

2010 Annual Water Report



McClure Reservoir

*City of Santa Fe
December 2011*

Sangre de Cristo Water Division

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- City Attorney's Office
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- Land Use Dept
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Acknowledgments

Victor Archuleta
Jeff Atencio
Chuck Bear
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Claudia Borchert
Rick Carpenter
Gretel Follingstad
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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 2010, Year 2011 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

2011 Water Demand and Supply Projections

This page summarizes the City's anticipated water picture for 2011. Details on how this year's water picture relates to the past can be found in subsequent sections of this report.

Demand (Acre-feet)

Total: 10,000 acre-feet		10,000
City Customers:		9,270
Water Deliveries:	Santa Fe County	420
	Las Campanas	305
	Agua Fria Village	0
	Hyde Park Estates	5

*assumes 100 GPCD and little new demand

Anticipated Supply Source (Acre-feet)

Santa Fe River Use	5,040
City well use	1,000
Buckman well use	4,000*
Buckman Direct Diversion	0

*plus 1,000 acre-feet San Juan-Chama (SJC) water for offsets

Storage Projected for Dec, 2011 (Acre-feet)

Target end of year storage in municipal reservoirs	1,576
2010 SJC water to be stored	3,000
Total Anticipated stored SJC Water :	
El Vado Reservoir	0
Abiquiu Reservoir	6,000
Elephant Butte Reservoir	19,100
Total	29,676

Santa Fe River Flows (Acre-feet)

Santa Fe River bypasses:	500
Effluent Releases to Santa Fe River	4,000

Anticipated 2011 Offset Requirements (Acre-feet)

Rio Grande	1,500
Rio Tesuque	35
Rio Nambe-Pojoaque	63
La Cienega Area	1

Private Wells

Estimated Number of Private Wells within the City limits	695
Anticipated number of replacement wells drilled	0
Anticipated number of new private wells	0

2011 basic 5/8" meter residential water rate

Monthly Service Charge	\$15.73
Sept-April	\$5.18/1,000 gallons for first 7,000 gallons, \$18.55/1,000 gallons thereafter
May-Aug	\$5.18/1,000 gallons for first 10,000 gallons, \$18.55/1,000 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 2010, City utility customer demand of 9,086 acre-feet resulted in utility-service-area gpcd of 104-116 (depending upon the method used), 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). For 2010, the single-family residential use rate is 69 gpcd.

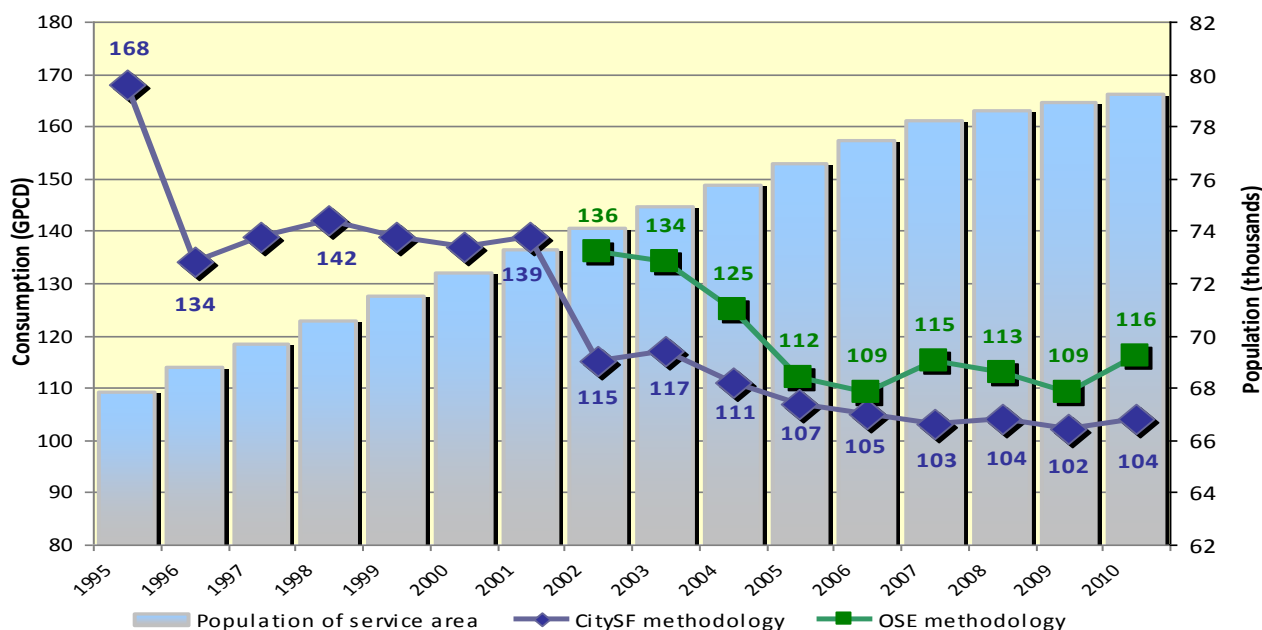
The chart below shows gpcd results calculated with two different methodologies. The method used by the City for the past fifteen years derives at the service area population using the 2000 Census population data (adjusted for households

that rely solely on domestic well water) and updates it based on growth rates from annual housing permits; however, the year 2010 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.

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>.

Consumption Per Capita Trend Vs. Population



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 2010, 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 2010, the affordable housing unit credits are robust. In 2009, 59.32 acre-feet were allocated to affordable housing unit credits, and the balance at the end of the year was 51.67 acre-feet. In 2010, 6.21 acre-feet was allocated to affordable housing units, leaving a balance of 45.46 acre-feet. If 33 homes are built a year under the Santa Fe Homes Program (SFHP) and Housing Opportunity Program (HOP) using approximately 6 acre-feet per year, the low priced dwelling units credit pool will last through 2018.

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

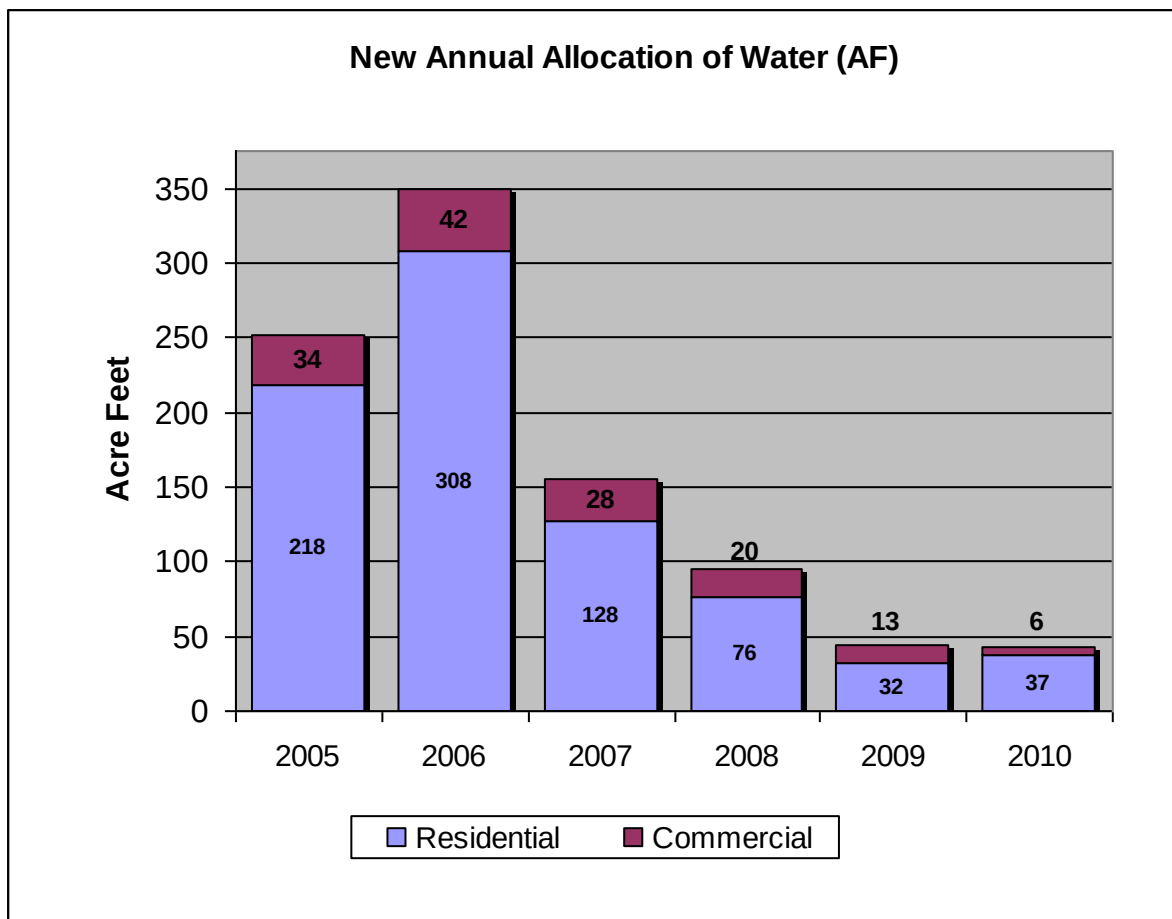
Our Near-future Water Demands

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; demand for new services for 2010 stood at 43 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.



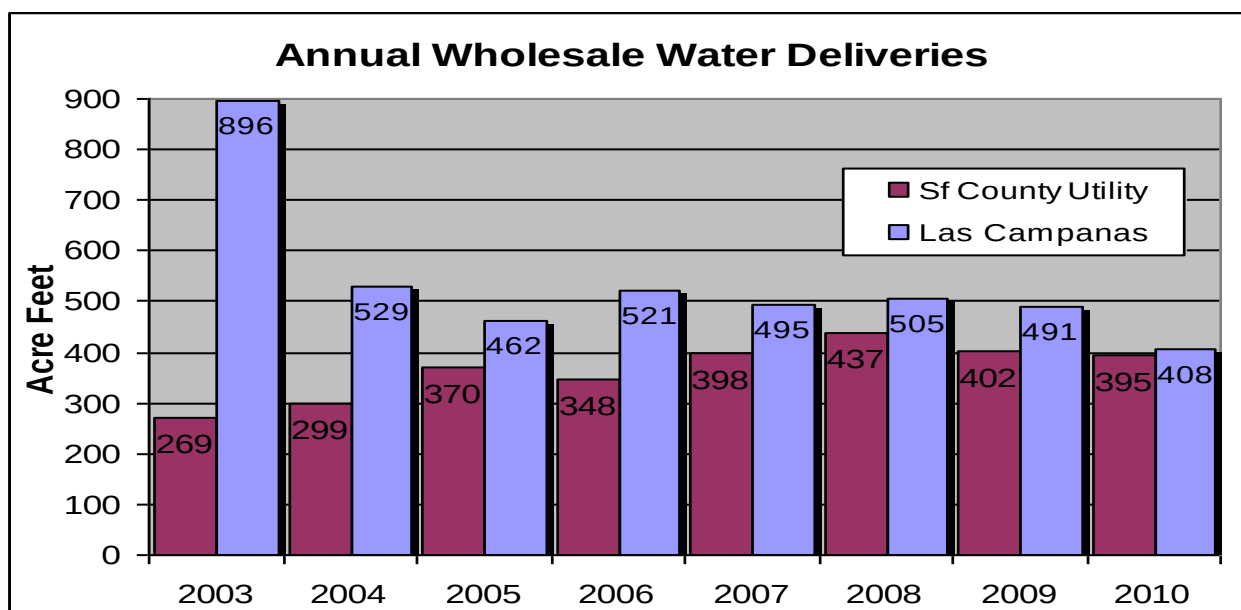
AMS and ACD Water Service Agreements

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

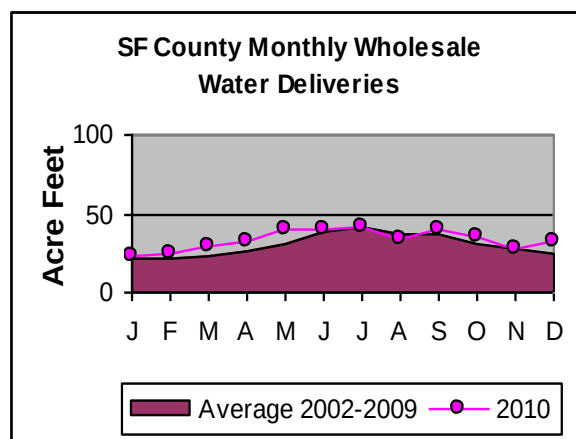
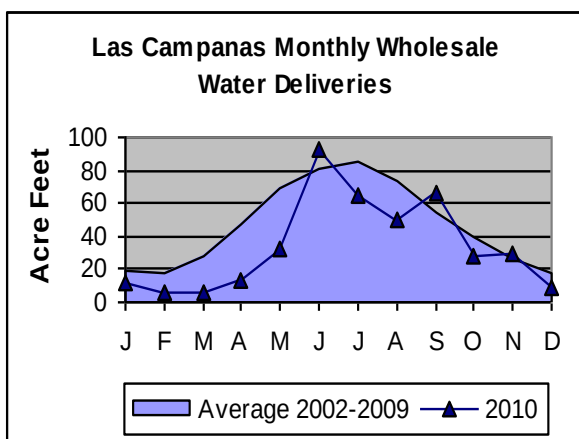
Wholesale Water Deliveries

The City has contracts to deliver wholesale potable water to both Las Campanas and Santa Fe County Utility. According to the terms of the 2003 settlement agreement between Las Campanas and the City, Las Campanas may purchase up to 650 acre-feet per year of potable water (under normal conditions) from the City water utility for its domestic and commercial needs. Additionally, Las Campanas may purchase up to 322 acre-feet per year of potable water for its golf courses.

The County has access to up to 500 acre-feet per year of wholesale delivery water from the City of Santa Fe and 375 acre-feet per year of imported San Juan Chama Project water. Upon implementation of the BDD in 2011, the County may buy up to 500 acre-feet per year under normal BDD operating conditions, with an additional 850 acre-feet available under drought and emergency conditions.



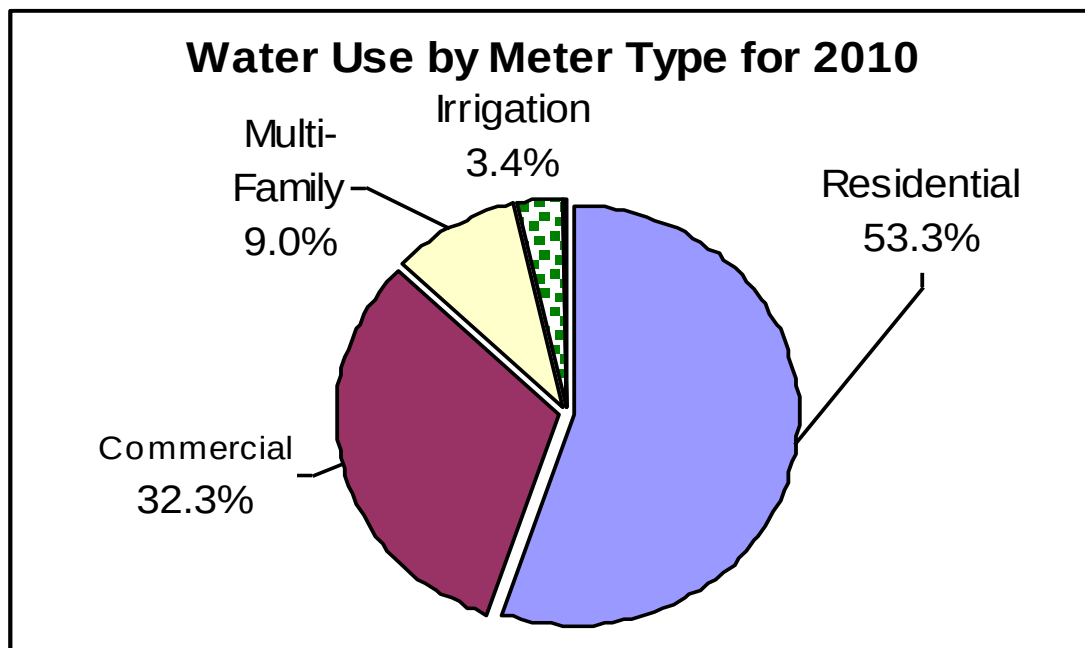
Note: In 2003, Las Campanas substituted treated effluent for potable water for irrigating their golf course.



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. As of the end of 2010, the City had a total of 36,705 utility customer meters. Of the 9,702 acre-feet

billed, the single family residential sector used 5,360 acre-feet (55%), the multifamily sector used 878 acre-feet (9%), and the commercial sector used 3,115 acre-feet (32%). Irrigation use accounted for 330 acre-feet (3%).



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 2010 rebates processed and the conserved water savings in acre-feet (Ac/Ft) for 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>

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	286	0
	2006		2007	
Hot Water Recirculators	33	1	49	1
Washing Machines	434	11	456	11
Rain Barrels	403	0	368	0
	2008		2009	
Hot Water Recirculators	34	1	43	1
Washing Machines	556	14	460	11
Rain Barrels	113	0	Discontinued 10/08	

Total Water Savings (AF) 2004-2009		
	# of Rebates	Savings (ac-ft)
Hot Water Recirculators	265	5.73
Washing Machines	2462	61.14
Rain Barrels	1711	0.26

- 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

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	Total
Applicants Required to Retrofit	714	661	677	720	645	355	170	183	4125
Residential Applicants	558	533	606	665	576	329	111	120	3498
Commercial Applicants	39	19	71	55	69	26	59	63	401
Option B Applicants	50	28	17	71	165	141	28	8	508
Number of Precertifications (in toilet equivalents)		6853	6079	7145	6365	6000	7500	7000	
Annual amount dedicated to building permits	225	366	150	164	57	46	39	36	1083

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 Flow to Santa Fe River below Nichols Reservoir (Acre-feet)*
2008	200	200
2009	700	719
2010	800	2,033

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

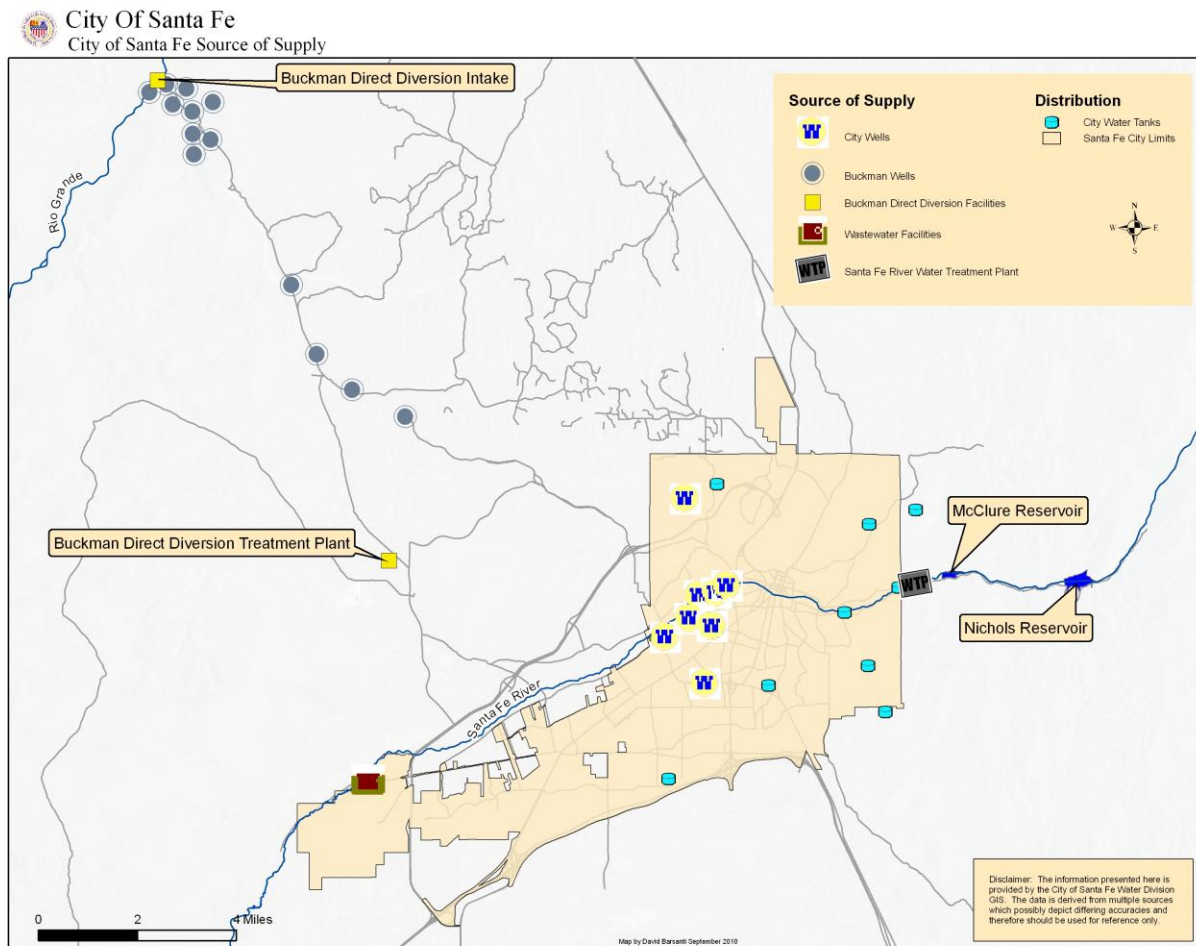


Annual Fishing Derby and River Festival Along the Santa Fe River

Our Water Supplies

Sources of Potable Supply

The municipal water utility produces water for its customers from one of the City's three supply sources: the Santa Fe River, the City well field, and the Buckman well field, 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 (af/y) and a licensed water right of 3,500 af/y 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 (50th 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 will begin 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.

City’s Surface Water Offsets (Acre-Feet)

<i>Stream system</i>	<i>Water rights (af)</i>	<i>Offsets needed in 2010 (af)</i>
Rio Tesuque*	49	34
Rio Pojoaque*	88	62
Rio Grande**	1,438	1,446
La Cienega	1	1

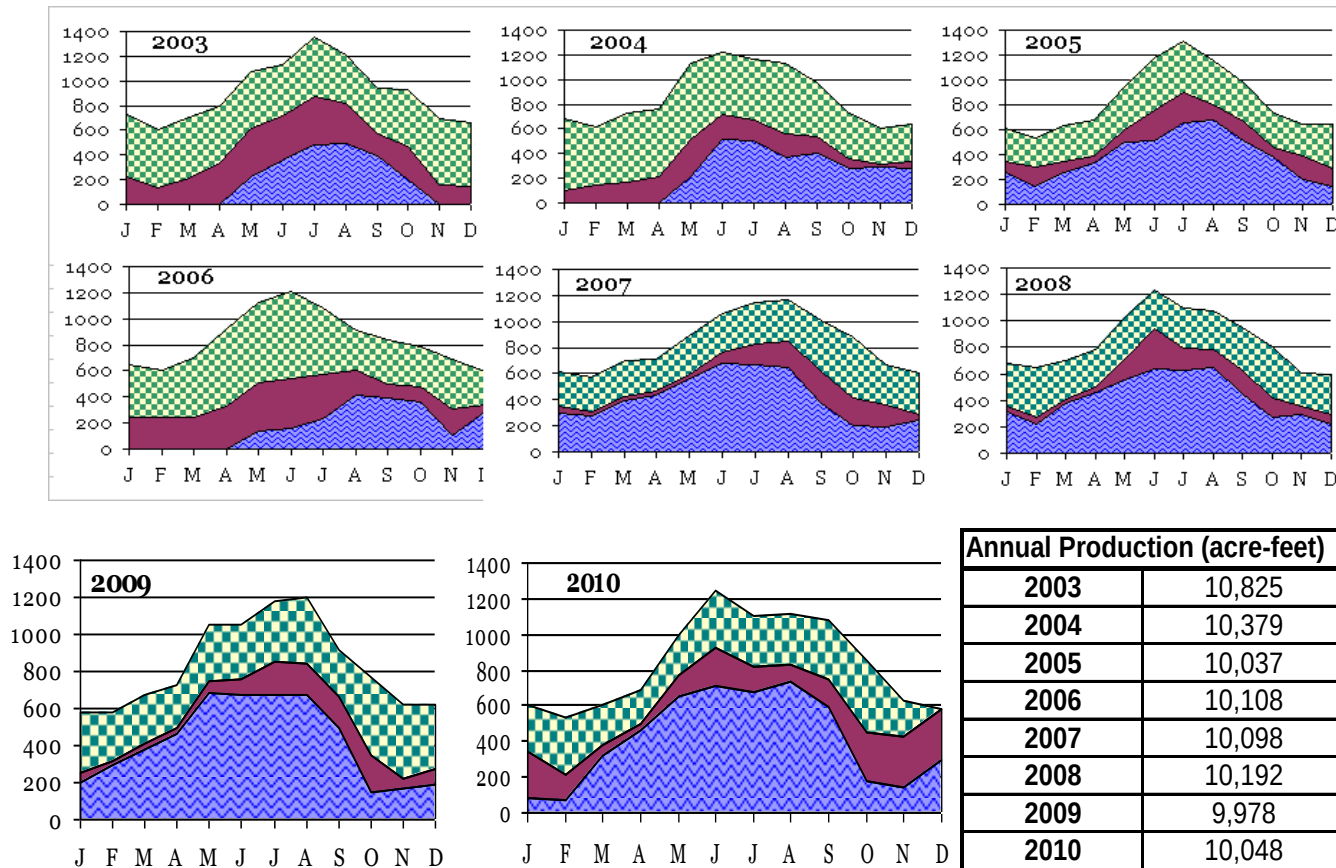
* includes water owned by Las Campanas

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

Production by Supply Source

As shown in the ‘Monthly Water Production by Source’ below, the City has taken advantage of increased availability of surface water from 2007-2010 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.

■ Surface ■ City Well ■ Buckman



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 2010 were 1,986 acre-feet or 50.4% of the total storage capacity. While the City water utility has been targeting a 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.

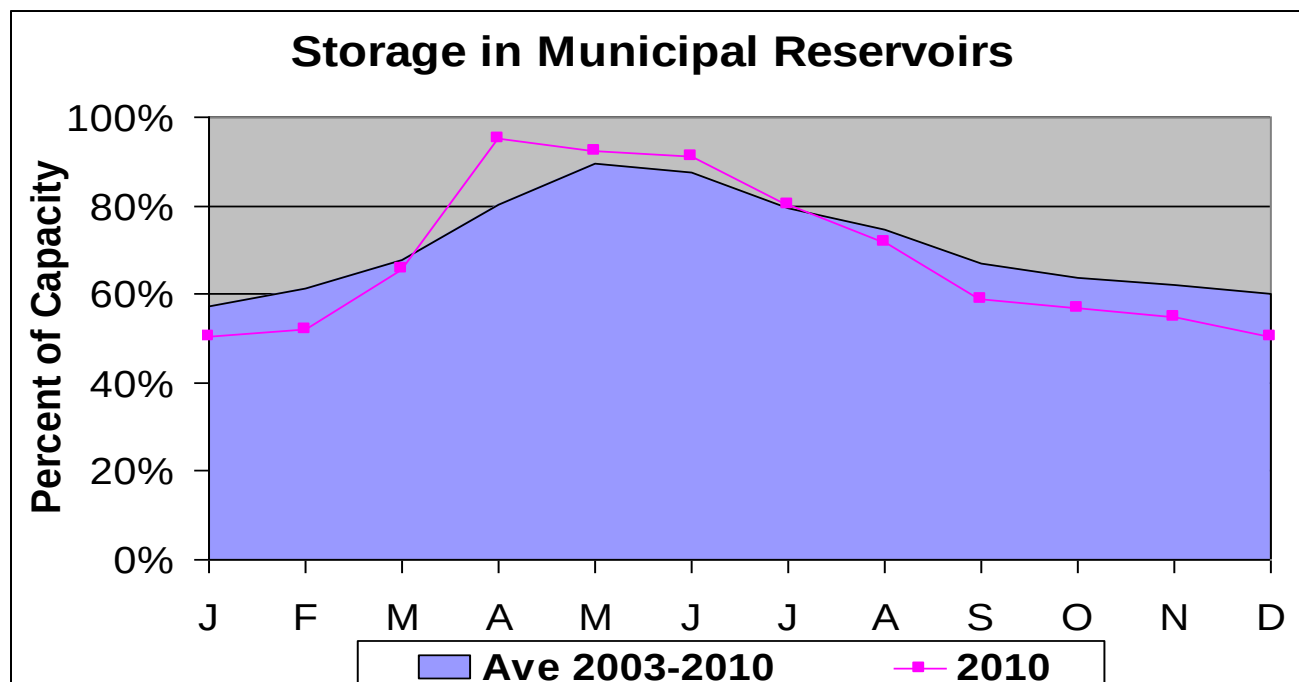
Stored San Juan-Chama Project Water

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 2010, the City had a total of 36,163 acre-feet stored, with 8,230 acre-feet

stored in Heron Reservoir, 0 acre-feet in El Vado Reservoir, 6,164 acre-feet in Abiquiu Reservoir and 21,799 acre-feet in Elephant Butte Reservoir.

Relinquishment Credits

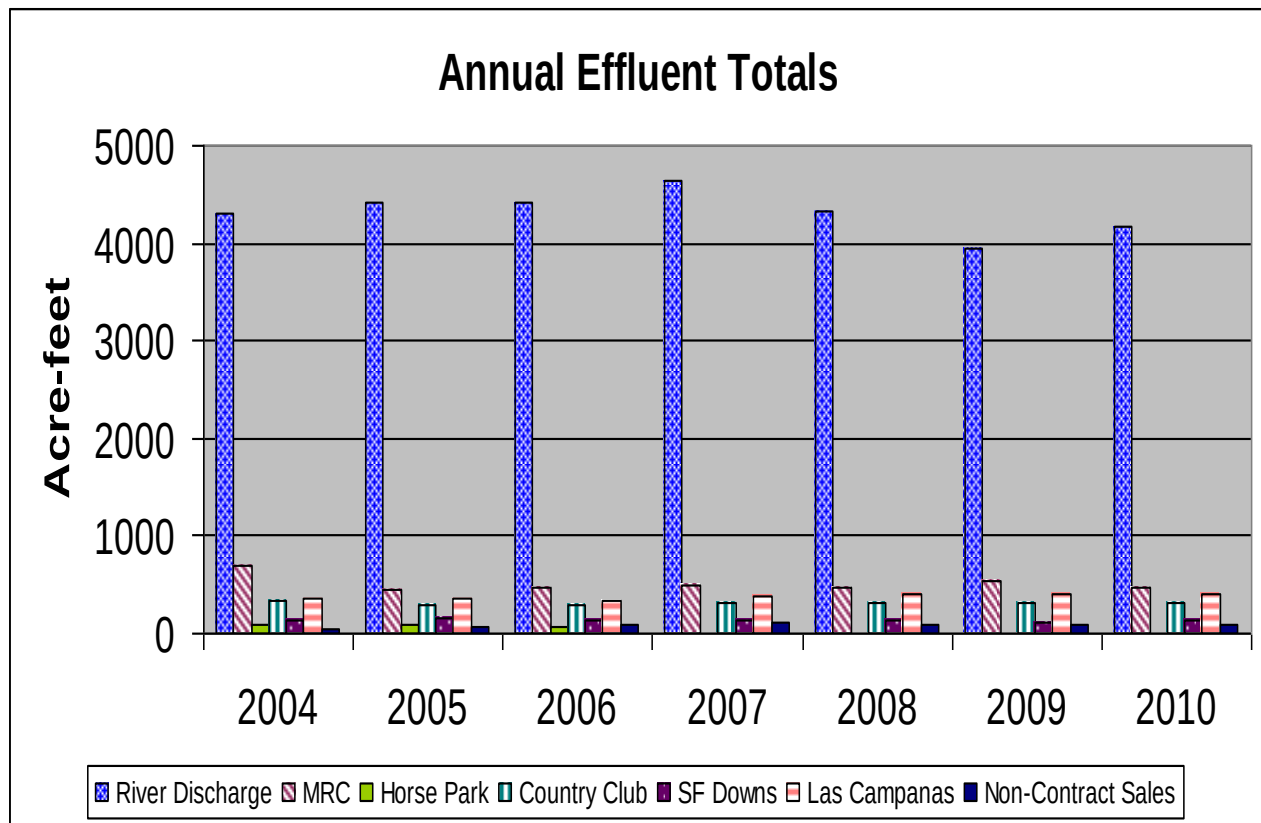
The New Mexico State Engineer has granted the City a total of 7,500 acre-feet of relinquishment credits: 6,052 acre-feet in 2003 and 1,448 acre-feet in 2008. The City used 1,293 acre-feet through 2010 and has a current balance of 6,207 acre-feet. New Mexico receives relinquishment credits when the quantity 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.

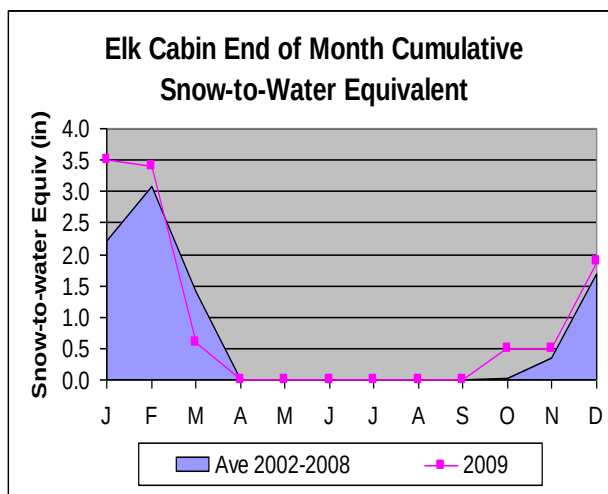
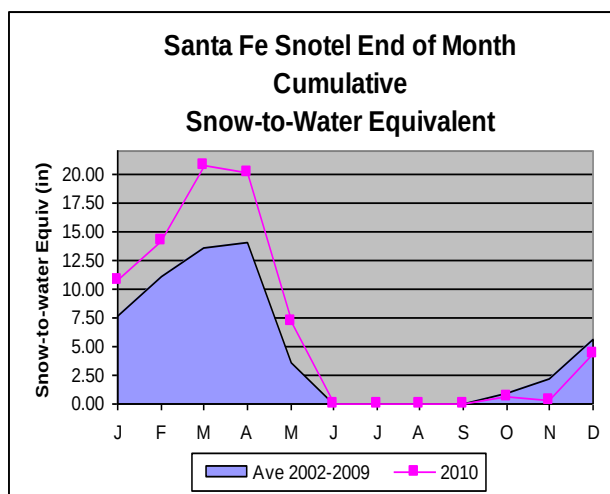
There is little difference in effluent use in the most recent year compared to previous years, except that the Santa Fe Horse Park is no longer contracting for treated effluent. The biggest changes occurred in 2003 and 2004, when Las Campanas began taking effluent deliveries in accordance with the 2003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



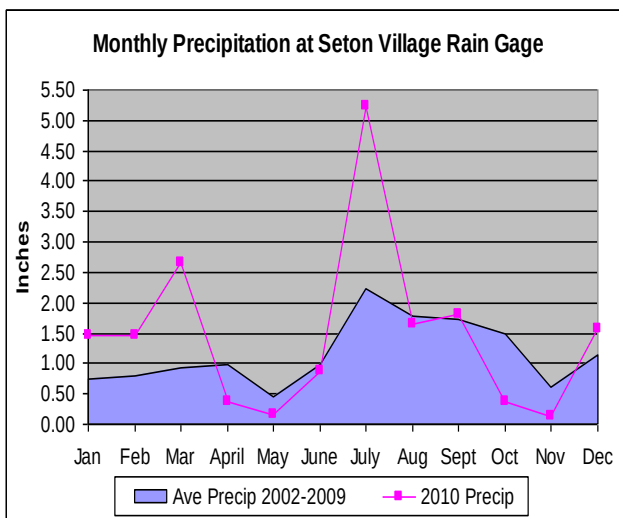
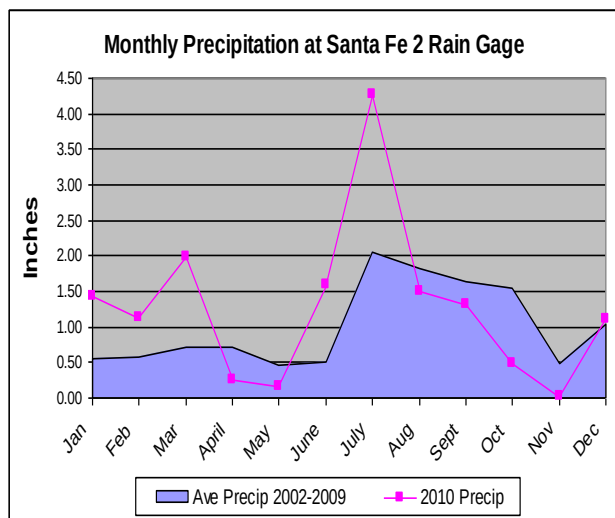
	River Discharge	MRC/ M.Sanchez	Horse Park	Country Club	SF Downs	Las Campanas	Non-Contract Sales	Totals In Acre-Feet
2004	4316	698	99	339	143	349	41	5984
2005	4428	456	80	301	157	369	61	5851
2006	4417	481	71	300	126	335	80	5810
2007	4636	483	0	310	128	371	121	6050
2008	4318	480	0	317	141	406	100	5762
2009	3949	532	0	314	109	405	83	5391
2010	4164	464	0	317	126	404	80	5554

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 20.7 inches of SWE for the end of March 2010. Elk Cabin reported a peak accumulation of 8.4 inches of SWE for the end of March 2010.



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 15.27 inches for the year of 2010. Seton Village (approximately 4.5 miles south of downtown Santa Fe) reported 17.76 inches for the year 2010.



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 Groundwater Quality

The City has been working with regional partners in a cooperative effort 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. 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>. 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 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.

Drinking Water Quality

Santa Fe tap water is of excellent quality. The 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 2010. 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 2010 is available at the following link: <http://www.santafenm.gov/DocumentView.aspx?DID=6044>.

City of Santa Fe 2010 Water Quality Table

Inorganic Contaminants	Units	MCL	City Well Field ^b	Range ^a 2008- 2010		Buckman Tank ^c	Canyon Road WTP	Violation	Typical Source
				Low	High				
Arsenic	ppb	10	ND	ND	5	8	ND	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium	ppm	2	0.7	0.006	0.7	0.1	0.0062	No	Discharge from drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium [Total]	ppb	100	ND	ND	2	7	ND	No	Discharge from steel and pulp mills; erosion of natural deposits
Fluoride	ppm	4	0.4	0.18	0.4	0.51	0.4	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Cyanide	ppm	0.2	0.044	ND	0.044	ND	ND	No	Discharge from steel/metals factories; discharge from plastic and fertilizer factories
Nitrate [as N]	ppm	10	6.7	2.8	6.7	1.4	ND	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion from natural deposits
Radioactive Contaminants									
Gross Alpha Emitters	pCi/L	15	2	0.52	2	7.4	ND	No	Erosion of natural deposits
Radium 226/228	pCi/L	5	2.07	0.57	2.07	ND	0.156	No	Erosion of natural deposits
Uranium	ppb	30	2.62	1	3	9.6	0.021	No	Erosion of natural deposits
Disinfectants & Disinfection By-Products									
Haloacetic Acids (HAAs)	ppb	60	8.84	0.1	18.8	0.71	12.27	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethane]	ppb	80	18.57	0.5	40	0.96	37.57	No	By-product of drinking water chlorination

Notes:

a. The range represents the highest and low values. Range values are not given if only one sample was taken during the range period.

b. City wellfield: Alto, Agua Fria, Ferguson, Osage, Santa Fe, St. Mikes

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

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

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). 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.



A view of the BDD gravity thickener.

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 will capture the energy of the finished water flowing downhill from the Canyon Road Water Treatment plant into the 5 million gallon tank. The 170 ft of net head generated by approximately 5,000 acre-feet per year will pass through a pump turbine, generating 100 kilowatts of energy and earning renewable energy credits (REC) from PNM. The City received a \$161,807 New Mexico Finance Authority (NMFA) Drinking Water Loan for project engineering, as well as an additional \$702,590 in ARRA funding for hydroelectric project construction and equipment. The project is expected to pay for itself in 19 years, without taking into account the payments for RECs or higher future cost of electricity. Construction began in September of 2010.

Buckman Direct Diversion Solar Project

The 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 Water Treatment Plant (BDD WTP). The facility will produce up to 1 megawatt of solar electrical energy approximately 1/3 the average electrical demand of the BDD WTP. Because the solar project is intended to reduce on-peak demand, there will be an additional environmental benefit by reducing peak unit emissions and by leveling electricity usage, possibly forestalling the installation of additional power plants over time. The project has received \$141,400 of federal stimulus money under the NMFA Drinking Water

infrastructure is expected for September State Revolving Loan Fund Program for additional BDD Project expenses. Construction for this project has begun.

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 in 2009 during which time there were 7 PNM Peak Saver events called for a total of 26 hours. To date the City of Santa Fe has earned \$37,780 for 3 out of 4 months of the 2009 season, which is approximately equal to 1334kW and 33,826kWh grid reduction.

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. The NMFA has provided a Drinking Water Loan of \$250,000, and construction of telemetry components that will interface with existing 2010.

System Maintenance

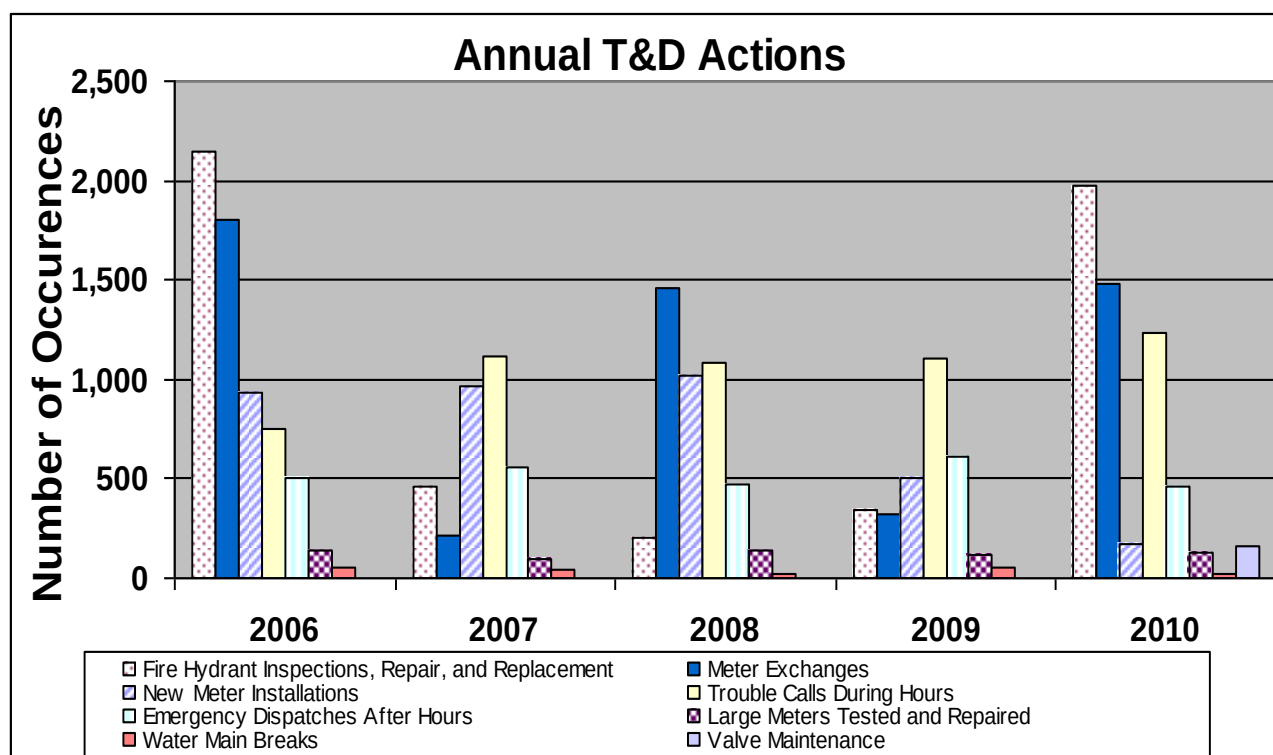
The Transmission and Distribution (T&D) section of the Water Division is responsible for the upkeep of the City's water lines, valves, and meters. Throughout the year this team handles emergencies and troubleshoots a system that includes components over 100 years old. The section also installs and maintains 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 2010 T&D flushed $\frac{3}{4}$ of Zone 7 and $\frac{3}{4}$ of Zone 8 of the City's water mains in preparation of the BDD Project coming online. Flushing the City's water distribution system removes accumulated silt/sediment from distribution system piping and addresses customer complaints regarding

water quality. During 2010, T&D also completed the replacement of 7 large meters and 23 mainline isolation valves. During the winter months of 2010, Transmission and Distribution crews serviced 63 frozen meter services.

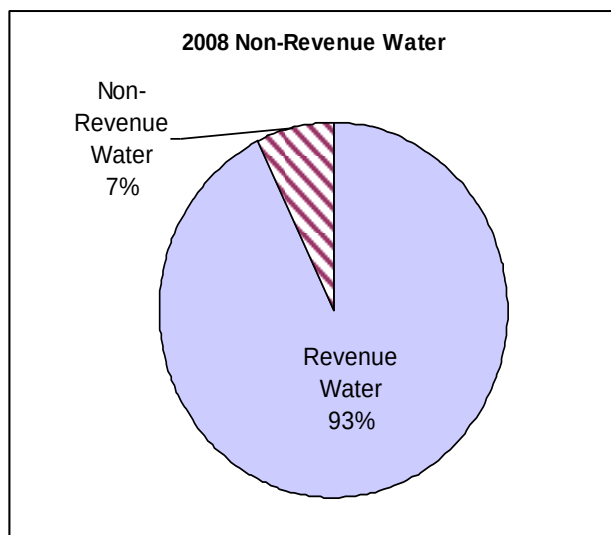


A member of the T&D staff repairs a main line leak.



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 \$58 million in federal, state and local grants and low interest loans since 1998 with approximately 6.8 million dollars secured in 2010.



