2011 Annual Water Report

McClure Reservoir 2011

City of Santa Fe
March 2012

Sangre de Cristo Water Division

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- Water Budget Administrative
- ITT Department
- City Attorney's Office
- Wastewater Division
- Land Use Dept
- Utility Billing Division

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Introduction

As water resources in northern New Mexico become increasingly limited and the region's population continues to grow, the improved understanding of water-related issues is imperative. As one of the largest municipal water suppliers in the state, the City of Santa Fe water utility delivers billions of gallons of water each year to customers in the greater Santa Fe urban area.

The purpose of this report is to provide the Santa Fe community with an annual report that summarizes the state of the municipal water utility and the water resources we depend upon. This report compiles and summarizes information about the City's water utility, including water supply, water rights, offsets and credits, conservation, precipitation, types of water use, water quality, system maintenance, energy use, future water needs, climate change, mission and goals, and utility financial information.

This report fulfills the reporting requirements of the City of Santa Fe Ordinance 2009-38 "Water Budget Requirements." The information presented within this report contains water data through December 2011, Year 2012 projections, and a snapshot of future needs. Averages from previous years are included for comparison. For the sake of brevity, not all the supporting data is included here. More information is available on the City's website at www.santafenm.gov or by contacting the water utility directly.

Santa Fe Watershed 1926

2012 Water Demand and Supply Projections

This page summarizes the City's anticipated water picture for 2012. Details on how this year's water picture relates to the past can be found in subsequent sections of this report.

Anticipated Demand (Acre-feet)

Total: 10,000 acre-feet		10,264
City Customers:		10,124*
Water Deliveries:	Santa Fe County	100
	Las Campanas	20
	Agua Fria Village	15
	Hyde Park Estates	5

*assumes minimum of 100 gallons per capita per day and little new demand

Anticipated Supply Source (Acre-feet)

Santa Fe River Use	2,217
City well use	1,920
Buckman well use	900
Buckman Direct Diversion	5,230

Storage Projected for Dec, 2012 (Acre-feet)

Target end of year storage in municipal reservoirs	1,576
Total Anticipated stored SJC Water :	
El Vado Reservoir	0
Abiquiu Reservoir	6,000
Elephant Butte Reservoir	18,800
Total	**29,676**

Anticipated Santa Fe River Flows (Acre-feet)

Santa Fe River bypasses:		1,000
Effluent Releases to Santa Fe River		4,000

Anticipated 2012 Offset Requirements (Acre-feet)

Rio Grande	1,400
Rio Tesuque	37
Rio Nambe-Pojoaque	65
La Cienega Area	1

Private Wells

Estimated Number of Private Wells within the City limits		600
Anticipated number of replacement wells drilled		0
Anticipated number of new private wells		0

2012 basic 5/8" meter residential water rate

Monthly Service Charge	$17.02
Sept-April	$5.60/1,000 gallons for first 7,000 gallons, $20.07/1,000 gallons thereafter
May-Aug	$5.60/1,000 gallons for first 10,000 gallons, $20.07/1,000 gallons thereafter

Water Demand

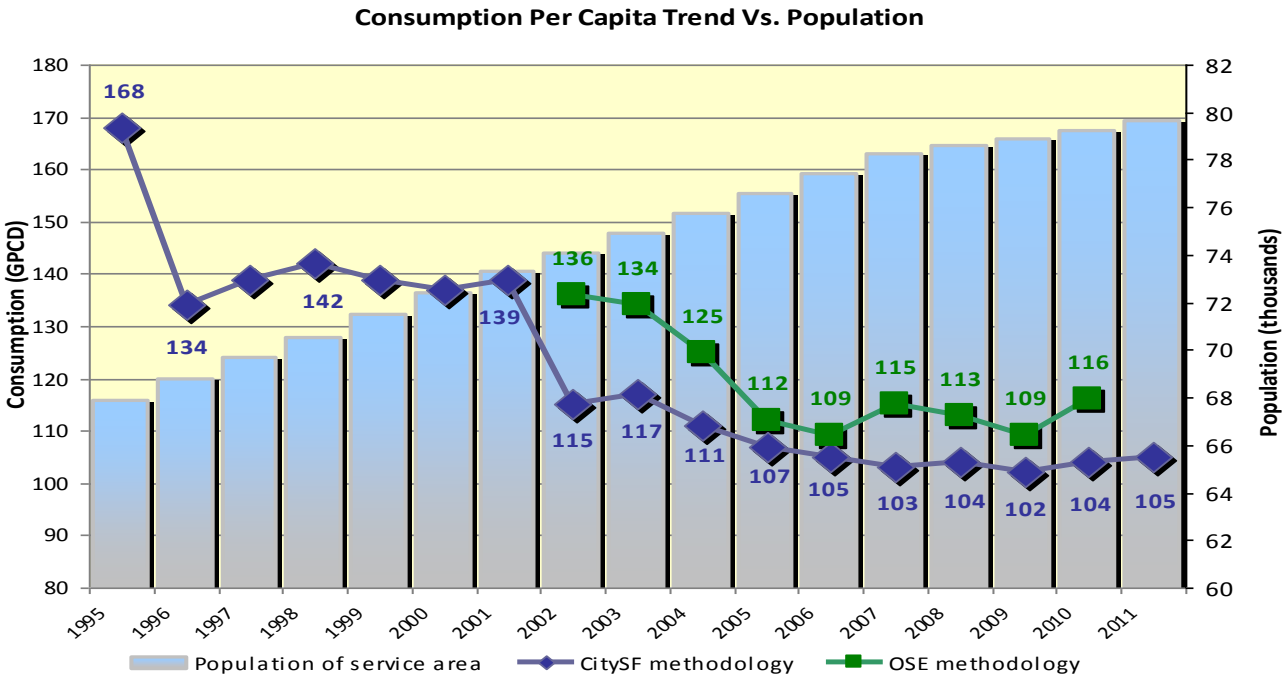
Per Capita Consumption

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 number of people served by the amount of water produced. In 2011, the City of Santa Fe's water utility customer demand of 9,368 acre-feet resulted in utility-service-area gpcd of 105 (based only upon the City's water utility methodology), one of the lowest of any comparable city in the country. The calculated gpcd does not include wholesale deliveries to Las Campanas and Santa Fe County (see section on Wholesale Water Deliveries for use numbers by these customers).

The chart below shows gpcd results calculated with two different methodologies. The method used by the City's water utility for the past fifteen years derives at the service area population using the 2010 Census population data (adjusted for households that rely solely on domestic well water) and updates it based on growth rates from annual housing permits; however, the year 2011 uses the 2010 Census population data. The New Mexico Office of the State Engineer (OSE) method bases the population served from the number of water utility residential customers, multiplied by a Census-derived vacancy rate, now based upon 2010 data, and a Census-based residents per household value. The OSE method also accounts for institutional (colleges, retirement homes, etc) uses. The OSE gpcd method for 2011 was not available at the time of this report.

Water Use by Sector

In 2009, The City conducted a detailed study on water use by sector (e.g. single family, apartment, office, medical, religious, schools, parks). The report, ***Water Use In Santa Fe*** *(2009)*, is available on the City's website at: http://www.santafenm.gov/DocumentView.aspx?DID=5017.



Water Bank

The City has a series of ordinances that require all new projects to acquire water for their new water demand. The options available for the acquisition of water are numerous, and the City's water bank tracks the inflows (credits), outflows (debits), ownership, and designated use. For detailed information, please refer to ordinances 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. the 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. the 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. the acceptance of toilet retrofits credits verified by June 30, 2010 by Water Budget Administration Office,
e. the Water Division's water right acquisition program,
f. water conserved by City-initiated conservation programs (2002 WaterWise 8000 toilet exchange, 2002-2009 washing machine rebate program), and
g. water conserved via a conservation credit program.

Any new water demand on the City water system requires a water credit from the credit bank in an equal amount. 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' above) are available for the water needs of City (e.g. new parks, municipal buildings, convention centers) 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.

For the end of 2011, 39.64 acre-feet of water is 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).

For 2011, the affordable housing unit credits are robust. In 2011, 4.50 acre-feet was allocated to affordable housing units, leaving an ending balance of 40.96 acre-feet. If, as in 2011, 47 homes are built a year under the Santa Fe Homes Program (SFHP) and Housing Opportunity Program (HOP) using approximately 8 acre-feet per year, the affordable housing units credit pool will last through 2016.

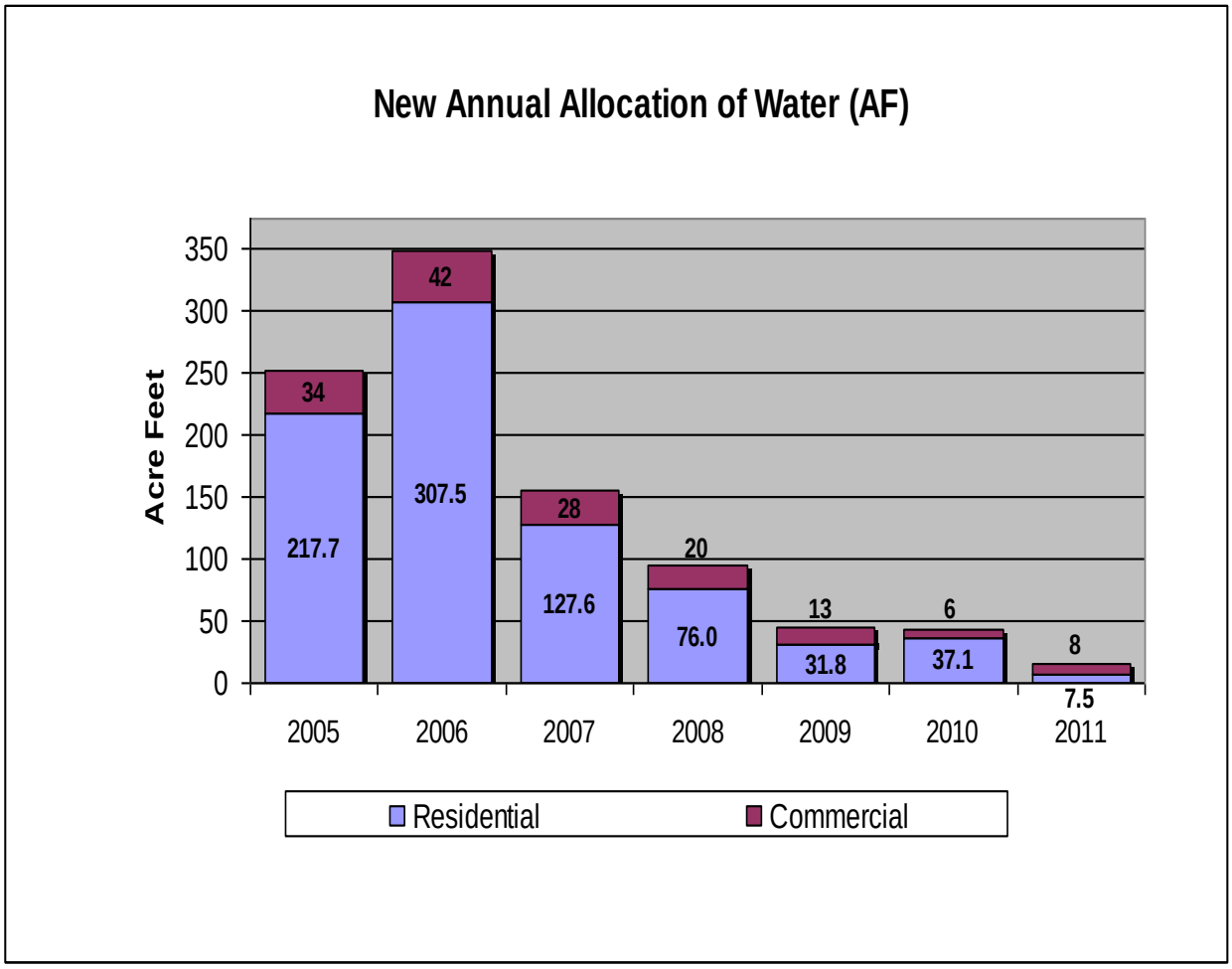
WATER BANK ACCOUNTING	In Acre-Feet/Year (AFY)		
Affordable Housing Unit Credits	**2009**	**2010**	**2011**
Initial Balance (AFY)	-5.20	51.67	45.46
Governing Body Allocations to Affordable Housing	59.32	0.00	0.00
Annual dedications to Affordable Housing	-2.45	-6.21	-4.50
End-of-Year Affordable Housing Water Credit Pool Balance (AFY), comprised of Water Rights and Conserved Water	51.67	45.46	**40.96**
Water Conservation Rebate Credits			
Initial Balance (AFY)	0.00	0.00	26.28
Water Conservation Rebate Credits Generated	0.00	32.46	9.04
Annual dedications to Private Projects for Offsets	0.00	-6.19	-9.87
End-of-Year Conserved Water Credit Pool Balance (AFY) for sale to developers	0.00	26.28	**25.45**
City Water Rights Credits			
Initial Balance (AFY)	0.00	0.00	39.64
Deposits into Water Bank	9.62	39.64	0.00
Withdrawls (Allocations by Governing Body)	-9.62	0.00	0.00
End of Year Balance of City owned water rights not yet allocated by Governing Body (AFY)	0.00	39.64	**39.64**
Privately Owned Water Credits			
Initial Balance (AFY)	403.28	455.89	483.50
Deposits into Water Bank	62.74	33.32	41.75
Withdrawls (Dedications by developers to their projects)	-10.13	-5.71	-7.04
End of Year Balance of Privately owned water rights (AFY)	455.89	483.50	**518.21**
Privately Owned Water Credits from old toilet retrofit program			
Initial Balance (AFY)	150.00	111.00	92.65
Withdrawls (Dedications by developers to their projects)	-39.00	-18.35	-11.88
End of Year Balance of Privately owned water rights (AFY)	111.00	92.65	**80.78**

Our 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 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 make an estimate on the amount of water that will be used.

The annual allocation in AMS and ACD showed a sharp decrease from 2006-2007 and in 2011 demand for new services dropped from 43 acre feet to 16 acre feet.

In November of 2009, the water budget numbers were adjusted to reflect current data on water use by sector in Santa Fe (for more information see http://www.santafenm.gov/DocumentView.aspx?DID=5017).
Every new demand placed on the City system is offset through purchase of water rights or water conservation credits from the Water Bank, as established by Ordinance 2009-38.



AMS and ACD Water Service Agreements														
	2005		2006		2007		2008		2009		2010		2011	
Residential	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**	**Units**	**Demand (AFY)**
Single Family Residence	587	141.8	965	246.4	307	68.8	187	43.2	5	1.3	198	36.9	12	1.9
Apartment/Condominium	153	32.1	285	59.9	185	38.9	116	24.4	0	0.0	0	0.0	10	1.6
Guesthouse	77	9.2	9	1.1	6	0.7	5	0.6	2	0.2	0	0.0	1	0.1
Mobile Home	0		1	0.2	0		0	0.0	133	30.3	1	0.2	0	0.0
Senior Complex	246	34.4	0		137	19.2	56	7.8	0	0.0	0	0.0	28	3.9
Subtotal Residential:	**1063**	**217.7**	**1260**	**307.5**	**635**	**127.6**	**364**	**76.0**	**140**	**31.8**	**199**	**37.1**	**51**	**7.5**
Commercial	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**	**sq. ft.**	**Demand (AFY)**
Office (Non-medical)	44355	2.7	22115	1.3	60923	7.3	83717	4.7	51452	3.1	1600	0.1	22249	1.6
Office (Medical)	52699	7.9	42000	6.3	33281	10.0	20300	3.1	2996	0.4	8272	0.6	0	0.0
Retail Store	30470	1.8	51993	3.1	33280	4.0	1200	0.1	6929	9.0	29113	2.9	150000	6.8
Grocery Store	9259	1.1	0		0		0		0	0.0	0	0.0	0	0.0
Restaurant (Full Service)	0		20525	5.9	0		0		0	0.0	0	0.0	1	0.0
Restaurant (Limited Service)	1500	2.5	0		0		3022	8.4	1	0.0	0	0.0	2	0.0
Wholesale, Warehousing	4273	0.2	149050	6.0	0		37846	1.5	10612	0.4	2000	0.1	3	0.0
Industrial Manufacturing	0		4375	0.2	0		0		0	0.0	0	0.0	4	0.0
Church (without day care)	7541	1.2	0		0		0		0	0.0	0	0.0	5	0.0
Lodging (Limited service)	46	6.9	0		0		0		0	0.0	0	0.0	6	0.0
Schools, Elementary	0		605	4.8	0				0	0.0	0	0.0	7	0.0
Other (not listed above)	196249	9.9	64977	14.6	29001	6.7	141	1.7	0	0.0	14368	2.7	0	0.0
Subtotal Commercial:	**346392**	**34.2**	**355640**	**42.2**	**156485**	**28.0**	**146226**	**19.5**	**71990**	**12.9**	**55353**	**6.4**	**172277**	**8.3**
Total Allocation:		**251.8**		**349.7**		**155.5**		**95.5**		**44.8**		**43.5**		**15.8**

Wholesale Water Deliveries

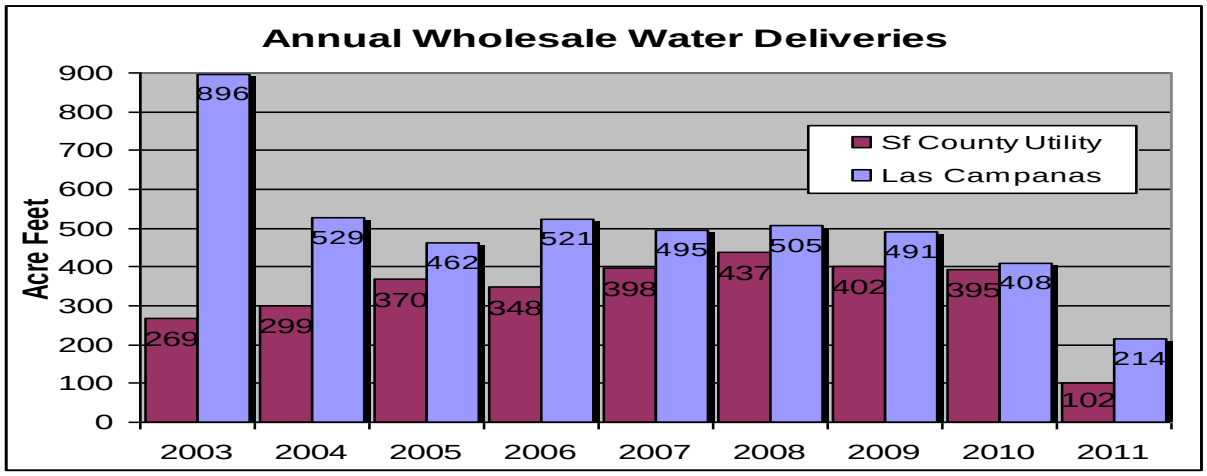
The City has contracts to deliver wholesale water to Las Campanas and Santa Fe County Utility; however, with the successful completion of the Buckman Direct Diversion facility (BDD) in January 2011, the BDD has become the primary, independent source of water for Santa Fe County's water utility. Additionally, beginning in 2011, Las Campanas potable water needs have been met by Santa Fe County's water utility under the terms stipulated in a bulk water agreement.

In 2011, only Las Campanas golf course received water from the City's water utility. Now that the BDD has been completed, 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.

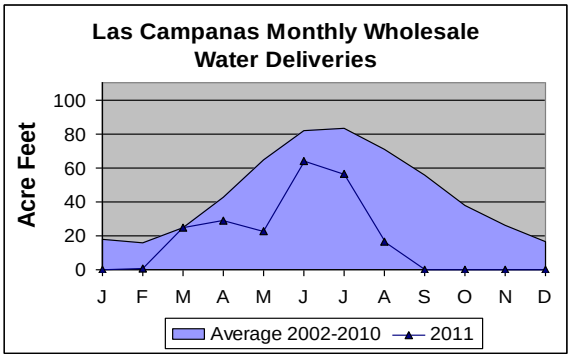
In 2011, Santa Fe County water utility took delivery of water under the agreement during the times when the BDD facility was not producing water.

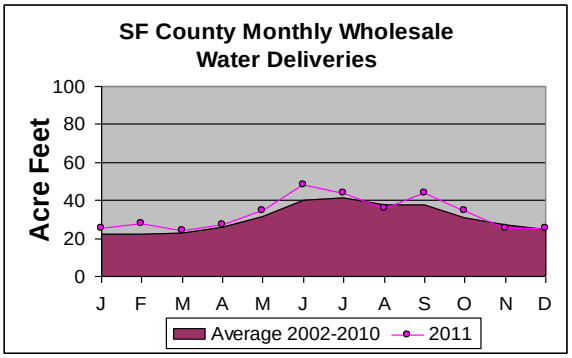
Residential and Commercial Consumption

The creation of a new multi-family billing category in 2006 caused a shift in total use from commercial to residential/multi-family, since many apartment complexes and condos had previously been billed as commercial customers. Of the 8,696 acre feet billed, the single family residential sector used 4,775 acre-feet (55%), the multifamily sector used 870 acre-feet (10%), and the commercial sector used 3,051 acre-feet (32%). Irrigation metered consumption was not separated from the previous three categories of consumption at the time of this report.



***Note**: In 2003, Las Campanas substituted treated effluent for potable water for irrigating their golf course.*





Conservation Programs

Residential Rebate Program

For the past several years, the Water Conservation Office has offered incentive rebates for the purchase of water-saving appliances including hot water recirculators, efficient clothes washing machines, and rainwater collection barrels. The rain barrel rebate program was phased out in October, 2008; however, the rain barrel program was reinstated in 2010. 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.

The table below is a summary of the 2011 water conservation rebates processed and the conserved water savings in acre-feet (Ac/Ft) from the rebate program that is deposited into the Water Bank.

Commercial Rebate Program

The City also offers several rebates in the commercial sector. More information can be found at the City of Santa Fe Water Conservation Office website at http://www.water2conserve.com/index.html

2011

Commercial Use	Qty of Rebates	$ Amount per Rebate	Water Savings In Ac/Ft per Rebate	$ Amount for all Rebates	Water Savings In Ac/Ft for Water Bank	
Flushometer Valve HET	2	$ 500	0.0336	$ 1,000	0.0672	
Tank Type HET	13	$ 250	0.0168	$ 3,250	0.2184	
Hotel/Motel HET	461	$ 125	0.0022	$ 57,625	1.0142	
Water Free Urinal	5	$ 500	0.0420	$ 2,500	0.2100	
HE Clothes Washer replacement for top loading washer	0	$ 350	0.0233			
	0	$ 150	0.0088	$ -	0.0000	
HE Clothes Washer exchange for any front loading Clothes Washer						
			0.4500	$ -	0.0000	
CPE (Commercial Process Efficiency)						
			0.4500	$ -	0.0000	
			Sub Total	$ 64,375	1.5098	ac/ft
Residential Use						
HET Residential	174	$ 175	0.0053	$ 30,450	0.9222	
HE Clothes Washer replacement for top loading washer	266	$ 350	0.0233	$ 93,100	6.1978	
	35	$ 150	0.0088	$ 5,250	0.3080	
HE Clothes Washer exchange for any front loading Clothes Washer						
	4	$ 12	0.0008	$ 48	0.0032	
Rain Barrel 50-99 g	2	$ 25	0.0015	$ 50	0.0030	
Rain Barrel 100-199 g	2	$ 50	0.0031	$ 100	0.0062	
Rain Barrel 200-299 g				$ -	0.0000	
Water Harvesting	6000	$ 0	0.0000	$ 1,500	0.0900	
			Sub Total	$130,498	7.5304	ac/ft
			Total	$194,873	9.0402	ac/ft

The table below is a summary of the 2010 water conservation rebates processed and the conserved water savings in acre-feet (Ac/Ft) from the rebate program that is deposited into the Water Bank.

2010 Commercial Use	Qty of Rebates	$ Amount per Rebate	Water Savings In Ac/Ft per Rebate	$ Amount for all Rebates	Water Savings In Ac/Ft for Water Bank	
Flushometer Valve HET	197	$ 504	0.0336	$ 99,288	6.6192	
Tank Type HET	192	$ 504	0.0168	$ 96,768	3.2256	
Hotel/Motel HET	459	$ 504	0.0022	$231,336	1.0098	
Water Free Urinal	24	$ 630	0.0420	$ 15,120	1.0080	
HE Clothes Washer replacement for a top loading washer	2	$ 480	0.0233	$ 960	0.0466	
HE Clothes Washer exchange for any front loading Clothes Washer	2	$ 180	0.0088	$ 360	0.0176	
CPE (Commercial Process Efficiency)	1	$ 874	0.4500	$ 874	0.4500	
			Sub Total	$444,706	12.3768	ac/ft
Residential Use						
HET Residential	236	$ 175	0.0053	$ 41,300	1.2508	
HE Clothes Washer replacement for top loading washer	782	$ 480	0.0233	$375,360	18.2206	
HE Clothes Washer exchange for any front loading Clothes Washer	35	$ 180	0.0088	$ 6,300	0.3080	
Rain Barrel 50-99 g	15	$ 12	0.0008	$ 180	0.0120	
Rain Barrel 100-199 g	5	$ 25	0.0015	$ 125	0.0075	
Rain Barrel 200-299 g	19	$ 50	0.0031	$ 950	0.0589	
Water Harvesting	15,200	$ 0	0.0000	$ 3,800	0.2280	
			Sub Total	$428,015	20.0858	ac/ft
			Total	$872,721	32.4626	ac/ft

Residential Rebate Programs				
	Total Rebates	Savings (AF)	Total Rebates	Savings (AF)
	2004		2005	
Hot Water Recirculators[1]	60	1	46	1
Washing Machines[2]	217	5	339	8
Rain Barrels[3]	541	0.08	286	0.04
	2006		2007	
Hot Water Recirculators	33	1	49	1
Washing Machines	434	11	456	11
Rain Barrels	403	0.06	368	0.06
	2008		2009	
Hot Water Recirculators	34	1	43	1
Washing Machines	556	14	460	11
Rain Barrels	113	0.02	Discontinued 10/08	

1) Assuming each installed device saves 7,000 gallons/yr

2) Assuming a 16.4 gallon/load savings, 5.7 loads/wk

3) Assuming one 50-gallon barrel is filled and totally used once/yr

Total Water Savings (AF) 2004-2009		
	Total Rebates	Savings (AF)
Hot Water Recirculators	265	6
Washing Machines	2462	61
Rain Barrels	1711	0.26

Water Budget Program (Toilet Retrofits)

The toilet retrofit program, adopted in 2002 as part of the Annual Water Budget Ordinance, offsets new water demands on the City water utility. The program requires that new building projects either replace the equivalent of their calculated demand by retrofitting high-flush toilets with low-flush toilets or by purchasing pre-1907 Middle Rio Grande surface water rights. The goal of this program is to prevent new demand on the water supply system. This is the final year of this program, which has been replaced by the water bank as required by the Water Budget Requirement Ordinance.

Pre-certifications are water credits awarded to entities that have retrofitted any number of toilets but have not designated the water credits to a future project.

Toilet Retrofit Program										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Applicants Required to Retrofit	714	661	677	720	645	355	170	183	162	4287
Residential Applicants	558	533	606	665	576	329	111	120	121	3619
Commercial Applicants	39	19	71	55	69	26	59	63	41	442
Option B Applicants	50	28	17	71	165	141	28	8	6	514
Number of Precertifications (in toilet equivalents)		6853	6079	7145	6365	6000	7500	7000	6500	
Annual amount dedicated to building permits	225	366	150	164	57	46	39	36	31	**1114**

Water for the Santa Fe River

With the adoption of the City's Long Range Water Supply Plan (2008) the City solidified its commitment to provide some water to a living Santa Fe River. The Water Plan calls for up to 1000 acre-feet to be bypassed to the urban reach of the Santa Fe river in normal and wet years once the Buckman Direct Diversion facility is fully operational. Since 2008, the City has passed resolutions annually providing for flow to the river based on current hydrologic conditions and the water utility's assessment of its ability to meet the year's projected demand.

Year	Targeted Bypass Flow for the Santa Fe River per Resolution (acre-feet)	Actual Bypass Flow for the Santa Fe River (acre-feet)
2008	200	200
2009	700	719
2010	800	>2,500
2011	300	321

**Note: Actual Flow to the Santa Fe River attributed to the targeted bypass flow, reservoir management releases, reservoir spillover and stormflow.*

Annual Fishing Derby and River Festival Along the Santa Fe River

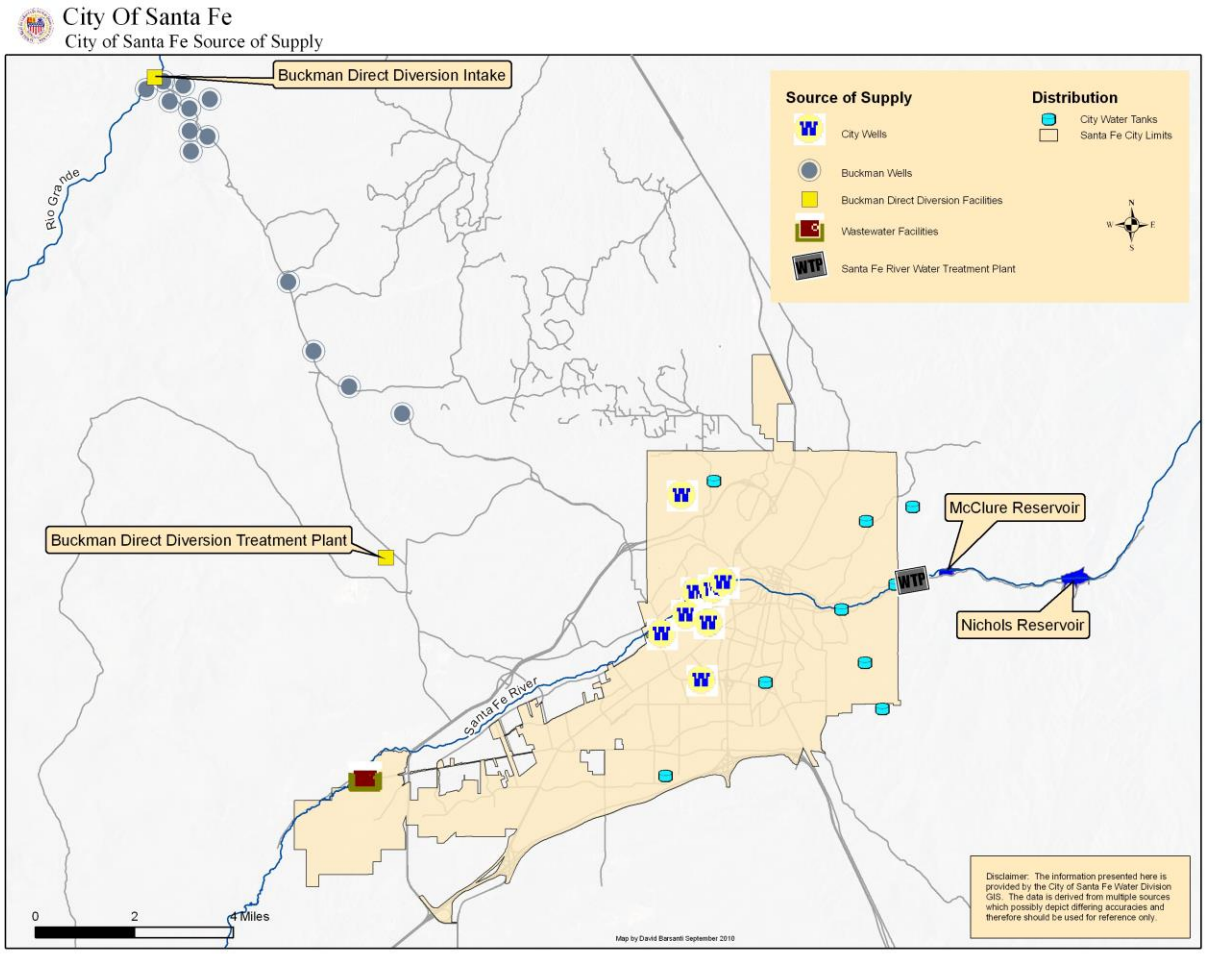
Voluntary River Conservation Fund

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, 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. Since, Fiscal Year 2006-2007 the volunteer donations have amounted to $103,456.84. With the match from the City of Santa Fe the total amount of the Voluntary River Conservation Fund is $206,913.68 to date.

Our Water Supplies

Sources of Potable Supply

The municipal water utility produces water for its customers from one of the City's four supply sources: the Santa Fe River, the City well field, the Buckman well field, and the Rio Grande via the Buckman Direct Diversion Facilities, all identified in the map below.



The City of Santa Fe has been relying on the Santa Fe River for its community needs since the founding of the City four hundred years ago. Since 1995, when the City purchased Sangre de Cristo Water Company from PNM, the City has managed a declared water right of 1,540 acre-feet per year and a licensed water right of 3,500 acre-feet per year on the river. Water from the Santa Fe River is treated at the Canyon Road Water Treatment plant (map on previous page), from which it flows into over 560.5 miles of distribution lines throughout the City.

Stream gage records dating back to 1915 identify the mean inflow (50^{th} percentile) of the Santa Fe River in the upper watershed to be approximately 4,909 acre-feet with the 25 and 75 percentiles being 3,065 and 7,045 acre-feet, respectively.

The Santa Fe Water Improvement Company built a reservoir on the Santa Fe River in 1881. Currently the City has a license to store up to 3,985 acre-feet (combined) 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.

Groundwater pumping from wells in the Santa Fe area presently accounts for a majority of the available municipal water supply. The City has seven active groundwater wells within the City limits, most of which are focused near the Santa Fe River (see map). The wells were installed in the 1940s and 1950s, and have been redrilled or upgraded over the years. The City also has thirteen groundwater wells in the Buckman well field, northwest of town (map on previous page). The newest Buckman wells are all 2,000 feet deep and began producing in 2003.

Beginning in the spring of 2011, the utility began using a fourth water supply source: San Juan-Chama Project water delivered via the Rio Grande. When the new regional Buckman Direct Diversion facility becomes operational next year, the City of Santa Fe will be able to fully use its 5,230-acre-feet share of Colorado basin surface water for the first time since contracting for the water in 1976. San Juan Chama Project water is delivered from tributaries of the San Juan River via a series of diversions and underground pipelines through the Continental Divide to the Rio Grande basin and distributed to the Project's contractors at the outlet of Heron Reservoir near Chama, New Mexico.

City of Santa Fe Diversion Water Supply Portfolio		
Source	***Water Rights (ac-ft)***	***Available Water (ac-ft)***
Santa Fe River	5,040	4,000 assuming 1,000 to river
City Wells	3,586*/ 4,865	sustainable use
Buckman Wells	10,000	sustainable use
Buckman Direct Diversion	5,230**	available in 2011

** when the City uses the Northwest well*

*** City's San Juan-Chama water*

Water Rights used for 'Offsets'

In addition to water rights that the City can directly divert for water supply, the City 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 has acquired sufficient water rights to satisfy its current obligation on the Rio Grande, Rio Tesuque, and Rio Pojoaque through a combination of acquired surface water rights, the City's San Juan Chama water, leased San Juan Chama water, and stored San Juan Chama water. The City is planning on offsetting impacts in the La Cienega/La Cienaguilla area by applying for a return flow credit for treated effluent discharged to the Santa Fe River.

Production by Supply Source

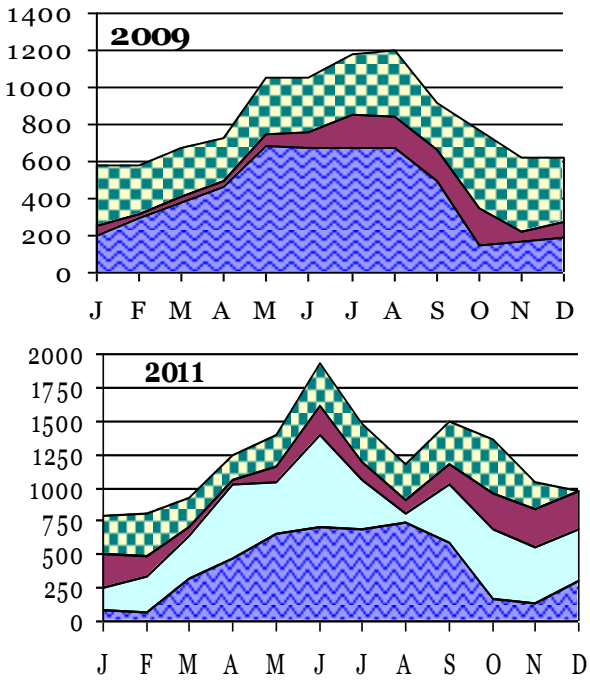
As shown in the 'Monthly Water Production by Source' graphs below, the City has taken advantage of increased availability of surface water from the Buckman Direct Diversion Project to decrease use of the City and Buckman well fields, allowing them to rest for use in drier years, when surface water is not as readily available.

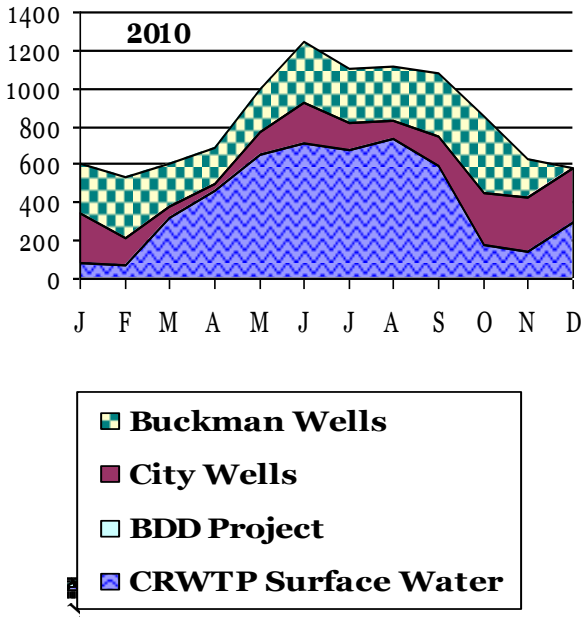
City's Surface Water Offsets (Acre-Feet)

Stream system	*Water rights (af)*	*Offsets needed in 2010 (af)*
Rio Tesuque*	49	37
Rio Pojoaque*	88	65
Rio Grande**	1,438	1,400
La Cienega	1	1

** includes water owned by Las Campanas*

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





Annual Production (acre-feet)					
2003	10,825	**2006**	10,108	**2009**	9,978
2004	10,379	**2007**	10,098	**2010**	10,048
2005	10,037	**2008**	10,192	**2011**	9,949

Water Storage

The City stores water in three ways: in the municipal reservoirs in the upper Santa Fe River watershed, on the Rio Grande/Rio Chama system, and by 'relinquishment' water.

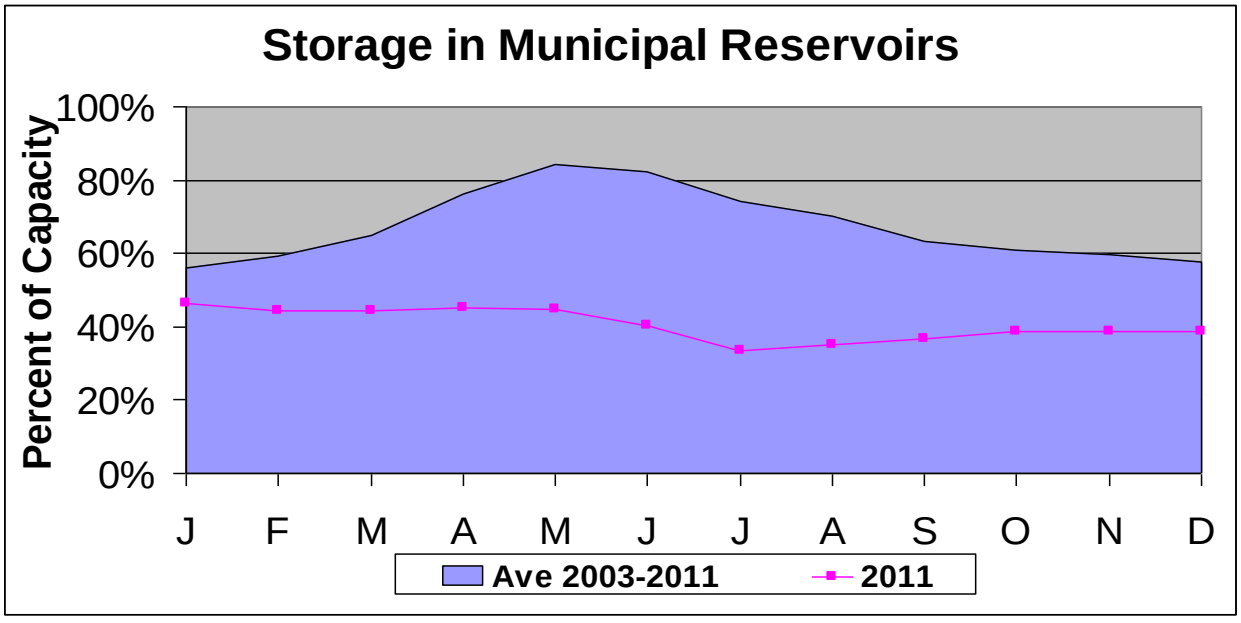
The Municipal Reservoirs: The water utility stores Santa Fe River water in McClure and Nichols Reservoirs in the upper watershed (see map on page 17). Storage levels of the reservoirs for the end of 2011 were 1,522.2 acre-feet or 38.6% of the total storage capacity. While the City water utility has been targeting the carry-over storage of 40% to hedge against drought-induced summer supply deficit, once the Buckman Direct Diversion comes online, a lower carry-over storage target may be considered.

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 2011, the City had a total of 27,726 acre-feet stored, with 2,756 acre-feet stored in Heron Reservoir, 0 acre-feet in El Vado Reservoir, 5,852 acre-feet in Abiquiu Reservoir and 19,118 acre-feet in Elephant Butte Reservoir.

Relinquishment Credits

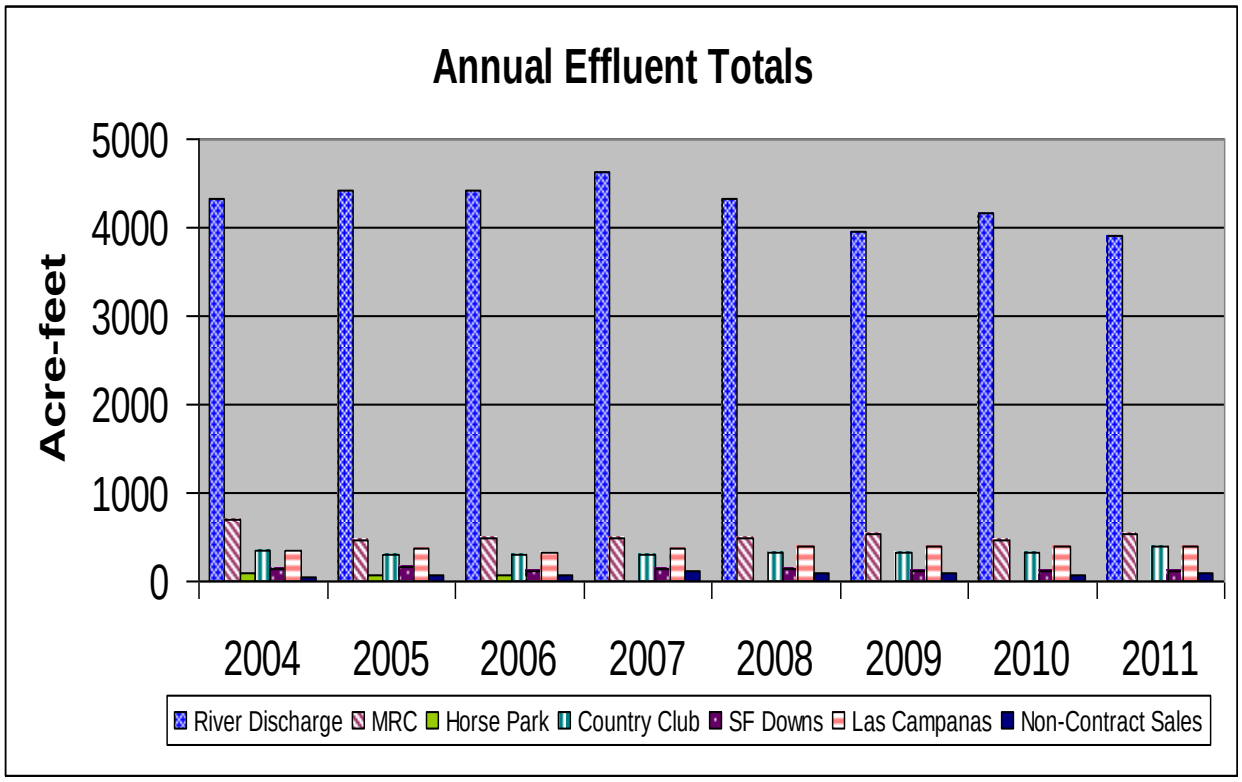
The New Mexico State Engineer has granted the City a total of 7,500 acre-feet of relinquishment credits: 6,052 acre-feet in 2003 and 1,448 acre-feet in 2008. The City has a current balance of 6,207 acre-feet. New Mexico receives relinquishment credits when the quantity of Rio Grande water provided to 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.



Treated Effluent Water Deliveries

The City has agreements to distribute treated wastewater effluent to various users in the Santa Fe area, including the US Forest Service, the City's Municipal Recreation Complex, the Marty Sanchez golf course, the Santa Fe Country Club golf course, The Downs of Santa Fe Racetrack, and the Las Campanas golf course. Treated effluent is used for irrigation instead of potable water.

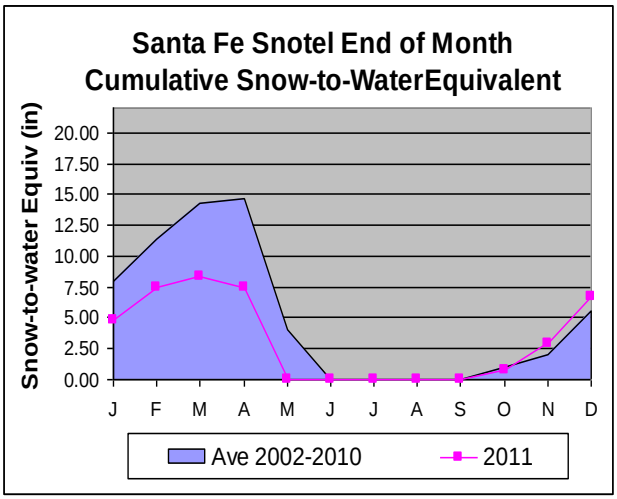
There is little difference in treated effluent use in 2011 compared to previous years, except that the Santa Fe Horse Park is no longer contracting for treated effluent. The biggest changes occurred in 2003 and 2004, when Las Campanas began taking effluent deliveries in accordance with the 2003 Settlement Agreement between the City and Las Campanas.

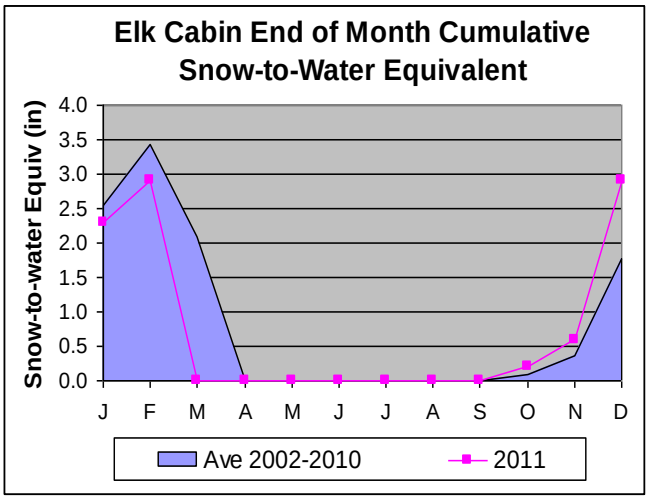


	River Discharge	MRC	Horse Park	Country Club	SF Downs	Las Campanas	Non-Contract Sales	Totals In Acre-Feet
2004	4316	698	99	339	143	349	41	5985
2005	4428	456	80	301	157	369	61	5852
2006	4417	481	71	300	126	335	80	5810
2007	4636	483	0	310	128	371	121	6049
2008	4318	480	0	317	141	406	100	5762
2009	3949	532	0	314	109	405	83	5392
2010	4164	464	0	317	126	404	80	5554
2011	3915	535	0	400	113	389	90	5442

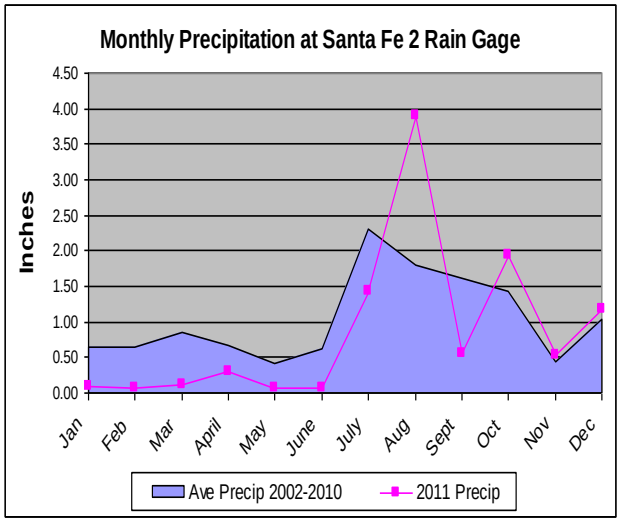
Precipitation

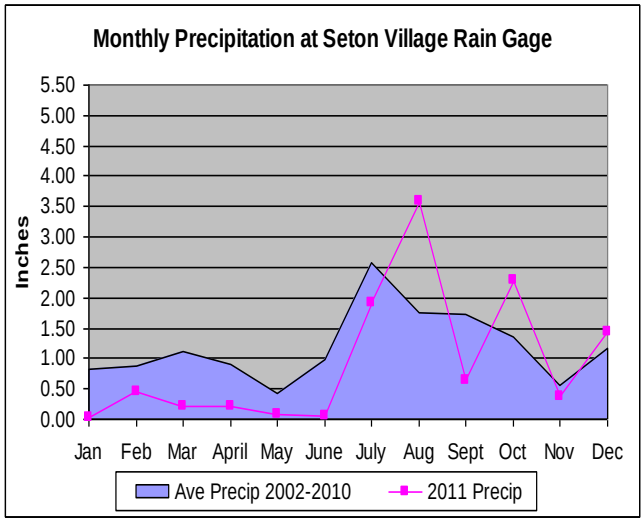
'SNOTEL' weather stations accurately measure snow pack as well as precipitation in the form of water (http://www.wcc.nrcs.usda.gov/snotel/New_Mexico/new_mexico.html). The snow-to-water equivalence (SWE) of the snow pack is used to predict spring runoff and watershed yield. There are two Snotel weather stations in the upper Santa Fe watershed: 'Santa Fe' at an elevation of 11,445 feet and, 'Elk Cabin' at 8,210 feet. Santa Fe reported a peak accumulation of 8.3 inches of SWE for the end of March 2011. Elk Cabin reported a peak accumulation of 2.9 inches of SWE for the end of February 2011.





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 10.22 inches for the year of 2011. Seton Village (approximately 4.5 miles south of downtown Santa Fe) reported 11.26 inches for the year of 2011.





Water-Related Policies, Programs and Projects

Conjunctive Use and Sustainability

Santa Fe's surface water supply has the advantage of being renewable, high quality, inexpensive to treat, and energy efficient (e.g. gravity flow). The disadvantages of surface water supply include its extreme variability and the impacts that using surface water can have on the downstream ecosystem. Groundwater availability does not have the wild fluctuations in variability, and is, therefore, more reliable as long as it is not overused. To have a sustainable and reliable water supply source, the City municipal utility conjunctively uses both surface water and groundwater. Conjunctive management is a water resources principal that espouses maximizing the use of renewable surface water, and preserving the groundwater when needed for droughts or emergencies, allowing for its more sustainable use.

Monitoring Groundwater Water Levels

Working together, state, federal and local agencies such as the Office of the State Engineer, the New Mexico Environment Department, New Mexico Bureau of Geology and Mineral Resources, the US Geological Survey (USGS), Santa Fe County, Los Alamos National Laboratory, and the City municipal water utility periodically assess the state of our regional aquifer, in terms of both quality and quantity. Water level and water quality data, especially when linked to groundwater models, are needed to understand the characteristics and flow of groundwater as well as the actual and potential impacts of groundwater production.

The USGS monitors water level changes throughout the region, and provides the data through the web at http://groundwaterwatch.usgs.gov/countymaps/NM_049.html and http://waterdata.usgs.gov/nm/nwis/gwlevels. In addition, the City of Santa Fe regularly updates a website on groundwater production from the Buckman well field and area water level changes. Further information and water level graphs for Santa Fe's monitoring wells can be found at: http://www.santafenm.gov/index.aspx?NID =1030.

While water levels had been declining significantly in both of the City's well fields over the past decades, most groundwater level data since 2003 show either positive groundwater level recovery or significantly reduced rates of decline. This shift is attributed to an overall reduction in the City's groundwater withdrawals compared to a decade ago, because of successful conservation efforts, the greater use of Santa Fe surface water, and less-frequent drought conditions.

Monitoring Surface and Ground Water Quality

The City of Santa Fe (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 study also 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: http://www.nmenv.state.nm.us/fod/LiquidWaste/documents/SF.Co.09.water.test.results2.pdf

The City continues its collaborative efforts to monitor the Buckman Well Field with the New Mexico Environment Department and Los Alamos National Laboratory (LANL) to ensure that there is no evidence of contaminant migration from past and present LANL operations that could potentially threaten the regional aquifer which provides water to the City's Buckman Wells. All samples taken in 2011 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 on January 5, 2011, at which time the facility started providing San Juan-Chama 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 2011.

The City has entered into efforts with the New Mexico Environment Department to classify Santa Fe Lake and the two City municipal, surface water supply reservoirs, Nichols Reservoir and McClure Reservoir, under a separate "lakes only" classification with appropriate designated uses. In 2011, the City has also started working with the NMED Surface Water Quality Bureau 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. These new classifications will better serve to protect both the existing and attainable uses of the Santa Fe River.

Drinking Water Quality

The City of Santa Fe's drinking water is of excellent quality. The addition of another surface water source to the City's water supply has resulted in the lowering of some naturally occurring contaminants and constituents such as Arsenic and Ca & Mg hardness. The following table (City of Santa Fe 2011 Water Quality Table) lists contaminants which have associated Primary Maximum Contaminant Levels (MCLs) that are regulated **and** were detected in the City's drinking water samples collected by the City and New Mexico Environment Department in 2011. The compounds below represent a small fraction of the substances tested; testing is required for over eighty contaminants. Drinking water, including bottled, 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. More information about contaminants and potential health effects can be obtained by calling 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 2011, and previous years, is also available at the following link: http://www.santafenm.gov/DocumentView.aspx?DID=6044

City of Santa Fe 2011 Water Quality Table

Contaminant Inorganic Contaminants	Units	MCL	MCLG	City Well Field[d]	Buckman Tank[e]	Canyon Road WTP	Buckman RWTP	Violation	Typical Source
Arsenic	ppb	10	0	4.6	1.6	ND	0.76	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Antimony	ppb	6	6	ND	ND	ND	0.38	No	Discharge from Petroleum refineries; fire retardants; ceramics;electronics; solder
Barium	ppm	2	2	0.8	0.073	0.0086	0.047	No	Discharge from drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Fluoride	ppm	4	4	0.18	0.25	0.1	0.35	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Selenium	ppb	50	50	1.7	ND	ND	1.4	No	Discharge from steel/metals factories; Discharge from plastic and fertilizer factories
Nitrate [as N]	ppm	10	10	7.5	ND	ND	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion from natural deposits
Sodium	ppm	NA	NA	9.9	18	12	24	No	Erosion of natural deposits; Runoff from deicing agent used on roads
Radioactive Contaminants									
Gross Alpha Emitters	pCi/L	15	0	2	1.3	0.6	3	No	Erosion of natural deposits
Gross Beta/Photon Emitters	pCi/L	50[a]	NA	6	2.4	0.7	6.8	No	Decay of natural and man-made deposits.
Radium 226/228	pCi/L	5	0	2.07	0.18	0	4.18	No	Erosion of natural deposits
Uranium	ppb	30	0	2.62	ND	ND	1.000	No	Erosion of natural deposits;
Synthetic Organic Contaminants									
Ethylene Dibromide	ppt	50[f]	0	ND	ND	61	ND	No	Discharge from petroleum refineries
Disinfectants & Disinfection By-Products									
Bromate	ppb	10	0	ND	ND	ND	1	No	By-product of drinking water chlorination
Haloacetic Acids (HAAs)	ppb	60	NA	7.45	9.39	12.19	6.4	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethane]	ppb	80	NA	13.43	18.21	38.57	28	No	By-product of drinking water chlorination
Surface Water Contaminants									
Turbidity[c] (highest single measurement)	NTU	TT = 0.3	0	NA	NA	0.35	0.54	No	Soil Runoff
Turbidity[c] (lowest monthly % meeting limits)	NTU	TT = % <0.3 NTU	0	NA	NA	99.4%	95.9%	No	Soil Runoff
Total Organic Carbon (TOC)	ppm	TT (35%-45%)	NA	NA	NA	39% to 70% removal[b]	NA	No	Naturally present in the environment

Notes:

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

b. The City complies with alternative compliance criteria 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

f. Rolling annual average

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

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

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

ug/l: Number of micrograms of substance per liter of water

mg/l: Number of milligrams of substance per liter of water

NA: Not Applicable

ND: Not Detected

NTU: Nephelometric Turbidity Units

MNR: Monitoring not required, but recommended

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

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 changes like less alpine snowpack, earlier peak stream flows, reduction in total streamflow, greater evaporative losses, more extreme weather events, and increased summer demand from a hotter, drier, and longer summer season. Fortunately, much of the future water supply planning that has been incorporated in the adopted Long Range Water Supply Plan contemplates how the City's water supply need can be managed using our diverse water portfolio under a range of conditions, including drought. However, the utility recognizes the need to evaluate the vulnerability of the water system to predicted impacts, develop response strategies to reduce those potential impacts, reduce our own contribution to greenhouse gas emissions and educate ourselves and the community on the impact that global warming will likely have on our water supplies and water utility.

Buckman Direct Diversion Project

Initially operated by the Design-Build Contractor beginning in January 2011, the Buckman Direct Diversion (BDD) Project produced a total of 4,983 acre feet of high quality drinking water throughout the year. Since assuming operational responsibility in May 2011, BDD staff has undertaken a series of high performance strategic initiatives aimed at becoming an industry leader. On-going efforts to establish "world class" maintenance practices will ensure infrastructure reliability and longevity in order to get the most out of the community's financial investment. The FY 2012-13 Proposed Budget contains published performance metrics covering financial performance, energy consumption, treatment process efficiency and regulatory compliance. Evaluating and reporting on project performance on a routine, publicized basis will keep citizens and elected officials apprised of the "value" received from the Buckman Direct Diversion Project. The Buckman Direct Diversion project is a $216-million regional water supply project that allows water customers in the City and County to use renewable surface water instead of relying mostly on groundwater unsustainably. Construction on the project began in October of 2008 and was completed by December, 31 2010.

The project includes a raw water intake on the east bank of the Rio Grande at Buckman; 6 booster stations; a 15 million gallon per day, $150 million, state-of-the art water treatment plant; and 26 miles of transmission pipeline (raw and finished).

A view of the BDD gravity thickener.

The project is governed by a joint City and Santa Fe County board. More information on the project can be found at www.bddproject.org.

Energy Use

The City of Santa Fe has worked to increase the use of renewable energy and reduce the total energy consumption associated with running the water utility.

Hydroelectric Project

This project 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 addition to operational cost savings, the City anticipates execution of a renewable energy credit (REC) purchase agreement with PNM, which will generate additional annual revenue for the City. The system became operational in June of 2011 and as of the end of 2011, the hydroelectric system had generated approximately 80,000 kWh of renewable energy.

Buckman Direct Diversion Solar Projects

The BDD Water Treatment Plant Solar project has been operating since February 2011. As of the end of 2011, the system had generated 1.8 million kWh. The facility produce up to 1 megawatt DC of solar electrical energy and provides approximately 1/2 the energy required to run the BDD Water Treatment Plant.

The BDD Booster Station 2A Solar Project is a proposed solar facility that includes high efficiency photovoltaic panels on a 5-8 acre area adjacent to the Buckman Direct Diversion Booster Station 2A. The project has been approved for $5 million in funding by the New Mexico Finance Authority. The City is currently engaged in procurement of an engineer to design the project.

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 2011 during which time there were 13 PNM Peak Saver events, all of which the water utility was not able to respond to. In 2011, participation in this program has resulted in $15,960 in revenue for the City.

Water Utility Energy Efficiency Program

The City of Santa Fe's current power usage is $1.4 million in electricity and $200,000 in gas. The City's current on-peak energy usage is 35-40%. Using telemetry to relay real-time energy usage from all of the utility's pumping sites and processing the data with software the City already owns; the City can optimize energy usage to limit on-peak usage and draw from the cheapest sources of water to meet instantaneous demand. A conservative estimate of annual savings is $140,000.

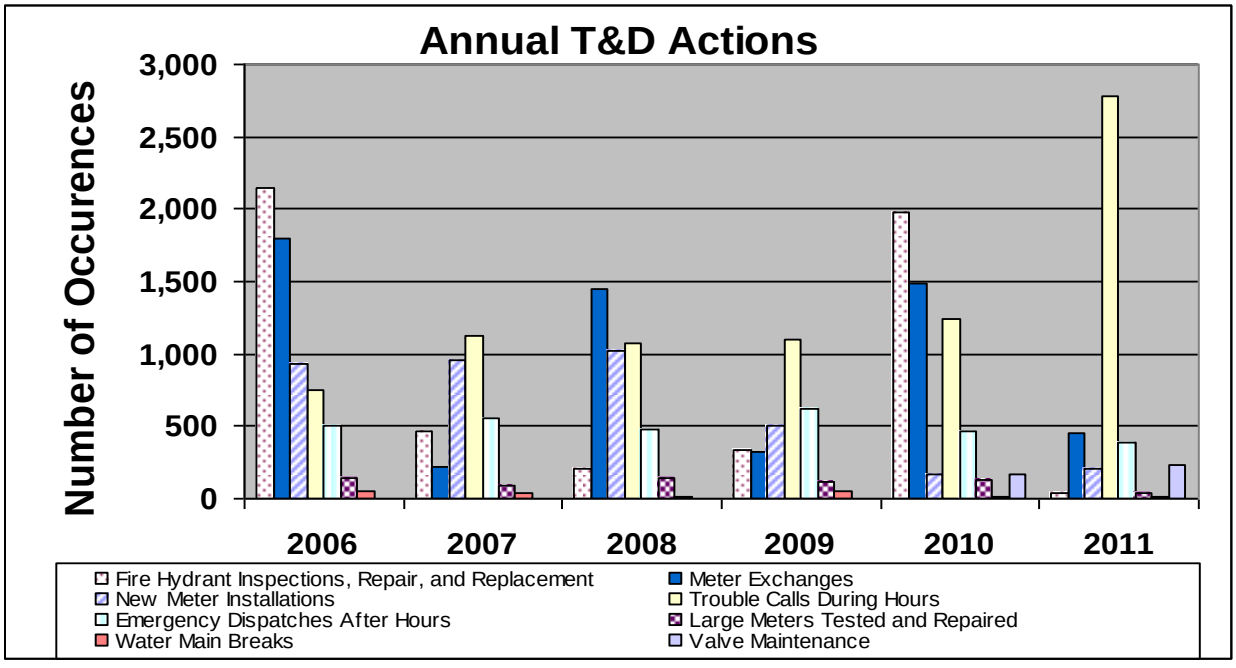
As of the end of 2011, the project was nearing completion, with all of the major hardware components installed at 28 remote well and pumping sites. Early 2012 will see final completion and operation of the project.

System Maintenance

The Transmission and Distribution (T&D) section of the Water Division is responsible for the upkeep of the City's water lines, valves, and meters. Throughout the year this team handles emergencies and trouble-shoots a system that includes components over 100 years old. The section also installs and maintains the newer parts of the City's water system. The following table is a summary of the frequency of some of the T&D team undertakings from the past 5 years. Please note that these numbers represent only a portion of the T&D team activities.

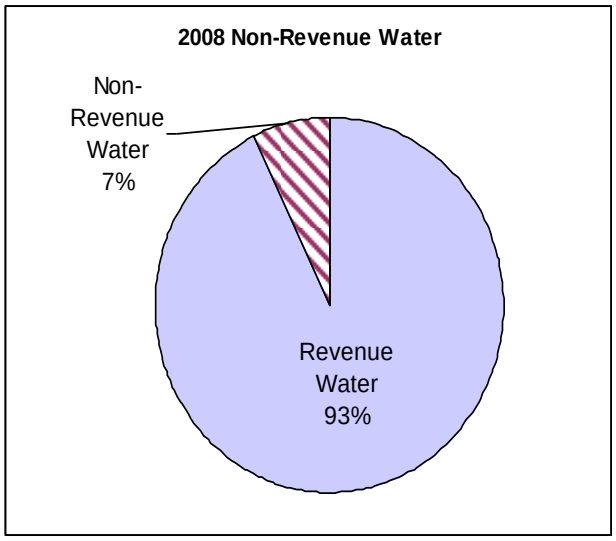
In 2011 T&D flushed all of the newly installed main lines including new infrastructure to deliver Buckman Direct Diversion Project drinking water to the system. Flushing the City's water distribution system removes accumulated silt/sediment from distribution system piping and addresses customer complaints regarding water quality. During 2011, T&D also completed flushing at 20 of the sample sites for the Initial Distribution System Evaluation (IDSE) of the City's drinking water main lines. During the winter months of 2011, Transmission and Distribution crews serviced approximately 2000 frozen meter services. These frozen meters were mostly due to a 5-day, below 32^{o}F, sustained event that occurred in early 2011. The response to frozen meter services calls revealed that over 99% of the occurrences were due to frozen service lines on the customer side of the meters.

A member of the T&D staff repairs a main line leak.



Non-Revenue Water Audit

In 2008, the Water Division conducted an annual non-revenue water audit in house. The graph below illustrates that seven percent of the City's production was non-revenue water. The purpose of this audit is to account for water that does not generate revenue and, hopefully to identify efficiency improvement potential. Several factors comprise "non-revenue" water, including inaccurate meters and system leaks. Industry standards report that a water system is performing well if non-revenue water is approximately 10-15 percent of total production.



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 our 10-year finance plan and 10-year 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 rates increase is needed to primarily pay for the Buckman Direct Diversion project, a key component in providing the community with a reliable and sustainable supply.

This rate increase coupled with the approved 10-year finance plan and CIP, allowed the Water Division to receive an AA+ rating from Standard & Poors and an AAA rating from Fitch for our $61M bond sale in November 2009. These ratings are among the highest received by a water utility west of the Mississippi River. This excellent bond rating translates into a reliable, lower-cost income source for the water utility.

To supplement the water utility's rate and bond income, the City Water Division has been fortunate to receive over $64 million in federal, state and local grants and low interest loans since 1998 with approximately 5.5 million dollars secured in 2011.