NORTH WELD COUNTY WATER DISTRICT

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DON POSSELT, DISTRICT MANAGER

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June 1, 2009

Ms. Veva Deheza, CWCB
1313 Sherman Street, Room 721
Denver, CO 80203

RE: North Weld County Water District Water Conservation Plan

Dear Ms. Deheza:

North Weld County Water District (NWCWD) has completed the final draft of its Water Conservation Plan. This letter includes the Cover Letter Submittal Requirements for CWCB review and approval of our Water Conservation Plan.

Name and contact information for NWCWD:

Mr. Don Posselt, General Manager
P.O. Box 56
Lucerne, CO 80646

List of organizations and individuals that assisted in plan development:

Clear Water Solutions, Inc.
Kim Frick
Michelle Hatcher
Rachel Kullman, P.E.

Quantify retail water delivery and population for past six years:

Year	Residence (ac-ft)	Standard - Full (ac-ft)	Standard – 3/4 (ac-ft)	Standard – 1/2 (ac-ft)	Commercial - Flow (ac-ft)	Commercial - Dairy (ac-ft)	Commercial - Industrial (ac-ft)	Total (ac-ft)
2003	9	1,535	0.3	0.0	107	534	875	3,062
2004	12	1,478	0.3	0.0	97	621	779	2,988
2005	15	1,647	0.4	0.0	92	703	768	3,227
2006	25	1,834	0.6	0.0	87	801	871	3,618
2007	33	1,725	0.8	0.6	96	1,265	857	3,977
2008	37	1,655	1.1	0.8	146	1,839	528	4,206

The following table shows the population, as well as the residential water use and per capita water use.

Year	Delivery (1000 gal)	Population	GPCD
2003	503,336	8,316	166
2004	485,700	8,570	155
2005	541,762	8,799	169
2006	605,897	9,080	183
2007	573,118	9,293	169
2008	551,682	9,470	160
Average	541,963	8,921	166

Public review and comment information:

NWCWD held its public-review period from February 25, 2009 through April 24, 2009. We provided notice in the Greeley Tribune and the North Weld Herald on February 25th and 26th, 2009 respectively that a draft plan would be available for the public to review at the NWCWD office and on the website. Comments were accepted through the 60-day review period, which is completed. We received no written comments on the plan.

NWCWD will commit the necessary resources, as they become available for the implementation of the water conservation plan. Please let me know if you have any further requirements.

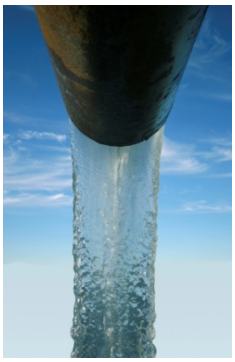
Sincerely,

Don Posselt

Don Posselt
General Manager

NORTH WELD COUNTY WATER DISTRICT

2009 WATER CONSERVATION PLAN



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CHAPTER 1 - INTRODUCTION

North Weld County Water District (NWCWD or District) is a quasi-municipal corporation that was formed in 1962 to provide a reliable, long term source of water to residents and businesses in north Weld County that had no other domestic source. The customer base has historically been residential and small and large agricultural operations, the latter of which continues to have a significant presence. The dairy industry represents a large portion of the commercial customers in the District and is forecasted to continue to grow both in existing establishments and new ones. The District has seen more growth in the large lot residential developments, especially in the vicinity of the bigger cities and towns that are adjacent to the District boundaries.

As the population grows in the northern Front Range of Colorado, water supplies are becoming more valuable and difficult to obtain. Water conservation is becoming an increasingly important part of sound water management and should be included as part of the water supply planning process. A meaningful and effective water conservation plan is a key component to accomplishing efficient water delivery obligations while minimizing system costs and protecting a valuable and limited resource. Figure 1.1 on the following page shows the District boundaries and surrounding entities. Parts of the growth management areas of Fort Collins, Greeley, Windsor and Timnath are served by the District and will have a substantial impact on future water demand.

Under the Colorado Revised Statute 37-60-126, prompted by the Water Conservation Act of 2004, water providers delivering over 2,000 acre feet are required to have a State-approved water conservation plan on file with the Colorado Water Conservation Board (CWCB), Office of Water Conservation and Drought Planning. Any entity that seeks funding from CWCB or the Colorado Water Resources and Power Development Authority must have a State-approved Water Conservation Plan. NWCWD currently delivers well over 6,000 acre feet (ac-ft) of water and will require funding for projects to meet current and future demands.

NWCWD is committed to optimizing its water supplies and system through practical water conservation practices. The benefits will include delaying the purchase of costly water supplies and infrastructure upgrades and reducing wastewater flows and treatment. The purpose of this Water Conservation Plan is to guide the District in the process of water conservation planning and implementation. The planning horizon for this plan is ten years, from 2009 to 2018.

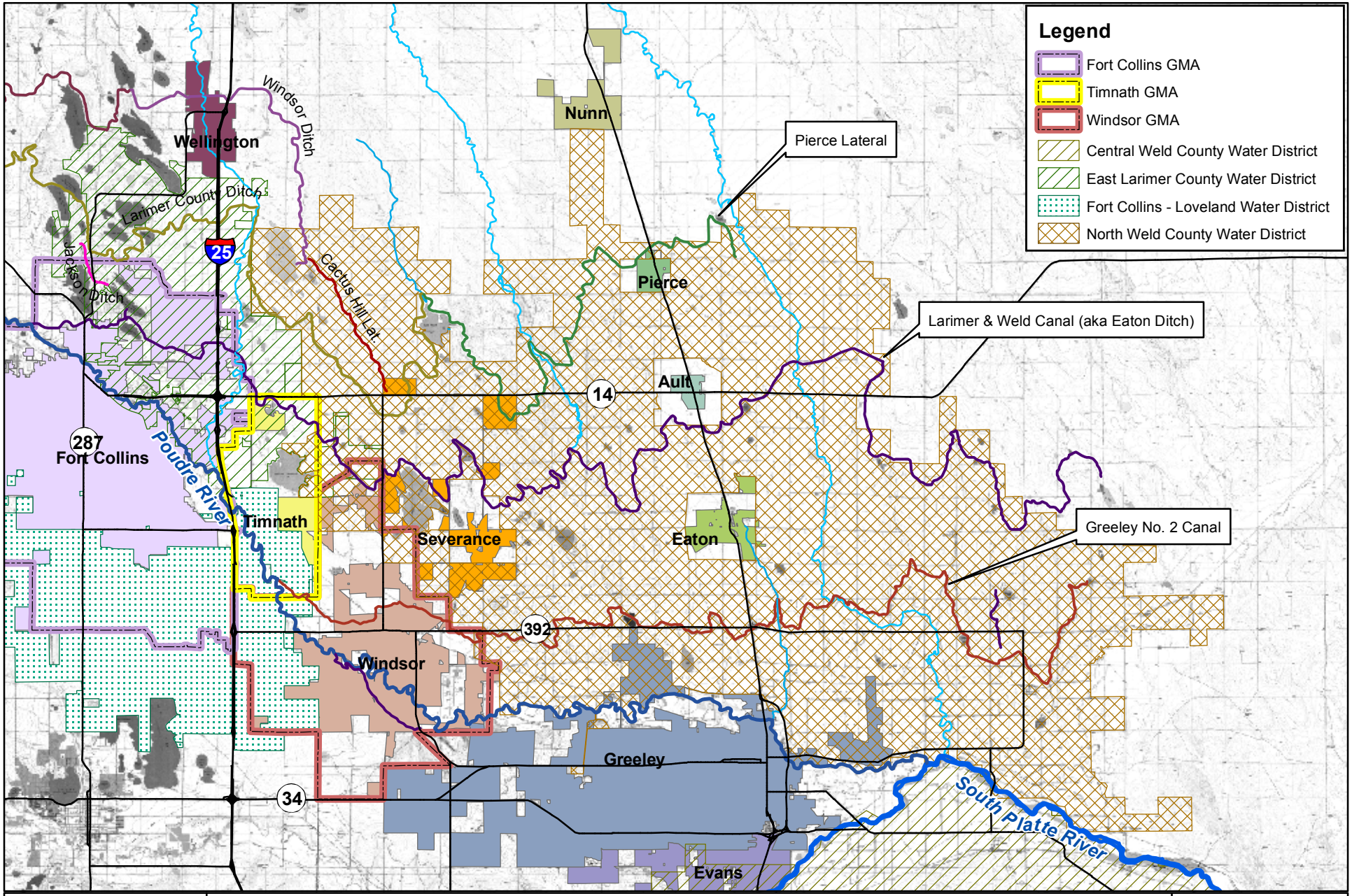

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Figure 1.1

NORTH WELD COUNTY WATER DISTRICT
VICINITY MAP

N
W E
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Date:	1/14/09
Drawn By:	VAF
Scale:	1" = 4 Miles
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Regional Cooperation

NWCWD is one of three water districts (NWCWD, East Larimer County Water District, and Fort Collins-Loveland Water District, collectively known as the Tri-Districts) that share ownership of the Soldier Canyon Filter Plant (SCFP), a regional water treatment facility. Through this ownership, NWCWD is in a position to participate in cooperative water system projects, which lowers the incremental cost for all participants through economies of scale. Water providers in the Fort Collins area have created partnerships to jointly construct and operate a number of critical water facilities. The Pleasant Valley Pipeline (PVP), an eight mile long, 67-in diameter raw water supply pipeline is shared by the Tri-Districts, Fort Collins, and Greeley.

The Tri-Districts are also a partner with Greeley in the purchase and development of gravel pits for raw water storage. A proposed project to enlarge Halligan Reservoir is being sponsored by Fort Collins, but includes NWCWD and several other project beneficiaries, including North Poudre Irrigation Company (NPIC). Water is exchanged year round between the City of Fort Collins water treatment facility and SCFP.

CHAPTER 2 - PROFILE EXISTING WATER SYSTEM

Characteristics of NWCWD Water Supply System

Population and Service Area

The NWCWD (aka the "District") service area encompasses approximately 325 square miles in northern Weld County. The service area lies generally north of Greeley, east of Fort Collins, south of Nunn and west of the Weld County boundary, which lies east of the Galeton/Gill area.

Within the service area, NWCWD delivers water, by contract, to all or part of nine municipalities, including: Ault, Eaton, Galeton, Gill, Lucerne, Nunn, Pierce, Severance and Windsor. NWCWD also provides water by contract to the Northern Colorado Water Association, which supplies water primarily to residences in the Wellington area. In addition, NWCWD delivers water directly to rural Weld County residences, businesses, agricultural, and livestock operations.

The NWCWD service area has experienced steady growth since it was formed in 1962, but has remained primarily rural in nature. The 2007 NWCWD Water System Master Plan estimates the population density of the service area to be 0.1 persons per acre. Although the service area is still zoned primarily for agriculture, the trend in recent decades has been one of increasing residential and commercial zoning. This trend is expected to continue.

NWCWD currently provides potable water to a population of approximately 36,000 including the population of the towns served through master meters. An exact population count is difficult to obtain since census data are not collected for special districts. In order to determine District population, several sources were used. First, population data were gathered from all of the master metered towns; Ault, Eaton, Nunn, Pierce, Severance and Windsor. In addition, the number of taps for the Towns of Galeton and Gill and the Northern Colorado Water Association (NCWA) were gathered. These tap numbers and the rural taps in the rest of the county were multiplied by the number of people per household.

To estimate population, the District uses 2.7 people per household. This estimate is slightly less than the Colorado Department of Affairs household population for Weld County due to the more rural nature of the District's service area. The population excluding the master metered towns is approximately 9,500.

NWCWD is in a unique situation in that a majority of its population resides within the master meter towns, yet the towns are responsible for their own water supply planning and acquisition. The master meter towns then turnover their water to NWCWD for treatment and delivery. NWCWD does not retain authority over the

customers living within the master meter towns. This situation is important to consider while constructing a water conservation plan.

Service Connections and Water Demand

At the end of 2008, the District was serving 3,482 residential, commercial and industrial taps. In 2008, a total of 6,726 ac-ft of water was delivered to District customers.

At the District, residential customers are separated into the following categories: Residence, Standard Full, Standard ¾, and Standard ½. The Residence category represented customers with a non-potable supply for outdoor use. In recent years, the District has decided to phase-out this category and replace it with the Standard ½ category. The Standard ½ customers have a non-potable supply and dual water system for outdoor irrigation or a residential lot less than 0.2 acres. The Standard ¾ customers have either a non-potable supply for outdoor irrigation or a residential lot size between 0.2 and 0.33 acres. The Standard Full customers represent the typical residential water user with both indoor and outdoor uses.

Commercial customers consist of Commercial Flow, Commercial Dairies and Commercial Industrial. The Commercial Flow customers are limited to a fixed flow rate and may have treated water storage on site to meet their peak demand, reducing the peak demand on the District's entire system. The Commercial Industrial category includes all other commercial uses within the District. In this water conservation plan, dairy specific uses from the Commercial Industrial category were separated into their own category. The dairies were separated since their water use is highly consumptive and because most of those customers are reusing and conserving as much water as they can to keep costs down.

The District had 6 fire meters in 2007, but due to the relatively new and unpredictable nature of water use for these taps, they have been left out of the analyses for this report.

The next two figures show the number of taps and the water use for each customer category in 2008. The purpose of this is to show side by side how the number of taps in a category can differ from the relative water use in that category. Figure 2.1 shows the percentage of taps in each category of the total number of taps in 2008. Figure 2.2 shows the percentage of water use in each category of the total water use in 2008.

Figure 2.1 – 2008 NWCWD Tap Percentages

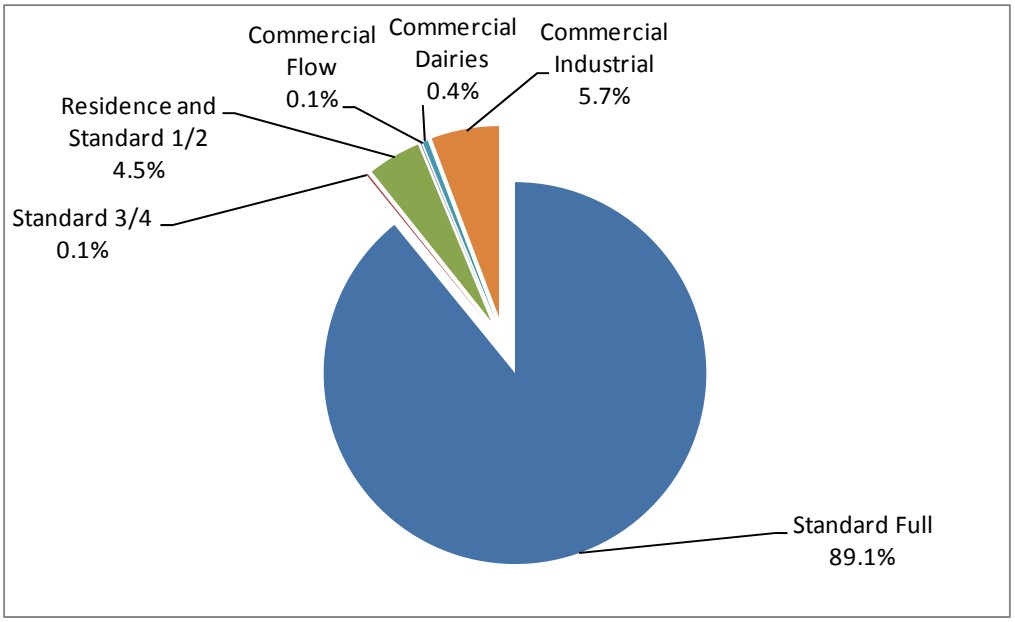
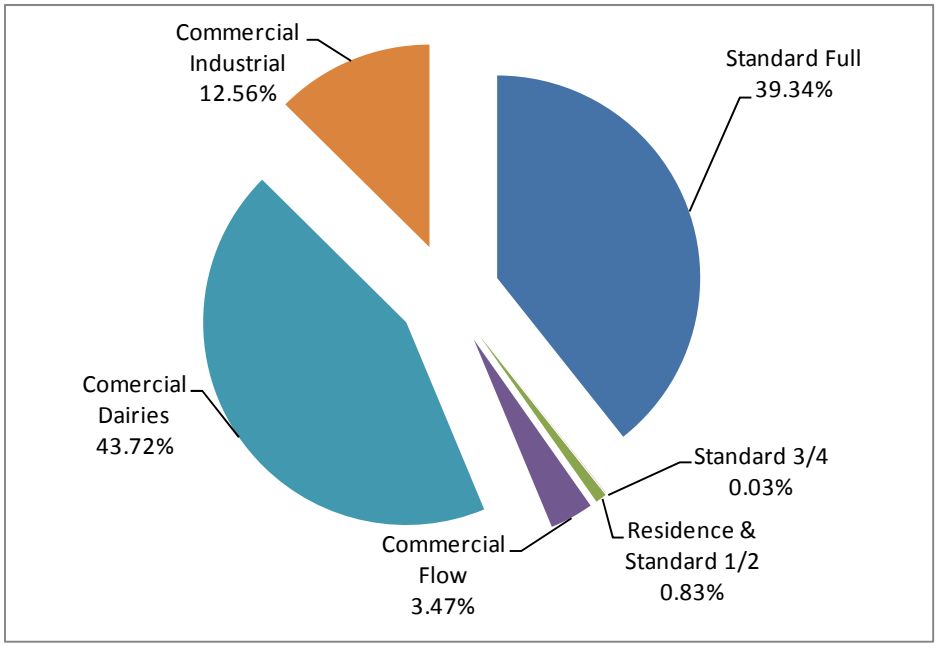


Figure 2.2 shows the percent of water used by each of the tap categories. As you can see, the percentages differ significantly. While the Standard Full water users represent 89.1 percent of the taps, they only represent 39.34 percent of the water use. Likewise, the Commercial Dairies represent 0.4 percent of the taps but 43.72 percent of the water use. This information is helpful in setting water conservation goals for the different water user categories.

Figure 2.2 – 2008 NWCWD Water Use Percentages



Existing Facilities

Most of NWCWD's potable water is delivered through the Colorado-Big Thompson Project (CBT) from the Colorado River. The water supply comes through the CBT system into Horsetooth Reservoir and is delivered directly to the District's water treatment plant, which is located just east of the reservoir. Some of the District's potable water is delivered from the Poudre River through the Pleasant Valley Pipeline (PVP) to the treatment plant. SCFP has a current capacity of 52 million gallons (MG) and underwent major expansion and upgrading from 1995 to 2003.

Additional facilities owned by the District include 643 miles of pipeline, 10 treated storage tanks with a capacity of 9.2 MG, seven pump stations, 16 control valves and nine flow control master meters.

Water Distribution System

The original pipeline from the SCFP to the District's first tank site was constructed of reinforced concrete steel cylinder pipe and was installed between 1962 and 1963. Portions of this pipeline have been replaced with ductile iron pipe and one pump station has been added. The majority of the distribution pipes that have been installed in the District over the last 25 years have been made of PVC and some ductile iron.

NWCWD also uses a pipeline and pump station to deliver water through ELCO's and the City of Fort Collins' system from Horsetooth Reservoir. The District's delivery is by contract from year to year and is based on excess capacity in ELCO's and Fort Collins' systems. As those entities grow into their excess capacity, additional delivery capacity will be needed to serve NWCWD's needs.

Currently, the District maintains 643 miles of pipeline and delivers water to eight pressure zones. The system losses through the District's distribution system are estimated to be an average of 8.3 percent from 2003 to 2007. The system maintenance program includes annual flushing of water lines, periodic valve maintenance and prompt leak repair. Due to the expansive size of their service area, the District frequently reminds its customers to be on the lookout for water on the ground surface, as this can indicate distribution system water leaks. The following table shows the miles for each diameter of pipe, ranging from one inch to 48 inches.

Table 2.1 – Water Transmission Pipe Lengths

Diameter (inches)	Length (feet)
5/8	814
3/4	64,671
1	78,866
1.5	6
2	560,313
2.5	211,928
3	398,984
4	440,117
6	446,418
8	431,998
10	161,993
12	186,080
14	29,463
16	107,685
18	10,535
20	53,999
24	142,492
30	36,371
36	30,853
42	146
48	48
Grand Total	3,393,780
Total Miles	643

The eight pressure zones in the District cover different portions of the service area and maintain adequate pressure, fire flows and enough storage to provide for one-24 hour period of peak delivery. The average growth from 1998 to 2005 is shown in Table 2.2 for each zone. The rate of growth in each zone differs, primarily because each is located at a different proximity to cities and towns.

Table 2.2 – NWCWD Pressure Zones

Zone	Approximate Area (Miles)	1998 - 2005 Average Growth Rate
Tank 1[1]	68	8.3%
Tank 2[2]	21	1.3%
Pump and Tank 3 & 4	61	3.7%
Tank 5	55	2.4%
Tank 6[3]	52	8.0%
Pump and Tank 7	73	5.0%
Nunn Pump and Tank[4]		6.0%
	Average:[5]	**4.9%**

Notes:

1. includes the Towns of Windsor, Severance, Eaton and Ault
2. Close proximity to Windsor and Greeley
3. Includes the Towns of Pierce and Nunn
4. Also serves the Town of Nunn and is contained in the Pump and Tank 7 Zone
5. This is consistent with the 2007 Water System Master Plan including all the master metered towns

Sources of Water Supply

The water supplies for NWCWD include trans-basin and native water rights. The trans-basin sources include CBT, the Water Supply and Storage Company (WSSC) and the Divide Canal Company, which divert water from the Colorado and Laramie River Basins. The potable water sources in the District come primarily from the Colorado River Basin. Some of the non-potable water sources owned by the District are exchanged to agricultural irrigators for the use of their CBT water, which is then in turn used for municipal and industrial deliveries to District customers. An application has been filed by the three owners of the SCFP (including NWCWD) for change of the WSSC water from agricultural use to municipal and industrial and is currently pending in water court.

Table 2.3 – NWCWD Water Supplies

Water Collection Companies	Shares or Units Owned	Firm Yield (ac-ft/share)	Average Yield (ac-ft/share)	Firm Yield (ac-ft)	Average Yield (ac-ft)
Potable Water					
Colorado Big Thompson Project	3091	0.5	0.7	1545.5	2163.7
North Poudre Irrigation Company	681	2	2.8	1362.0	1906.8
Poudre Valley Pipeline Junior Right	1	0	131	0.0	131.0
Non-Potable Water					
North Poudre Irrigation Company[1]	681	1	1.7	681.0	1157.7
Water Supply and Storage Company[2]	8.5	50	58.8	425.0	499.8
Divide Canal Company Class A	47	0.31	1.875	14.6	88.1
Divide Canal Company Class B	33.5	1.11	3.53	37.2	118.3
Windsor Reservoir and Canal Company Class B (Tunnel)	37.5	10.4	14.8	390.0	555.0
John R Brown[2,3]	2.64 cfs	-	-	29.0	32.0
Jackson Ditch[2]	0.8182	95	117	77.7	95.7
New Cache La Poudre Reservoir Co. (Timnath Reservoir)	8	3	3	24.0	24.0
Good Lateral Company	20			0.0	0.0
Pierce Lateral Company	5.5			0.0	0.0
Total Potable[5]				3451.0	5582.4
Total Non-Potable				1135.0	1189.7

Notes:

1. The Native portion of NPIC is only available to water users under that system
2. Shares can be exchanged for municipal water if available and are currently in Water Court to change the use from agricultural to municipal
3. NWCWD owns 1/3 of the 8cfs diversion right for John R Brown Ditch
4. Native NPIC and John Brown Ditch not available for potable use; WSSC only available in average years
5. Total includes WSSC in Firm Yield only; State Engineer allows municipal use in severe drought

CBT Water

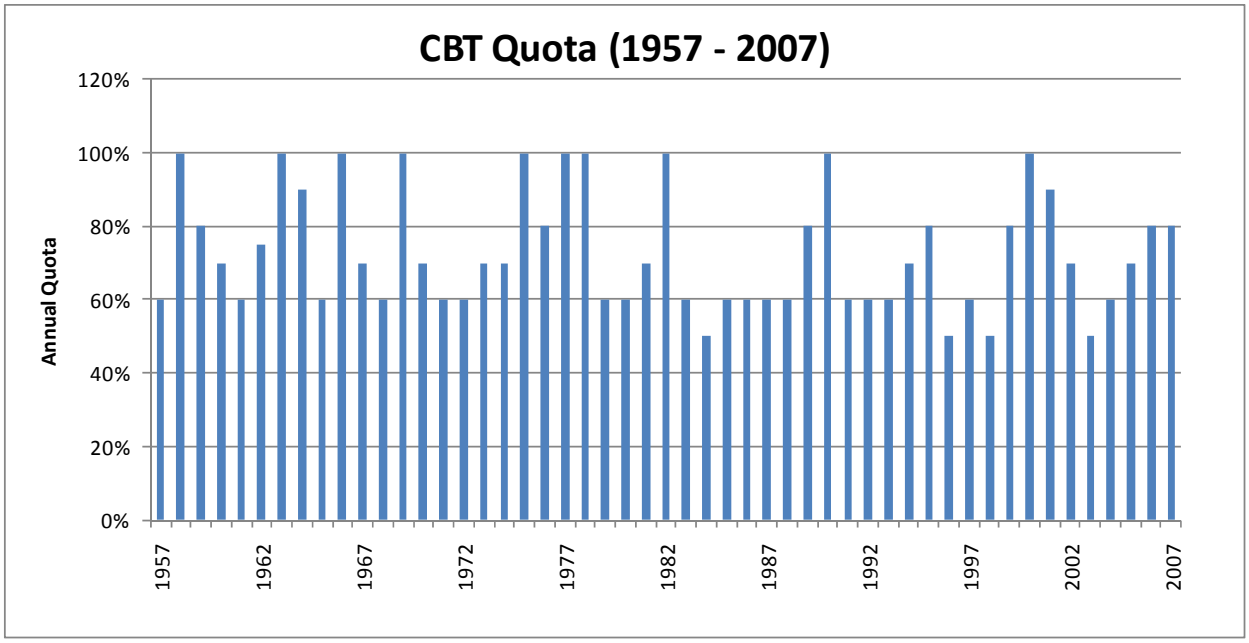
CBT facilities divert water from the western slope of Colorado to the Front Range to supplement the region's native water supply. The CBT project is the largest trans-mountain water diversion project in Colorado. It was constructed by the Bureau of Reclamation between 1938 and 1957 and is maintained by the Northern Colorado Water Conservancy District (Northern Water). The CBT project is decreed to divert 310,000 ac-ft of water each year and imports an average of 213,000 ac-ft of water to northeastern Colorado for agricultural, municipal and industrial uses.

The yield of CBT units is established each year by the Northern Water Board through what is known as the quota setting process. The basis for setting the quota is to make every year look like an average water year. The Northern Water Board examines the region's native supply and local storage before declaring a quota that meets the

supplemental needs of the region as a whole. As a result, the quota is lower in wet years because native supplies are plentiful and local reservoirs are full, so less CBT water is required to satisfy water demands.

In the last 51 years of operation, the average yield for CBT has been 0.73 ac-ft per unit. For planning purposes, a commonly used quota is 0.70 ac-ft per unit. The yield has never been less than 0.50 ac-ft per unit (50% quota) or more than 1.0 ac-ft per unit (100% quota). The annual quota established by the Northern Water Board over the years is shown in Figure 2.3.

Figure 2.3 – Annual CBT Quota History



Native Water Supplies

The District owns agricultural water rights and a junior water right on the Cache la Poudre River that is decreed for municipal and industrial use. The junior water right was filed in 2003 and only yields water in above average years.

The agricultural water rights include shares in the following mutual companies: North Poudre Irrigation Company (NPIC), WSSC, Divide Canal and Reservoir Company, Windsor Reservoir and Canal Company, John R. Brown Ditch Company, Jackson Ditch Company, New Cache la Poudre Reservoir Company, Good Lateral Company and the Pierce Lateral Company. These water rights are decreed for agricultural uses only, so are exchanged on an annual basis for CBT water when possible. When no CBT water is available for exchange, the water rights are rented by the District to agricultural users.

NPIC owns 40,000 CBT units as well as various native water supplies. Shares of stock in NPIC therefore constitute a CBT portion and a native agricultural portion. The CBT

water is delivered prorata to each of the 10,000 shares of stock within the NPIC system and is used for a variety of purposes including agricultural, municipal or industrial uses.

The District has a pending water court case to change the use of the WSSC and John R. Brown Ditch shares to include additional uses such as municipal and industrial. Some of the District's agricultural water rights will be used to satisfy return flow obligations and depletions associated with changed water rights. Agricultural water rights will also continue to be exchanged directly with sources that can be used for municipal use.

In order to diversify their water rights portfolio, the District committed funds in 1997 to study the feasibility of constructing a pipeline that would deliver Poudre River water to the SCFP. The project became known as the Pleasant Valley Pipeline (PVP) and eventually grew into a partnership between the Cities of Greeley and Fort Collins and the Tri-Districts. Construction on the pipeline began in April 2003 and was completed in the spring of 2004 and is capable of delivering Poudre River water that is decreed for municipal and industrial purposes to the SCFP.

System Limitations

Water system limitations can provide insight when setting conservation goals. The following section describes both current and potential system limitations. Ideally, conservation can help mitigate a portion of the limitations and improve the reliability and efficiency of the system.

Statewide Water Supply Initiative

In 2003, the Colorado General Assembly authorized CWCB to implement the Statewide Water Supply Initiative (SWSI) as a result of growing pressure on water supplies in Colorado and the 2002 drought. The study identified current and future water demands, available water supplies, and existing and planned water supply projects in eight major river basins in the State.

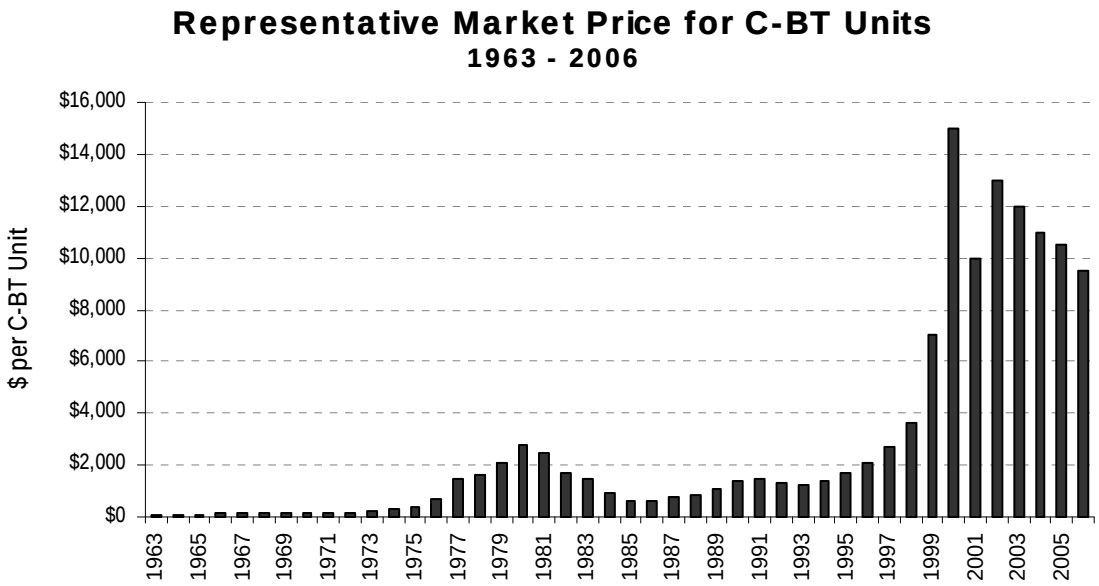
The study found a state-wide water supply gap of 118,200 ac-ft by 2030 between projected demands and fully implemented water supply processes and projects and the estimated water demand in 2030. This represents a gap of 20 percent. The gap in the South Platte Basin, where NWCWD is located, is 90,600 ac-ft or 22 percent. This gap reinforces the need for the District to consider all possible future water supplies, including those saved through conservation.

Future Water Supply

Increasing demand for water from population growth on the Front Range has driven the price and availability of water up significantly in the last 10 to 15 years. The water sources that the District is considering for future supply are CBT in the form of NPIC shares, and other native Poudre River shares.

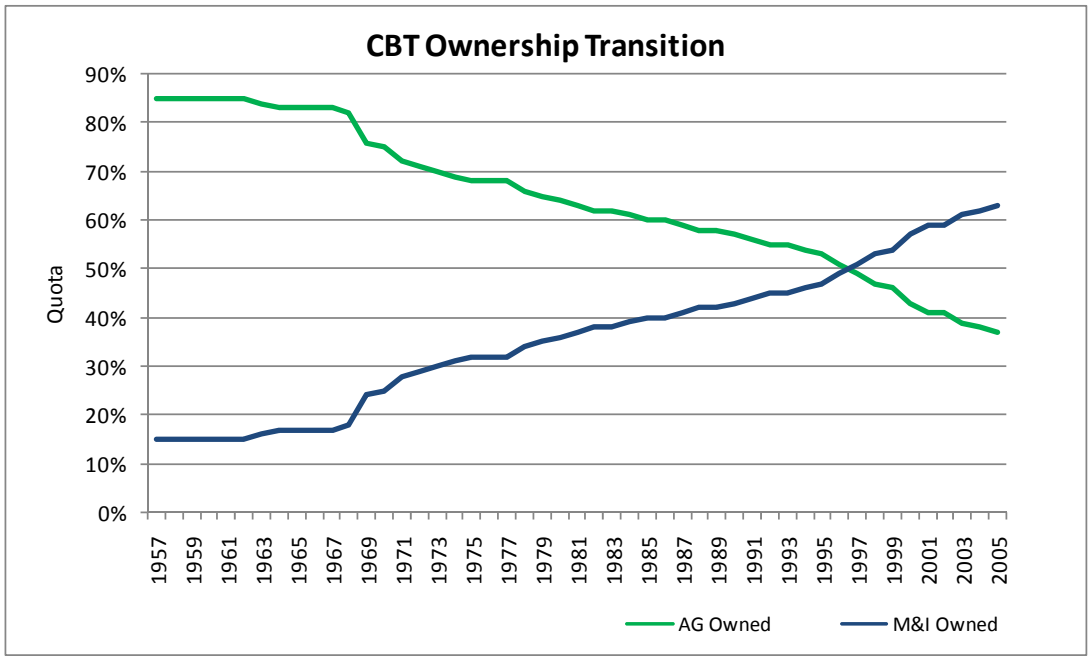
In planning for future water acquisition, it is important to consider the costs of acquisition relative to water availability. In 1963, CBT water could be purchased for $100 per unit from farmers that had excess water supplies. The current market price for CBT is approximately $9,500 per unit or $13,600 per ac-ft assuming a 70% quota. Figure 2.4 shows how the price of CBT units has varied from 1963 to 2006.

Figure 2.4 – Price of CBT Units



Another important trend to understand while planning for future acquisitions is the transfer of agricultural water to domestic and industrial water users. For instance, CBT water can still be purchased from farmers and ditch companies, but it rarely represents a farmer's surplus water supply like it did historically. It is now often sold to finance continued agricultural operations, settle an estate or accommodate development of farmland. In 1957, 85 percent of the CBT units were owned by individual farmers and mutual ditch companies. By the end of 2005, only 35 percent of the CBT units were owned by individuals and mutual ditch companies. Figure 2.5 shows the transfer of CBT units from agricultural ownership to municipal and industrial ownership over the life of the CBT Project.

Figure 2.5 – CBT Ownership Transfer



At the current rate of acquisition by cities and water districts, it is projected that few if any CBT units will be available for purchase by the year 2020. However, the construction of other regional projects may take some pressure off of the CBT system. If so, CBT supplies could be available through 2025 or 2030. Halligan-Seaman Enlargement, Northern Integrated Supply Project (NISP), and the Windy Gap Firming Project are local projects that are currently in the National Environmental Policy Act (NEPA) permitting process. Construction of these projects will occur only if a permit is obtained from the federal government and all NEPA requirements are satisfied.

Raw Water Storage

In 2005, the Tri-Districts did an evaluation of raw water storage needs. This study concluded that the future water supply needs varied significantly with the amount of storage available. The District currently has no raw water storage, other than the storage associated with the CBT Project. As such, raw water storage considerations are important for the District, especially considering the variability in the yield of their Poudre basin water rights, both year to year and month to month. In the Tri-District's study, the purposes outlined in the evaluation for developing storage include: 1) to store water during peak flow months (May, June and July) for use in months when the District's water rights yield little or no water, 2) to store water in years of surplus for use in years when a water supply deficit occurs, and 3) to store the historic return flow component of agricultural water rights converted to municipal use for year-round releases required to meet court-imposed return flow obligations.

NWCWD is currently participating in the enlargement of Halligan-Seaman Reservoir along with the City of Fort Collins, NPIC and the Tri-Districts. If a permit is obtained for the project, NWCWD will be obligated to pay a pro-rata cost for the design and construction of the project. Halligan-Seaman is a storage only project and is currently estimated to cost $7,500 per ac-ft of capacity.

NWCWD is also in the process of purchasing and constructing storage in Miners Lake and the Overland Trail Ponds as part of a regional partnership. These three storage projects go a long way towards meeting the storage needs for NWCWD that were identified in the 2005 Tri-District's study.

Change of Use

Conversion of NWCWD's Poudre River and trans-mountain water rights from agricultural to municipal use requires detailed engineering analyses and applications to water court. The easiest change cases take at least three to five years before a decree is entered. The more complicated change cases can take as many as ten years and can be costly.

The engineering analyses required to support a change of use from agricultural water focuses on the historical consumptive use of the crops grown with the water right and return flows resulting from irrigation of those crops. Determination of the consumptive use and identifying the amount, location and timing of return flows makes change cases increasingly complicated and costly. NWCWD currently has one change case before water court, which was filed jointly with the Tri-Districts. Within the next few years, additional applications may be submitted to change the use of water rights owned by the District.

Unaccounted-for Water Use

There are two types of water losses that occur in water utilities, apparent losses and real losses. Apparent losses are paper losses that can be caused by customer meter inaccuracies, billing system data errors or unauthorized consumptions. Real losses are those that are physically lost within the distribution system, including the water treatment process.

The total average annual system loss for the District over the last five years is approximately 8.3 percent. The entire system is metered and the water users are monitored monthly for high water use and contacted when identified. Seven meters have been installed in the system in strategic locations to create smaller areas to monitor for possible leaks. Five more of these meters are desired for optimal monitoring. A SCADA system has been installed throughout the system and is used for real time monitoring. Table 2.4 shows the difference in water treated and delivered from the SCFP and water billed to the District customers.

Table 2.4 – NWCWD System Losses

Year	Produced Water (gallons)	Water Delivered (gallons)	Water Losses (gallons)	% Dist Loss (ac-ft)
2003	1,791,105	1,591,228	199,877	11.2%
2004	1,769,612	1,670,781	98,831	5.6%
2005	1,980,681	1,875,468	105,213	5.3%
2006	2,321,891	2,097,087	224,804	9.7%
2007	2,388,756	2,153,153	235,603	9.9%
Average	-	-	-	**8.3%**

The source for some of this loss is known by the District to be through existing interconnections with Greeley, Fort Collins and ELCO, construction meters and system flushing. Part of the effort to upgrade the billing software and general record keeping will include tracking these water uses.

Water Costs, Pricing and Billing Practices

Charges for Water Service

When residential customers buy a water tap from NWCWD they pay fees not only according to the size of the tap, but also according to the size of lot, and whether they have additional non-potable water. For commercial users, fees are based on the water demand for the particular commercial operation. The tap fee includes a raw water fee, a raw water storage fee, a plant investment fee, and a distance fee from the main treated storage tank. Upon Board approval, water can be dedicated per 0.70 ac-ft in lieu of the raw water fee. Table 2.5 shows the fees per the residential taps. Commercial taps are evaluated on a case-by-case basis.

Table 2.5 – Residential Tap Fees

Fees and Allocation	Standard - Full Tap	Standard - 3/4 Tap	Standard - 1/2 Tap
Raw Water Fee	$9,500	$5,625	$4,750
Raw Water Storage Fee	$1,000	$750	$500
Plant Investment Fee	$7,500	$7,125	$3,750
Distance Fee (per mile)	$300	$225	$150
Water Allocation	0.7 ac-ft	0.5 ac-ft	0.35 ac-ft

NWCWD charges customers for water use based on a water allocation according to lot size or commercial water needs. Water use over the annual allotment is charged a water surcharge and a plant investment surcharge to cover the cost of acquiring extra water and cost to treat and deliver the additional water. Table 2.6 shows the water rates for the residential taps. CBT owned by the customer may be transferred to the District on an annual basis for $25.00 per ac-ft to cover water use over the allotment. These types of transfers can be used to eliminate or reduce the water surcharge of

$0.10 per 1,000 gallons, but cannot be used to eliminate or reduce the plant investment surcharge of $3.15 per 1,000 gallons up to 456,000 gallons and $1.30 per 1,000 gallons above 456,000 gallons.

Table 2.6 – 2009 NWCWD Water Rates

	Base Rate	**Gallons**				
Tap	10,000 gal.	114,000	171,000	228,000	456,000	Above 456,000
Standard - Full	$28.50	$2.85			$6.10 (2.85+.10+3.15)	$4.25 (2.85+0.10+1.30)
Standard - 3/4	$28.50	$2.85		$6.10 (2.85+.10+3.15)		$4.25 (2.85+0.10+1.30)
Standard - 1/2	$28.50	$2.85	$6.10 (2.85+.10+3.15)			$4.25 (2.85+0.10+1.30)

These tap fees and water rates provide revenue to cover costs to maintain the treatment and distribution system as well as acquire new water rights for increasing demands.

The commercial taps have the same allocation and rates as the residential ones unless they are larger than ¾ inch or have a determined higher use. The allocation is then determined on an individual basis.

Billings and Collections

All District meters are read and billed monthly. The bills are sent at the end of the month and are due on the 10th of the next month. Each bill shows the monthly water use, the annual cumulative water use and the last 12 months of water use so the customer can track and adjust their water usage according to their allocation and historic water use. The District also identifies any water use that is significantly higher than usual and alerts the customer immediately to determine possible leaks past the customer meter.

Current Water Conservation Activities

NWCWD has been working diligently since the 2002-2003 drought to raise the awareness of water resource limitations and conservation. The District has developed water conservation activities in the following areas:

Leak Detection

The District's entire distribution system is metered and water users are monitored monthly for high water use and contacted when identified. Seven meters have been installed within the distribution system in strategic locations to create smaller areas to monitor for possible leaks. Five more of these meters are desired for optimal

monitoring. A SCADA monitoring system has been installed on most of the major distribution system components to track pressures and flow rates.

Customer meters are replaced every ten years to reduce meter reading errors due to meter slippage. Customers are reminded in newsletters to keep an eye out for surface water in the remote parts of the service area, helping to extend the field observation coverage. Regular valve maintenance, pipeline upgrades, meter replacement and prompt leak repair are all part of the standard operation in the District.

Recycled Filter Backwash

The SCFP backwashes its treatment filters with water periodically to unclog them and keep them filtering at their highest efficiency. The plant captures all water used to backwash the filters and diverts it into settling ponds adjacent to the plant. The water is then diverted from the ponds back into the filtering plant for treatment and delivery. Approximately 5 percent of the total water taken into the filter plant is recycled for treatment.

Billing and Meter Reading Practices

The District reads meters and sends bills each month with the current monthly water use, monthly use for the last 12 months, and the annual allotment. The monthly water use is monitored for irregularly high water use and customers are contacted immediately upon detection of high use.

Water Audits and Water Use Guidelines

In 2003, the District purchased some residential water audit kits that include dye tablets, a kitchen and bathroom faucet pressure reducer, and a toilet displacement device that doubles as a showerhead flow meter. These kits are available at the office and advertised in the newsletter.

District staff is also available to commercial customers as needed for a special audit of their water distribution past the service meter. Some dairies and a mobile home park have taken advantage of this service.

Smart Watering Guidelines are posted on the website that include recommended times and conditions for watering, frequency for watering, and the use of soil amendments and mulch. These guidelines are listed under watering restrictions on the first page of the District's website and are easy to find.

CHAPTER 3 - WATER USE AND DEMAND FORECAST

Historic Water Use

The rural areas of the District have historically served agricultural based commercial customers and small acreage residential customers. Since 2003, the percentage has been approximately 93 percent residential and 7 percent commercial. The current trend of the District is toward large lot, estate-type residential neighborhoods in the vicinity of the major towns surrounding and within the service area.

In 2003, the District implemented tap categories to encourage the use of non-potable, native water sources in return for lower raw water and plant investment fees. These tap categories are the Standard ¾ and Standard ½ categories discussed previously. The Residence category consisted of lots with a non-potable water source, and reduced the water requirement fee, but didn't reduce the plant investment fees. This category is no longer being offered and since the typical water use is similar to the Standard ½ category, these two categories have been combined in this conservation plan.

The Commercial Flow category is a limited flow rate tap for large commercial users that have on-site storage to meet their own peak demands. This category relieves some of the peak demand burden on the Districts' system while still meeting the customers demand. The Commercial Dairy taps are contained within the Commercial Industrial category, but have been separated out in this conservation plan.

Tables 3.1 through 3.3 show the number of taps, water use, and water use per tap for each category between 2003 and 2008. Taps associated with the master meter towns are not included in this analysis. Close to 3,000 ac-ft is currently being delivered to the towns through the master meter taps. The Residence and Standard – ½ water use per tap was combined in Table 3.3 because these categories have essentially the same kind of water use.

Table 3.1 – NWCWD Taps

Year	Residence	Standard - Full	Standard – 3/4	Standard – 1/2	Commercial - Flow	Commercial - Dairy	Commercial - Industrial	Total
2003	45	2,827	1	0	2	12	193	3,080
2004	67	2,899	1	0	2	12	193	3,174
2005	100	2,951	1	0	2	12	193	3,259
2006	131	3,015	2	2	2	14	194	3,360
2007	144	3,067	5	7	2	15	196	3,436
2008	147	3,097	5	9	2	15	199	3,474

Table 3.2 – NWCWD Water Use

Year	Residence (ac-ft)	Standard - Full (ac-ft)	Standard – 3/4 (ac-ft)	Standard – 1/2 (ac-ft)	Commercial - Flow (ac-ft)	Commercial - Dairy (ac-ft)	Commercial - Industrial (ac-ft)	Total (ac-ft)
2003	9	1,535	0.3	0.0	107	534	875	3,062
2004	12	1,478	0.3	0.0	97	621	779	2,988
2005	15	1,647	0.4	0.0	92	703	768	3,227
2006	25	1,834	0.6	0.0	87	801	871	3,618
2007	33	1,725	0.8	0.6	96	1,265	857	3,977
2008	37	1,655	1.1	0.8	146	1,839	528	4,206

Table 3.3 – NWCWD Water Use per Tap

Year	Residence and Standard – 1/2 (ac-ft/tap)	Standard - Full (ac-ft/tap)	Standard – 3/4 (ac-ft/tap)	Commercial - Flow (ac-ft/tap)	Commercial - Dairy (ac-ft/tap)	Commercial - Industrial (ac-ft/tap)	Total (ac-ft/tap)
2003	0.21	0.54	0.27	53.69	44.53	4.54	0.99
2004	0.18	0.51	0.33	48.71	51.71	4.04	0.94
2005	0.15	0.56	0.37	46.20	58.62	3.98	0.99
2006	0.18	0.61	0.28	43.55	57.21	4.49	1.08
2007	0.22	0.56	0.16	47.99	84.34	4.37	1.16
2008	0.24	0.53	0.21	73.05	122.59	2.65	1.21
Avg	**0.20**	**0.55**	**0.27**	**60.52**	**103.46**	**4.01**	**1.06**

Note:
Water use for the Commercial - Dairy and Commercial - Flow categories is an average of 2007-2008 to reflect current conditions.

Per Capita Water Use

Per capita water use, both on a system-wide and residential scale, is a commonly used way to evaluate an entity's water use habits. System-wide per capita use can vary significantly between entities depending on the type of non-residential water users within the system.

The District is unique in that a large amount of the population within the service area resides within the towns served by master meters. NWCWD does not have jurisdiction over the town customers and is therefore not including them in this water conservation plan. However, it is important to examine the per capita water use both with the town population and without. The comparison illustrates that per capita use in the rural areas of the District is very different than the per capita use within the master meter towns, primarily because of the high commercial dairy uses in the rural parts of the District.

Tables 3.4 and 3.5 show water delivery, population and per-capita water usage in gallons per capita per day (GPCD) from 2003 to 2007 with the master meter towns and without.

Table 3.4 – NWCWD per Capita Water Use Including Master Meter Towns

Year	Delivery (1000 gal)	Population	GPCD
2003	1,591,228	28,644	152
2004	1,670,781	30,344	151
2005	1,875,468	32,020	160
2006	2,096,977	33,488	172
2007	2,152,400	34,872	169
Average	1,877,371	31,874	161

Table 3.5 – NWCWD per Capita Water Use without Master Meter Towns

Year	Delivery (1000 gal)	Population	GPCD
2003	997,723	8,316	329
2004	973,659	8,570	311
2005	1,051,425	8,799	327
2006	1,178,938	9,080	356
2007	1,295,811	9,293	382
Average	1,099,511	8,812	342

The commercial water users in the rural areas of the District include a number of high water use dairies and feedlots, which make the system per capita water use higher than what is expected for residential or commercial use. Fifteen of the top dairy water users have been identified and separated from the Commercial Industrial tap category into their own category. Table 3.6 shows the per capita water use in the District, with the master meter towns, 15 dairies, and the two Commercial Flow customers (which are two large dairy customers) removed for 2003 to 2008. The water use for the dairies has increased over the last five years due to an increased demand for production.

Table 3.6 – NWCWD per Capita Water Use without Master Meter Towns or 15 Identified Dairies and 2 Commercial Flow Customers

Year	Delivery (1000 gal)	Population	GPCD
2003	788,591	8,316	260
2004	739,700	8,570	236
2005	792,087	8,799	247
2006	889,588	9,080	268
2007	852,315	9,293	251
2008	723,806	9,470	209
Average	812,456	8,921	250

Table 3.7 shows the per capita water use for the rural residential water users only from 2003 to 2008. This per capita water use is similar to the per capita use including the master meter towns. This per capita rate is fairly high compared to other Front Range towns because a large number of the lots are small acreages and may include some small cattle operations and hobby farm irrigation like large gardens or small hay fields.

The hope is to see more lots in the future use non-potable water for outdoor irrigation and to lower the per capita use by up to 8 percent.

Table 3.7 – NWCWD Residential per Capita Water Use

Year	Delivery (1000 gal)	Population	GPCD
2003	503,336	8,316	166
2004	485,700	8,570	155
2005	541,762	8,799	169
2006	605,897	9,080	183
2007	573,118	9,293	169
2008	551,682	9,470	160
Average	541,963	8,921	166

Water Forecasting Method

The District uses a regularly updated water system master plan to plan for future system upgrades to their distribution system to ensure adequate delivery to its customers. Water-main sizing and storage capacities are evaluated to meet requirements for peak day delivery, maximum and minimum pressures and fire flows throughout the system. The most recent update to the Master Plan was completed in December of 2007. In this Plan, population projections were included as well as the possible number of taps at build-out according to the zoning within the entire service area.

The purpose of this water conservation plan is to provide conservation measures and programs that will benefit the rural residential and commercial customers of the District. The water demand needed for conservation planning is similar to a water supply planning demand and was completed for the rural area of the District only.

To project future water demand in this conservation plan, we used the growth rate published by the Colorado Department of Local Affairs for Weld County, which is 1.9 percent. This is also the rate of growth used in the 2007 Master Plan for the rural areas of the District. This growth rate was used to determine the total number of taps projected for each future. To separate the total projected taps into the individual categories, the percentage of each category in 2008 was used (Table 3.8). Because several of the residential tap categories are relatively new in the District, 2008 data better represents the distribution between categories than an historic average. Water demand was then projected in each category using the 2003 - 2008 average water use per tap shown in Table 3.3, except for the Commercial – Flow and Commercial – Dairy taps, which was projected using the average of 2007 to 2008 to reflect current operations.

Water Demand Forecast

Table 3.8 shows the total annual projected tap numbers in the second column using the 1.9 percent growth rate. The total taps are then separated into categories according to the percentages shown. While the overall tap projections are reasonable for the

District, there are two categories that may be underestimated; Standard ¾ and the Commercial Flow. The reason they may grow more is that the District would like businesses and developments use these taps more and will encourage use of them. This practice would not affect the overall tap numbers nor change the percentage split between residential and commercial uses.

Table 3.8 – NWCWD Tap Projection

Year	Total Taps	Residence & Standard – 1/2 Taps	Standard - Full Taps	Standard – 3/4 Taps	Commercial - Flow Taps	Commercial - Dairy Taps	Commercial - Industrial Taps
		4.5%	*89.1%*	*0.1%*	*0.1%*	*0.4%*	*5.7%*
2008	3,474	156	3,097	5	2	15	199
2009	3,540	159	3,156	5	2	15	203
2010	3,607	162	3,216	5	2	16	207
2011	3,676	165	3,277	5	2	16	211
2012	3,746	168	3,339	5	2	16	215
2013	3,817	171	3,403	5	2	16	219
2014	3,889	175	3,467	6	2	17	223
2015	3,963	178	3,533	6	2	17	227
2016	4,039	181	3,600	6	2	17	231
2017	4,115	185	3,669	6	2	18	236
2018	4,193	188	3,738	6	2	18	240
2019	4,273	192	3,809	6	2	18	245
2020	4,354	196	3,882	6	3	19	249
2021	4,437	199	3,956	6	3	19	254
2022	4,521	203	4,031	7	3	20	259
2023	4,607	207	4,107	7	3	20	264
2024	4,695	211	4,185	7	3	20	269
2025	4,784	215	4,265	7	3	21	274
2026	4,875	219	4,346	7	3	21	279
2027	4,968	223	4,428	7	3	21	285
2028	5,062	227	4,513	7	3	22	290
2029	5,158	232	4,598	7	3	22	295
2030	5,256	236	4,686	8	3	23	301

Notes:

(1) Residence and Standard - 1/2 water use categories were combined into one category because the tap use is very similar.

(2) Commercial - Industrial water use category was seperated into Commercial - Dairy and Commercial - Industrial

(3) Distribution percentages based on 2008 data and annual tap growth rate of 1.9% used.

Table 3.9 shows the water demand projection associated with the tap projection out to 2030. The year 2030 is not anticipated to be build-out for the District; build-out tap projections are included in the 2007 Water System Master Plan. The water demand projection in 2030 is 6,318 ac-ft, with just slightly over half of the water use in commercial categories and slightly under half in the residential categories.

Table 3.9 – NWCWD Water Demand Projection

Year	Residence and Standard – 1/2 (ac-ft)	Standard - Full (ac-ft)	Standard – 3/4 (ac-ft)	Commercial - Flow (ac-ft)	Commercial - Dairy (ac-ft)	Commercial - Industrial (ac-ft)	Total (ac-ft)
ac-ft/tap =	***0.20***	***0.55***	***0.27***	***60.52***	***103.46***	***4.01***	
2008	31	1,703	1	121	1,552	798	4,207
2009	32	1,736	1	123	1,581	813	4,255
2010	32	1,769	1	126	1,611	829	4,336
2011	33	1,802	1	128	1,642	844	4,418
2012	34	1,837	1	131	1,673	860	4,502
2013	34	1,871	1	133	1,705	877	4,588
2014	35	1,907	2	136	1,737	893	4,675
2015	36	1,943	2	138	1,770	910	4,764
2016	36	1,980	2	141	1,804	928	4,854
2017	37	2,018	2	143	1,838	945	4,946
2018	38	2,056	2	146	1,873	963	5,040
2019	38	2,095	2	149	1,909	982	5,136
2020	39	2,135	2	152	1,945	1,000	5,234
2021	40	2,176	2	155	1,982	1,019	5,333
2022	41	2,217	2	158	2,020	1,039	5,435
2023	41	2,259	2	161	2,058	1,058	5,538
2024	42	2,302	2	164	2,097	1,078	5,643
2025	43	2,346	2	167	2,137	1,099	5,750
2026	44	2,390	2	170	2,178	1,120	5,859
2027	45	2,436	2	173	2,219	1,141	5,971
2028	45	2,482	2	176	2,261	1,163	6,084
2029	46	2,529	2	180	2,304	1,185	6,200
2030	47	2,577	2	183	2,348	1,207	6,318

Notes:

(1) Residence and Standard - 1/2 water use categories were combined into one water use category

(2) Commercial - Industrial water use category was seperated into Commercial - Dairy and Commercial - Industrial

(3) Water use per tap based on ave. use between 2003 and 2008, except for Commercial - Dairy and Commercial - Flow, which is based on an average of 2007 and 2008 to reflect the current water use of the dairies.

CHAPTER 4 - PROPOSED WATER SUPPLY AND FACILITIES NEEDS

Identification of Future Water Supply Purchases

In the 2005 raw water storage evaluation report completed by the Tri-Districts, potential water supplies were identified for NWCWD in order to run the storage model and determine storage needs. The sources were ones that could be used in the District's current potable system or could be changed along with some of their existing native supplies. The report recommended purchasing 500 ac-ft by 2010 and another 2,100 ac-ft by 2020.

The current firm yield of the District's water supplies in a dry year is 3,451 ac-ft assuming no CBT is available for exchange of the native supplies. This would require some watering restrictions to meet the current water demand. The average yield of the District's current sources is 5,582 ac-ft and would provide water out to 2025.

Within the planning period of this water conservation plan, 2009 to 2018, the water demand will be 1,589 ac-ft more than the firm yield of the District's current water supplies. This shortage could be met by a combination of purchasing new water and conservation. Any water saved would be water that would not have to be purchased. The current average price for domestic water is approximately $10,000 per ac-ft, so the benefit of saving water could add up quickly.

Raw Water Storage

The need to better utilize Poudre River water rights was a major reason why the Tri-Districts conducted the raw water storage needs assessment in 2005. The results of the study showed that NWCWD would need 6,530 ac-ft of storage at build-out. NWCWD plans to obtain storage capacity at several locations along the Poudre River in cooperation with the other entities in the Tri-Districts. The Tri-Districts considered the following criteria when planning these storage project locations: 1) available for diversion at the Pleasant Valley Pipeline, 2) as close as possible to SCFP, and 3) downstream of the wastewater treatment facilities that will discharge reusable effluent that they can claim and capture.

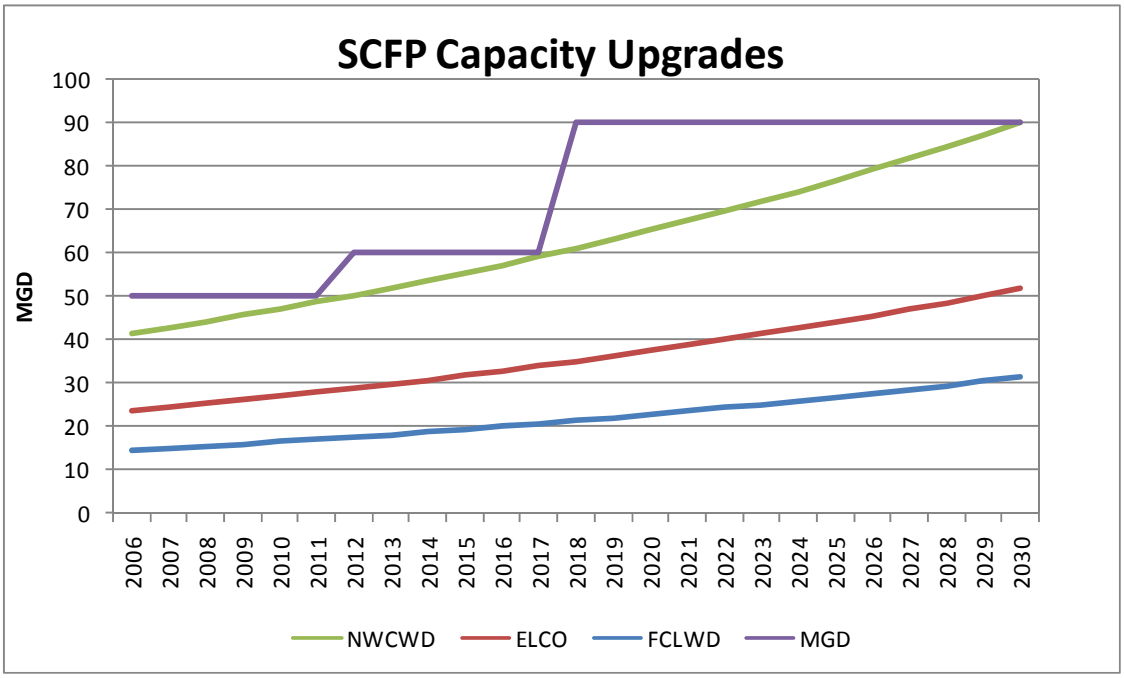
Estimated Capacity Improvement Projects

Water Treatment Capacity

Each of the Tri-Districts owns an equal share of SCFP, but funds expansion and improvement based on its respective water use. The treatment capacity needs of the three Districts were projected in August of 2002. In the study report, it was determined that SCFP would need to be expanded from 50 MGD to 60 MGD by

the year 2012 and from 60 MGD to 90 MGD by the year 2018. Figure 4.1 compares projected water demands of the three Districts that own SCFP to the existing and future treatment plant capacity.

Figure 4.1 - SCFP Treatment Capacity and Projected District Demands



The 10 MGD treatment plant expansion planned for 2012 will replace tube settlers in existing basins with dissolved air flotation equipment. Four new filter basins will also be constructed. Utilization of existing basins inside the treatment facility will make the next 10 MGD plant expansion relatively inexpensive.

Table 4.1 shows preliminary cost estimates for the planned expansion in 2012. The cost of the plant expansion will be shared among the Tri-Districts according to the relative water use of each. The District currently uses approximately 35% of the water treated at the filter plant and will pay this proportional share of the project costs.

Table 4.1 - Estimated Cost of SCFP Expansion Planned for 2012

	SCFP Estimated Cost	Estimated Cost for NWCWD
Permitting	N/A	N/A
Land Acquisition	N/A	N/A
Construction	$3,600,000	$1,260,000
Subtotal	$3,600,000	$1,260,000
Design & Construction Contingency (20%)	$720,000	$252,000
Subtotal	$4,320,000	$1,512,000
Engineering (12%)	$518,400	$181,440
Total	$4,838,400	$1,693,440
Capacity	10 mgd	3.5 mgd
Unit Cost of Capacity	$4.84 per gallon	$4.84 per gallon
Present Value of Unit Cost of Capacity @ 5%	$3.80 per gallon	$3.80 per gallon

Potential NWCWD Facility Needs

Potential facility needs for the District are outlined in detail in the 2007 Water System Master Plan. Some of the facility improvements are needed because of existing capacity or pressure issues; these improvements are not changed or delayed by water conservation in the future. For this plan, only the facilities that could be delayed due to water conservation are mentioned.

The District is working on a multi-year transmission line project along with ELCO called NEWT (NWCWD – ELCO – Waterline Transmission). This project is broken into three phases and is designed to increase the delivery capacity. If growth doesn't occur as quickly as forecasted or if water deliveries are reduced, the project could be delayed. Of course the delay would have to be equal for both districts and may still need to be built before NWCWD needs it, due to ELCO's demands.

Recommended improvements have been made for each of the pressure zones in the District. Table 4.2 shows only the improvements that can possibly be delayed by slower growth or reduced water use.

Table 4.2 - NWCWD Recommended Capital Improvements

Description	Estimated Cost	Timeline	Revised Timeline
Recommended Transmission Waterline Construction Schedule:			
NEWT Phase I	$4,400,000	2008/2009	2009/2010
NEWT Phase II	$3,300,000	2010/2011	2010/2011
Summit View PS to Future Tank 1 (NEWT Phase III)	$6,850,000	2012/2013	
Additional 5.0 MG Tank	$5,000,000	2014	
Total Cost of Improvements by 2014	**$19,500,000**		
Recommended Improvement for Tank 3 and 4 Service area:			
8/6" W/L along WCR 76 from WCR 45 to 51	$285,000	2008	
8/6" W/L along WCR 76 & 45 to 80 & 43	$220,000	2008	
16" W/L from WCR 51 & 70 to Tank 5	$380,000	2009	
30/20" W/L from WCR 33 & 70 to 41 & 70	$2,217,600	2010	
2.0 MG Elevated Tank	$3,000,000	2010/2011	
Total Cost of Improvement by 2011	**$6,102,600**		
Recommended Improvement for Tank 5 Service area:			
Hwy 392 Improvements	$210,000	2009	
16/14/12" W/L from Tank 5 to WCR 64-1/2 & 57	$600,000	2010	
Total Cost of Improvement by 2010	**$1,210,000**		
Recommended Improvement for Tank 6 Service area:			
4" & 6" W/L looping WCR 86 & 88 between WCR 43 & 45	$75,000	2006	2009
6" W/L along Hwy 14 from WCR 25 to 27	$95,000	2007	2010
6" W/L on WCR 39 from WCR 88 to 86	$85,000	2007	2010
8" & 6" W/L loop from WCR 90 to 92 and WCR 35 to 37	$325,000	2009	2012
6" W/L loop from WCR 39 to WCR 45 and WCR 94 to WCR 90	$400,000	2010	2013
2 MG Ground Level Tank	$1,000,000	2010	2013
Total Cost of Improvement by 2013	**$1,980,000**		
Recommended Improvement for Tank 7 Service area:			
8" from WCR 86 & 15 to WCR 88 & 19	$350,000	2006-2007	2009-2010
12" from Tank 7 to WCR 90	$150,000	2006-2007	2009-2010
12" on WCR 90 from WCR 13 to WCR 15	$120,000	2007-2008	2010-2011
Total Cost of Improvement by 2011	**$470,000**		
Recommended Improvement for Nunn Service area:			
300,000 gallon tank located at WCR 94 & 25	$240,000	2007-2008	2009-2010
12" W/L on WCR 94 from WCR 29 to Tank	$375,000	2007-2008	2009-2010
Pump station at Gold Stone PUD	$250,000	2009	2010
Total Cost of Improvement by 2010	**$865,000**		

CHAPTER 5 - WATER CONSERVATION GOALS

Goal Development Process

The development of water-savings goals for NWCWD was a collaborative process involving Clear Water Solutions and District staff. We obtained information from staff including billing records and other reference materials to characterize the distribution system, water resources and water use. With this information, we were able to characterize water use by customer category, seasonal usage, system limitations and losses, as well as outline NWCWD's existing conservation efforts. This background information provided the basis on which water conservation goals were set.

Once the water use for each customer category was identified, we met with staff to discuss possible conservation measures and methods that could be used to reach the conservation goals. With District staff, we reviewed a universal list of possible measures and programs that could be implemented to meet the conservation goals. This universal list is discussed in detail in Chapter 6. In the process of setting the conservation goals, the following factors were considered: water savings potential, costs, control, and public acceptance.

Water Conservation Goals

Establishing water conservation goals is an iterative process that begins with quantifying the future demand for water based on current water-use habits and identifying areas where water use can feasibly and effectively be reduced. Reduction of future water demand through water conservation can potentially delay planned water supply acquisition and delay the need for infrastructure improvements.

Discussions with District staff focused on the desire to continue and potentially expand on current efforts to reduce unaccounted for losses through installation of meters to pinpoint distribution system leaks and by accelerating their current meter replacement program. This District is also interested in expanding current and adding additional education programs that encourage residential and commercial customers to conserve water.

In setting initial water savings goals for NWCWD, we looked at the current water use per customer category and the limitations of the water supply system. Table 5.1 shows initial goals established for each customer category.

Table 5.1 – NWCWD Water Conservation Goals

Water Use Categories:	Total Projected Water Use (2009 to 2018)	Reduction Goals for Planning Horizon	
	(ac-ft)	(%)	(ac-ft)
Standard - Full & 3/4	18,934	5.0%	947
Standard – 1/2	347	2.0%	7
Commercial - Flow	1,344	1.0%	13
Commercial - Dairy	17,237	1.0%	172
Commercial - Industrial	8,863	5.0%	443
Unaccounted-for Losses (currently 8.3%)	4,229	3.3%	1,681
Total Water Demand:	50,954		
Total Demand Reduction:			3,264
Total Percent Reduction:			6.4%

Standard Full and Standard ¾ Conservation Goals

For purposes of this water conservation plan, these two categories were combined since the Standard ¾ customer class is relatively new and does not have much water use history on which to set unique conservation goals. Considering that there are a number of existing water conservation measures that can be improved and new measures that can be introduced, a water conservation goal of five percent was set for these two categories.

Standard ½ Conservation Goals

Customers in the Standard ½ category use water for indoor purposes only (estimate that approximately 50 percent of total use is indoor use). Considering this indoor use only, a water conservation goal of two percent was set for this category.

Commercial Flow Conservation Goals

This commercial category includes primarily commercial dairy customers that receive a set volume of delivery. Since this category is relatively new and because there are very few customers in this category currently, it is difficult to predict the degree to which these customers will be able to conserve in the future. At this time, NWCWD will set a goal of one percent for this customer category.

Commercial Dairies Conservation Goals

As discussed previously, this customer category includes the dairy only uses that are part of the Commercial Industrial category. Dairies represent the largest commercial users in NWCWD. Although some level of water conservation savings is expected in

this category, the District does not believe it will be great since dairies are already fairly efficient in their water use. Because the cost of water represents a significant operating expense to dairies, they tend to be on the cutting edge of water conserving technology and practices. However, the District anticipates some additional measures and programs may be able to reduce water use by one percent over the planning period.

Commercial Industrial Conservation Goals

The Commercial Industrial category includes but is not limited to hobby farms, small cattle operations, hospitality, restaurants, retail, mobile home parks, and grocery stores. Little is known about the water use habits of these customers and until results from conservation measures have been monitored, the actual savings are difficult to predict. For now, NWCWD will set a goal of five percent for this customer category. Savings for the next water conservation plan will be easier to estimate.

Unaccounted-for Losses

This category is where the District is likely to achieve a large water savings. The average loss in the system due to leaks and losses is estimated to be 8.3 percent of water production. The goal for NWCWD is to reduce the system losses by 3.3 percent bringing them to a total system loss of 5.0 percent.

CHAPTER 6 – CONSERVATION MEASURES AND PROGRAMS

Water Conservation Measures and Programs

We reviewed numerous resources to compile a universal list of conservation measures and programs including the CWCB Guidance Document, conservation plans for several Front Range communities, Great Western Institute water conservation workshops, and many water conservation reference materials.

Through this research, a universal list of measures and programs was created specifically for NWCWD's consideration. This list of measures also included those measures required by CWCB. Both *supply-side* and *demand-side* measures were considered. The measures and programs were grouped further into five major categories: Utility Maintenance, Regulatory Controls, Educational Programs, Rebates and Incentives and Audit Programs. The groupings help to define the nature of each program/measure and provide some organization to NWCWD staff for planning implementation.

While reviewing the universal list of the various conservation measures and programs with NWCWD, the following key concepts became apparent:

- While the District has made recent progress in implementing some of the measures and practices on the universal list over the last few years, there are still areas that could be improved or expanded on to further promote water conservation.
- The District is not interested in regulatory controls.
- At this time, the District is not interested in implementing rebate programs, but may be in their next water conservation plan.
- Much of the water supplied by the District is for use by master meter towns, which were not included in this conservation plan. Certain conservation measures and programs may be more applicable to users within those master meter communities and not necessarily for users in the rural areas of the District's service area.

Screening Criteria

We reviewed the universal list of measures and programs shown in Table 6.1 with District staff to determine which measures are currently in place, which existing measures could be improved upon, and what additional new measures the District would like to consider. The criteria used to select measures for consideration was based primarily on staff knowledge of the Board and the District's customer base. In the process of screening each measure and program for applicability in the District, staff considered several criteria including: 1) Board approval, 2) customer acceptance and participation, 3) staff availability, and 4) financial requirements.

Table 6.1 – Universal List of Conservation Measures and Programs

Conservation Measure or Program		Existing	Further Evaluation	Comment
Utility Maintenance Programs				
Supply side measures & programs	Billing Software Upgrades	No	Yes	NWCWD would like to contract with a third party technical support consultant to upgrade tables and reports in existing software.
	Meter Installation to Pinpoint Leaks in Distribution System	Yes	Yes	Currently has seven non-billable meters installed to pinpoint leaks and would like to add more.
	Leak Detection & Repair Program	Yes	No	Continues to install non-billable meters to pinpoint leaks in system. NWCWD also educates customers how to identify leaks throughout system.
	Leak Detection for Master Meter Communities	Yes	No	Currently cross checking meter readings with master meter communities on a monthly basis for leaks.
	Leak Detection in Mobile Home Parks	Yes	No	Currently cross checking meter readings with mobile home community on a monthly basis for leaks.
	Sub-Meter Mobile Home Parks	No	No	
	Meter Testing and Replacement Program	Yes	Yes	Currently change meters when they change batteries (approximately 10% per year); interested in replacing meters more frequently at 20% per year.
	Recycling WTP Filter Backwash	Yes	No	Already practiced at Soldier Canyon Filter Plant. Continue as is.
	Water Reuse System	No	No	In early planning stage and will be ready for next planning period.

Table 6.1 – Continued

Conservation Measure or Program		Existing	Further Evaluation	Comment
Regulatory Controls and Standards				
Demand side measures & programs	General Evaluation of Policies that Encourage Water Savings	Yes	No	Current polices are adequate and will support on-going and planned water conservation activities.
	Rates that Encourage Water Savings	Yes	No	NWCWD currently issues surcharge for use over water allotment. Continue as is.
	Water Restrictions-Hours/Days	Yes	No	NCWCD currently issues recommendations for outdoor watering as they do not have resources to enforce restrictions. Continue as is.
	Water Waste Ordinance	No	No	NCWCD not interested in regulatory controls to manage waste.
	Lot Irrigation Restriction	No	No	Rate surcharge is an effective means fo controlling irrigation.
	New Construction Requirements/Standards - Commercial	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Single Pass Cooling System Prohibitions for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Turf and Landscape Restrictions/Standards for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	New Construction Requirements/Standards - Residential	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Require Insulation for Hot Water Piping for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Turf and Landscape Restrictions/Standards for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Boiler/Heating System Requirements/Standards for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	High Efficiency Appliance Requirements/Standards for New Construction	No	No	NCWCD not interested in regulatory controls for new construction; building permits are issued by other entities.
	Irrigation System Audit & Improvements - Commercial	No	No	NCWCD prefers audits as an incentive program rather than a regulatory measure.
	Irrigation System Audit & Improvements - Residential	No	No	NCWCD prefers audits as an incentive program rather than a regulatory measure.
	Removal of Phreatophytes e.g. Cottonwoods	No	No	NCWCD stores water supply in tanks; no phreatophytes near water supply.
	Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation	No	No	NCWCD not interested in regulatory controls.
	Soil Amendment Ordinance for New Landscapes - Commercial	No	No	NCWCD not interested in regulatory controls for new construction.
	Soil Amendment Ordinance for New Landscapes - Residential	No	No	NCWCD not interested in regulatory controls for new construction.
	Temporary Irrigation Taps for Native Landscaping	No	Yes	NWCWD Board interested in considering this measure on a case by case basis.

Table 6.1 – Continued

Educational Programs				
Demand side measures & programs	Commercial/Irrigator Education and Training	No	No	Re-evaluate with future planning efforts.
	Customer Surveys and Focus Groups	No	No	Re-evaluate with future planning efforts.
	Designated Water Conservation Officer	No	No	Not enough interest in customer class to dedicate staff and resources to this measure.
	Water Education Workshop (EPA WaterSense Program)	No	No	Re-evaluate with future planning efforts.
	Send ET Irrigation Scheduling in Water Bill	No	Yes	NWCWD interested in developing irrigation schedule for customers and including it in water bill, newsletter and/or website.
	Water Use Calculator	No	Yes	NWCWD interested in provide existing link to a water use calculator on website and promoting this measures in their newsletter and/or water bill.
	Online Access to Water Bill and History	No	Yes	NWCWD currently in process of integrating this measure; would like to further evalute and implement.
	Water history on water bills	Yes	No	NWCWD currently includes water use history on water bills. Continue as is.
	Post commercial BMPs on website and as bill stuffers	No	Yes	NWCWD would like to evaluate further.
	School Education Program (K-12 Education and K-12 Teacher Education and Training)	No	No	Schools in NWCWD service area already make use of area water festivals for water conservation education.
	Public Education at Library	Yes	Yes	NWCWD interested in improving and expanding on their existing education program.
	Children's Water Festival	Yes	Yes	NWCWD would like to promote existing programs in the surrounding area by including information on water bills, newsletters, and/or website.
	Xeriscape Garden Demonstration	No	Yes	NWCWD interested in demonstration garden at a regional library and/or planned future headquarters.
	Xeriscape Gardening Classes	No	Yes	NWCWD would like to promote existing programs in the surrounding area by including information on water bills, newsletters, and/or website.
	Xeriscape Program for Commercial	No	No	NWCWD has limited commercial users with landscape irrigation.

Table 6.1 – Continued

Rebates, Incentives & Audits				
Demand side measures & programs	Residential rebate programs for toilets, clothes washers, dishwashers, faucets and showerheads	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Water Conservation Product Giveaways (low flow showerheads, faucet aerators, etc.)	No	No	NWCWD already issues residential water audit kit that includes aerators and toilet displacement devices.
	Distribute pre-rinse spray heads to restaurants & institutions	No	No	NWCWD has limited number of these types of establishments in their service area.
	Commercial toilet rebates	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Distribute Toilet Retrofit Devices (bladders, toilet dams, early closure devices, etc.)	No	No	NWCWD already issues residential water audit kit that includes aerators and toilet displacement devices.
	Dual Flush Toilet Rebate	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Waterless Toilet Rebate	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Zero Interest Loans for Washers	No	No	NWCWD Board not interested in loan programs. Re-evaluate with future planning efforts.
	Low Income Retrofit Program	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Irrigation system rebate - commercial (controller, heads, nozzles)	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Irrigation system rebate - residential (controller, heads, nozzles)	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Mulch Rebate/Incentives	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Soil Amendment Rebate/Incentives	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Soil Moisture Probes Rebate/Incentives	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Turf Replacement Rebate/Incentives	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Wind and/or rain sensor rebates for residential	No	No	NWCWD Board not interested in rebate programs. Re-evaluate with future planning efforts.
	Xeriscape incentive for all categories	No	No	NWCWD plans to promote existing demonstrations and classes as an incentive to customers.
	Commercial & Industrial water audits	Yes	Yes	NWCWD has visited most individual dairy customers and will continue in the future; most dairies have practices and measures in place the promote water conservation.
	Residential audit kit	Yes	Yes	NWCWD already issues residential water audit kits and would like to evaluate further (including dye tablets, faucet aerators, toilet displacement device, informational booklet). NWCWD is also available to residential customers for individual audits as needed.
	Residential landscape audit kit	No	Yes	NWCWD would like to include distribution catch cans and instructions with their existing residential water audit kits.

Initial Screening of Conservation Measures and Programs

As mentioned above, we reviewed the universal list of measures with staff to determine a list of measures and programs that *would be evaluated further in the planning process* via a cost-benefit analysis. The list of measures was also evaluated to determine if the CWCB Minimum Required Water Conservation Plan Elements were addressed. The required CWCB elements include:

- Water-efficient fixtures and appliances, including toilets, showerheads, and faucets
- Low water use landscapes, drought resistant vegetation, removal of phreatophytes (a deep rooted plant that obtains water from the water table or the layer of soil just above it. Includes cottonwoods, tamarisk, etc.), and efficient irrigation
- Water-efficient industrial and commercial water use processes
- Water reuse systems
- Distribution system leak identification and repair
- Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations
- Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner
- Regulatory measures designed to encourage water conservation
- Incentives to implement water conservation techniques, including rebates to customers

The best way for the District to regulate water use at this time is through rates and allotments. The current rate structure is equitable for the diverse water use levels of customers within the District.

This initial screening process was completed on January 9, 2009. The resulting decisions are noted on Table 6.1.

CHAPTER 7 – EVALUATION AND SELECTION

The NWCWD Board and staff have a good understanding of where potential water savings exist and what will be acceptable to the public within their service area. The District recognizes that there are benefits to focusing foremost on conservation efforts that may help to reduce system wide distribution losses. However, the District also knows that there is potential to save water at each individual tap and believes that education and service based (via audits) approaches to conserving water are most appropriate for their constituents.

The initial screening of the measures and programs with NWCWD's staff resulted in eliminating forty-nine measures and selecting fourteen for further evaluation. The grouping of the measures enabled us to consider like measures and avoid double counting savings. The benefits and costs of the fourteen measures and programs are shown in Table 7.1.

Estimated Costs and Water Savings of Conservation Options

Many resources were used to estimate water savings for each conservation measure including Amy Vickers Handbook of Water Use and Conservation, studies and papers from California and Arizona, local studies available from the American Water Resource Association (AWRA), the Environmental Protection Agency (EPA), Western Resource Advocates, information from Colorado municipalities, and the CWCB website. Interviews with conservation program directors from surrounding public water service entities provided additional water savings information and added a local perspective.

The assumptions for calculating water savings used for this analysis were on the conservative end of the ranges found in the available water conservation research to avoid overestimating savings.

Table 7.1 provides an annual cost-benefit analysis for all of the measures and programs previously identified to be evaluated further. A planning horizon of ten years is used to quantify the full benefit of these measures and programs (2009 – 2018). The costs and water savings over the planning period are calculated assuming the measures/programs all start in year one. This provides an equitable ranking of the measures, so they can be compared on an apples-to-apples basis. In reality, the measures and programs will be implemented according to the implementation schedule developed in Chapter 9 and budget availability.

The first three columns (Columns A-C) of Table 7.1 identify the conservation measure or program and quantify the costs to the District. These costs include unit or annual costs for materials, staff time, and one-time start-up costs.

Table 7.1 - Cost/Savings Analysis of Conservation Measures and Programs

Conservation Measure or Program		One time Labor and Material Cost (A)	Annual Labor (B)	Annual Materials (C)	# of Participants per Year (D)	Gallons Saved per Unit per Year (E)	Estimated Annual Water Savings (gallons) (F)	Estimated Total Water Savings over Planning Period (gallons) (G)	Annual Revenue Loss Related to Water Savings (H)	Estimated Annual Cost (I)	Estimated Total Cost over Planning Period including Set-up (J)	Cost per 1000 Gallons Saved (K)	Rank (L)
Supply side measures & programs	**Utility Maintenance Programs**												
	Billing Software Upgrades	$6,000					8,301,702	83,017,023	$0	$0	$6,000	$0.07	1
	Meter Testing and Replacement Program			$115,756	772	21,515	16,603,405	166,034,045	$0	$115,756	$1,157,560	$6.97	14
	Meter Installation to Pinpoint Leaks in Distribution System			$37,500			29,886,128	239,089,025	$0	$7,500	$37,500	$0.16	2
Demand side measures & programs	**Regulatory Controls and Standards**												
	Temporary Irrigation Taps for Native Landscaping	$400	$400	$100	2	89,609	179,218	16,129,625	$511	$500	$5,400	$0.65	3
	Educational Programs												
	Send ET Irrigation Scheduling in Water Bill	$700	$500	$345	3,445	2,686	9,254,453	92,544,528	$26,375	$845	$9,145	$2.95	10
	Water Use Calculator	$700	$200				9,489,791	94,897,907	$27,046	$200	$2,700	$2.88	8
	Online Access to Water Bill and History	$2,200	$100				15,225,322	152,253,220	$43,392	$100	$3,200	$2.87	7
	Post commercial BMPs on website and as bill stuffers	$700	$850	$24	240	37,276	8,942,768	89,427,680	$25,487	$874	$9,440	$2.96	11
	Public Education at Library	$4,700	$800	$500			18,341,265	183,412,646	$52,273	$1,300	$17,700	$2.95	9
	Xeriscape Garden Demonstration	$5,000	$800	$250			3,084,818	30,848,176	$8,792	$1,050	$15,500	$3.35	13
	Xeriscape Gardening Classes	$700	$400				3,084,818	30,848,176	$8,792	$400	$4,700	$3.00	12
	Audit Programs												
	Commercial & Industrial water audits		$1,000	$200	20	65,333	1,306,663	19,599,938	$3,724	$5,000	$25,000	$2.23	6
	Residential audit kit		$800	$183.75	75	2,579	193,409	10,637,487	$551	$984	$9,838	$1.44	4
	Residential landscape audit kit	$0	$800	$20	150	150	669,787	36,838,270	$1,909	$3,800	$38,000	$1.55	5

Table 7.1 Notes:

(A) One time labor and material costs involved in setting up program or measure.
(B) Labor involved each year for operation of measure or program.
(C) Materials needed each year for each unit if listed or for the whole measure or program.
(D) Number of participants expected to participate and resulting units or audits needed.
(E) Gallons of water saved per unit as a result of participating in the program or measure.
(F) Total water savings seen in a year from the measure or program.
(G) Total water savings seen over entire ten year planning period; could be based on increasing water demand or a fixed use per account.
(H) Annual revenue the water provider will not be paid if the water savings occur.
(I) Total annual cost to water provider.
(J) Total cost to implement and operate measure or program over entire planning period, including annual operation, one time set up costs.
(K) Cost per 1000 gallons saved equal total cost over planning period divided by total water saved over planning period.
(L) Ranks the measures and programs according to the price per 1000 gallons of water saved, lowest to highest.

Table 7.1 also quantifies water savings annually and for the entire ten-year planning horizon. Annual water savings and projected lost revenue are based on full implementation. The purpose of the cost-benefit analysis is to give the District an idea of the anticipated water savings and revenue impacts after full implementation.

The cost per 1,000 gallons of water saved is found by dividing the total cost by the total water savings for the entire ten year period. To determine which measures will be more effective and to suggest a useful order of implementation, we ranked the measures and programs according to the cost per 1,000 gallons saved, starting with a rank of one for the lowest cost.

Comparison of Benefits and Costs

The resulting rank of measures by cost-benefit is shown in Table 7.2. The cost per 1,000 gallons saved ranges from $0.07 to $6.97. Keeping in mind that the costs include lost revenue, it is not surprising that the first two ranked measures are supply side measures that address system losses and have no associated lost revenue. These are the most effective measures to implement in a conservation plan to avoid wasting water.

The subsequent rankings are a result of the ratio of cost and lost revenue to water savings. For instance, providing an evapotranspiration (ET) schedule to customers may encourage water conservation through reduction in landscape irrigation, but it also results in lost revenue, so it ranks lower than one might expect.

Table 7.2 – Cost-Benefit Ranking

Conservation Measures and Programs	Rank
Billing Software Upgrades	1
Meter Installation to Pinpoint Leaks in Distribution System	2
Temporary Irrigation Taps for Native Landscaping	3
Residential audit kit	4
Residential landscape audit kit	5
Commercial & Industrial water audits	6
Online Access to Water Bill and History	7
Water Use Calculator	8
Public Education at Library	9
Send ET Irrigation Scheduling in Water Bill	10
Post commercial BMPs on website and as bill stuffers	11
Xeriscape Gardening Classes	12
Xeriscape Garden Demonstration	13
Meter Testing and Replacement Program	14

Evaluation of Selected Conservation Measures and Programs

After each of the conservation measures and programs were ranked by *cost per 1,000 gallons saved*, as shown in Table 7.2, the next step was to select conservation measures and programs for implementation.

A second evaluation of the initially selected measures and programs was accomplished in conjunction with District staff. During this second evaluation, no measures or programs were eliminated from the initial set. The primary reason was that all evaluated measures and programs were important and needed for the District to meet their conservation goals. Further detail on the conservation measures and programs chosen in the final selection are found in Appendix A.

Upon CWCB review, a regulatory measure was suggested involving a water waste ordinance. We added this measure in Appendix A but did not reflect the savings in the summary tables. This is just going to be additional savings to the proposed plan.

In Chapter 5, conservation goals were established for five customer categories:

- Unaccounted-for Losses: 3.3% - 1,681 ac-ft
- Standard Full & ¾: 5% - 947 ac-ft
- Standard ½: 2% - 7 ac-ft
- Commercial Flow: 1% - 13 ac-ft
- Commercial Dairy: 1% - 172 ac-ft
- Commercial Industrial: 5% - 443 ac-ft

The selected conservation measures/programs and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Some of the measures contribute savings to more than one category. Table 7.3 shows the water savings for the selected measures, sub-totaled for each category.

Table 7.3 – Combined Water Savings of Selected Conservation Measures and Programs

Conservation Measures and Programs	Estimated Annual Water Savings (gallons)	Estimated Total Water Savings over Planning Period (gallons)
Unaccounted for Losses		
Billing Software Upgrades	8,301,702	83,017,023
Meter Testing and Replacement Program	16,603,405	166,034,045
Meter Installation to Pinpoint Leaks in Distribution System	29,886,128	239,089,025
Subtotal - Gallons	54,791,235	488,140,093
Acre-Feet	168.1	1,498.0
Standard - Full and 3/4		
Temporary Irrigation Taps for Native Landscaping	179,218	16,129,625
Send ET Irrigation Scheduling in Water Bill	9,254,453	92,544,528
Water Use Calculator	9,320,413	93,204,125
Online Access to Water Bill and History	6,169,635	61,696,352
Public Education at Library	12,339,270	123,392,703
Xeriscape Garden Demonstration	3,084,818	30,848,176
Xeriscape Gardening Classes	3,084,818	30,848,176
Residential audit kit	189,499	10,422,426
Residential landscape audit kit	669,787	36,838,270
Subtotal - Gallons	44,291,909	495,924,380
Acre-Feet	135.9	1,521.9

Table 7.3 – Continued

Conservation Measures and Programs	Estimated Annual Water Savings (gallons)	Estimated Total Water Savings over Planning Period (gallons)
Standard - 1/2		
Water Use Calculator	169,378	1,693,781
Online Access to Water Bill and History	112,919	1,129,188
Public Education at Library	225,838	2,258,375
Residential audit kit	3,910	215,062
Subtotal - Gallons	512,045	5,296,406
Acre-Feet	1.6	16.3
Commercial - Flow		
Online Access to Water Bill and History	438,067	4,380,669
Post commercial BMPs on website and as bill stuffers	438,067	4,380,669
Subtotal - Gallons	876,134	8,761,338
Acre-Feet	2.7	26.9
Commercial - Dairy		
Online Access to Water Bill and History	5,616,623	56,166,228
Post commercial BMPs on website and as bill stuffers	5,616,623	56,166,228
Subtotal - Gallons	11,233,246	112,332,455
Acre-Feet	34.5	344.7
Commercial - Industrial		
Online Access to Water Bill and History	2,888,078	28,880,784
Post commercial BMPs on website and as bill stuffers	2,888,078	28,880,784
Public Education at Library	5,776,157	57,761,567
Commercial & Industrial water audits	1,306,663	19,599,938
Subtotal - Gallons	12,858,976	135,123,072
Acre-Feet	39.5	414.7
Total (ac-ft)	**382.3**	**3,822.5**

Adjusted Water Conservation Goals

These savings were compared to the original goals set in Chapter 5. As mentioned earlier, water conservation goal setting is an iterative process; original goals are established, conservation measures are evaluated and selected based on appropriate criteria, and the resulting water savings are compared to the original goals. The goals are then adjusted if necessary. In this case, the resulting water savings are close to or higher than the original goals.

Table 7.4 compares the anticipated water savings from the selected measures with the original goals and then adjusts the water saving goals for this plan.

Table 7.4 – Water Conservation Goals Comparison

Water Use Categories:	Total Projected Water Use (2009 to 2018)	Reduction Goals for Planning Horizon		Total Water Savings from Selected Programs	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(ac-ft)	(%)	(ac-ft)	(ac-ft)	(%)	(%)	(ac-ft)
Standard - Full & 3/4	18,934	5.0%	947	1,522	8.0%	8.0%	1,515
Standard – 1/2	347	2.0%	7	16	4.7%	4.7%	16
Commercial - Flow	1,344	1.0%	13	27	2.0%	2.0%	27
Commercial - Dairy	17,237	1.0%	172	345	2.0%	2.0%	345
Commercial - Industrial	8,863	5.0%	443	415	4.7%	4.7%	417
Unaccounted-for Losses (currently 8.3%)	4,229	3.3%	1,681	1,681	3.3%	3.3%	1,681
Total Water Demand:	50,954						
Total Demand Reduction:			3,264	4,006			4,001
Total Percent Reduction:			6.4%		7.9%	7.9%	

Over the ten-year planning period, the selected measures/programs provide an overall estimated water savings of 4,001 ac-ft. This is close to, but higher than the initial water savings goals set in Chapter 5. The Commercial Industrial category goal was adjusted down to 4.7 percent from the initial goal of 5 percent, to reflect the estimated savings from the selected conservation measures and programs. Goals for all other categories were not changed or were adjusted upward from the original goal levels. The adjusted goals reflect the goals believed to be obtainable by the District.

After the goals were adjusted to better reflect the expected water savings, the estimated water use reduction is 4,001 ac-ft or 7.9 percent over the ten year planning period. Therefore, the District will target a reduction in its water use by 7.9 percent over the next ten years as a result of implementation of this plan.

CHAPTER 8 – IMPLEMENTATION SCHEDULE AND FORECAST MODIFICATION

Implementation of the water conservation plan will gradually reduce the water demand that was forecasted in Chapter 3, since those forecasts do not consider potential savings from conservation. The reduction in water demand will ideally occur according to an implementation schedule that is adopted by the District, however the reduction is likely to occur more slowly over the next seven to ten years as repairs and upgrades are made. This chapter shows the demand forecast with and without conservation and estimates a modification to capital improvement projects or water supply purchases.

Implementation Schedule

As mentioned above, water savings resulting from implementation of this water conservation plan will occur gradually as the District has the resources to implement each selected measure and program and the water users respond to that implementation. Grant availability will be crucial in the timing of implementation.

Table 8.1 proposes a schedule of implementation that splits the effort over the next five years and allows time to apply for and possibly obtain grant money. The annual costs shown reflect the cost to implement the measure/program and maintain it. For some of the measures, the annual cost is the same as the implementation cost and as such is shown in the set up column for the first year. Any grant money obtained would reduce these yearly costs shown in Table 8.1. Table 8.1 also shows the percent of the total water saved over the planning period for each measure.

Table 8.1 –NWCWD Water Conservation Plan Implementation Schedule

Measure/Program	Cost to Implement (includes 1st year annual cost)	Annual On-going Costs (programs in 2nd or 3rd year of implementation)	% of Total Water Savings	Implementation Requirements	Grant Request
2009					
Billing Software Upgrades	$6,000		6.7%	Funding, obtaining 3rd party	Yes
Online Access to Water Bill and History	$2,200	$100	12.2%	Funding, obtaining 3rd party along with billing software upgrades	Yes
Meter Installation to Pinpoint Leaks in Distribution System	$7,500		19.2%	Funding, staff time	Yes
Temporary Irrigation Taps for Native Landscaping	$400	$500	1.3%	Staff time to develop policy, Board approval	
Send ET Irrigation Scheduling as Bill Stuffer*	$700	$845	7.4%	Staff time to calculate ET	
Meter Testing and Replacement Program	$115,756		13.3%	Funding, staff time	Yes
Xeriscape Gardening Classes*	$700	$400	2.5%	Staff time to find available classes and put on website	
Post commercial BMPs on website and as bill stuffers*	$700	$874	7.2%	Staff time to find BMPs	
Water Use Calculator*	$700	$200	7.6%	Staff time to find link and get familiar with tool	
* All of these measures will require a 3rd Party website developer to set up Conservation Pages and links - one time cost is totalled and will cover consultant fee	$2,800			Funding to hire web developing consultant	Yes
Total 2009 Cost	**$137,575**				
2010					
Meter Testing and Replacement Program		$115,756			
Meter Installation to Pinpoint Leaks in Distribution System		$7,500		Funding, staff time	Yes
Commercial & Industrial water audits	$5,000		1.6%	Funding, obtaining 3rd party, staff time	Yes
Residential audit kit	$984		0.9%	Funding, staff time to plan and order kits	
Residential landscape audit kit	$3,800		3.0%		
Public Education at Library	$4,700	$1,300	14.7%	Funding, staff time to develop program, library participation	Yes
Total 2010 Cost	**$139,040**				
2011					
Meter Testing and Replacement Program		$115,756		Funding, staff time	Yes
Meter Installation to Pinpoint Leaks in Distribution System		$7,500		Funding, staff time	Yes
Xeriscape Garden Demonstration	$5,000	$1,050	2.5%	Funding, obtaining 3rd party for design and construction, staff time	Yes
Total 2011 Cost	**$129,306**				
2012					
Meter Testing and Replacement Program		$115,756		Funding, staff time	Yes
Meter Installation to Pinpoint Leaks in Distribution System		$7,500		Funding, staff time	Yes
Total 2012 Cost	**$123,256**				
2013					
Meter Testing and Replacement Program		$115,756		Funding, staff time	Yes
Meter Installation to Pinpoint Leaks in Distribution System		$7,500		Funding, staff time	Yes
Total 2013 Cost	**$123,256**				
Total 2009 - 2013 Combined Cost (implementation and annual costs)	**$652,432**				

The total cost to implement the conservation plan is $652,432. This cost includes getting all of the measures set up and/or installed, such as installing the meters to pinpoint leaks or to develop the website with all planned upgrades. There will be some additional on-going costs for things like staff time and re-ordering residential audit kits if necessary. The implementation schedule will be most affected by available staff time and funding. While this schedule may be optimistic, the goal is to allow time for researching and obtaining grants to develop sound programs for a higher probability of success.

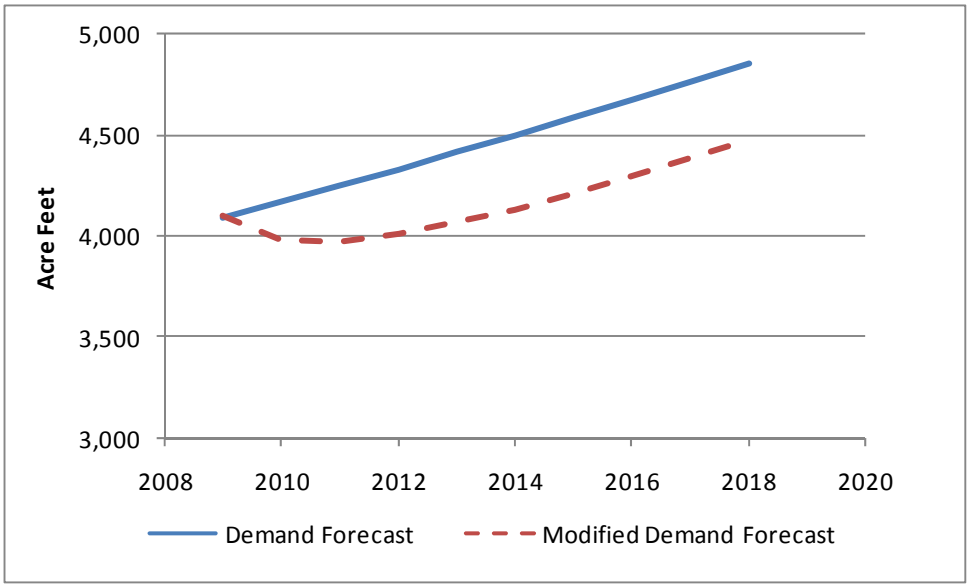
Appendix A provides a detailed breakdown of costs for each measure/program for both set-up and maintenance.

Modified Demand Forecast

The total water demands for NWCWD are shown in the following graph with and without water conservation for the 2009 to 2018 planning period. The anticipated water savings follow the implementation schedule. The savings are compiled according to the assumptions used in the cost-benefit analysis and are carried through the end of the planning period. The anticipated impacts from implementing the water conservation measures are expected to last well beyond the planning horizon.

The annual savings after all of the measures/programs have been implemented is 400 ac-ft per year without considering savings due to measures already in place, like watering recommendations.

Figure 8.1 – Comparison of Demand Forecast with and without Conservation



Water Supply and Capacity Upgrade Forecast Modification

Water providers generally maintain a water supply to meet an acceptable level of drought protection, meaning they can deliver their full expected demand in a reasonable drought condition (e.g. 50 year drought). Enough water supplies are typically obtained by providers to ensure an acceptable level of drought protection, especially as water demand increases due to growth. NWCWD will need to obtain water in the next few years as demands increase.

Full implementation of the water conservation plan will result in annual water savings of up to 400 ac-ft, which could occur as early as five years from now. This savings could be expressed as a cost savings since the rate required to acquire water could be lowered. If a market value of $10,000 per ac-ft were used to determine this value, the savings from conservation would be $4 million. The current price of CBT water is $9,500 per unit or $13,570 per ac-ft, making $10,000 per ac-ft a reasonable estimate.

Table 8.2 shows financial savings from delaying capital improvement projects due to conservation. The capital improvement projects from Table 4.2 were reviewed to determine which ones could be delayed by saving water through conservation. The delay in construction of the projects was estimated in a very general sense and a cost savings due to delay was calculated using a present value difference that is outlined in the water conservation manual noted in Table 8.2.

The combined cost savings from a one or two year delay to the projects listed is $1.2 million.

Table 8.2 – Cost Savings from Delayed Capital Improvement Projects

Description	Estimated Cost	Timeline	Revised Timeline	Estimated Possible Delay	Present Value if Built when Scheduled[2]	Present Value if Built in Delayed Year[2]	Cost Savings[1]
Recommended Transmission Waterline Construction Schedule:				(years)			
NEWT Phase I	$4,400,000	2008/2009	2009/2010				
NEWT Phase II	$3,300,000	2010/2011	2010/2011	1	$2,993,197	$2,850,664	$142,533
Summit View PS to Future Tank 1 (NEWT Phase III)	$6,850,000	2012/2013		1	$5,635,512	$5,367,154	$268,358
Additional 5.0 MG Tank	$5,000,000	2014		1	$3,917,631	$3,731,077	$186,554
Total Cost of Improvements	**$19,500,000**					**Total Cost Savings**	**$597,445**
Recommended Improvement for Tank 3 and 4 Service area:							
8/6" W/L along WCR 76 from WCR 45 to 51	$285,000	2008	2009	1	$271,429	$258,503	$12,925
8/6" W/L along WCR 76 & 45 to 80 & 43	$220,000	2008	2009	1	$209,524	$199,546	$9,977
16" W/L from WCR 51 & 70 to Tank 5	$380,000	2009	2010	1	$344,671	$328,258	$16,413
30/20" W/L from WCR 33 & 70 to 41 & 70	$2,217,600	2010	2011	1	$1,915,646	$1,824,425	$91,221
2.0 MG Elevated Tank	$3,000,000	2010/2011	2011/2012	1	$2,591,513	$2,468,107	$123,405
Total Cost of Improvement	**$6,102,600**					**Total Cost Savings**	**$253,942**
Recommended Improvement for Tank 5 Service area:							
Hwy 392 Improvements	$210,000	2009		1	$200,000	$190,476	$9,524
16/14/12" W/L from Tank 5 to WCR 64-1/2 & 57	$600,000	2010		1	$544,218	$518,303	$25,915
Total Cost of Improvement	**$1,210,000**					**Total Cost Savings**	**$35,439**
Recommended Improvement for Tank 6 Service area:							
4" & 6" W/L looping WCR 86 & 88 between WCR 43 & 45	$75,000	2006	2009	1	$71,429	$68,027	$3,401
6" W/L along Hwy 14 from WCR 25 to 27	$95,000	2007	2010	1	$86,168	$82,065	$4,103
6" W/L on WCR 39 from WCR 88 to 86	$85,000	2007	2010	1	$77,098	$73,426	$3,671
8" & 6" W/L loop from WCR 90 to 92 and WCR 35 to 37	$325,000	2009	2012	1	$267,378	$254,646	$12,732
6" W/L loop from WCR 39 to WCR 45 and WCR 94 to WCR 90	$400,000	2010	2013	1	$313,410	$298,486	$14,924
2 MG Ground Level Tank	$1,000,000	2010	2013	1	$907,029	$746,215	$160,814
Total Cost of Improvement	**$1,980,000**					**Total Cost Savings**	**$199,647**
Recommended Improvement for Tank 7 Service area:							
8" from WCR 86 & 15 to WCR 88 & 19	$350,000	2006/2007	2009/2010	2	$333,333	$302,343	$30,990
12" from Tank 7 to WCR 90	$150,000	2006/2007	2009/2010	2	$142,857	$129,576	$13,282
12" on WCR 90 from WCR 13 to WCR 15	$120,000	2007/2008	2010/2011	2	$108,844	$98,724	$10,119
Total Cost of Improvement	**$470,000**					**Total Cost Savings**	**$54,391**
Recommended Improvement for Nunn Service area:							
300,000 gallon tank located at WCR 94 & 25	$240,000	2007/2008	2009/2010	2	$228,571	$207,321	$21,250
12" W/L on WCR 94 from WCR 29 to Tank	$375,000	2007/2008	2009/2010	2	$357,143	$323,939	$33,204
Pump station at Gold Stone PUD	$250,000	2009	2010	2	$226,757	$205,676	$21,082
Total Cost of Improvement	**$865,000**					**Total Cost Savings**	**$75,536**
						Grand Total Cost Savings:	***$1,216,399***

Notes: 1. Water Conservation Programs - A Planning Manual, AWWA Manual M52, pg. 77, formula (4-11)

2. Present value calculation assumes a 5% interest rate

3. Time count starts in 2009

Summary of Modifications and Benefits of Conservation

Reducing water demand can have many benefits that are both quantifiable and inherent. On the Front Range, demand for water continues to increase and large water supply and storage projects are being developed to meet the growing demands. Pressure on water resources in the region creates an expectation that public utilities will do what they can to use water wisely and efficiently. The District has been and will be diligent about implementing conservation measures to stretch their existing supply and save on treatment and delivery costs.

The value of the water saved by implementing this water conservation plan will be equivalent to $4 million. The value of being able to delay the planned capital improvement projects by one or two years is $1.2 million.

The cost to implement the entire Water Conservation Plan over the next five years is $652,432. By comparing the cost to implement water conservation to the potential cost of acquiring the “saved” water and the cost of constructing infrastructure upgrades, it is clear that there are many benefits to water conservation.

CHAPTER 9 – MONITORING, EVALUATING AND UPDATING THE CONSERVATION PLAN

Public Participation

One of the CWCB requirements for a Water Conservation Plan is to publish a draft plan, give public notice of the plan, make the plan publicly available, and solicit comments from the public for not less than a 60-day period.

Through this water conservation planning process, the public was notified and given 60 days to comment. The plan was available on NWCWD's website and in its office for review. Written comments and responses to those comments are included in Appendix B.

Monitoring and Evaluation

Monitoring the success of this Water Conservation Plan includes measuring water use as well as money spent on the selected conservation measures and programs. NWCWD will measure water use in the customer categories that have been targeted for water savings. Monitoring water use per customer category will be evaluated as part of the billing system evaluation and update and implemented early in the program for better tracking of water savings. Participants in the audit programs can be recorded and individual accounts tracked for specific water reductions.

Expenditures for conservation will be documented by NWCWD staff and reported to the NWCWD Board on a regular basis. This will be valuable information in evaluating the cost-benefit ratio and to validate the success of implementing the selected conservation measures and programs. Since the programs will be implemented in phases, there will be time to evaluate and establish the appropriate method to monitor success of each program and measure.

Plan Updates and Revisions

The required schedule for updating the Water Conservation Plan is seven years. The progress towards achieving the water savings goals will be monitored on an annual basis. NWCWD will update this plan prior to seven years if implementation and actual water savings deviate too much. This deviation may be caused by several factors including higher than expected growth, less than anticipated participation or the inability to implement the plan due to lack of funding.

Plan Adoption and Approval

Public comments gathered during the advertised public comment period have been incorporated into the plan and the NWCWD Board has formally adopted the plan prior to submittal to CWCB for final approval.

CWCB will provide written notification of approval, conditional approval, or disapproval within 90 days of submittal. Conditions for conditional approval or disapproval will be addressed if necessary. Implementation will begin after CWCB approval is received. It is only after final CWCB approval that NWCWD will be eligible for a water-efficiency grant through CWCB for plan implementation.

REFERENCES:

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APPENDIX A

Water Conservation Measures

Billing Software Upgrades

Software Upgrades will allow water providers to quickly and easily retrieve water usage data in a variety of formats including reports and tables. Software upgrades will help staff to identify system problems such as leaks and track reduced water use due to conservation.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Annual Estimated Water Production without Savings	1,660,340,453	gallons/yr
Total Estimated Water Production over Planning Period without Savings	16,603,404,526	gallons
Annual Estimated Savings Rate	0.50%	
Estimated Annual Water Savings	**8,301,702**	gallons/yr
Estimated Savings over Planning Period	**83,017,023**	gallons

Notes:

Current system leakage/loss rate is estimated at 8.3%.

Goal is to reduce overall system leakage/loss rate to 5%. Software upgrades are estimated to help detect and reduce system losses by 0.5%.

Costs

Total Cost to Water Provider

One Time Labor and Material Costs

One Time Staff Costs	$2,000.00
Upgrades performed by Consultant	$4,000.00
One Time Labor/Material Cost	**$6,000.00**

Estimated Annual Cost	**$0.00**
Estimated Total Cost over Planning Period Including Set-up	**$6,000.00**
Cost per 1000 Gallons Saved	**$0.07**

Notes:

Estimated staff costs include one-time coordination with third party consultant to update existing billing system to include additional functionality. Estimate that staff would spend approximately 40 hours at $50.00/hour, coordinating with third party consultant and training to understand additional functionality.

Staff estimates that incorporating additional functionality to software by third party consultant would cost approximately $4,000.

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	no
Annual Revenue Loss Related to Water Savings	**$0.00**

Meter Testing and Replacement Program

Existing meters in the NWCWD service area are replaced every ten years. Aging meters account for apparent losses, or losses due to meter inaccuracies. NWCWD would like to increase frequency of meter replacement to once every 5 years.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Production without Savings	1,660,340,453	gallons/yr
Estimated Water Production over Planning Period without Savings	16,603,404,526	gallons
Annual Estimated Savings Rate	1.00%	
Estimated Annual Water Savings	**16,603,405**	gallons/yr
Estimated Savings over Planning Period	**166,034,045**	gallons

Notes:

Current system loss rate is estimated at 8.3%. A portion of these losses may be attributed to aging meters. NWCWD would like to use this measure to reduce these losses by 1% over the planning period.

Goal is to reduce overall system leakage/loss rate to 5%.

Costs

Total Cost to Water Provider

Materials Costs

Unit Cost	$150.00	/participant
Number of Participants	772	/year
Gallons Saved per Unit per Year	21,515	gallons
Annual Materials	**$115,756.01**	/year

Notes:

NWCWD would like to replace 20% of all meters per year, which over the planning period is equal to approximately 778 meters per year.

The $150 unit cost includes meter testing, replacement costs, and labor.

Estimated Annual Cost	**$115,756.01**	/year
Estimated Total Cost over Planning Period Including Set-up	**$1,157,560.06**	
Cost per 1000 Gallons Saved	**$6.97**	

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above*	$2.85

Measure affects revenue?	no
Annual Revenue Loss Related to Water Savings	**$0.00**

Meter Installation to Pinpoint Leaks in Distribution System

NWCWD currently has non-billed distribution system meters to identify system leaks and losses. They would like to enhance this program by installing five additional meters that will allow them to more proactively monitor smaller zone areas within the service area. These meters will have SCADA technology to be able to audit this data on a weekly basis.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	5

Estimated Water Savings

Annual Estimated Water Production without Savings	1,660,340,453	gallons/yr
Estimated Water Production over Planning Period without Savings	16,603,404,526	gallons
Annual Estimated Savings Rate	1.80%	
Est Annual Water Savings at end of Planning Period	**29,886,128**	gallons/yr
Estimated Savings over Planning Period	**239,089,025**	gallons

Notes:

Current system leakage/loss rate is estimated at 8.3%. Through their distribution meter installation program, NWCWD would like to reduce these losses by 1.8% on an annual basis after meters are installed.

Goal is to reduce overall system leakage/loss rate to 5%.

Costs

Total Cost to Water Provider

Materials Costs		
Unit Cost	$7,500.00	/meter
Number of Meters	5	
Total Materials over 5 Years	**$37,500.00**	/year

Notes:

NWCWD plans to install five additional distribution meters under this current program. NWCWD anticipates installing one meter per year starting in 2009. Estimated water savings are compounded for first five years of program implementation.

Estimated cost per meter is $7500 for labor and materials.

Estimated Annual Cost	**$7,500.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$37,500.00**	
Cost per 1000 Gallons Saved	**$0.16**	

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	no
Annual Revenue Loss Related to Water Savings	**$0.00**

Water Waste Ordinance

North Weld will develop or expand an existing ordinance to say that wasting water will not be allowed within the District. They will institute this process within 2 years.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	0.50%

Customer Category	Average Annual Water Use	*Estimated Annual Water Savings gallons/yr*
Standard - Full	616,474,926	3,082,375
Standard - 3/4	488,591	2,443
Standard - 1/2	11,291,876	56,459
Commercial - Industrial	288,807,835	1,444,039

Estimated Annual Water Savings	**4,585,316**	gallons/yr
Estimated Savings over Planning Period	**45,853,161**	gallons

Notes:

Estimated savings is 1/2 %. This measure will only affect Residential, Multi-Family, and Potable Commercial water users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Labor Costs	$750.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$750.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing the ordinance.

Cost for one time program development are split between all new development standards (8 total). Total annual labor for all development standards totals $6,000.

Water Waste Ordinance

Water Rates (2008)

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Notes:

Average rates are shown for planning purposes only.

Estimated Revenue assumes that the current avg rates will not change over the planning period.

For revenue loss calculations. The number of taps participating from each group will be split evenly. For Example, if 250 total participate each year; each customer category will have 62.5 participants.

Estimated Annual Revenue Loss Related to Water Savings **$13,068.15** /year

Estimated Annual Cost	**$13,068.15**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$750.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$131,431.51**	
Cost per 1000 Gallons Saved	**$2.87**	

Customer Category	Annual Water Savings	Estimated Lost Revenue
Standard - Full	3,082,375	$8,784.77
Standard - 3/4	2,443	$6.96
Standard - 1/2	56,459	$160.91
Commercial - Industrial	1,444,039	$4,115.51
Total	4,585,316	$13,068.15
Average	1,146,329	$3,267.04

Temporary Irrigation Allocation for Native Landscaping

NWCWD will consider issuing an outdoor water allocation on a temporary basis to Standard-Full customers for purposes of establishing native or zeric landscapes. Once landscape is established, water is not needed for on-going irrigation for all or part of the landscape and is therefore conserved.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	50.00%

Customer Category	Avg Annual Outdoor Water Use Per Tap (gallons/tap)	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Standard - Full	89,609	4	179,218

Estimated Annual Water Savings	**179,218**	gallons/yr
Estimated Savings over Planning Period	**16,129,625**	gallons

Notes:

Estimate that approximately 50% of total Standard - Full customer use is outdoor use for irrigation.

Estimate that 2 customers will participate in the program per year. Each participant is expected to establish native landscape over the course of one year before reducing outdoor water use. Once native landscape is established, outdoor use for participants is expected to be reduced by 50%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$400.00**	/year
Materials Costs		
Unit Cost	$50.00	/participant
Number of Participants	2	/year
Gallons Saved per Unit per Year	89,609	gallons
Annual Materials	**$100.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost to Set Policy	$400.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Annual labor costs include time for installation and removal of water related appurtenances by staff.

One-time labor costs include staff time for researching and updating the current policy to include the new program as well as implementing the program.

Assume a $50 water rental fee per year.

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

W

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$510.77**

Estimated Annual Cost	**$500.00**	/year
Est Cost over Planning Period Including Set-up	**$5,400.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$10,507.71**	
Cost per 1000 Gallons Saved	**$0.65**	

Send ET Irrigation Scheduling in Water Bill

ET irrigation schedules using historical averages of weather data can be prepared by NWCWD prior to the irrigation season and sent out to all customer categories in the spring to reference when programming their irrigation systems throughout the irrigation season. Northern Water has tools on their website that can aid with this calculation. The schedule would be printed in-house and sent out as a bill stuffer at the beginning of the irrigation season as well as posted on the website.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	3.00%

Customer Category	Avg Annual Outdoor Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Standard - Full	308,237,463	9,247,124
Standard - 3/4	244,295	7,329

Estimated Annual Water Savings	**9,254,453**	gallons/yr
Estimated Savings over Planning Period	**92,544,528**	gallons

Notes:

This measure affects projected outdoor water usage for Standard - Full and Standard - 3/4 tap customers only. Estimate that approximately 50% of total use for these customers is outdoor use for irrigation.

Estimate that, annually, 3% of water use by Standard - Full and Standard - 3/4 customers would be saved with this measure.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost (cost of in-house Bill Stuffers)	$0.10	/participant
Number of Participants	3,445	/year
Gallons Saved per Unit per Year	2,686	gallons
Annual Materials	**$344.54**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Third Party Website Development	$700.00	
One Time Labor/Material Cost	**$700.00**	

Notes:

Staff hours include time spent preparing schedules, which will be sent out one time per year.

Schedules would be sent to customers on an annual basis as a bill stuffer. Average cost per bill stuffer made in-house is $0.10.

There are projected to be an average of 3,477 affected tap accounts each year.

One time costs for website upgrades are split with additional conservation measures that also require website development.

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$26,375.19**

Estimated Annual Cost	**$844.54**	/year
Est Cost over Planning Period Including Set-up	**$9,145.36**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$272,897.26**	
Cost per 1000 Gallons Saved	**$2.95**	

Website Water Use Calculator

Putting a residential water use calculator on a website is an effective way for a customer to calculate their water use and get them thinking about how to save water and money. NWCWD would reference customers to their website, where they would them provide a link to a website water use calculated such as www.H2Oconserve.org .

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1.50%

Customer Category	Avg Annual Total Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Standard - Full	616,474,926	9,247,124
Standard - 3/4	4,885,908	73,289
Standard - 1/2	11,291,876	169,378

Estimated Annual Water Savings	**9,489,791**	gallons/yr
Estimated Savings over Planning Period	**94,897,907**	gallons

Notes:

This measure affects projected indoor and outdoor water usage for Standard - Full, Standard - 3/4, and Standard - 1/2 tap customers only.

Estimate that 1% of water use by Standard - Full, Standard - 3/4, and Standard - 1/2 customers would be saved with this measure on an annual basis.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	4	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$200.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$200.00**	/year

One Time Labor and Material Costs	
One Time Materials Cost	$0.00
One Time Third Party Website Development	$700.00
One Time Labor/Material Cost	**$700.00**

Notes:

Staff hours include time spent coordinating website set up, website promotion, and annual maintenance.

One time costs for website upgrades are split with additional conservation measures that also require website development.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$27,045.90**

Estimated Annual Cost	**$200.00**	/year
Est Cost over Planning Period Including Set-up	**$2,700.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$273,159.03**	
Cost per 1000 Gallons Saved	**$2.88**	

Online Access to Water Bill and History

Water providers may provide customers with online access to water bills and water use history, which may encourage residential and commercial customers to conserve water.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Use without Savings	1,522,532,195	gallons/yr
Estimated Water Use over Planning Period without Savings	15,225,321,950	gallons
Annual Estimated Savings Rate	1.00%	
Estimated Annual Water Savings	**15,225,322**	gallons/yr
Estimated Savings over Planning Period	**152,253,220**	gallons

Notes:

This measure affects all commercial and non-commercial customers (including commercial dairy customers).

Water savings through online access to water use history is estimated at 0.5% annually.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$100.00**	/year
One Time Labor and Material Costs		
One Time Staff Labor Cost	$1,200.00	
Website Set Up	$1,000.00	
One Time Labor/Material Cost	**$2,200.00**	

Notes:

Staff hours include time spent updating and maintaining online access service on website.

Estimated one-time third party set-up cost for water bill history on website estimated to be $1000 (service assumed to be performed simultaneous to billing software upgrades).

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$43,392.17**

Estimated Annual Cost	**$100.00**	/year
Est Cost over Planning Period Including Set-up	**$3,200.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$437,121.68**	
Cost per 1000 Gallons Saved	**$2.87**	

Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers

Best Management Practices (BMPs) regarding business, industrial, Public (schools and churches), and livestock (dairies) can be posted on a website. Customers can be informed of these on-line BMPs through bill messages or through bill stuffers to help encourage commercial water users to conserve.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1.00%

Customer Category	Avg Annual Total Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Commercial - Industrial	288,807,835	2,888,078
Commercial - Dairy	561,662,276	5,616,623
Commercial - Flow	43,806,690	438,067

Estimated Annual Water Savings	**8,942,768**	gallons/yr
Estimated Savings over Planning Period	**89,427,680**	gallons

Notes:

This measure affects projected water usage for Commercial - Industrial, Commercial - Dairy, and Commercial - Flow customers.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$750.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$100.00	/year
Annual Labor	**$850.00**	/year
Materials Costs		
Unit Cost (cost of in-house Bill Stuffers)	$0.10	/participant
Number of Participants	240	/year
Gallons Saved per Unit per Year	37,276	gallons
Annual Materials	**$23.99**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Third Party Website Development	$700.00	
One Time Labor/Material Cost	**$700.00**	

Notes:

Staff hours include time spent setting up website, website promotion, and annual maintenance.

Notice of commercial BMPs on NWCWD website would be sent to customers on an annual basis as a bill stuffer. Average cost per bill stuffers made in-house is $0.10.

There are projected to be an average of 241 affected tap accounts each year.

One time costs for website upgrades are split with additional conservation measures that also require website development.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$25,486.89**

Estimated Annual Cost	**$873.99**	/year
Est Cost over Planning Period Including Set-up	**$9,439.91**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$264,308.80**	
Cost per 1000 Gallons Saved	**$2.96**	

Public Education at Library

NWCWD will partner with local library to purchase reference materials on water conservation that may be checked out by water users. Availability of water conservation materials to customers free of charge may encourage water conservation.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	2.00%

Customer Category	Avg Annual Total Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Standard - Full	616,474,926	12,329,499
Standard - 3/4	488,591	9,772
Standard - 1/2	11,291,876	225,838
Commercial - Industrial	288,807,835	5,776,157

Estimated Annual Water Savings	**18,341,265**	gallons/yr
Estimated Savings over Planning Period	**183,412,646**	gallons

Notes:

This measure affects projected water usage for Commercial - Industrial and all residential water customers.

Water savings is estimated to be 2% annually.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Allowance to Purchase New Books	**$500.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$2,000.00	
One Time Labor Cost	$2,000.00	
One Time Third Party Website Development	$700.00	
One Time Labor/Material Cost	**$4,700.00**	

Notes:

Staff hours include time spent researching which library materials to purchase on an annual basis, coordinating with the library and developing reminders to customers on bill messages, in newsletters, and/or on website that resources are available at the local library.

Annual allowance to purchase books estimated at $500 per year.

One-time labor costs to determine library materials for initial purchase and setting up the program, estimated to be $2000. Initial materials purchase estimated at $2000.

One time costs for website upgrades are split with additional conservation measures that also require website development.

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$52,272.60**

Estimated Annual Cost	**$1,300.00**	/year
Est Cost over Planning Period Including Set-up	**$17,700.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$540,426.04**	
Cost per 1000 Gallons Saved	**$2.95**	

Xeriscape Demonstration Garden

Creating a Xeriscape demonstration garden is an excellent way to educate the public to the water savings evident from xeriscape. Possible locations for demonstration garden could include local library or pump station. NWCWD also plans to encourage their customers to visit the existing demonstration garden at Northern Water in Berthoud.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	1.00%

Customer Category	Avg Annual Outdoor Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Standard - Full	308,237,463	3,082,375
Standard - 3/4	244,295	2,443

Estimated Annual Water Savings	**3,084,818**	gallons/yr
Estimated Savings over Planning Period	**30,848,176**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

This measure affects outdoor use for Standard - Full and Standard - 3/4 customers.

Estimate that approximately 50% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Annual Materials Budget	$250	/year
Annual Materials	**$250.00**	/year
One Time Labor and Material Costs		
One Time Third Party Development Cost	$5,000.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Annual costs include staff time for maintenance and upkeep of demonstration garden. Annual allowance of $250 per year also estimated for planting, mulching and other maintenance materials.

One-time cost for garden design, installation, plants and planting materials estimated to be $5000.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$8,791.73**

Estimated Annual Cost	**$1,050.00**	/year
Est Cost over Planning Period Including Set-up	**$15,500.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$103,417.30**	
Cost per 1000 Gallons Saved	**$3.35**	

Xeriscape Gardening Classes

Conservation can be achieved by promoting existing programs in the surrounding area by including information on water bills, newsletters, and/or website.

Planning Period	2009 to 2018
	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	1.00%

Customer Category	Avg Annual Outdoor Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Standard - Full	308,237,463	3,082,375
Standard - 3/4	244,295	2,443

Estimated Annual Water Savings	**3,084,818**	gallons/yr
Estimated Savings over Planning Period	**30,848,176**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

This measure affects outdoor use for Standard - Full and Standard - 3/4 customers.

Estimate that approximately 50% of total customer use is outdoor use.

Residents who attend the classes each year are estimated to account for a 1% annual water savings.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$400.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Third Party Website Development	$700.00	
One Time Labor/Material Cost	**$700.00**	

Notes:

Cost includes research on available classes and input into newsletter, water bills and/or website.

One time costs for website upgrades are split with additional conservation measures that also require website development.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$8,791.73**

Estimated Annual Cost	**$400.00**	/year
Est Cost over Planning Period Including Set-up	**$4,700.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$92,617.30**	
Cost per 1000 Gallons Saved	**$3.00**	

Commercial and Industrial Water Audits

Commercial and Industrial customers who participate in a water audit could identify ways to reduce their operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	5

Estimated Water Savings

Annual Estimated Savings Rate	5.00%

Customer Category	Avg Annual Water Use Per Tap (gallons/tap)	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Commercial - Industrial	1,306,663	20	1,306,663

Estimated Annual Water Savings	**1,306,663**	gallons/yr
Estimated Savings over Planning Period	**19,599,938**	gallons

Notes:

Estimated water use applies to Commercial - Industrial customers only. Annual savings for audit participants is estimated to be 5% per year.

Assume 20 participants per year for five years for a total of 200 participants. Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year. For example, in the first year of the program, there are 20 participants. In the second year of the program, there are water savings from the 20 participants from last year's program, and new participants thereby compounding the savings.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$1,000.00	
Third Party Costs	$0.00	/year
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$1,000.00**	/year
Materials Costs		
Unit Cost	$200.00	/participant
Number of Participants	20	/year
Gallons Saved per Unit per Year	65,333	gallons
Annual Materials	**$4,000.00**	/year

Notes:

Staff hours include time for coordination with third party consultants to perform audits.

Consultants may be hired to perform audits at an average cost of approximately $200.00 per audit.

Water Rates

Rate	Rate Cost/1,000 gallons
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$3,723.99**

Estimated Annual Cost	**$5,000.00**	/year
Est Cost over Planning Period Including Set-up	**$25,000.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$43,619.94**	
Cost per 1000 Gallons Saved	**$2.23**	

Residential Audit Kit

Self-guided residential audit kits could include the following: 2.0 gpm Massage Pro white shower head, 2.0 gpm swivel spray kitchen aerator, 2 bath aerators that are 1.0 gpm, a heavy gauge toilet displacement bag and leak detecting tablets and teflon tape with installation instructions. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The District will have a signup sheet that includes email address and follow up with participants to see if it was installed. If email response is not received they will telephone.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Indoor water conservation kit with best products on the ma

Estimated Water Savings

Annual Estimated Savings Rate	3.00%

Customer Category	Avg Annual Indoor Water Use Per Tap (gallons/tap)	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Standard - Full	89,609	70	188,179
Standard - 3/4	43,990	1	1,320
Standard - 1/2	32,585	4	3,910

Estimated Annual Water Savings	**193,409**	gallons/yr
Estimated Savings over Planning Period	**10,637,487**	gallons

Notes:

This measure affects indoor use for Standard - Full, Standard - 3/4, and Standard - 1/2 customers. Estimate that approximately 50% of total customer use is indoor use. Annual savings for audit participants is estimated to be 3% per year.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost for Residential Audit Kit	$2.45	/participant
Number of Participants	75	/year
Gallons Saved per Unit per Year	2,579	gallons
Annual Materials	**$183.75**	/year

Notes:

Annual staff costs include development and assembly of custom residential audit kits. Kits would be available at the front desk at NWCWD headquarters on a first come, first served basis.

Estimated cost to develop audit kits by NWCWD staff is $2.45 per kit.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$551.22**

Estimated Annual Cost	**$983.75**	/year
Est Cost over Planning Period Including Set-up	**$9,837.50**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$15,349.65**	
Cost per 1000 Gallons Saved	**$1.44**	

Residential Landscape Audit Kit

Self-guided landscape residential audit kits can be designed to include items such as professional sprinkler measuring gauges and specific instructions. The instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The District will follow up with participants to see what was actually installed.

Planning Period	2009 to 2018
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	5.00%

Customer Category	Avg Annual Outdoor Water Use Per Tap (gallons/tap)	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Standard - Full	89,609	149	667,587
Standard - 3/4	43,990	1	2,199

Estimated Annual Water Savings	**669,787**	gallons/yr
Estimated Savings over Planning Period	**36,838,270**	gallons

Notes:

This measure affects outdoor use for Standard - Full and Standard - 3/4 customers. Estimate that approximately 50% of total customer use is outdoor use. Annual savings for audit participants is estimated to be 5% per year.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost for Residential Audit Kit	$20.00	/participant
Number of Participants	150	/year
Gallons Saved per Unit per Year	4,465	gallons
Annual Materials	**$3,000.00**	/year

Notes:

Annual staff costs include development and assembly of custom residential landscape audit kits. Kits would be available at the front desk at NWCWD headquarters on a first come, first served basis.

Estimated cost to develop audit kits by NWCWD staff is $20.00 per kit.

Water Rates

Rate	**Rate Cost/1,000 gallons**
Monthly Base Rate - ** Includes first 10,000 gallons*	$2.85
Usage Rate - ** Per 1,000 gallons used above 10,000 gallons*	$2.85

Measure affects revenue?	yes
Annual Revenue Loss Related to Water Savings	**$1,908.89**

Estimated Annual Cost	**$3,800.00**	/year
Est Cost over Planning Period Including Set-up	**$38,000.00**	
Est Total Cost over Planning Period Including Set-up and Lost Revenue	**$57,088.92**	
Cost per 1000 Gallons Saved	**$1.55**	

APPENDIX B

Public-Review Process

Public Review Process

The North Weld County Water District held its public-review period from February 25, 2009 through April 25, 2009. Notification was posted in the Greeley Tribune on February 25, 2009 and the North Weld Herald on February 26, 2009, announcing the review period and that a draft plan would be available for the public to review at the Water District's office and on their website at www.nwcwd.org. An announcement was also posted on the website asking for public comments on February 25, 2009.

The North Weld County Water District has completed a draft Water Conservation Plan. The goal of the plan is for NWCWD to develop programs for efficient and sustainable water use. The water conservation measures NWCWD has implemented to date include the following:

- Installing distribution system meters and SCADA to identify leaks
- Customer meter replacement program
- Recycling Water Filter Plant backwash
- Billing monthly and showing the last 12 months of water use on bills
- Posting Smart Watering Guidelines on the website
- Offering residential water conservation kits

Before finalizing the water conservation plan, NWCWD welcomes input from its customers and will conduct a 60-day public review period beginning the date of this notice through April 25, 2009. A complete draft copy will be kept at the office located at 33247 Hwy 85, Lucerne CO for you to review and will also be posted on the website at www.nwcwd.org.

All written comments are due at the front desk prior to April 25, 2009 and can be dropped off or mailed to P.O. Box 56 Lucerne, CO 80646 Attn: Leann Koons.

1tc43—Published February 26, 2009 in The North Weld Herald, Eaton, CO

AFFIDAVIT OF PUBLICATION

STATE OF COLORADO

ss.

COUNTY OF WELD

I, Bruce J. Bormann, of said County of Weld, being duly sworn, say that I am Publisher of

THE NORTH WELD HERALD

a weekly newspaper having a general circulation in said County and State, published in the Town of Eaton, in said County and State; and that the notice, of which the annexed is a true copy, has been published in said weekly newspaper for one successive week(s), that the notice was published in the regular and entire issue of every number of the paper during the period and time of publication, and in the newspaper proper and not in a supplement, and that the publication of said notice:

North Weld County Water District Water Conservation Plan draft

was in said newspaper bearing the date(s) of:

Thursday, the 26th day of February, 2009

Thursday, the _____ day of _____, 2009

Thursday, the _____ day of _____, 2009

Thursday, the _____ day of _____, 2009

Thursday, the _____ day of _____, 2009

and that the said *THE NORTH WELD HERALD* has been published continuously and uninterruptedly for the period of 52 consecutive weeks, in said County and State, prior to the date of first publication of said notice, and the same is a newspaper within the meaning of an Act to regulate printing of legal notices and advertisements, approved May 18, 1931, and all prior acts so far as in force.

Bruce J. Bormann

BRUCE J. BORMANN, PUBLISHER

Publication Cost: $34.50

Subscribed and sworn to before me

this 26th day of February, 2009

Erika C. Bagley

ERIKA C. BAGLEY, NOTARY PUBLIC

NOTARY PUBLIC ERIKA C. BAGLEY STATE OF COLORADO

My Commission Expires 10/21/2011

Affidavit of Publication

STATE OF COLORADO

ss.

County of Weld,

I, Jennifer Usher

of said County of Weld, being duly sworn, say that I am an advertising clerk of

THE TRIBUNE

that the same is a daily newspaper of general circulation and printed and published in the City of Greeley, in said county and state; that the notice or advertisement, of which the annexed is a true copy, (days): that the notice was published in the regular and entire issue of every number of said newspaper during the period and time of publication of said notice, and in the newspaper proper and not in a supplement thereof; that the first publication of said notice was contained in the, issue of the said newspaper - bearing date the Twenty-fifth day of February AD. 2009, and the last publication thereof: in the issue of said newspaper bearing date the Twenty-fifth day of February AD. 2009; that said The Tribune has been published continuously and uninterruptedly during the period of at least six months next prior to the first issue there of contained said notice or advertisement above referred to; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any amendments thereof; and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

February 25, 2009

Total Charges: $25.98

NOTICE

The North Weld County Water District has completed a draft Water Conservation Plan. The goal of the plan is for NWCWD to develop programs for efficient and sustainable water use. The water conservation measures NWCWD has implemented to date include the following:

Installing distribution system meters and SCADA to identify leaks
Customer meter replacement program
Recycling Water Filter Plant backwash
Billing monthly and showing the last 12 months of water use on bills
Posting Smart Watering Guidelines on the website
Offering residential water conservation kits

Before finalizing the water conservation plan, NWCWD welcomes input from its customers and will conduct a 60-day public review period beginning the date of this notice through April 25, 2009. A complete draft copy will be kept at the office located at 33247 Hwy 85, Lucerne CO for you to review and will also be posted on the website at www.nwcwd.org.

All written comments are due at the front desk prior to April 25, 2009 and can be dropped off or mailed to P.O. Box 56 Lucerne, CO 80646 Attn: Leann Koons.

The Tribune
February 25, 2009

Jennifer Usher
Advertising Clerk

25th day of February 2009

My Commission Expires 06/14/2009

Robert Lotts
Notary Public

APPENDIX C

NWCWD Board Plan Adoption

RESOLUTION OF THE NORTH WELD COUNTY WATER DISTRICT REGARDING ADOPTION OF A WATER CONSERVATION PLAN

Whereas, the Board of Directors of North Weld County Water District ("District") recognizes the importance of conserving water and improving water use efficiency; and

Whereas, under the Colorado Revised Statute 37-60-126 prompted by the Water Conservation Act of 2004, requiring water providers delivering over 2,000 acre feet or more per calendar year are required to develop, adopt, and make publicly available and implement a water use efficiency plan; and

Whereas, a Draft Water Conservation Plan ("Plan") that describes the role of water use efficiency plans in the District's water supply planning was presented for review and comment at the Board meeting held on February 23, 2009; and

Whereas, a public notice announcing the availability of the Plan for review and comment was published and the Plan was publicly available for a period of not less than sixty (60) days; now, therefore,

BE IT RESOLVED, that the Board of Directors of the North Weld County Water District hereby adopts the Water Conservation Plan attached hereto as Exhibit "A" and incorporated herein by reference.

Passed and adopted at a regular meeting of the Board of Directors of the North Weld County Water District held this 27th day of April, 2009

By: _____

Title: President

ATTEST:

_____
Don Posselt, District Manager

APPENDIX D

Public Comments and Response

The North Weld County Water District has completed its 60-day public review period for the Water Conservation Plan beginning on February 25, 2009 and ending on April 24, 2009. A public notice was posted in the following newspapers, Greeley Tribune and North Weld Herald and on the Water District's website. No public comments were received on the Water Conservation Plan during the public comment period.