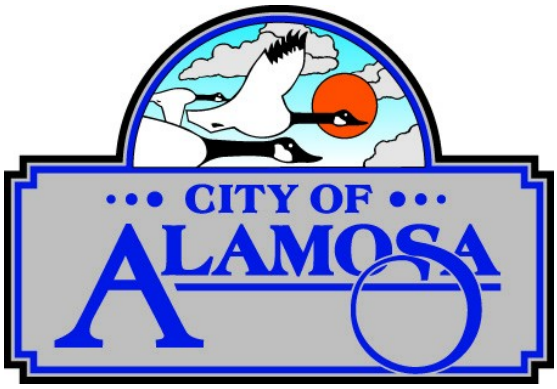

Water Conservation Plan

May 2007

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Executive Summary

The dry San Luis Valley receives about half as much precipitation as Colorado's average. The underground water aquifers – where we get much of the water serving the area – are overdeveloped and we are consuming water faster than the aquifer can replenish it.

This scenario is complicated by the area's 7,500-foot elevation, high winds and agriculturally dominant economy. All of this contributes to the Valley using more water for irrigation than the rest of the state. Recent drought conditions have brought increased pain and attention to this situation.

Steps must be taken to ensure that Alamosa have reliable, sustainable, safe supply of water for generations to come. The City is in the middle of taking numerous steps to strengthen our water supply. That's only half the equation. As our water supply becomes more precious, we must become more responsible stewards of it.

This conservation plan outlines efforts that will reduce water consumption by 30-percent over the next 10 years.

Conservation has become less of an option and more of a necessity in Alamosa for two main reasons:

- It has been determined through a recent judicial finding that the aquifer from which we get our water is being used at an unsustainable rate; and
- We will soon begin treating our water for both domestic and irrigation use.

When it comes to water conservation, we must start with a hard look in the mirror. Before the City can expect Alamos to adopt new water behaviors, we and other larger institutions must lead by example.

Roughly half of the City's current water is currently consumed by the City of Alamosa Parks & Recreation Department, the Municipal Golf Course, Adams State College and the Alamosa School District. These four institutions have an opportunity to create a tremendously positive impact.

As this plan summarizes, the City will work with larger irrigators like these to audit their irrigation systems and help them access grants to fund the replacement of outdated, wasteful systems. Rebates are another option discussed in the plan to help stimulate conservation actions among larger irrigators like these.

Throughout Colorado, and nationally, education of water users is one of the most effective ways to increase conservation. This is a key component of our plan. Increases to domestic water rates or tiered rate structures (charging those who use more water more) is another key component. Surprising to many people is that, even with higher rates, one of the lesser known results of a water conservation plan is that most customers actually have lower monthly bills because their reduction in water use more than offsets the higher rates.

Another key component of our program will be to offer incentives for positive conservation behaviors like replacing older model faucets and shower heads or installing lower water demand landscaping (xeriscaping). Our plan also encourages the City to enact new ordinances to reduce inefficient use or waste of water.

The Plan will require some funding by the City – this will be addressed in future budgets – but it is an essential part of our future sustainability. By implementing this plan, we can provide our children and grandchildren with a more reliable, safe and sustainable supply of water.

Our Existing Water System

Most of Alamosa's water comes from a deep, protected, underground aquifer. We have six wells which supply the bulk of the City's needs. One surface aquifer well supplies irrigation needs for the front nine of the municipal golf course. Two of these six wells do not have independent decrees, meaning water can only be pumped out of them when the other four are not providing Alamosa's decreed capacity.

Total adjudicated water rights from these wells is 7,200 gallons per minute (gpm) for a total of 11,615 acre feet (af) per year. This is nearly 3.8 billion gallons per year. Average water production for the City over the past five years (2001 through 2005) has been 2,595 af/yr or roughly 845 million gallons per year.

While this might seem to imply that we have more than adequate water rights for at least the near future there are many other factors that may well have a major impact on the security of these water rights, not the least of which is the recent examination of the impacts of confined aquifer groundwater use on surface rights.

Well	Location	Depth	Capacity (gpm)
1	*701 Ross*	1225	900
2	21st Street[1]	1648	2,400
3	12th St	1500	1,800
4	Murphy	1500	1,800
5	*Weber*[1]	*1244*	*800*
6	*Cole Park*	*1000*	*600*
7	*Golf Course*	*16*	*600*
8	*Price Well*	*1630*	1,500
Capacity (GPM)			7,200
Capacity (af/yr)			11,615
Peak GPH			432,000
Note[1]	*These wells do not have a separate adjudication of rights. They are alternate points of diversion for wells 1,2,4, and 6.*		

The City also owns water rights associated with the "Alamosa Ranch" purchased in 1997. The most significant of these rights are associated with the Independent or "Maddux Ditch" at 470 af/yr of consumptive use and the Excelsior Ditch at 526 af/yr of consumptive use. Converting the rights from the Maddux Ditch or Excelsior Ditch, which are decreed for agricultural use, to municipal use would require a "change of beneficial use" by the Colorado Water Court. This is a complex process that could take some time.

Alamosa has approximately 49.1 miles of water pipes serving our 5.1 square mile service area. The pipes range in size from four to sixteen inches. The City has 750,000 gallons of elevated water storage capacity. There are another 375,000 gallons of available water storage in a surface

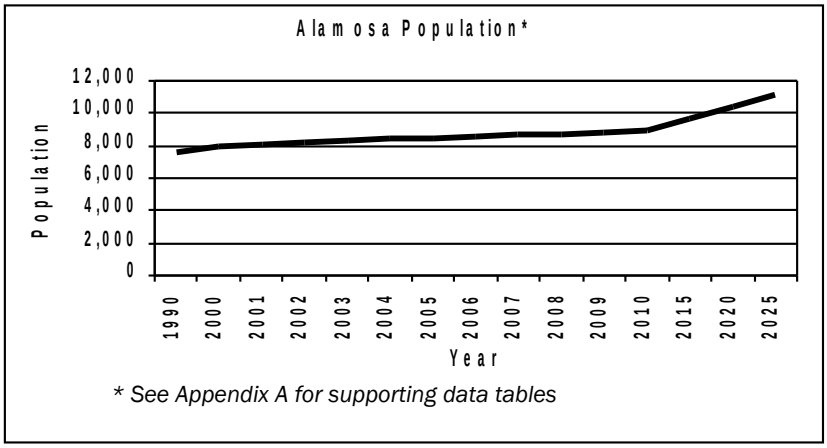
mounted covered facility. At the beginning of 2006 Alamosa had a total of 2,914 taps, all of which are metered and are billed monthly serving a population of 8,488.

Alamosa has no major industrial users. The largest users are public and institutional irrigation users such as the City Parks, the municipal golf course, the local school system, and Adams State College, and the hospital.

Water Use and Demand Forecast

Over the past 15 years, population growth in Alamosa has been running well below state averages at approximately 0.8% per year.

Using the assumption that Alamosa's population growth rate will increase no more than 1.5% per year, Alamosa's population growth rate will remain well below state historic averages.
Water production has been increasing at 1.05 percent per year – a rate slightly above that of the City's population growth.

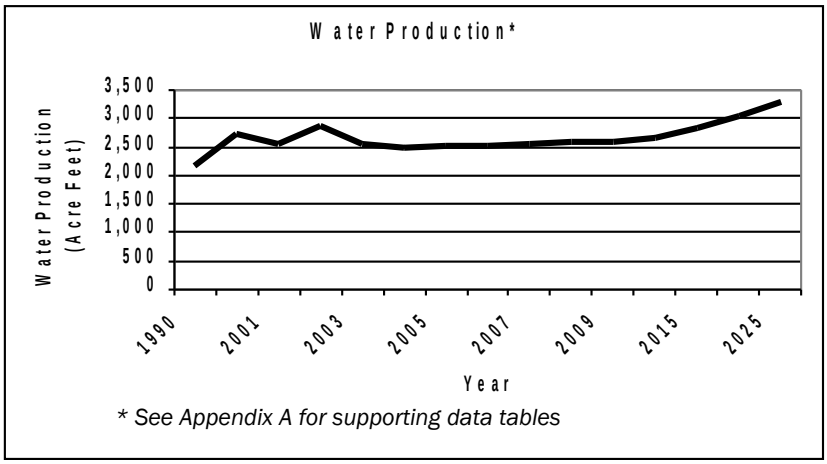


** See Appendix A for supporting data tables*

In order to sustain the use of our limited water supplies, we need to do two critical things:

- Increase efficiency;
- Decrease demand.

First, we must increase the efficiency the water we use to ensure we get the most out it. An example of efficient use is finding ways to reduce the amount of water needed to irrigate five acres of bluegrass. Second, we must reduce our overall water by identifying current uses that can be reduced or eliminated. An example of demand reduction is finding ways to get by with less than five acres of bluegrass. Both approaches will be addressed in this plan.



** See Appendix A for supporting data tables*

Proposed Facilities

Alamosa is currently faced with a major change in how we produce and distribute water. For the first time in our history, we will be treating our groundwater for potable use in order to comply with increasingly stringent state and federal regulations. This two-supply system will provide non-potable water to significant irrigation users while serving the rest of the City's water users with potable water. We are currently constructing a new water treatment facility and are also making a significant investment to upgrade our distribution system.

Recently enacted EPA requirements call for a five-fold reduction in the arsenic standards (from 50 µg/L to 10 µg/L) that forces us to develop a treatment system to achieve the new standard. High levels of dissolved silica in our water supply greatly constrained our options for compliance.

Overall the capital costs for this system will exceed $16 million which includes the cost of design and construction of the plant and the design and installation of the new water lines needed to upgrade our distribution system. Annual operations and maintenance costs are estimated to add an additional $480,000 in 2006 dollars.

In an effort to reduce these costs, we have identified several large irrigation users that we will supply with non-potable water, for the most part from existing wells. The 375,000 gallon ground level storage tank will be used for irrigation storage purposes. Two of our existing confined aquifer wells will be exclusively dedicated to non-potable uses with the remaining five wells used for both potable and non-potable sources.

One major irrigation user, the back nine of the municipal golf course, will be irrigated using our surface water rights from the Excelsior and/or Independent Ditch, thus removing this demand from our confined aquifer sources. The front nine is currently irrigated with the unconfined aquifer well Number 7. We are currently looking at the best way to convey the ditch water to a surface storage facility on the golf course and the pumping system necessary to distribute the water. We expect to have this system in place before the new water treatment plant is on-line in 2008.

The Road to Conservation

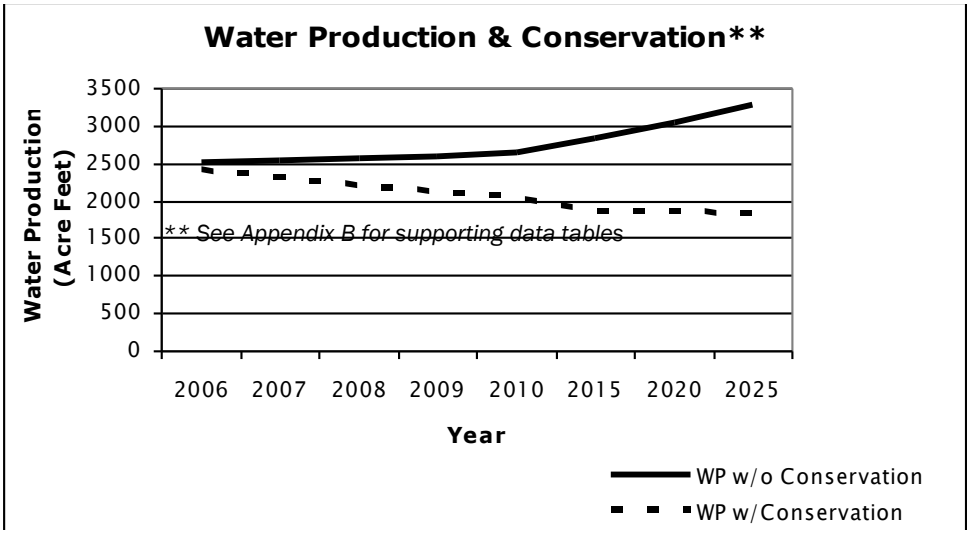
Conservation Goals

The goals of our water conservation program are to:

- Decrease our water use by 30% by 2018. We hope to achieve this gradually by:
    - Decreasing the per capita water use by 5% per year over the first five years of the program.
    - Decreasing the per capital water use by 3% per year over the final five years.
- Decrease overall water use so that, in the long-term, we can grow our population at a higher rate without increasing our water use.

Other water providers have found that their water conservation programs generate the greatest water savings in the earlier years of the water conservation effort as we "pick the low hanging fruits" offered by programs and investments to increase efficiency. As time goes on, it becomes more and more difficult to squeeze more efficiencies out of our water use.

The benefits of demand management will tend to take effect a little later in the plan cycle to be realized. It generally takes a greater upfront investment and the educational efforts needed to change life-long behaviors and habits take longer and are a little more challenging.



Long term (greater than ten years) we hope to be able to grow our population at a higher rate than we have in the past without increasing our water use. This implies that we not only reduce our use per capita, but our overall use. If our population growth rate stays in the 1% to 1.5% per year this should be achievable, requiring a continued per capita reduction matching that of the population growth. Should the growth rate exceed 1.5% per year it will be more challenging but not impossible to achieve the overall goal.

Conservation measures then can be expected to save 1,406 af of the water. This represents a production savings of 44%.

In 2005 our total production was 844,848,200 gallons. Of that residential customers were billed for 435,234,000 gallons (51.5%) and commercial customers were billed for 364,156,000 gallons (43.1%). The remaining 45,458,200 gallons (5.4%), went to City parks and buildings which are metered but have not been entered into the billing system, and unaccounted for water. This is a major improvement over the data collected from 2000, 2001, and 2002 which reflect an 18% unaccounted (not billed) water as reflected in appendix 3, *Preliminary Engineering Report* completed by Arber and Associates in May of 2005. Much of this improvement can be attributed to the fact that we no longer estimate winter water use, but rather read meters year round. Data accuracy will also improve with the well meters installed in 2007. We found that the old mechanical type well meters were under-reading by an average of 8%, a problem that should be eliminated with the new electronic flow meters. A similar problem exists with customer meters. We had never had a structured repair or replacement program, and as meters age, they tend to under-read the use. We started replacing all meters larger than one inch in 2005 and are approximately 85% complete with this program. In 2008 we will start a systematic customer meter replacement at 5% replacement per year.

We will be able to further refine that data as we restructure our customer service codes. The City acquired a new billing system in 2006 which is still being refined. As mentioned earlier, we have only been tracking usage by residential and commercial customer classes. We will be expanding these codes in the summer of 2007 to include residential, commercial, industrial, and institutional users. Our industrial use base, except for the two car washes, is minor, including automotive and equipment service facilities, one machine shop, and some trucking companies, all of which have limited uses and none of which are in our top twenty users. Our institutional base however is substantial, including the Alamosa School District, Adams State College, Alamosa Parks and Recreation Department, and the San Luis Regional Medical Center, all of which are on our top twenty user list. More than half of the water use of these institutional users, except for the hospital, is irrigation use.

Measuring the effectiveness of the City's water conservation efforts will not be easy – we routinely have 10% - 20% variations in the mean water production of from year to year, depending primarily on weather patterns for that year. Domestic water use does not vary as much, making it easier to see and measure the effectiveness of our conservation program elements aimed at that segment of use. Irrigation use will have to be measured over time, perhaps with a three year rolling average compared to the baseline. In both cases however, immediate feedback may not be possible and the five year review can be expected to be more accurate than the annual review.

Some of our other measurement tools will also have to be improved. Currently we track only two general customer classes, commercial and residential. While we do have subclasses within these two categories, they are not really useful in determining where and how the water is being used. This makes it very difficult to sort user types and see the affects of various conservation

measures. One of the first things we will have to do is determine how best to categorize our customers by use type and collect baseline data.

Identify Conservation Measures and Programs

Alamosa is a small community in a largely agricultural area with a dry climate. Our citizens tend to have a good understanding of the value of water, but we have struggled to reduce our use of this precious resource in a municipal setting.

The mean and median incomes of the community are also well below that of most of the state. This will have a direct affect on the success of conservation measures that require an investment – even an upfront, reimbursable investment – on behalf of the community. We have a large inventory of older homes with plumbing fixtures that pre-date the lower water use fixtures mandated by the plumbing codes currently in effect.

§37-60-126 C.R.S. lists nine specific water-saving measures that must be considered:

1) Water-efficient fixtures and appliances
2) Low water use landscapes
3) Water-efficient industrial and commercial water-use processes
4) Water reuse systems
5) Distribution system leak identification and repair
6) Dissemination of information regarding water-use efficiency measures
7) Water-use efficiency water rate structures and billing systems
8) Regulatory measures designed to encourage water conservation
9) Incentives to implement water conservation techniques

These nine measures use the word efficient extensively, inferring the requirement to do the same job with less use of resources. Implied, by not stated, is demand management - to actually reduce demand by changing practices in such a way that the need for the resource is minimized. Items 2, 7, and 9 would all contribute to demand management. Leak detection is a prime example of a third category, resource waste.

Evaluate and Select Conservation Measures and Programs

As mentioned earlier, there are two primary ways to reduce water use – increased efficiency and demand management. Some of the tools available for water conservation address one or the other of the efficiency/demand issues, some address both.

There are also two general classifications of use – domestic (indoor) use and irrigation. In Alamosa, just over 50% of our total water production is for irrigation purposes and has some of the greatest potential for savings. We will be looking at each of these use classifications separately although some of the proposed conservation can be used for both.

Domestic Use

Domestic use is generally considered to be that use commonly found in homes and small businesses, though not necessarily in industrial applications. This accounts for just under 50% of the water used in the City of Alamosa.

As stated earlier, many of Alamosa's citizens have limited incomes. This is both a challenge and an opportunity.

It can limit the effectiveness of rebates on some of the more expensive fixtures and appliances such as washing machines or dish washers. Even with the rebate it may not be affordable for our customers to replace the fixtures or appliances unless they no longer function.

On the other hand it means that we have many of the older, high-use water fixtures still in use throughout the City which can be replaced at a reasonable cost while generating substantial water savings. It may also make water conservation rates more effective than they might otherwise be the case.

In order to reduce water used for domestic purposes we will have to change perceptions and habits in the community. Doing so will require a significant and on-going investment in education of our customers. Until our customers understand and "buy into" the need for water conservation any other program elements will be of very limited effectiveness.

We need to further educate our customers first about the limited water supplies available to us. Then we can begin informing them about how domestic water is used and which activities use the most of it. Finally we can then engage them in a discussion about the resources available to reduce the water use by specific activities and how to more efficiently use water for those activities that remain.

Any conservation program will have to be adaptable, reinforcing successes while not spending too many resources on the less effective measures. The rankings on the following table range from one to three, with the lower numbers reflecting more desirable outcomes. As we gain experience in these areas we may find that the ratings are not accurate and adjust the programs

accordingly. The following tools and methods have been considered achieve water conservation for domestic uses with rankings for expected effectiveness and cost:

Tools	Methods	Effectiveness Ranking	Cost Ranking	Overall Ranking
Education	Direct Mail, PSA's, School Programs, Demonstrations, Workshops	1	1	1
Conservation Rates	Inclining block	1	1	1
Use Audits	Leak Detection, Use Patterns and quantities	2	2	2
Regulatory	Water Use Ordinances, Landscaping Restrictions	2	2	2
Awards/Recognition	Landscaping	3	1	2
Fixture Rebates	Free Small Fixtures, Rebates on larger fixtures	3	3	3

Irrigation Use

Almost half of the water we produce each year goes to irrigate lawns, parks, golf courses, and school areas. About half of that amount is used by large institutional users, City parks, the municipal golf course, and school district and Adams State College.

Alamosa is at 7,500 feet of elevation, subjecting the local landscaping to harsh sun during the irrigation season with high winds, especially in the spring, which can desiccate plantings in short order. In addition this are seldom receive more than seven inches of precipitation in any given year. This makes it very difficult to sustain the traditional bluegrass lawns to which so many of us have become accustomed.

Irrigation use can be controlled by two factors again, efficiency and demand management. Sub-irrigation has a great potential for efficient irrigation of turf areas. It puts water where it is needed, at the roots, while loosing much less to the evaporation effects of the wind and sun that plague irrigation by surface rotors.

Changing planting selections in those areas that do not need turf can greatly reduce water demand with informed plant selection as well. Working with representatives of the City of Alamosa Parks and Recreation Department, the Cattails Golf Course, Adams State College, the Alamosa School District, and community representatives, we have evaluated and ranked the following measures:

Tools	Methods	Effectiveness Ranking	Cost Ranking	Overall Ranking
Education	Plant Selection; Irrigation design options, demonstration plantings, system design workshops, PSA's	1	1	1
Conservation Rates	Inclining Block	1	1	1
Awards/Recognition	Landscaping design	2	1	1.5
Regulatory	Landscape ordinance, time restrictions, waste reduction	1	2	1.5
Grants	Grants to large users to develop demonstration projects and landscape or irrigation system changes	1	3	2
Use Audits	Irrigation system leak, maintenance issues	2	2	2
Rebates	Irrigation controllers, soil moisture sensor purchase and installation	2	3	2.5

Water Efficient Industrial and Commercial Processes.

The bulk of our commercial and industrial users actually follow a more domestic use pattern rather than that of what might normally be associated with such uses because of their limited numbers and small size. Such users also tend to follow a more formal decision making process when considering improvements. If they see that the "payback" for improvements is positive and can be attained in a reasonable amount of time, they are more likely to adopt improvements. The change in our rates and rate structures discussed elsewhere in the plan will help encourage improvements that will reduce their water use. One of the things we will be encouraging will be water re-circulation systems for car washes.

Our institutional users, as mentioned earlier, have a much higher potential for water conservation, if only because they use more water. More than half of that use is for irrigation for most of these customers. In 1996 we conducted an audit of the City parks system and golf course (Agro Engineering, September 1966). The focus was demand management rather than conservation, but the findings were applicable to the conservation issues as well. Problems were noted in a high variation in system pressures, poor design of the some of the systems, age related maintenance, and control systems. While the maintenance and system pressures have been addressed we still have many opportunities to improve our control systems, system design, and landscaping, which was not addressed in the report. We are also looking at sub-surface irrigation systems for those parks that need to have their current system replaced and for new installations. In our limited contact with current users of sub-surface systems, they have indicated a savings potential of 30% or more with no decrease in performance. We will also be replacing some of 1960's era toilets in City Hall in the summer of 2007. This will not only help reduce our use, but serve as an "exhibit" of some of the various low flow toilets available today.

Adam States College started looking seriously at their irrigation systems due to the anticipated cost increases associated with the new arsenic treatment plant. They conducted a system

analysis with the help of Carter Burgess in 2005 and 2006. This is leading to a integrated control system and an entirely new irrigation distribution system being installed in 2007. They anticipate a 15% demand reduction from these steps alone. ASC was not able to incorporate a lot of landscaping changes in this phase of the project due to the source of funds, but have produced conceptual designs for future improvements which could generate another 20% or more in water savings. The City was fortunate in that ASC has shared their study with us which will help in our future irrigation planning.

The school district high school and middle schools are the biggest water consumers. Just a casual examination of their use patterns, with almost 70% of their use coming in the irrigation season, during much of which the schools are closed, makes it clear that the largest potential savings are for that irrigation use. While we have never conducted a water audit for the district, this should be a priority. We have been involved in the initial studies for a new combined elementary school and are in full agreement that a green building process to include water conservation will be a priority.

The other major use groups that we have not examined in detail are our restaurant customers. Two of them are in our top 20 users. An audit of their use may well indicate water savings opportunities across the use group. We will be able to distribute this information to like users through direct mailings.

Water Reuse Systems

The City originally considered treating wastewater for irrigation needs as part of the 1993 Agro Engineering evaluation of our water rights and conducted a more detail study in 1999 (Conceptual Design Report – Wastewater Reuse, Richard P. Arber Associates, May, 1999). The overall findings were that while it was certainly technically feasible and probably affordable over time, it would not truly "save" water, and was in fact, probably not possible under our water decrees. Trans-mountain water can be used to extinction. Our water comes from the San Luis Valley confined aquifer and does not fall under these rules. In fact, our wastewater treatment plant effluent contributes to the delivery requirements under the Rio Grande compact. Even if we could use our water to extinction that would mean that the effluent no longer being returned to the Rio Grande would have to be replaced by another source.

Distribution System Leak ID and Repair.

While we have not had a formal distribution leak identification and repair program in place we have been looking at the amount of water billed versus the amount produced annually and focused on major changes to identify the reasons. The difference has generally been within the margins of meter accuracy so this was not seen as a major problem. Our lines are relatively shallow (5' to 6' bury) which means that major leaks become apparent quickly. We have also been systematically replacing our oldest lines which are cast iron over the past ten years, budgeting $200,000 to $250,000 per year for this purpose. Once we complete this phase we will move into the AC line replacement phase. This program was suspended in 2006 through 2008 because of the major capital demands placed on us by the design and construction of our new water treatment plant and the raw water collection and finished water distribution lines necessary to make that work. This program will be re-instituted in 2009. We will also add a leak detection

element to our valve exercising program with a target of 20% of the lines per year for a five year cycle for each line segment.

Conservation Oriented Rate Structure and Billing System.

Prior to the draught which was starting to be apparent in 2001, the City had not adjusted its water rates since 1992. That was a politically traumatic experience both for our customers and for some of our longer serving City Councilors. While we all recognized that our declining block structure adopted on 1992 was not the most desirable system for valuing water, and was in fact dysfunctional, the political will to take the first step took a while to build. The draught added impetus to this effort. From a declining block structure of $0.90/1000 gallons for the first 20,000 gallons, $0.70/1,000 gallons for 20,001 to 100,000 gallons, and $0.55/1,000 gallons for all use in excess of 100,000 gallons we started a three or four step (we ended up skipping the third step) to first narrow the ranges and increase the rates, move to a flat rate structure, and then to an inclining rate structure. The need to increase our rates to help pay for the new requirements for arsenic removal in our water also helped to make these changes more palatable. The first step was taken in 2004 when we maintained the same blocks but increased the rates to $1.00, $0.90, and $0.75 respectively. In 2005 we again adjusted the rates and changed the block structure as well to $1.05/1,000 gallons for the first 50,000 gallons and $0.90 for all water used over 50,000 gallons. In March of 2007 we adopted our current rate and inclining block rate structure of $1.10/1,000 gallons for the first 8,000 gallons of use, $1.30/1,000 gallons for all use between 8,001 gallons and 50,000 gallons, and $1.50/1,000 gallons for all use in excess of 50,000 gallons.

Implementation Plan

All of these measures cannot be implemented at once, if only because we lack sufficient funds, staffing and expertise to do so. We will focus first on those measures that we expect to be most effective, and within that group, the ones that have a more limited impact on funding. As resources and measurements of effectiveness become available we will consider adding more activities and modifying the ones already in place.

Education

From the tables above, education is clearly an effective and relatively inexpensive means to conserve water. Educating our customers of the need to conserve is also a necessary first step in implementing other water conservation measures if we are to gain acceptance.

Education can also provide a tool to get customer input on what works and what does not. Education will always be an ongoing activity, both to gain initial customer acceptance of conservation activities and to reinforce and maintain the program.

In the first year of the program we will want to provide timely information on the real costs of water and our supply limitations. We also will want to help our customers identify water intensive practices and provide tools to reduce the need for these activities and to most efficiently meet the remaining need.

The primary tools for doing this will be quarterly newsletters, PSA,s and billing modifications so that people can see the affect of their actions. These activities will be funded from City resources.

Within five years, we will develop a demonstration landscape project with the help of one or more of our large irrigation customers, interns hired by the City, and perhaps professional landscape architects. We will take advantage of the work done by CSU and others to develop test planting areas to provide a better palate of landscape materials that are successful in the San Luis Valley. The City Parks and Recreation Department will complete a test installation of a sub-irrigation system and monitor its performance for both effectiveness and efficiency. Funding for these activities will come from City resources and we expect to apply for OWCB and GoCo grants.

Conservation Rates

The City has been moving from a declining block rate structure towards a flat rate structure in measured steps in order to allow our customers to adapt to this shifting paradigm. In 2007 Alamosa adopted conservation rates as noted earlier in this document. We will also move to an annual review of the rates to ensure that they adequately cover all costs of the water system and that they are having the intended water conservation impacts.

Regulatory

There are a number of issues that can be addressed by regulatory means:

- "Water Waste" Ordinance – One example is water users who continually "irrigate" asphalt and concrete. We will work to enact an ordinance to discourage/punish repeat offenders. This can be developed within the next two years.

- Water Restrictions – We have had voluntary restrictions in place for the last three years which allow irrigation to take place only between the hours of 6:00 pm to 9:00 am. We need to codify this restriction, perhaps with some provisions made for new plantings and hand application. This can be developed within the next two years.

- Landscape Restrictions – A somewhat more controversial measure that will require a great deal of community discussion and input will be the potential for landscape restrictions on new development and incentives for modification of existing landscaping. Addressing such issues will take more time to develop an acceptable program.

Use Audits

Use audits help identify high water use activities and leakage. Audits can be useful for both the homeowner and the large irrigation users. We can conduct these with existing personnel, although scheduling of the audits may be difficult during busier times of the year. The audit program will be developed in the first year of this plan with full training and implementation to take effect in year two.

Awards/Recognition

An awards program is already being discussed by the City Arboreal Board and the Parks and Recreation Department. They will lead this effort, recognizing home owners and large users for conservation efforts. Choosing effective awards to reinforce the public recognition element of this program can be very important.

Grant Programs

The City will establish a competitive grant program for large irrigation users to modify irrigation systems to increase efficiency, change landscaping to more low water use options and/or install demonstration projects. These grants will be awarded annually by the City as funds become available through a competitive process.

Fixture Rebates

As mentioned earlier, demographics and economic conditions will limit the effectiveness of a rebate program. These same two conditions, however, also provide opportunities for significant savings. While we will have to examine all of our options and funding constraints in developing this program, we should focus our initial efforts in reducing high use fixtures in some of our older housing units.

These older housing units may not have dish washers, but they almost certainly do have high-use toilets and showerheads. We may consider providing free low-flow showerheads which are available at an affordable price and rebates for installation of replacement of high-use toilets, a larger rebate for replacing higher use toilets perhaps.

Development of this program will take time but elements can be adopted in the interim. Rebates will have to be included in the budget process and in rate changes as well. This program may well take a full five years to fully implement.

Measure	Implementation Date	Estimated Water Savings	Estimated Cost	Funding Source
Water Conservation Rates	1st Quarter 2007	5%-7%	$1,800 one time	General Fund
Customer Education	4th Quarter 2007/On-going	2%	$3,000/yr	Enterprise Fund
Use Audits				
Alamosa School District	4th Quarter 2007	.2%	$7,000 one time	Grant/Enterprise
2 – 3 Major Restaurants	1st Quarter 2009	.2%	$3,500 one time	Enterprise Fund
Update on City Parks	4th Quarter 2008	See below	$3,500 one time	Enterprise Fund
Homeowner audits	2nd Quarter 2009	1%-2%	$5,000/yr	Enterprise Fund
Top Twenty Audits	2nd Quarter 2010 – 1-2/yr	.5%-1.5%	$4,000/yr	Enterprise Fund
City Owned Facility Modifications				
Replace City Hall Bathroom Fixtures – Education element	3rd Quarter 2007	.01%	$1,500 one time	General Fund
Install sub-surface system in new park	3rd Quarter 2007	25% – 35 % per park	$17,000 incremental over conventional	Enterprise Fund
Re-design and install new system in one park with significant problems with current system – repeat every three years till caught up	2nd Quarter 2008	10% - 15% if conventional, 35% - 45% if subsurface/park	$30,000 -$45,000/park	Enterprise/Park Funds
Re-design and replace irrigation system front nine of the golf course.	2nd Quarter 2009	10% - 15%/park	$50,000	Enterprise/Park Funds
Park/Golf Course "Billing"	1st Quarter 2008	5%	$500/yr	Enterprise Fund
ASC Irrigation Improvements	3rd Quarter 2008	2%	Under Bid Now	State
Lawn and garden low water test and demonstration areas	Turf options 2nd Quarter 2008 – Garden/landscaping 2nd Quarter 2009	2% - 5% per year	$15,000 to establish, $3,000/yr thereafter	Grant/Enterprise Fund
Fixture Rebates/Incentives	2nd Quarter 2008	1%-2%/yr	$3,500/yr	Enterprise Fund
Appliance Rebates	1st Quarter 2009	1%	$7,000/yr	Enterprise Fund
Leak Detection	1st Quarter 2009	1% - 2% per year	$2,500/yr	Enterprise Fund
Regulatory	1st Quarter 2009/Annual revision	1%-2%/yr	$7,500/yr	Enterprise Fund

Monitor, Evaluate, and Revise

In order for any program to be effective, an on-going monitoring effort must measure the outcomes on a periodic basis. This becomes more difficult if we change too many variables at once, but at the same time we cannot afford to wait to implement measures that have been shown to be effective in other cities.

We will continue to monitor production/distribution on a daily basis while aggregating the information monthly and annually. Each month we will identify the average and peak hourly and daily use and compare that to the comparable values for the previous year. Production and billing data will be used to provide this information. As we become more familiar with the capabilities of our new billing system and our data requirements, we will update the reporting formats.

Weather plays a large part in our irrigation use and measuring the effectiveness of irrigation conservation efforts will not be possible without taking this into account. We will have to build this database since historical data is not available. We may start with monthly precipitation summaries and add daily precipitation, temperature and wind data as our capabilities for doing so grow.

Costs, and the effectiveness of the programs associated with these costs will have to be closely monitored, especially early in the program. This will allow us to tailor our asset allocations to the more effective aspects of the program in the out-years. All expenditures, including staff time for each program element will be tracked at the Public Works Department and aggregated on a monthly and annual basis. A method will have to be developed to account for cumulative affects over time so that individual program elements are accurately measured.

At the end of each irrigation year, reports for each major irrigation user will be prepared to measure the effectiveness of that years' program and to share successes and failures with all users. This will be a joint effort on the part of the users and the City.

At least every two years we must conduct an informed "lessons learned" evaluation of our conservation program and develop recommendations for revisions and additions based on prior performance. Budget projections will have to be updated annually to bear the cost of program elements.

The entire program will undergo a formal, thorough evaluation no less than every five years, incorporating the outcomes to date with a public review process that will ensure that we understand what our customers need and want in the Conservation Plan. As best management practices and technologies are developed we can then evaluate how they fit our needs and adopt them as necessary during this review process.

Our water is one of our most precious resources. Needs are growing, but the supply is not. We must plan to deal with this dichotomy if we are not to "dry up and blow away".

Appendix A: Population Growth and Water Production Historic and Projected Trends

Historic Population Growth

Year	Population	% Annual Increase
1990	7,579	
2000	8,012	0.57%
2001	8,128	1.45%
2002	8,248	1.48%
2003	8,370	1.48%
2004	8,419	0.59%
2005	8,488	0.82%
Average annual change for period		**0.80%**

Projected Population Trends

Year	Population	% Annual Increase
2006	8,573	1.00%
2007	8,659	1.00%
2008	8,745	1.00%
2009	8,833	1.00%
2010	8,965	1.50%
2015	9,638	1.50%
2020	10,360	1.50%
2025	11,137	1.50%
Average increase for period		**1.39%**

Historic Water Production Trends

Year	Water Production (af)	% Annual Increase
1990	2,164	
2000	2,715	2.55%
2001	2,563	-5.60%
2002	2,866	11.82%
2003	2,544	-11.24%
2004	2,499	-1.77%
2005	2,505	0.24%
Average change for period		**1.05%**

Projected Production Trends w/o Conservation

Year	Water Production (af)	% Annual Increase
2006	2,530	1.00%
2007	2,555	1.00%
2008	2,581	1.00%
2009	2,607	1.00%
2010	2,646	1.50%
2015	2,844	1.50%
2020	3,058	1.50%
2025	3,287	1.50%
Average increase for period		**1.39%**

Appendix B: Anticipated Water Production Trends With and Without Conservation

Projected Production Trends w/o Conservation

Year	Water Production (af)	% Annual Increase
2006	2,530	1.00%
2007	2,555	1.00%
2008	2,581	1.00%
2009	2,607	1.00%
2010	2,646	1.50%
2015	2,844	1.50%
2020	3,058	1.50%
2025	3,287	1.50%
Average annual change for period		**1.39%**

Projected Production Trends with Conservation

Year	Water Production (af)	% Annual Change
2006	2,404	-4.05%
2007	2,306	-4.05%
2008	2,213	-4.05%
2009	2,123	-4.05%
2010	2,037	-4.05%
2015	1,861	-1.73%
2020	1,851	-0.11%
2025	1,841	-0.11%
Average annual change for period		**-1.53%**