppm: parts per million, or milligrams per liter (mg/l)

ppb: parts per billion, or micrograms per liter (ug/l)

TT: A Treatment Technique standard was set instead of Maximum Contaminant Level

NA: Not Applicable

ND: Not Detected

NTU: Nephelometric Turbidity Units

pCi/l: picocuries per liter (a measure of radioactivity)

2013 Water Quality Required Compliance Monitoring, Table 5

The addition of another surface water source to the City's water supply and less frequent use of the City's well fields has resulted in the lowering of some naturally occurring contaminants.

classifications proposed by NMED and the City were adopted by the New Mexico Water Quality Control Commission on November 12, 2012. These new classifications will better serve the citizens of Santa Fe in protecting both the existing and attainable uses of the river. This is especially important in light of the Santa Fe River Living River Ordinance target flows planned by the City now and into the future which, in part, have resulted in flow patterns more characteristic of intermittent streams. The upper intermittent portions of the river below Nichols Dam will now be protected for Coolwater Aquatic Life and Primary Contact Uses. The ephemeral reach below the Guadalupe Street bridge crossing will be protected for primary contact uses and limited aquatic life uses. The segment from Santa Fe's wastewater treatment plant outfall to the boundary of Cochiti Pueblo will now be classified for Coolwater Aquatic life and Primary Contact uses. The new stream classifications assigned to the urban reach of the Santa Fe River by the NMED will probably also result in more frequent monitoring of water quality by both the City and State and increased controls on nonpoint and storm water contributions of contaminants to the River in the future.

Drinking Water Quality

The City of Santa Fe's drinking water continues to be of excellent quality. The addition of another surface water source to the City's water supply and less frequent use of the City's well fields has resulted in the lowering of some naturally occurring contaminants and constituents such as arsenic, and calcium & magnesium hardness. The following table (City of Santa Fe 2013 Water Quality Table) lists contaminants which have associated Primary Maximum Contaminant Levels (MCLs) that are regulated by the U.S. Environmental Protection Agency (EPA) and New Mexico Environment Department and were detected in the City's drinking water samples collected by the City and New Mexico Environment Department (NMED) in 2013. The compounds below represent a small fraction of the substances tested; testing is required for over eighty contaminants. All other EPA and NMED regulated contaminants were not detected in sampling performed during 2013. Drinking water may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that water poses a health risk, especially when they are at levels below the EPA's MCLs.

Microbial and Disinfection Byproducts Rule

The Microbial and Disinfection Byproducts Rules (MDBPs) is a set of interrelated regulations that address risks from microbial pathogens and disinfectants/disinfection byproducts (DBPs). The rule focuses on public health protection by limiting exposure to DBPs (known carcinogens), specifically total trihalomethanes (TTHM) and five haloacetic acids (HAAs), which can form in water through the use of disinfectants used to control microbial pathogens.

In previous years the City selected sampling locations that distinguished between production sources and thus, samples from distribution could be referenced back to a particular source. During 2013 however, the City's various sources of drinking water supply were mixed in the distribution system throughout the year and therefore samples are more representative of the water system as a whole, rather than by individual source.

All quarterly sampling performed by the City in 2013 pursuant to the regulatory requirements of the Safe Drinking Water Act indicate that the Santa Fe Drinking Water System readily meets all EPA standards for TTHMs and HAAs.

Lead and Copper Rule

Tests for lead and copper are taken from customer taps located throughout the City once every three years. The most recent round of lead and copper testing took place in August of 2012. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing.

The results of the City's 2012 lead and copper monitoring determined that all households sampled were below both "action level" concentrations and Maximum Contaminant Levels mandated under the Safe Drinking Water Act for lead and copper.

More information about contaminants in the City's public water supply and the potential health effects of specific can be obtained by calling the City at 955- 4232 or the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791), or visiting www.epa.gov/safewater. The City's water quality report for 2013, and previous years, is also available at the City of Santa Fe Water Division.

Contaminant	Units	MCL	MCLG	Buckman RWTP	Sample Date	Violation	Typical Source
Barium	ppm	2	2	"0.061 (0.039 - 0.061)"	28-Nov-12	No	Discharge from drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Ethylbenzene	ppb	700	700	0.11	08-Apr-12	No	Discharge from petroleum refineries
Toluene	ppm	1	1	0.000071	08-Apr-12	No	Discharge from petroleum factories
Xylenes (Total)	ppm	10	10	0.000529	08-Apr-12	No	Discharge from petroleum factories; Discharge from chemical factories
Fluoride	ppm	4	4	"0.32 (0.21 - 0.32)"	28-Nov-12	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
trichloroethlene	to be com-pleted						
lead	to be com-pleted						
Nitrate (as N)	ppm	10	10	"0.17 (0.058 - 0.17)"	12-Apr-12	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion from natural deposits

Voluntary Primary Contaminant Monitoring at BRWTP, table 6

Contaminant	SECONDARY STANDARD	Buckman RWTP	Sample Year
Aluminum	0.05 to 0.2 mg/L	0.015	2012
Chloride	250 mg/L	31	2012
Copper	1.0 mg/L	0.0031	2012
lead			
Fluoride	2.0 mg/L	0.32	2012
Manganese	0.05 mg/L	0.0049	2012
pH	6.5-8.5	8.02	2012
Sodium	NA	20	2012
Total Dissolved Solids	500 mg/L	233	2012
Contaminant	Unit of measurement	Buckman RWTP	Sample Year
Americium-241	pCi/L	0.326	2012
Strontium-90	pCi/L	0.12	2012
Tritium	pCi/L	37	2012
Uranium-234	pCi/L	0.352	2012
Uranium-238	pCi/L	0.17	2012

Voluntary Secondary Contaminant Monitoring at BRWTP, table 7

Unregulated Contaminant Monitoring Rule

The third Unregulated Contaminant Monitoring Rule (UCMR 3) was signed by EPA Administrator, Lisa P. Jackson on April 16, 2012. The UCMR 3 requires monitoring for 30 contaminants using EPA and/or consensus organization analytical methods during 2013-2015. EPA, the States, laboratories and public water systems are obligated to participate in UCMR 3. The City of Santa Fe Water System has been scheduled by the EPA to begin its year- long monitoring for the Unregulated Contaminant rule in March 2015.

The UCMR design divides contaminants into three types of monitoring. UCMR 3 includes monitoring under each of the three lists, as follows:

- **Assessment Monitoring** uses common analytical method technologies used by drinking water laboratories. For UCMR 3, all public water supplies serving more than 10,000 people and 800 representative public water supplies serving 10,000 or fewer people will monitor for 21 List 1 contaminants during a 12-month period from January 2013 through December 2015.
- **Screening Survey** monitoring uses specialized analytical method technologies not as commonly used by drinking water laboratories. All public water supplies serving more than 100,000 people, 320 representative public water supplies serving 10,001 to100,000 people and 480 representative public water supplies serving 10,000 or fewer people are required to monitor for seven List 2 contaminants during a 12-month period from January 2013 through December 2015.
- **Pre-Screen Testing** uses newer method technologies not as commonly used by drinking water laboratories. For UCMR 3, EPA will select 800 representative public water supplies serving 1,000 or fewer people that do not disinfect. Those public water supplies with wells that are located in areas of karst or fractured bedrock, will participate in monitoring for two List 3 viruses during a 12-month period from January 2013 through December 2015.

UTILITY MANAGEMENT

System Maintenance

The City of Santa Fe Water Division, Transmission & Distribution section (T&D) maintains existing pipelines, installs new pipelines and accepts new developments throughout the city. The T&D section proudly was recognized and received an award from the New Mexico Occupational Health and Safety Bureau (OSHA) for outstanding job safety in confined space entry. In 2013 T&D installed and repaired 82 service lines. The T&D section completed the replacement of 7 large meters, 444 meter exchanges, inspected the 102 pressure reducing valves (PRV) quarterly and preformed 243 new meter installs. Also during 2013, the T&D section maintained and operated 450 mainline isolation valves and replaced 15 mainline valves. Mainline valve maintenance is necessary to assure the proper shut down during emergency situations. Replacing meters is required to record accurate water use and loss. During the winter months of 2013, T&D crews serviced 28 frozen meters and service lines. Furthermore, over the past year T&D responded to over 1182 trouble calls, all of which were completed. The Water Division's Transmission and Distribution department has always worked hard to provide courteous and reliable customer service.

Water Utility Energy Efficiency Program

The City of Santa Fe water utility typically incurs approximately $1.4 million in electricity and $200,000 in gas costs annually. The City's current on-peak energy usage is 35-40%. In an effort to reduce on-peak energy usage, the Water Division designed, instrumented, and activated an energy efficiency program. This construction phase of this project was completed in August 2012, with funding from the EPA's Drinking Water State Revolving Fund. Since that time the program monitors real-time energy usage at 28 major pumping sites within the water utility and, to the extent possible, automates pump/motor controls to prioritize energy usage in off-peak periods while maintaining minimum water tank reservoirs.

PNM Peak Saver

This is an electrical Demand Management Program designed to relieve PNM's Grid during Peak Periods. It is a no-cost voluntary program that pays performance-based incentives to participants without penalties of any kind. Through the use of real time power monitoring, City of Santa Fe and EnerNOC can monitor and measure the electrical consumption at the facility. The Peak Saver season is from Jun 1- Sept 30 each year. Weather events are most likely to be called in the afternoon on the hottest days of the year and for the last four hours of the day. The City Buckman Well Field participated in the PNM Peak Saver program in 2013 during which time there were over 20 PNM Peak Saver events which resulted $30,000 in revenue for the City.

In the future, as the water utility develops more water storage capacity and the Hospital Tank returns to service, it is expected that this program can reduce the water utility's on-peak usage to 10- 15%, which will result in substantial operational cost savings. The Buckman Direct Diversion project in 2011 had 43% of its total usage as on-peak usage. In 2013, it had already been reduced to 28%, boosting the off-peak usage to 72%.

In an effort to reduce on-peak energy usage, the Water Division designed, instrumented, and activated an energy efficiency program that monitors real-time energy usage.

Hydroelectric Facility

This facility, which became operational on June of 2011, captures the energy of the finished water flowing from the Canyon Road Water Treatment Plant 2 miles downhill to the 5 million gallon tank located at Camino Cabra and Upper Canyon Rd. The water pressure in the 20 inch pipeline resulting from the 180 ft of net head is capable of generating 100 kilowatts of energy using a pump turbine system, which is net-metered with the

St. John's booster station. Renewable energy provided by the system offsets energy the City would otherwise need to purchase from PNM, thereby effectively reducing water utility operating costs at this site. In 2012 the hydroelectric facility generated 30,430 kWh of renewable energy, which saved the City approximately $2,890.85 in operational expenses, based on average energy costs (on- and off-peak rate).

In addition to operational cost savings, the City has executed a Renewable Energy Credit (REC) purchase agreement with PNM for RECs generated from the hydroelectric facility. This agreement generated an additional $608.60 in revenue for the City this past year.

Buckman Direct Diversion Solar Projects

In operation since February 2011, the first BDD Water Treatment Plant Solar Project produces up to 1 megawatt DC of solar electrical energy and provides approximately 1/3 the energy required to run the BDD Water Treatment Plant.

The first BDD Water Treatment Plant Solar project has been operating since February 2011. The first facility produces up to 1 megawatt DC of solar electrical energy and provides approximately 1/3 the energy required to run the BDD Water Treatment Plant. Under a Power Purchase Agreement, BDD buys power generated form this privately owned and operated solar facility.

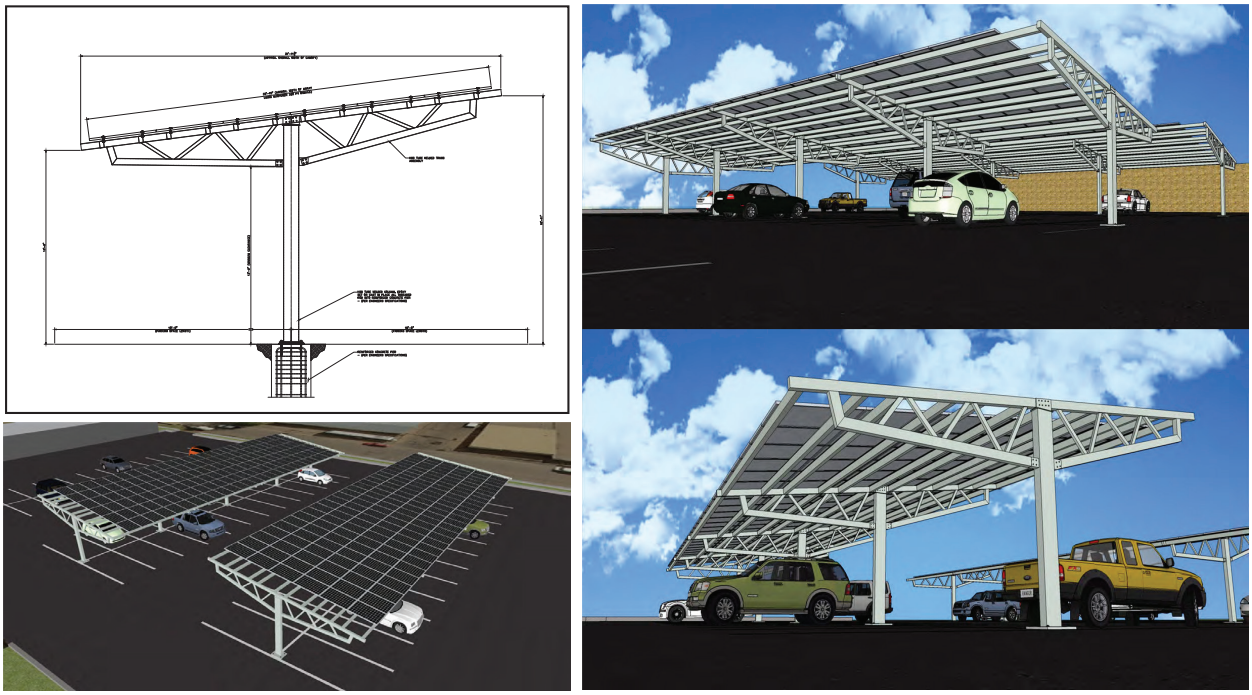
As of the end of 2012, the solar system had generated 2.19 million kWh of renewable energy, for which the BDD paid the solar power provider $339,000. This cost was offset by the REC payment that BDD received from PNM, amounting to $328,650. All told, BDD paid approximately $11,000 ($0.05/kWh) for the 2.19 million kWh generated by the solar facility in 2012. Without the solar facility, this same energy would have cost BDD approximately $180,000. The second PV system, BDD Booster Station 2A Solar Project, was completed in June 2014 and includes high efficiency photovoltaic panels on an 8 acre area adjacent to the Buckman Direct Diversion Booster Station 2A.

The 1.5 megawatt AC PV solar system will have an output of 88,644,253 kWhr over 30 years and provide a financial benefit of $4,589,886 over 30 years, accounting for all O&M costs, loan financing costs, Renewable Energy Credit revenue, energy bill savings an BLM lease costs. The total development cost for the solar PV system, including construction management, was about $4,750,000

BDD Water Treatment Plant Solar Project, Figure 14

Water Division Solar Projects

The Water Division has also received approval to install an 84KW photovoltaic (PV) system at its administration office located at 801 W. San Mateo. The office which houses both Water Division and Utility Billing Division staff will have nearly 90 percent of all energy needs met through the PV system. The PV system should be operational by January 2015.



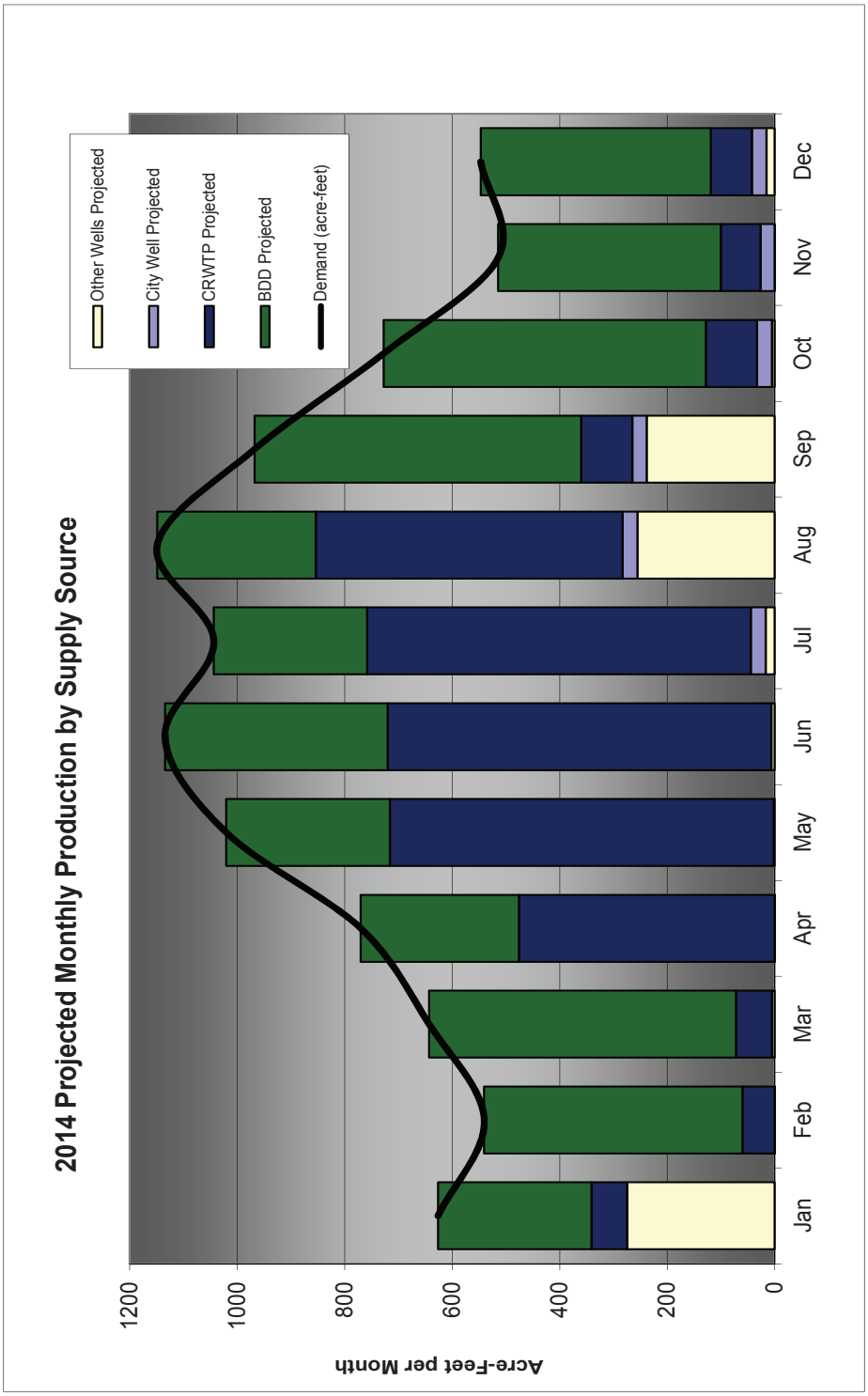
Proposed Photovoltaic System at Water Division, Figure 15

Fiscal Responsibility

The Water Division is committed to managing the water utility to maintain fiscal responsibility to its customers. This is achieved by an annual review of the finance plan and the capital improvement plan (CIP) with the goal of maintaining a high level of service while increasing effectiveness and efficiency. In early 2009, the City Governing Body approved a water rate increase in the amount of 8.2% for five consecutive years. The water utility rate increase was needed to pay for the Buckman Direct Diversion Project, a key component in providing the community with a safe and reliable supply of drinking water, and approximately $100 million of infrastructure improvements. The last rate increase went into effect July 1, 2013. This rate increase coupled with the approved finance plan and the CIP, allows the Water Division to not have to increase water rates until possibly Fiscal Year 2019-2020.

2014 WATER DEMAND AND SUPPLY PICTURE

In the chart below, the 2014 projected demand (black line)is approximately 9,700 acre-feet over the 12 month period. The BDD annual production is projected to be 4,980 acre-feet, Canyon Road Water Treatment Plant is projected to produce 3,720 acre-feet, the City Wells are projected to produce 163 acre-feet, and Other Wells are projected to produce 819 acre-feet over the 12 month period.



2014 Projected Monthly Production by Supply Source, Figure 16