NORTH TABLE MOUNTAIN
WATER AND SANITATION DISTRICT
2009 – 2015 WATER CONSERVATION PLAN

June 15, 2009

Prepared for
North Table Mountain Water and Sanitation District
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1 Introduction

1.1 Water Conservation Plan Purpose and Need

Water providers who annually supply over 2,000 acre-feet (af) of water to retail customers each year are required to submit a water conservation plan (Plan) to the State Office of Water Conservation in accordance with the Colorado Water Conservation Act of 2004 (HB 04-1365). This Plan is submitted by the North Table Mountain Water and Sanitation District ("NTM" or "the District") to satisfy the requirements set forth in HB 04-1365. This Plan was developed with the assistance of a grant from the Colorado Water Conservation Board (CWCB), a State agency whose mission is "To Conserve, Develop, Protect and Manage Colorado's Water for Present and Future Generations". Headwaters Corporation, a water resources and environmental consulting firm, was hired by the District to assist in the development of this Plan. With less than half of its potential service area developed, NTM recognizes that a well developed Water Conservation Plan will help manage current demands while ensuring the long-term reliability of it water supplies.

NTM has sufficient water to meet the demands of its current customers though in periods of drought both mandatory and voluntary drought mitigation measures are invoked. In 2002, NTM first imposed water restrictions in response to drought conditions. In 2007 the District decided to develop a Water Conservation Plan to evaluate a wide variety of potential conservation activities to select those that are most effective and appropriate for its customers. This Plan is designed to decrease total per capita water use (all treated water use in the District, not just residential) by an estimated 18% from the 2000 (pre-conservation) average of 259.5 gallons per capita per day (gpcd) to 212.7 gpcd by 2015. This is a savings of 46.8 gpcd which, for a projected population of 12,941, equates to a total savings of 678 acre-feet (af) of water annually by 2015. Residential use is anticipated to decrease from 171 gpcd to 141 gpcd over this same time period. Current per capita water use (total use) is 235 gpcd which is a 9% decrease from 2000 (pre-conservation) use.

In addition to water savings, the Plan development process has provided an important opportunity to educate District staff and Board of Directors about water conservation and how it can be integrated in their operations and planning. A significant amount of time was also spent characterizing water use in the District which has helped the District better understand when, how and by whom water is being used.

1.2 District Contact Information and Plan Commitment

Name of Entity:	North Table Mountain Water and Sanitation District
Contact:	Bart Sperry, P.E. Assistant Manager and Engineer North Table Mountain Water and Sanitation District 14806 West 52nd Ave. Golden, CO 80403-1228 303-279-2854 ext 305 303-279-2865 Fax

Chief Executive: Rick Jeschke, P.E.
District Engineer and Manager
North Table Mountain Water and Sanitation District
14806 West 52nd Ave.
Golden, CO 80403-1228
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North Table Mountain Water and Sanitation District has developed this Water Conservation Plan in accordance with the Colorado Water Conservation Act of 2004 (HB 04-1365) to cover the 2009 – 2015 timeframe. The Water Conservation Plan is not meant to be a static document, but rather a guidance document which enables NTM to meet its water savings goals. NTM staff will be responsible for implementing programs and collecting and evaluating data, with assistance from other organizations and/or consultants as appropriate and necessary. Water conservation activities will be monitored and evaluated on an ongoing basis. Costs and water savings data will be collected, along with customer feedback where possible. The District may make modifications to programs as a result of data collected. Additionally, water conservation programs and implementation schedules may be adjusted in response to the availability of staff and financial resources. Changes in technology, State and Federal laws, public perceptions, climatic conditions, and financial considerations, among others, may also impact NTM's water conservation programs. In addition to ongoing program management and evaluation, NTM staff will review the Plan and progress made towards its goals on a quarterly basis during one of their monthly staff meetings. Results will also be presented to NTM's Board of Directors.

Signature — Date: 6/15/2009

2 Existing Water System

2.1 History and Character

In 2008 the North Table Mountain Water and Sanitation District (NTM) celebrated its 50th anniversary. Located approximately 20 miles northwest of Denver, NTM was formed on November 5, 1958 to provide water service to an area north and east of North Table Mountain as shown in Figure 1. NTM is a special district, formed under State statutes with an elected board of directors. The NTM service area is predominantly residential in unincorporated Jefferson County and the City of Arvada. On January 5, 1967 the District's purposes were expanded to include complete sanitary sewage collection, transmission, treatment and disposal.

Historically NTM's service area has been dominated by horse properties and ranches interspersed with residential neighborhoods. In recent years development has increased as agricultural lands are converted to residential and commercial use. Between 2000 and 2007, approximately 811 new residential accounts (a 27% increase), primarily for single family homes, were created in the District. NTM's surface water treatment plant currently treats about 5 million gallons of water per day during the peak season (summer months).

Figure 1: Service Area Map

2.2 Current Supplies, Treatment and Storage

NTM has a contract with Denver Water[1], originally signed in 1961, which entitles it to a maximum of 6,000 af of raw water annually in most years. 100% of the potable water delivered to NTM customers is treated Denver Water contract water. The term of the contract is until it is mutually terminated by both parties or in the case that NTM violates certain terms of the agreement. The contract also stipulates that "...such leases shall provide for limitation of delivery of water to whatever extent may be necessary to enable the Board to provide an adequate supply of water to the people of Denver...." As a result, during severe drought conditions Denver Water can require that NTM decrease its water use. For planning purposes, NTM assumes that a firm yield (water that will be available in all years including periods of drought) of 4,000 af will be available from this source.

NTM's Denver Water contract surface water supply is delivered through Denver's north side collection system. The untreated water originates from the western slope and the South Boulder Creek watershed. Rainfall and snow melt from the western slope collect

[1] NTM purchases *raw* water from Denver Water via contract. This relationship is different than that of the 60+ water districts which purchase part or all of their *treated* water supply from Denver Water. NTM customers are not eligible to participate in Denver Water's conservation programs, rebates for example, while customers of water districts that purchase treated water are. Denver Water has nonetheless been very helpful during the development of this Plan.

through natural channels and flow to the Winter Park/Fraser area. From there this water flows through the Moffat Tunnel under the Continental Divide. After exiting the tunnel on the east side of the Divide water continues through South Boulder Creek into Gross Reservoir. Water released from Gross Reservoir travels by gravity through natural streams and man-made canals to Ralston Reservoir in Jefferson County (built in 1936 by the City of Denver) by two gravity lines (18" and 24"). Raw water is delivered directly from Ralston Reservoir to NTM's water treatment plant which is located at 1950 West 68th Avenue in unincorporated Jefferson County.

The District's contract with Denver Water limits it to an instantaneous rate of 11,100 gallons per minute which is based on 16.0 million gallons per day (MGD). NTM's treatment plant is currently rated for 11 MGD. During the District's busiest periods, current use does not exceed 5.9 MGD. NTM recently modified its treatment processes by installing a mixed-oxidant hypochlorite generator which eliminates the potential hazards of using chlorine gas disinfection. Five treated water storage tanks are located throughout the service area, ranging in size from 0.5 to 2.5 million gallons. The District's total finished water storage capacity is about 7 million gallons. Water is delivered throughout NTM's service area by 87.4 miles of water mains. The District currently maintains 6 pump stations that serve 9 pressure zones.

In addition to its surface water supplies, NTM has groundwater rights for the aquifer under its service area, located along the western edge of the Denver Basin aquifer. This supply has not been quantified as NTM currently has no plans to develop this water which would be expensive to pump and treat. NTM also has raw surface water rights in several area ditches that total 304 af, though the District estimates only 200 af of this is real water. Approximately 50 af of the 200 af is leased within District boundaries for pasture and plant nursery irrigation. The rest is leased outside of the District. Many of the older ranches in the District also have their own groundwater irrigation rights, but the District does not maintain this information.

This Plan was developed focusing on Denver Water contract water which is treated and distributed by the District. At existing water use rates, NTM's demands would exceed its firm yield supply around 2021 and average annual supply would be exceeded around 2031 (Figure 6). These dates may vary due to actual population growth patterns. Additionally, it is likely that as water use in the District begin approaching its firm yield, it will require developers to bring all or a portion of the water supply needed to meet the resulting increase in demands. Water conservation is an important demand management tool that will enable the District to ensure that its customers are using water efficiently and effectively into the future.

2.3 Waste Water Treatment and Storage

NTM contracts with Metro Wastewater Reclamation District (Metro Wastewater) for all wastewater treatment, similar to many other Front Range water providers. NTM is responsible for the wastewater collection system and lift stations required to deliver waste to Metro's system and maintains over 65 miles of sewer mains. Metro Wastewater charges the District for the treatment based upon the quantity of wastewater and the amount of contaminants. As NTM's service area continues to grow, so will the need for new and expanded wastewater conveyance system. Water conservation reduces and delays these needs.

2.4 Metering and Billing

Metering and Billing

100% of taps in NTM's service area are metered, enabling the water utility to charge customers based on their actual water use. Multi-unit dwellings, which include apartments, condos, townhomes and some commercial accounts, typically have only one tap so charges are based upon building totals.

NTM's customers are broken into four metering, or billing cycle, areas (Attachment A). Cycles 1, 2 and 3 are geographically based. These meters are read quarterly, typically at the end of the last month of the quarter. Cycle 4 is comprised of industrial and commercial accounts that are billed monthly. Bills are sent out on the 15th of the month following the reading. The following is the schedule for meter reading by cycle:

Cycle 1: March, June, September and December
Cycle 2: January, April, July and October
Cycle 3: February, May, August and November
Cycle 4: Monthly

Individual customer meters are read using an electronic radio receiver. The meter reading is automatically read into a handheld or laptop computer. During processing at NTM's office, the reading is flagged if it is outside of the normal use pattern.

NTM bills most customers on a quarterly basis with a limited number of high water use industrial and commercial businesses being billed monthly.

Treated Water Rates

NTM's rates and fees are structured to ensure the financial stability of the utility. Typically revenue streams are sufficient to cover overhead and system improvement capital costs without outside financing. North Table Mountain Water and Sanitation District has been debt free since December 2001. In 2008 NTM billed $3.54 million in water and sewer charges.

NTM utilizes a tiered rate structure where costs increase with increasing water use. In 2008, while developing this Water Conservation Plan, NTM completed a rate study which resulted in a rate increase and more rapidly inclining rate tiers. The new rate structure is designed to encourage water conservation while covering the costs associated with maintaining the District's water distribution and sewer collection system. While rates increased by 30% to 80% depending on the volume of water used, they remain lower than many other Front Range communities. The District also lowered its minimum water use range from a minimum of 15,000 gallons/quarter to a minimum of 5,000 gallons/quarter. For NTM's lowest water use customers this results in lower water bills even though rates increased.

Rates for quarterly customers are charged per thousand gallon block as shown in Table 1. In addition to charges for actual water used, NTM assesses a minimum charge for each account based upon meter (or tap) size (Table 2). Most residential accounts are 5/8" or 3/4" meters (taps). This is not a charge on top of water use fees, but rather is a minimum charge which covers the District's costs of providing and maintaining services for accounts using minimal volumes of water.

Table 1: NTM 2009 Water Rates (per 1,000 gallons)

Quarterly Accounts		
Gallons per quarter	**Average gallons per month**	**Cost per 1,000 gallons**
0 to 5,000	0 to 1,667	$2.57
5,000 to 60,000	1,667 to 20,000	$2.95
60,000 to 125,000	20,000 to 41,667	$3.65
Over 125,000	Over 41,667	$4.66
Monthly Accounts		
Gallons per month		**Cost per 1,000 gallons**
0 – 20,000		$2.67
Over 20,000		$2.96

Table 2: NTM Minimum Account Fees

Meter size	Minimum charge[1]	Quarterly allowance (gallons)
5/8" or 3/4"	$12.85	5,000
1"	$101.35	35,000
1 1/4"	$193.35	65,000
1 1/2"	$321.10	100,000
2"	$528.85	150,000
3"	$1,227.85	300,000
4"	$2,159.85	500,000
6"	$4,489.85	1,000,000

[1] Customers who are billed quarterly pay the minimum fee with each quarterly bill. High volume customers who are billed monthly pay 1/3rd of the charge with each bill.

Sewer Charges

Water use is typically higher in the summer as a result of outdoor irrigation (which does not return to customers' sewer lines). NTM bases sewer charges on individual accounts' winter quarter use when outdoor use is expected to be minimal. Each year, NTM sets each account's sewer charges for the next year as 130% of the previous winter quarter charge. These fees are used to maintain sewer infrastructure within the District and to pay Metro Wastewater for treatment.

3 Current Water Use

Understanding how, when and by whom water is used is important in determining which conservation measures and programs are likely to be the most appropriate and effective. This section presents meter data in a variety of formats to characterize water use in the District.

3.1 Data Quality Control and Development

Time Period Represented

Work on this Plan was started in 2007. Historical water use data beginning in 2000 (prior to most conservation activities being implemented) through 2007 was used as a recent representative period.

Seasonal Data Development

NTM reads meters for most accounts on a rolling quarterly basis (metering cycles), as discussed above in the "Metering and Billing" section. As a result of quarterly readings it is difficult to compare use for similar periods among accounts in different cycles. To understand existing water use and evaluate potential savings it is useful to be able to view data on a monthly basis. This enables seasonal changes to be identified. NTM water use data was manipulated at the account level to estimate indoor and outdoor use by assuming that 100% of each customer's winter quarter use was "indoor". This baseline indoor water use was then removed from other quarters' readings and remaining use was classified as "outdoor". Monthly indoor use estimates were developed by dividing the "indoor" portion of each quarterly reading by three (the number of months in the quarter). Monthly estimates for outdoor use were developed by distributing quarterly "outdoor" water use among the months in that cycle based upon the monthly distribution from an evapotranspiration (ET) curve for the Front Range (NCWCD,2007).

Units

Water utilities and their customers typically think in terms of gallons of water used. When discussing water supply and demands units of acre-feet (af) are more often used. An acre-foot is the amount of water it takes to cover one acre with water one foot deep. It equals 325,851 gallons and is the amount of water needed to supply between one to four households per year. This Plan includes both units, typically using gallons when referring to water use and acre-feet when referring to water supply.

3.2 Account Types

NTM's service area is predominantly residential with a limited commercial and industrial base. NTM classifies its customers into the following account types: residential (owner and tenant), commercial, industrial, greenhouse and irrigation. Residential accounts are identified as either "owner" or "tenant" accounts in NTM's billing system. There are fewer than 200 tenant accounts and over 3,600 owner accounts. For this Plan, the term "residential" includes all owner and tenant accounts (single family and multifamily dwellings). Irrigation accounts provide water to parks and home owner association (HOA) outdoor irrigated areas, which may occasionally include recreational facilities such as swimming pools and public restrooms. In this Plan, such accounts are referred to as "Parks and HOA". Commercial customers include retail, service and similar industries as well as municipal customers such as fire departments and schools. Industrial customers are those who manufacture a product. Industrial customers may require water as an input to their processes. Commercial and industrial customers also frequently have outdoor areas that receive seasonal irrigation.

3.3 Annual Use

In addition to water use by metered customers, the designation "Unaccounted For" water is used for the difference between produced water (water leaving the treatment plant) and all metered (customer) water deliveries. "Unaccounted For"[2] water may include both "real" losses (water lost to system leaks or tank overflows) as well as "apparent" losses. Apparent losses may not be an actual loss of water but due to metering, billing, or accounting inaccuracies. Apparent losses also include authorized uses which are not typically metered such as water main flushing, main repairs, fire suppression and construction activities. NTM does meter and bill for construction water use but these uses are small and the data is not entered into the billing database.

Figure 2 provides a breakdown of total water use in 2007 by each account type (MG = million gallons). In 2007 single family homes and rental units (residential accounts) used 64.4% of the water produced by NTM. In this same year Commercial accounts used 7.2%, Industrial 10.2%, Greenhouses 3%, and Parks and HOA accounts 8.6% (which are primarily for irrigation). In 2007, 6.6% percent of water use in the District was "Unaccounted For".

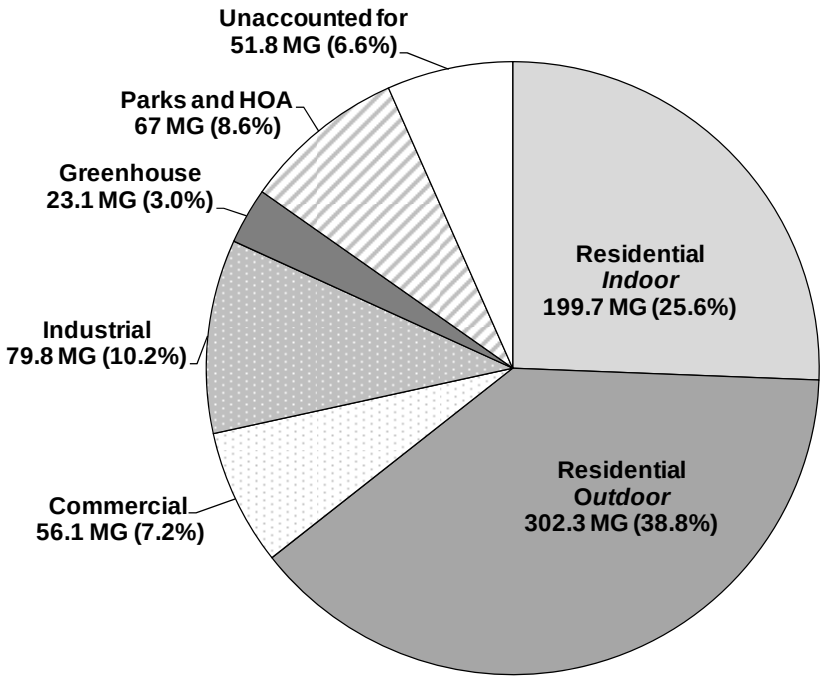

Figure 2: 2007 Percent Water Use by Account Type
(Total 2007 water use = 780 million gallons or 2,394 acre-feet)

[2] It is a goal of the water utility industry to better quantify "Unaccounted For" water, understanding the different components and minimizing both "real" and "apparent" losses. Several of the water conservation activities adopted in this plan are geared towards this end.

Table 3 shows total annual water use by account type for the 2000 through 2007 period. Residential users account for the majority of water use. Table 4 lists the approximate annual number of account for each account type.

Table 3: Total Annual Water Use by Account Type (1,000,000 Gallons)

Year	Residential	Commercial	Industrial	Greenhouse	Parks and HOA	Un-accounted For[1]
2000	464.1	49.3	89.7	27.3	27.4	45.9
2001	448.6	39.3	91.3	29.2	32.9	46.0
2002	469.5	33.5	82.5	28.3	24.2	58.3
2003	417.3	29.3	80.7	27.5	30.8	16.5
2004	353.2	28.9	74.6	28.0	31.3	35.5
2005	450.1	40.7	72.3	26.2	40.8	27.3
2006	541.3	50.0	84.0	24.6	72.1	60.6
2007	502.2	56.1	79.8	23.1	67.0	51.8

[1] NTM installed a recycled water meter in late 2002. 2000 – 2002 Unaccounted For water was calculated using estimates of recycled water for those years.

Table 4: Approximate Annual Number of Accounts by Account Type

Year	Residential	Commercial	Industrial	Greenhouse	Parks and HOA
2000	2986	80	19	13	21
2001	3113	88	19	13	26
2002	3130	94	19	13	27
2003	3191	107	20	12	32
2004	3420	110	22	11	35
2005	3574	110	23	11	47
2006	3751	112	21	11	52
2007	3797	119	24	11	53

Total number of accounts by account type per year in which billing occurred. Number not adjusted for accounts closed or created mid-year. Any account active at any point in the year was counted.

Table 5 shows approximate average annual use by account type. These data were developed by dividing the annual totals from Table 3 by the number of accounts in Table 4. While these data are intended to provide a comparison between account types, it should be noted that wide variations in use among individual accounts likely exist. While total residential use accounts for the majority of water in the District's service area, each residential account uses less water on average than other account types. Individual industrial and greenhouse accounts use the most water, followed by Parks and HOA and then commercial accounts. While non-residential accounts are less numerous, they should not be overlooked when evaluating potential water conservation activities.

Table 5: Approximate 2000 to 2007 Average Annual Use by Account (1,000 gallons)

	Residential	Commercial	Industrial	Greenhouse	Parks and HOA
2000 – 2007 Average	136	405	3970	2261	1106

Figure 3 and Figure 4 look more closely at residential water use. Figure 3 compares residential water use to total annual water use. Figure 4 shows the breakdown between annual indoor and outdoor residential use.

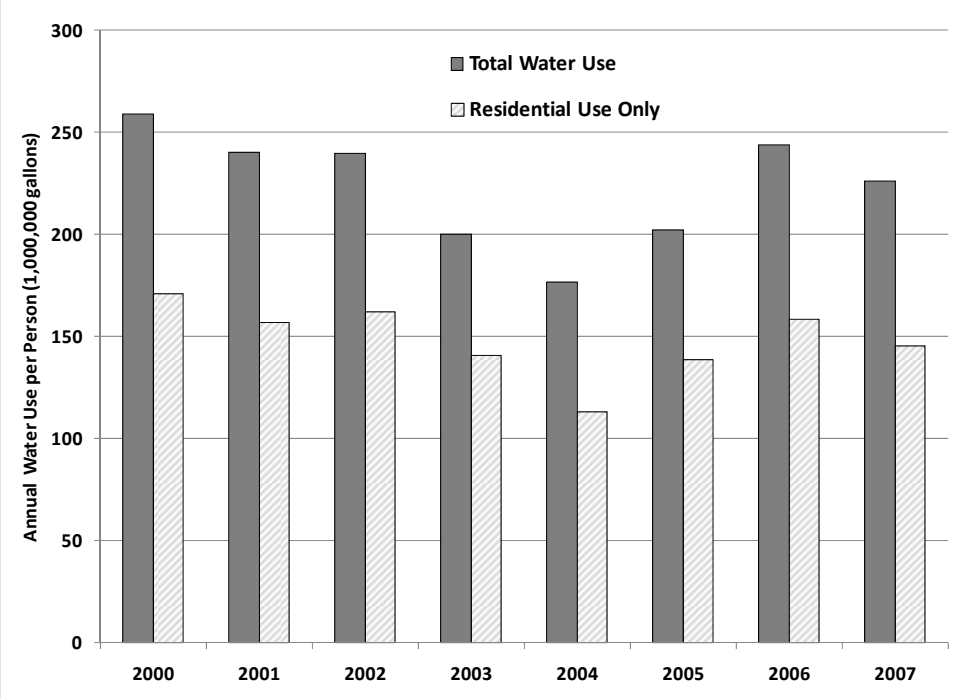

Figure 3: Annual Total and Residential Water Use

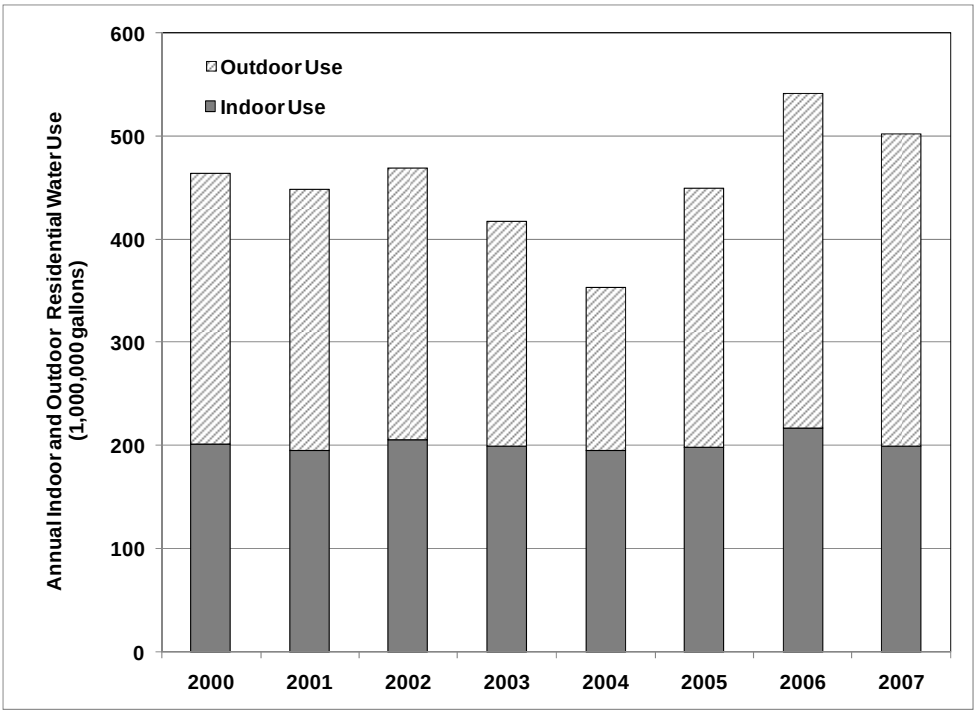

Figure 4: Annual Indoor and Outdoor Residential Water Use

Table 6 provides total annual treated water data for the District. Total produced (or treated) is shown as well as "Reclaimed" water that is captured and recycled at the treatment plant. The District recycles or "reclaims" 100% of its process wastewater and filter backwash water. This recycled water is metered and accounts for approximately 10% of total water produced. Distributed water is the volume leaving the water treatment plant (Produced minus Reclaimed). Billed water is what is metered as being used by NTM's customers. As discussed above, Unaccounted For water is the difference between Distributed and Billed.

Total annual water distributed has increased from 703.7 million gallons in 2000 to 779.9 million gallons in 2007, an increase of nearly 11% or 76.5 million gallons. Note that some fluctuation between years has occurred as a result of climatic and other conditions. Unaccounted For water has been about 6% of Distributed water on average. A commonly accepted rule-of-thumb for acceptable levels of Unaccounted For water is 15 percent of water leaving the treatment plant (Mays L., 2000), though this highly variable and the industry is moving towards a more utility specific indicator. The District believes that the small volume of Unaccounted For water is due to the size of their system which enables them to quickly identify leaks and breaks, as well as the consistency of the types and age of pipes used throughout the system.

Table 6: Total Annual Treated Water Data (1,000,000 gallons)

Year	Total Produced	Reclaimed (Recycled)[1]	Distributed	Billed	Unaccounted For (Distributed - Billed)	Unaccounted For as Percentage of Distributed
2000	783.7	80.0	703.7	657.8	45.9	7%
2001	765.7	78.4	687.3	641.3	46.0	7%
2002	775.7	79.3	696.4	638.1	58.3	8%
2003	665.6	63.4	602.2	585.7	16.5	3%
2004	619.2	67.7	551.6	516.1	35.5	6%
2005	737.2	79.6	657.5	630.2	27.3	4%
2006	924.4	91.8	832.6	772.0	60.6	7%
2007	868.2	88.3	779.9	728.1	51.8	7%

[1] Reclaimed water data was not kept for 2000 through 2002. Data for these years was estimated based upon a trend line of 2003 through 2007 Reclaimed compared to Total Produced.

3.4 Seasonal Use

Figure 5 shows total monthly water use by account type for the 2000 to 2007 period for all metered accounts. Temporal variations in water use patterns are evident for all account types. Water use is lower in the winter and early spring, peaks in the summer, and decreases over the fall and early winter months. Increased use during summer months is due to outdoor water use, principally for landscape irrigation. This is best illustrated by Parks and HOA accounts where water use is essentially zero in winter months. Residential uses peak at between 60 million gallons (MG) and 80 MG in the summer up from winter monthly lows of around 16 MG. Figure 5 also illustrates that residential water use, much of which is for outdoor irrigation, accounts for the majority of water use in NTM's service area. It is also interesting to note that commercial and industrial account use increases in summer months as a result of outdoor irrigation.

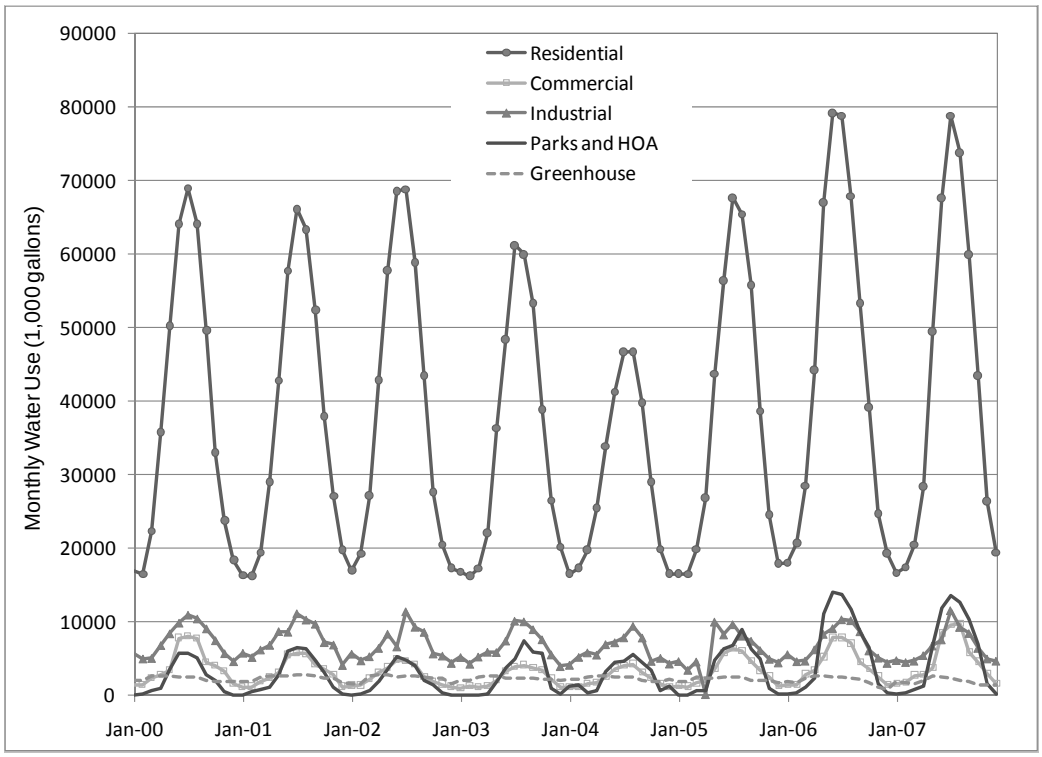

Figure 5: Total Monthly Water Use (estimated from quarterly data)

Table 7 presents 2007 average annual indoor and outdoor water use by account type as well as average total volumes (in units of gallons and acre-feet). Unaccounted For water is not included. In 2007 outdoor water use accounted for approximately 59% of all metered water used in NTM's service area.

Table 7: 2007 Indoor and Outdoor Water Use by Account Type

Percent Use						
	Residential	Commercial	Industrial	Greenhouse	Parks and HOA	TOTAL
Indoor	40%	36%	71%	83%	4%	41%
Outdoor	60%	64%	29%	17%	96%	59%
Total	100%	100%	100%	100%	100%	100%
Total Water Use (1,000,000 gallons)						
	Residential	Commercial	Industrial	Greenhouse	Parks and HOA	TOTAL
Indoor	199.8	20.2	56.5	19.3	2.4	298.2
Outdoor	302.4	35.8	23.2	3.8	64.7	429.9
Total	502.2	56.1	79.8	23.1	67.0	728.1
Total Water Use (acre-feet)						
	Residential	Commercial	Industrial	Greenhouse	Parks and HOA	TOTAL
Indoor	613	62	174	59	7	915
Outdoor	928	110	71	12	198	1319
Total	1541	172	245	71	206	2235

3.5 Per Capita Use

Table 8 shows daily per capita (per person) systemwide and residential water use. Gallons per capita per day (gpcd) is a widely used metric to evaluate water use. It is the average daily volume of water used by each person in a water provider's service area. 2000-2001 water use data illustrates pre-drought conditions. In 2002 a multi-year, regional drought began, prompting NTM to adopt temporary drought mitigation measures and limited ongoing conservation measures. As a result, the 2002-2004 period includes the effects of water conservation and drought mitigation measures. Weather and precipitation also influenced water usage, for example in the summer months of 2004, when precipitation resulted in water use that was significantly lower than in other years. Total annual water use decreased from 259 gpcd in 2000 to 226 in 2007. Average annual residential use declined from 171 gpcd to 146 gpcd over the same timeframe.

Table 8: Average Daily Water Use per Person in NTM's Service Area

		Daily per Capita Water Use (gallons)	
Year	Population[1]	Residential	Total Water Use[2]
2000	7430	171	259
2001	7823	157	241
2002	7944	162	240
2003	8125	141	203
2004	8560	113	177
2005	8911	138	202
2006	9353	159	244
2007	9456	146	226
2000 – 2007 Average		148	224
2006 – 2007 Average		152	235

[1] Estimated service population was calculated by multiplying the average number of residential accounts (owners and renters) in the calendar year by 2.62 people per household, which is the average household number for 2000 census blocks in and around NTM's service area.
[2] Total annual use includes billed (for all account types) and Unaccounted For water.

4 Demand Forecast and Facility Needs

4.1 Population Projections

According to the State Demography Office, Colorado's population is expected to grow to over 7.8 million by 2035, a 53% increase from the 2009 population estimate of 5.1 million (DOLA, 2008). Most of the State's growth is expected to occur along the Front Range. This is leading to increased competition among municipalities for available water supplies and overtime, costs will only continue to increase. The District's contract with Denver water is fixed and does not have an expiration date. The contract can only be terminated by mutual agreement. NTM's supplies are relatively secure as a result. However, as a member of the Front Range community, the District is committed to minimizing waste and encouraging the efficient use of water throughout their service area.

In December of 2006, NTM completed an evaluation of growth potential in and around its existing service area. Using landownership information, satellite imagery, topographic data, and density assumptions, an estimate of developable surface area was made. Within NTM's current service area approximately 77% of the area is developed with an estimated 1,338 acres of developable land remaining. In addition, the majority of land west of Highway 93 (1,176 acres), which is not currently in NTM's service area, could be developed and served by NTM.

Based upon recent developments and the character of NTM's service area, it is likely that most new development in NTM's service area will be residential. To simplify future demand projections, this Plan assumes that 100% of future development will be residential. If industrial and commercial uses are a significant component of new service areas, water use could be higher than predicted in this Plan.

For planning purposes (based upon recent developments), NTM currently assumes a density of three houses per acre. Using this assumption, if all the land in NTM's service area and west of Highway 93 were developed and served by NTM, their service population could triple to include an additional 7,542 residences. Using U.S. Census estimates for NTM's service area of 2.62 people per residence, this equates to an additional 19,760 residents.

There is a great deal of uncertainty in predicting the timing and amount of future water demands as the majority of land is in unincorporated Jefferson County and development depends on the interests of buyers and sellers. Using NTM's 2007 service area population as the baseline and assuming a 4% annual growth rate (the 2000 to 2007 average), NTM would reach it's build out population of just over 29,000 around 2036 as shown in Table 9.

Table 9: NTM Service Area Population Projections

Year	Service Population Estimate	Projected Water Use[1]	
		Acre-ft	1,000,000 Gallons
2007	9456	2394	780
2010	10636	2799	912
2015	12941	3406	1110
2020	15744	4143	1350
2025	19155	5041	1643
2030	23305	6133	1999
2035	28354	7462	2432
2036 Build Out	29113	7662	2497

[1] 2007 water use is actual. Projected water use for other years was calculated by applying the 2006 to 2007 system-wide average of 235 gallons per capita per day (to represent current water use rates) to the projected service population.

Indoor fixtures and appliances currently available are more efficient than those in older existing homes. However new homes in NTM's service area have tended to have more manicured landscaping and higher outdoor water use than older homes. For this reason, existing water use rates of 235 gallons per capita per day (gpcd) were used to development demand projections. Assuming the water use is used by new customers at

a rate similar to existing residential customers, water use in the District would exceed NTM's 6,000 af/yr supply around the year 2029 (Figure 6). At build out current water use rates would result in a supply deficit of 1,662 af annually. During periods of drought the District, Denver and Arvada (which also receives raw water from Denver Water via contract) must share in any shortages to supplies. The District's policy is to plan around an assumed firm yield supply of 4,000 af. The District's firm yield is predicted to be exceeded around the year 2019.

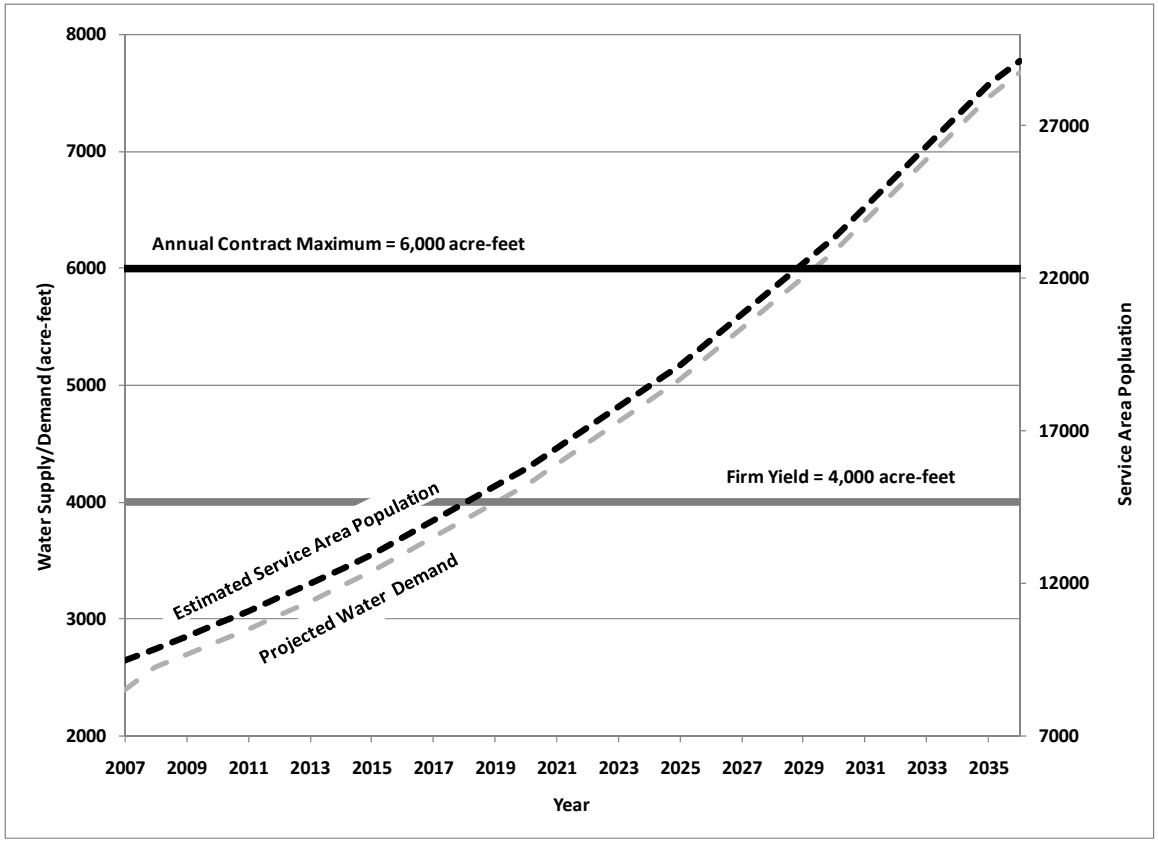

Figure 6: Projected Annual Water Demand as Compared to Water Supply

4.2 Current Policies and Planning Initiatives

The following are existing District policies and planning initiatives.

2008 Tap Fee Increase

NTM tap and sewer fees correspond to those set by Denver Water and Metro Wastewater, which provide raw water and wastewater services, respectively. Effective January 2008, Denver Water increased their new tap connection charge to $5,300 (from $5,100) and Metro Wastewater raised their connection charge for a 3/4" residential tap to $2,150 (from $1,980). NTM's 2008 fees have also been increased accordingly.

2008 Rate Increase

As described above under section 2.4 Metering and Billing, the District completed a rate study in 2008 which resulted in a rate increase as shown in Table 1.

4.3 Recent Facility Improvements and Future Needs

A summary of NTM system conditions is provided in Table 10. NTM currently has the supplies and facilities it needs to meet demands in its service area.

Table 10: Summary of System Conditions

PLANNING QUESTIONS	Yes	No	Comment
Is the system in a designated critical water supply area?	X		System is in Denver Metro SWSI[1] subbasin for which conservation savings are pivotal to meeting future water demands.
Does the system experience frequency shortages or supply emergencies?		X	Water is contracted from Denver Water. Shortages occur when Denver Water is experiencing a shortage.
Does the system have substantial unaccounted-for and lost water?		X	An average of 6% of water distributed is unaccounted for. This value is low compared to many water providers and is considered acceptable by industry standards.
Is the system experiencing a high rate of population and/or demand growth?	X		The area has been and expects to continue experiencing rapid population growth due to new development. Based upon current growth rates, NTM's service population could triple by 2036.
Is the system planning substantial improvements or additions?	X		Planned improvements are discussed in the "Future Projects" section of this Plan.
Are increases to wastewater system capacity anticipated within the planning horizon?		X	NTM contracts with Metro Wastewater for all wastewater treatment. NTM is responsible for adding and expanding wastewater conveyance lines to meet demands of new development.

[1] SWSI = Statewide Water Supply Initiate

The District has responded to system needs in a timely manner in the past with required improvements. A description of recently completed and planned projects is provided below.

Recently Completed Projects

Sproul Pump Station – A large amount of the recent growth has occurred on the west side of the District's service area which created strain on the original pump station installed to feed this area. In 2008, the District responded by installing a new pump station that is capable of providing the required flows along with room for future expansion of the pumps. The costs were born by fees that were paid by the developers as well as money from the District.

Sproul Pressure Zone Split – The existing Sproul Pressure Zone was split into two pressure zones to better control the additional pressure added by the new Sproul Pump Station. The project included the installation of two pressure reducing vaults.

West Side Tank – The District completed construction of a 1.5 million gallon water storage tank at 52nd Avenue just east of Highway 93 in the summer of 2007. This tank is

on Jefferson County Open Space land and is fully buried so not visible. The tank went on line in June of 2007.

50th Avenue Sewer Main Upgrades – In 2007 approximately 2,000 lineal feet of 15" sewer main was installed in 50th Avenue between Indiana Street and Eldridge Street. This new main parallels the existing system and adds significant capacity and needed redundancy to the west side of the collection system. The existing sewer main was at capacity and needed to be upgraded.

Indiana Street and Croke Canal Water Main Relocation – Jefferson County widened a bridge at 5500 Indiana Street where it crosses over the Croke Canal in early fall 2008. As a result the District was required to relocate the existing water main.

Dunraven Street Main Replacement – An approximately 35 year old water main along Dunraven Street that was failing due to corrosive soils was replaced in 2008.

50th and 54th Avenue Water Main Replacement – Approximately 4,600 lineal feet of 8" and 12" water main was replaced due to frequent main breaks.

12" DIP Extension Through CDOT Maintenance Yard – The pipeline was installed to support anticipated future development south of Highway 58.

49th Place 8" Water Main Replacement – Approximately 1,500 lineal feet of 8" water main was replaced due to frequent main breaks.

Blow-off replacement – 2" blow-offs were replaced in 12 cul-de-sacs with fire hydrants. The purpose of this project was to provide better water quality management in the mains as well as better fire protection to the residents.

Future Projects
The following are capital project needs that the District has identified. The District typically evaluates infrastructure and system capacity needs looking ahead five to ten years.

Treatment Plant

- Treatment Plant Storage – Approximately 2.5 million gallons of additional finish water storage is required at the treatment plant for operations (anticipated completion 2010).
- Backwash Retention Basin Expansion – The capacity of the retention basin will be expanded to allow for the storage of a full backwash cycle (anticipated completion 2009).

- Additional Settling Pond – In order to increase the flexibility of operations and increase the recycle water capacity a third pond will be added (anticipated completion 2011).
- Additional treatment capacity/redundancy – In order to provide greater treatment capacity and additional redundancy an additional treatment train will be added to the Acti-Flo process (not scheduled).

Distribution System Improvements

- Pipe Replacement – 3,000 to 5,000 feet per year (ongoing).
- Improvements – As necessary for new development (ongoing).

Collection system improvements

- Sewer Collection Capacity Study – The study will examine the sewer collection system and attempt to determine areas of inadequate capacity (estimate 2011 start).
- Groundwater Infiltration Study – The study will examine the sewer collection system and attempt to determine areas of excessive infiltration (estimate 2011 start).
- Relining/replacement based on results of infiltration/capacity studies (2012 and beyond).

Construction Financial Plan Update

NTM completed a 10-Year Construction Financial Plan in early 2004 to evaluate its finances and infrastructure needs. Since the 2004 plan was developed the majority of projects have been completed and additional projects have been identified. As a result, the District will update its 10-Year Construction Financial Plan to better reflect current conditions. The updated plan will evaluate growth projections and funds available for construction in order to lay out the major capital projects that the District anticipates building (estimate 2010 start).

5 Current Water Conservation Activities

North Table Mountain began implementing limited water conservation and drought response measures in 2002). Current programs and measures include the following:

WATER-EFFICIENT FIXTURES AND APPLIANCES, INCLUDING TOILETS, URINALS, SHOWERHEADS AND FAUCETS

1992 Energy Efficiency Law

Though not NTM specific, the passage of the Federal 1992 Energy Efficiency Law set maximum water use standards for fixtures and appliances. This has led to indoor water use savings as new developments are built with more water efficient fixtures and appliances and older buildings are gradually retrofitted.

Free Water Conservation Kits

NTM began providing free water conservation kits to customers in 2002. Kits can be picked up at NTM's offices. Each includes a water saving toilet displacement bag (easily installed in the toilet tank), non-toxic dye tablets to test for leaky toilets, a shower restrictor and a sink faucet restrictor.

LOW WATER-USE LANDSCAPES, DROUGHT-RESISTANT VEGETATION, REMOVAL OF PHREATOPHYTES AND EFFICIENT IRRIGATION

Outdoor Watering Schedule

NTM follows Denver Water outdoor use restrictions. Initially restrictions were put in place to address a period of drought (2002). Since that time water providers have recognized the value of keeping some level of outdoor water restrictions in place to

ensure that water is being used efficiently. NTM posts restrictions and watering schedules on their website and includes them as billing inserts.

Raw Water Irrigation

NTM has raw surface water rights in several area ditches totaling approximately 150 af/yr. 130 af of this is currently leased within the District for pasture and plant nursery irrigation. Another 20 af is leased outside of the District. Raw water irrigation does not decrease total water use but it does avoid unnecessarily treating water to drinking water quality. This decreases the energy needed for treatment and pumping and minimizes the use of chemicals.

WATER-EFFICIENT INDUSTRIAL AND COMMERCIAL WATER-USING PROCESSES

Existing Industrial Customer Efforts (Not an NTM Program)

A few industrial customers in NTM's service area have, at their own initiative, made modifications that have resulted in significant decreases in water use. NTM is aware of, and would like to recognize, the following customers' conservation efforts:

- *Ball Metal Beverage Container Corp*
  The Ball Metal Beverage Container Corp has received numerous awards for its pollution prevention and waste minimization efforts. They have decreased their water use by approximately 60% in recent decades by:
  - Upgrading their wastewater treatment system;
  - Installing closed loop cooling towers;
  - Switching to a variety of more water efficient, water free, and recycling processes;
  - Decreasing irrigation water use; and
  - Employee training and education.
- *International Paper*
  International Paper's Golden branch manufactures corrugated and solid fiber boxes. This company has decreased its water use by nearly 80% in the last 10 years. Activities related to these savings include:
  - Throttled open loop cooling system used only when plant is in production (closed loop system could not provide necessary cooling);
  - Decreased irrigation water use;
  - Switching to more water efficient and water free processes; and
  - Employee training and education.

WATER REUSE SYSTEMS

Water Treatment Plant Backwash and Wastewater Reuse

NTM's water treatment plant produces wastewater (from clarifiers) and backwash water (from filters). NTM's treatment plant infrastructure and processes are designed to recycle nearly all of this water. In 2007, a total of 88.3 million gallons (271 af) of waste and backwash water was recycled.

DISTRIBUTION SYSTEM LEAK IDENTIFICATION AND REPAIR

Meter Replacement Program

As meters age, they typically become less reliable and often slow down. This may result in low readings compared to actual water use. Properly maintained meters improve

accuracy and allow NTM to more quickly detect leaks. In recent years NTM has replaced, repaired or recalibrated 100% of its residential and commercial meters. The District is also upgrading to a radio read water meter system. As transmitters on meters stop working correctly, NTM replaces them with new radio read transmitters.

System Maintenance, Leak Detection and Repair

System segments that have had multiple breaks or a break that indicates poor conditions are identified and scheduled for evaluation, repair, or replacement. In addition point repairs to the system are promptly made as needed. NTM tracks leaks in their GIS database. Leaks are mapped and labeled by type so that visual analyses can be made of the break patterns. If it is determined that a specific area is prone to breaks it is designated for replacement. The District typically completes anywhere from 1 to 3 significant main replacement projects each year.

Individual Account Leak Detection Program

Approximately 10% of District meters currently have automatic leak detection capabilities. As older meters are replaced this percentage will increase. The new meters flag possible leaks if there are no 24 hour periods throughout the billing cycle with at least one hour when the meter never stops. Each billing cycle, NTM staff identify flagged accounts and compare consumption to historical use. In addition, any consumption (including from the meters that do not report potential leaks) that appears to be abnormal is checked with past usage and, if it appears high, the customer is notified.

DISSEMINATION OF INFORMATION REGARDING WATER USE EFFICIENCY MEASURES, INCLUDING PUBLIC EDUCATION, WATER AUDITS AND WATER-SAVING DEMONSTRATIONS

Water Conservation Communications

NTM regularly communicates with residents regarding efficient water use and conservation. Each billing period, a “North Table Mountain Report” insert is included with customer’s bills. The report frequently contains conservation related articles, watering restriction information, and other information designed to educate and inform customers about their utility and water use. NTM’s website provides similar information as well as links to outside sites to help customers better understand and make decisions regarding their water use.

High Water Use Customer Assistance

The District flags accounts using water volumes much higher than would be expected for that type of account. If a leak is suspected, the District sends a crew out to check for a leak and contact the customer. If it is not a leak but water use is very high, NTM will attempt to work with the customer to help them decrease their water use to a more reasonable level.

WATER RATE STRUCTURES AND BILLING SYSTEMS DESIGNED TO ENCOURAGE WATER USE EFFICIENCY IN A FISCALLY RESPONSIBLE MANNER

Tiered Rate Structure

The District has long had a tiered rate structure in place, with rates increasing with increasing water use. Historically differences between tiers have been small and increased occurred only with large increases in the volume of water used.

REGULATORY MEASURES DESIGNED TO ENCOURAGE WATER CONSERVATION

Summer Water Use Restrictions
Each year NTM reevaluates its Summer Water Use Regulations which typically mirror Denver Water's policies. 2008 regulations specified the following:

- No lawn watering between 10 a.m. and 6 p.m.
- Do not waste water by allowing it to pool in gutters, streets and alleys.
- Do not waste water by letting it spray on concrete and asphalt.
- Repair leaking sprinkler systems within 10 days.
- Do not use spray irrigation while it is raining or during high winds.
- There are no assigned watering days, but watering more than three days per week is prohibited.

Customers found breaking the watering rules receive a conservation card informing them of the regulations after the first violation. After a second violation they are contacted in person and provided information to remedy the situation and a warning of the fine for failing to do so. In the rare case that a customer continues to violate the regulations, fines are imposed.

INCENTIVES TO IMPLEMENT WATER CONSERVATION TECHNIQUES, INCLUDING REBATES TO CUSTOMERS TO ENCOURAGE THE INSTALLATION OF WATER CONSERVATION MEASURES

NTM's provides free Water Conservation Kits as an incentive to customers.

OTHER WATER MANAGEMENT ACTIVITIES

Association Memberships
NTM participates in the following organizations:

- American Water Works Association (AWWA)
- Backflow Prevention Association
- Special District Association
- International Association of Plumbing and Mechanical Officials
- Distributors Forum (local water agency monthly meeting to discuss Denver issues and current topics)
- Colorado Rural Water

Drought Mitigation Measures
NTM is required to impose drought restrictions at least as stringent as those imposed by Denver Water, which it purchases raw water from. Historically NTM has adopted more stringent restrictions during times of water scarcity.

6 Conservation Program Evaluation and Selection

6.1 Conservation Goals

NTM has the following goals for its Water Conservation Plan which were developed by the District's staff, Board of Directors, and water conservation consultant:

- Decrease average total annual use (total water use divided by population) by 18% from the 2000 (prior to most conservation activities being implemented)

average of 259 gallons per capita per day (gpcd) to 210 gpcd by 2015. Decrease residential water from 171 gpcd to 141 gpcd for this same period. (2006/2007 average total per capita water use was 235 gpcd which is a 9% decrease from 2000 use.)
- Select water conservation programs and measures that are appropriate for NTM given its size and service area characteristics;
- Increase customer awareness (for all customer types) of the importance of water conservation;
- Provide technical assistance to help customers decrease indoor and outdoor water use;
- Initiate several pilot programs to evaluate effectiveness, costs and staff needs prior to full program implementation;
- Ensure that new development uses outdoor water use efficiently through landscaping regulations;
- Initiate data collection to effectively monitor and characterize water use and conservation savings;
- Serve as an example for other small water providers with limited financial and staff resources; and
- Utilize Plan development and implementation processes as opportunities to develop collaborative relationships with other water providers and water conservation organizations.

6.2 Evaluation Criteria

In addition to the District's existing conservation measures a variety of potential new activities were evaluated in this Water Conservation Plan. Several qualitative and quantitative criteria were used in evaluating conservation activities for selection. These include:

Feasibility of implementation
Technical, legal, political, institutional and other concerns can serve as impediments to certain conservation measures and programs. Because NTM is a special district it is more limited in the types of regulations it can enforce as compared to a municipal water provider. Over time such constraints may change.

Costs and water savings potential
NTM was strategic in selecting conservation activities for implementation that are likely to achieve the highest water savings within a realistic financial and staff time commitment.

Educational benefits
Education can provide customers with the resources and training they need to use water more efficiently. It is also important in instilling a value of water conservation. NTM has considered all customer types in developing its educational water conservation programs.

Best practice
To provide a positive example for its customers, some water conservation measures and programs were adopted due to their nature as best practices and ability to demonstrate NTM's commitment to promoting efficient water use.

Several of the conservation activities which were removed from further consideration in this Plan may be reevaluated in the future. These activities are described in Section 6.5.

6.3 Potential Conservation Measures and Programs

Table 11 provides a complete list of the conservation activities considered in this Plan. The table specifies whether an activity is "Existing" (currently or previously implemented) or "New". The table also lists if the program was selected for implementation. Narrative descriptions of existing conservation activities are provided in Section 5. New activities selected for implementation are described in Section 6.4. Section 6.5 describes activities removed from consideration and reasons for elimination.

Table 11: Conservation Measures and Programs Identified in the Planning Process

Water Conservation Program or Measure	Status	New or Continued Implementation Planned?	Notes
Water-efficient fixtures and appliances, including toilets, urinals, showerheads and faucets			
Free Water Conservation Kits	Existing	Yes	Increase promotion of kits
Upgrade NTM Office and Treatment Plant Fixtures and Appliances	New	Yes	To be completed in 2009
Toilet Rebate Pilot Program	New	Yes	Program implementation may be dependent on financial resources
High Efficiency Washing Machine Rebates	New	No	Program may be reevaluated in the future
New Build Fixture and Appliance Regulations	New	No	
Low water-use landscapes, drought-resistant vegetation, removal of phreatophytes and efficient irrigation			
Outdoor Watering Schedule	Existing	Yes	Will be extended to year round program under new Waste of Water Regulations
Raw Water Irrigation	Existing	Yes	
Waterwise Demonstration Garden	New	Yes	
New Development Soil Amendment Regulation	New	Yes	
New Development Common Area Landscape Regulations	New	Yes	
Irrigation Audit Pilot Program	New	Yes	Program implementation may be dependent on financial resources
Water Efficient Landscaping and Irrigation Educational Materials	New	Yes	
Annual Landscape and Irrigation System Seminar	New	Yes	
Parks and HOA Water Use Evaluation	New	Yes	
Greenhouse Industry Education	New	Yes	
Smart Controller and Rain Sensor Rebate Pilot Program	New	Yes	
New Build Residential Landscape Regulations	New	No	Program may be reevaluated in the future
Removal of Phreatophytes	New	No	

Table 11: Conservation Measures and Programs Identified in the Planning Process

Water Conservation Program or Measure	Status	New or Continued Implementation Planned?	Notes
Water-efficient industrial and commercial water-using processes			
Existing Customer Efforts	Existing	Yes	Not an NTM Project
Industrial and Commercial Customer Education	New	Yes	
Greenhouse, Commercial and Industrial Audits	New	No	Program may be reevaluated in the future
Low Flow Pre-Rinse Sprayers	New	No	Program may be reevaluated in the future
Water reuse systems			
Water Treatment Plant Backwash and Wastewater Reuse	Existing	Yes	
New Development Closed Loop Cooling System Regulation	New	Yes	
Distribution system leak identification and repair			
Meter Replacement Program	Existing	Yes	
System Maintenance, Leak Detection and Repair	Existing	Yes	
Individual Account Leak Detection Program	Existing	Yes	
Sonic Leak Detection Program	New	Yes	
Systemwide Water Audit	New	Yes	
Dissemination of information regarding water use efficiency measures, including by public education, customer water audits and water-saving demonstrations			
High Water Use Customer Assistance	Existing	Yes	
Increased Water Conservation and Water Use Education	Existing & New	Yes	Expanded “Water Conservation Communications” program
Educational Water Bills	New	Yes	
Water Meter Monitor Loan Program	New	Yes	
Educational School Program	New	Yes	
Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner			
2008 Tiered Rate Structure Modifications and Annual Evaluation	Existing & New	Yes	Replaced older “Tiered Rate Structure” program
Billing System Software Upgrade	New	Yes	
Monthly Billing for Park and HOA Accounts	New	Yes	
High Volume (Monthly) Customer Criteria	New	Yes	
Monthly or Bi-Monthly Billing	New	No	Program may be reevaluated in the future
Regulatory measures designed to encourage water conservation			
Waste of Water Regulations	Existing & New	Yes	“Summer Water Use Restrictions” expanded to these year round regulations

Table 11: Conservation Measures and Programs Identified in the Planning Process

Water Conservation Program or Measure	Status	New or Continued Implementation Planned?	Notes
Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures			
Included under other headings			
Other water management activities			
Association Memberships	Existing	Yes	
Drought Mitigation Measures	Existing	Yes	Implemented during drought periods
Collaborative Water Conservation Relationships	New	Yes	
Part Time Water Conservation Coordinator	New	No	Program may be reevaluated in the future

6.4 Summary Descriptions of New or Expanded Conservation Programs

This District will continue with all of its existing conservation measures and programs with some modifications as described above in Section 5. The following additional activities have been selected for implementation. Information on conservation activities which were considered but which will not be implemented is provided in section 6.5. All water conservation programs which are geared towards NTM's customers will be promoted in the NTM Report and on the District's website.

WATER-EFFICIENT FIXTURES AND APPLIANCES, INCLUDING TOILETS, URINALS, SHOWERHEADS AND FAUCETS

Increased Promotion of Conservation Kits

NTM has had free conservation kits available since 2002. Kits include a toilet tank water displacement bag, leak detecting toilet dye tablets, and shower and faucet restrictors. In recent years, the District stopped promoting the kits so many customers are unaware that they are available. NTM will place kits for pick up at the front desk of their office. They will promote the kits in the NTM Report, more prominently on their website, and on water bills.

Upgrade NTM Office and Treatment Plant Fixtures and Appliances

In 2008 the District began replacing old appliances and fixtures in their office and water treatment plant with more efficient models. The District will complete this project in 2009.

Toilet Rebate Pilot Program

NTM will implement a two-year pilot program designed to evaluate the effectiveness and interest in rebates for low flow (1.6 gallons per flush) and high efficiency toilets (HET) (1.3 gallons per flush or less). The program's pilot status will help the District evaluate staff time required to manage a rebate program. If successful the program may be offered annually. The District will provide customers with a list of approved low flow and high efficiency toilets. Rebate of $25 for low flow toilets and $100 for HET toilets will be

made up to a total pilot program cost of $6,250 (approximately $3,125 per year for two years). Rebates will be made on a first come first served basis and only to customers who are replacing older high water use toilets. During the pilot stage of this program, participants will be required to provide NTM with their account information so that NTM can monitor changes in water use.

LOW WATER-USE LANDSCAPES, DROUGHT-RESISTANT VEGETATION, REMOVAL OF PHREATOPHYTES AND EFFICIENT IRRIGATION

Waterwise Demonstration Garden

To serve as a model and provide technical assistance to its customers, NTM will replace existing landscaping outside of its office with a Waterwise Demonstration Garden. The irrigation system will use efficient components and include a smart controller and rain gage. A submeter for the garden will be installed to track irrigation water use. Signage will be installed and water efficient landscaping education materials made available on loan from NTM. Denver Water has agreed to review a landscape design plan for the demonstration garden and will likely be able to assist with signage.

New Development Soil Amendment Regulation

The District will draft a soil amendment regulation for new development similar to regulations which have been developed by several other Front Range water providers. Amending soil with organic matter helps soil take in and retain moisture in the plant root zone and provides needed nutrients in addition to other benefits. This can lead to a significant reduction in irrigation requirements but must be done prior to planting or seeding. The regulation will apply to new commercial, industrial, Parks and HOA and larger residential (greater than 4 homes) developments. Typical soil amendment requirements range from 3 to 5 cubic yards of organic material per 1,000 square feet of landscaped area. The developer must provide proof of purchase and delivery of soil amendment (including data indicating site volume requirements) to NTM prior to meter installation. The District will not install meters until this requirement has been met.

New Development Common Area Landscape Regulations

In addition to the Soil Amendment Regulation, the District will develop common area landscape regulations for new developments. Regulations will require that landscape and irrigation systems for common areas be designed by certified, licensed or similarly qualified landscaping and irrigation professionals. NTM will develop a list of approved qualifications which it will provide to developers. Landscape regulations will be developed. The regulations will establish annual supplemental irrigation (in excess of natural precipitation) specifications designed to provide developers with the flexibility to include higher water use turf areas by offsetting them with more water wise landscaping in other areas. Though final program details need to be developed, preliminary specifications include an annual supplemental irrigation water budget of 16 gallons per square foot irrigated area. Irrigation systems will need to be hydrozoned and have smart controllers with Smart Water Application Technology (SWAT) tested with scores of 95% or higher on adequacy and excess. Water for irrigation will be separately metered from other uses. The District will not install meters until landscaping and irrigation plans meeting specifications have been provided by the developer.

Irrigation Audit Pilot Program

The Center for Resource Conservation's (CRC) Slow the Flow Colorado is a landscape irrigation audit program. The CRC contracts with municipalities and water providers to provide outdoor audits to customers. They assess irrigation system efficiency, develop watering schedules, and review maintenance needs. NTM will develop a voluntary pilot program targeted at specific users with high outdoor water use, including residential, commercial and HOA customers. To encourage participation, NTM will provide targeted customers with information regarding their water use as compared to average use and potential costs savings. Currently the CRC requires that audits be provided free to customers and that the costs be covered by the water utility or municipality (NTM in this case). The CRC is considering a policy change that would allow utilities to ask customers to contribute to audit costs, which NTM prefers. Prior to receiving an audit, NTM staff will contact potential program participants. To receive an audit, participants will be required to acknowledge that they are willing to make modifications to their landscaping and/or irrigation system in response to audit findings. In addition, they will need to agree to allow NTM to evaluate pre- and post-audit water use data. As part of the pilot program, NTM will also assist customers in locating qualified professionals to make post-audit irrigation system/landscaping modifications.

Water Efficient Landscaping and Irrigation Educational Materials

Nearly 60% of the water purchased by NTM customers is used for irrigation purposes. NTM will develop a library of water efficient landscaping and irrigation materials which it will make available for loan from their office. It will utilize the Green Industries of Colorado's (GreenCO) "Green Industry Best Management Practices (BMP) for the Conservation and Protection of Water Resources in Colorado – Moving Towards Sustainability" (GreenCO, 2008) to develop an informational series for the NTM Report. The BMP's are guidelines on how to reduce water consumption and protect water quality while producing, designing, installing and maintaining healthy and beautiful landscapes. The forthcoming Colorado WaterWise BMP Manual may also be utilized. Links to internet resources and education materials/information will be added to NTM's website. NTM will provide link to lists of qualified professionals posted on the Irrigation Association, American Society of Landscape Architects, EPA WaterSense Partners, and other websites.

Annual Landscape and Irrigation System Seminar

NTM will provide a free half-day landscaping and irrigation system class for its customers. The class will be offered once a year in the spring, most likely at NTM's offices so that the Waterwise Demonstration Garden can be utilized. NTM will partner with Colorado WaterWise or GreenCO, possibly with the assistance of a local nursery or the Colorado State University Extension Office, to develop and present the class. Other area water providers may be asked to participate.

Parks and HOA Water Use Evaluation

NTM provides water to several parks and recreational areas for outside entities including the City of Arvada, City of Golden, North Jefferson County Parks and Recreation District, and Prospect Recreation and Park District. Numerous HOA's also have large irrigated commons areas in the District's service area. During the development of this Plan, NTM began evaluating water use in parks and HOAs and decided that additional information, outside of the scope of this Plan, is needed to determine if water is being used efficiently. NTM will work with park owners and HOAs to develop irrigated area

estimates and groundcover types. Location specific water use per area can then be developed and compared to irrigation requirements to estimate potential water savings. NTM will provide information to park owners and HOAs to help them identify ways to decrease their water use.

Greenhouse Industry Education

There are nine commercial greenhouses (13 accounts) in NTM's service area. Together these greenhouses account for about 3% of total annual water use in the District. NTM does not currently have sufficient information to determine if water is being used efficiently by greenhouse customers. District staff will begin working with customers, several of which are large, well respected industry leaders, to determine key water conservation practices. GreenCO's greenhouse specific BMP's (GreenCO, 2008) will be utilized in this process. Sharing of information between greenhouses and facility tours will be encouraged. Information on potential water and costs savings will be developed and provided to Greenhouse customers. This program may be expanded depending on initial findings.

Smart Controller and Rain Sensor Rebate Pilot Program

Irrigation controllers are often set to apply more water than plants need and frequently aren't adjusted to reflect on-the-ground conditions. Weather based smart controllers develop irrigation schedules based upon plant type and real time or historic location-specific climate data. Rain sensors shut the system off if it is raining or has recently rained. Irrigation water savings can results through the use of smart controllers and rain sensors. NTM will offer rebates for smart automatic irrigation controllers (a list of approved controllers will be provided) and rain sensors through a pilot program. Twenty rebates up to the cost of rain sensors (up to $25) and ten $75 rebates for smart controllers will be provided. At the end of the pilot period, NTM will assess interest in and water savings resulting from the program as well as the staff time required. New development common areas will not be eligible for rebates.

WATER-EFFICIENT INDUSTRIAL AND COMMERCIAL WATER-USING PROCESSES

Industrial and Commercial Customer Education

Twenty-four industrial accounts use approximately 10% of total water distributed in the District in 2007. 119 commercial accounts used 7.3%. NTM will develop industry specific education materials and directly contact and work with these customers to determine potential water savings. Commercial customers will be targeted via a targeted mailing. Materials will include information and resources from references such as the East Bay Municipal Utility District's *WaterSmart Guidebook for Businesses - Water Saving Technologies for Commercial, Industrial, and Institutional Properties* (EBMUD, 2008), Colorado WaterWise ICI Committee, and the Northern Colorado collaborative project's Water Conservation Assessment Toolkit, among others. Information on potential water and costs savings, consultants, and estimated costs for site specific water audits will also be provided. The District will investigate the possibility of arranging tours of existing customers' water conserving facilities.

WATER REUSE SYSTEMS

New Development Closed Loop Cooling System Regulation

The District will require that new commercial and industrial development requiring large cooling systems install either air cooled or closed loop water recycling cooling systems. Single pass water cooled systems will not be allowed. These regulations will not apply to existing development, though these customers will be encouraged to switch to recycling systems. Once-through or single pass cooling water demands can account for up to 70 percent of water use in commercial, industrial, and institutional buildings (Brendle Group, 2006). Closed loop (recycling systems) reuse water and can reduce water use by 20 to 95 percent (The Brendle Group, 2006). Air cooled systems do not require water. The District will require proof of air cooled or closed loop cooling system purchase and installation prior to installing meters on commercial and industrial buildings.

Additional water reuse systems include the District's water treatment plant backwash and wastewater reuse program and industrial and commercial recycling processes.

DISTRIBUTION SYSTEM LEAK IDENTIFICATION AND REPAIR

Sonic Leak Detection Program

NTM currently estimates Unaccounted For water, which includes leaks, to be about 6% of water distributed. Though this is low according to industry standards, the District would like to evaluate its system sonically to insure that losses due to leaks are, in fact, small and identify problem areas. Currently NTM promptly repairs leaks in its system that it has identified visually. Other smaller, less obvious leaks may go unnoticed and over time can add up to significant water loss. The Sonic Leak Detection Program will help the District better assess its system and determine how much loss is "real" rather than "apparent" (due to accounting and meter inaccuracies). NTM will implement an ongoing leak detection program with approximately 20% of its system being evaluated annually. NTM will start with the sections of its system that are most prone to breaks. The various methods for detecting leaks in water distribution systems usually involve using sonic leak detection equipment which identifies the sound of water escaping a pipe. If, as a result of preliminary sonic leak detection findings, leaks in NTM's system are found to be minimal, the ongoing leak detection program schedule may be relaxed.

Systemwide Water Audit

NTM will use the American Water Works Association (AWWA) Water Loss Control Committee (WLCC) Water Audit Software (AWWA, 2006b) or a similar methodology to complete a water audit of its entire system, from source to metered water user. This process will provide NTM with a better understanding of its system and Unaccounted For water (both real and apparent losses). The audit will determine how much losses may be costing NTM and identify improvement areas. It will also allow NTM to assess its water losses in comparison with other water utilities and to set performance targets.

DISSEMINATION OF INFORMATION REGARDING WATER USE EFFICIENCY MEASURES, INCLUDING BY PUBLIC EDUCATION, CUSTOMER WATER AUDITS AND WATER-SAVING DEMONSTRATIONS

Increased Water Conservation and Water Use Education

The District began educating its customers about water conservation during the 2002 drought. It has identified a variety of additional educational materials it would like to develop including:

- Additional water conservation website content;
- Customer specific educational water bills (discussed below under "Billing System Software Upgrade");
- Water use by customer type with indoor and outdoor breakdown showing percentages of customers falling in different use ranges;
- Figures showing individual (unidentified – to protect privacy) customer use as compared to others of that account type to demonstrate use in relation to others;
- Information on water use by fixture and appliance comparing older, standard and high efficiency models and water that can be lost to toilet leaks;
- Ranges of water use and potential cost savings associated with decreasing water use;
- Landscaping and irrigation water use, typical inefficiencies and ways to decrease water use;
- Commercial and industrial customer education (described above); and
- Greenhouse industry education (described above), among others.

Water Meter Monitor Loan Program

NTM recently purchased five water meter monitors that customers can borrow (with a $75 fully refundable deposit). These are small devices with magnetic backs that can be placed on a refrigerator or similar location. Monitors read the individual customer's meter in real time which allows them to track their water use and determine how much water various activities use. This information can then be used to target areas for potential water savings. NTM recommends the meters to customers who have questions about their water use and they are also available for loan upon customer request. The District is not widely promoting the meter monitors at the present time because this requires that the meter transmitter, all of which were recently replaced, be switched out for monitor compatible transmitters. Over time as transmitters throughout the District fail, they will be replaced with compatible transmitters. NTM anticipates increasing the meter monitor loan program as this occurs.

Educational School Program

NTM would like to involve the two public schools in its service area (Fairmount Elementary and Compass Montessori) in water education and conservation. NTM will work with the schools to select an appropriate program. The District has looked into Resource Action Programs' WaterWise™ program which focuses on 5th grade students as well as ProjectWET which trains teachers of all grade levels in its water focused curriculum and activity guide. In addition to a water resources and conservation curriculum, WaterWise™ provides each student with a retrofit kit for their home. NTM has spoken with the principals of both schools and they have expressed an interest in participating. If selected, the WaterWise™ program would reach approximately 100

students and their families annually. ProjectWET would be provided to about 20 teachers at a time and count towards continuing education credits.

WATER RATE STRUCTURES AND BILLING SYSTEMS DESIGNED TO ENCOURAGE WATER USE EFFICIENCY IN A FISCALLY RESPONSIBLE MANNER

2008 Tiered Rate Structure Modifications and Annual Evaluation

During the development of this Water Conservation Plan, NTM implemented a more rapidly inclining tiered rate structure. This occurred after comparing their annual revenue to expenditures and their rates to those charged by other Front Range water providers. NTM realigned the blocks in its rate structure to more aggressively encourage conservation and to cover its costs. In assigning new rates, NTM allows for indoor use and a sensible amount of outdoor irrigation at reasonable rates. Higher rates apply for excessive water use. NTM's Board of Directors reviews its rates on an annual basis.

Billing System Software Upgrade

The District has decided to upgrade its billing software in 2009. The new software will have additional capabilities, many of which can be used to enhance NTM's conservation programs. Among other things, the new software will have the ability to provide more educational and customer specific information on bills including:

- graph billing rate tiers;
- compare customer specific current use with historical use;
- compare customer water use with similar customers' use;
- identify winter versus summer use; and
- provide educational message blocks, among other items.

Monthly Billing for Park and HOA Accounts

Park and HOA Accounts are currently billed on a quarterly basis. Only large industrial and commercial customers are billed monthly. As a result, these accounts, which are primarily for outdoor irrigation, frequently do not receive a water bill until well into the irrigation season. This makes it difficult for customers to adjust their outdoor water use as they may already be three months into the season. Additionally, many HOAs hire landscape management companies that are concerned primarily with keeping landscaping green and who may overwater to insure this. To provide Park and HOA customers with the opportunity to recognize and address excessive water use, NTM will begin billing Park and HOA accounts on a monthly basis.

High Volume (Monthly) Customer Criteria

NTM bills industrial and commercial customers whose businesses requires higher volumes of water (so have large water taps) on a monthly basis. These customers have a slightly modified rate structure as described above in Section 2.4 Metering and Billing. NTM has determined that some commercial customers with smaller taps and whose businesses do not require significant volumes of water should be moved to the quarterly rate system. This will increase their rates, encouraging them to more closely monitor their water use. NTM has developed criteria that accounts must use 100,000 gal or more of indoor usage consistently each month to qualify for monthly billing. Large irrigation accounts are not eligible for monthly rates due to their seasonal use patterns.

REGULATORY MEASURES DESIGNED TO ENCOURAGE WATER CONSERVATION

Waste of Water Regulations
NTM is extending its Summer Water Use Restrictions to become year round regulations. Previously the regulations were in place only from May through September.

Additional regulatory measures included under other headings include the New Development Soil Amendment Regulation, New Development Common Area Landscape Regulations, and New Development Closed Loop Cooling System Regulation.

INCENTIVES TO IMPLEMENT WATER CONSERVATION TECHNIQUES, INCLUDING REBATES TO CUSTOMERS TO ENCOURAGE THE INSTALLATION OF WATER CONSERVATION MEASURES

Incentives described under other headings include the Free Water Conservation Kit program, Toilet Rebate Pilot Program, Irrigation Audit Pilot Program, and Smart Controller and Rain Sensor Rebate Pilot Program.

OTHER WATER MANAGEMENT ACTIVITIES

Collaborative Water Conservation Relationships
NTM is a smaller water provider with limited staff and financial resources. The development of its Water Conservation Plan has provided it with the opportunity to initiate new collaborative relationships and expand upon existing ones with other water providers, water focused non-profit organizations, and area schools, among others. For example, in implementing this Plan, NTM will likely utilize existing Denver Water information to develop its soil amendment regulation, toilet rebate and smart controller rebate programs. In addition, Denver Water has said that it may assist NTM in reviewing plans and providing signage for its Waterwise Demonstration Garden. NTM plans to approach other local water providers, such as Valley Water District and the City of Golden, to participate in an annual landscaping seminar for customers. The District will work with Compass Montessori and Fairmount Elementary to offer a water conservation school program. NTM will also rely upon technical assistance from water conservation oriented organizations such as the Center for Resource Conservation, Colorado WaterWise, GreenCO, and Resource Action Program, among others.

6.5 Programs Removed from Further Consideration at the Present Time

This section describes conservation measures and programs that NTM has decided to remove from its 2009 – 2015 Water Conservation Plan. Some activities may be reconsidered in the future.

High Efficiency Washing Machine Rebates
After toilets, washing machines are the appliance that uses the most water per household. The District was interested in offering high efficiency washing machine rebates. Due to costs, staff time, and potential savings, the District decided to focus on the toilet rebate pilot program. Depending on the results of the toilet rebate pilot program, *a HE washing machine rebate program may be reevaluated in the future.*

New Build Fixture and Appliance Regulations
The District considered requiring that new homes be built using high efficiency fixtures and appliances. Federal legislation and improved technology has resulted in standard fixtures and appliances which use less water than those installed in the past. While these result in new homes being built more efficiently than older homes, high efficiency products have been shown to result in significant water savings as compared to standard products. The District decided not to pursue this program as this would require significant staff time and expertise beyond what is currently feasible for the District to review and enforce plans. In addition, Jefferson County is currently responsible for adopting and enforcing building and plumbing code in its service area.

New Build Residential Landscaping Regulations
NTM considered developing landscaping regulations applicable to all new residences. This would require significant staff time and expertise beyond what is currently feasible for the District to review and enforce plans. The District instead decided to develop regulations for new development common area landscaping which will be more reasonable to manage. *This program may be reevaluated in the future.*

Removal of Phreatophytes: Phreatophytes are plants which consume water from groundwater or surface water sources through uptake and subsequent evapotranspiration. These plants, which are often non-native, can be a concern along streams and rivers and may account for significant water loss. Their removal can increase water availability. NTM purchases its raw water supply from Denver Water and has limited irrigation rights so this conservation measure is not applicable.

Greenhouse, Commercial and Industrial Water Audits
The District was interested in providing water audits and follow up technical assistance to greenhouse, commercial and industrial customers. After a preliminary investigation of costs, the District decided to instead develop targeted educational programs (see the Greenhouse Industry Education and Industrial and Commercial Customer Education conservation programs selected for implementation). *This program may be reevaluated in the future.*

Low Flow Pre-Rinse Restaurant Sprayers
NTM considered promoting low flow pre-rinse sprayers, which can be an easy and effective way to save water in commercial and institutional settings. However, after looking at their customer base, it was determined that there are very few restaurants and cafeterias in their service area. As a result this program is unlikely to have a significant impact and was removed from further consideration. *This program may be reevaluated in the future if NTM's customer base changes.*

Monthly or Bimonthly Billing: With the exception of high volume commercial and industrial accounts, NTM customers receive their bills on a quarterly basis. While customers received their bills on a timely basis following the meter read, quarterly billing makes it difficult for them to adjust their water use after receiving their bill. For example, a customer may use a lot of water to irrigate in the middle of the summer but may not receive a bill until late summer at which point they can't adjust their peak summer water use. Billing frequency could be increased to monthly or bimonthly. While the District understands the value of more frequent billing, it estimates that switching to monthly billing would require it to double its office staff. The District will increase customer

specific information on bills, which it hopes will help customers better understand and make decisions about their water use. *This program may be reevaluated in the future.*

Part Time Water Conservation Coordinator

The implementation of its water conservation program will require existing staff to allocate a portion of their time to conservation efforts. This District considered hiring an additional part time conservation staff member. This was removed from further consideration. The District prefers to begin implementing its conservation Plan with existing staff. *Additional staff with conservation specific responsibilities may be reevaluated in the future.*

6.6 Costs and Water Savings Estimates

Program costs, water savings, and assumptions are provided in Table 12. Water savings calculations were based upon NTM specific data when possible and are documented in detail in Attachment B. Costs presented are estimates. They are presented in terms of 2009 dollars and no adjustments were made for the time value of money. The costs presented only include additional costs specific to the District's conservation program. Existing staff time and other costs that are covered under the District's annual operating and maintenance (O&M) budgets were not included. Due to the seven year timeframe of these calculations, and the fact that many programs will begin in 2010, product lifespan was not considered in the cost analysis. It was not possible to quantify costs and/or water savings for all programs. Many of the values provided in Table 12 are preliminary and will be adjusted as better data is collected during program implementation. If the pilot programs (toilet rebates, smart controller and rain sensor rebates, and irrigation audits) are expanded into ongoing programs, savings would increase from those shown.

Total program costs and water savings are provided at the end of Table 12. Total program startup costs are estimated to be $91,510. Ongoing annual costs are much lower at $14,660, which is about 0.4% of the District's annual budget. Ongoing costs could increase by around $15,000 if the District decides to continue the three rebate programs as they are currently designed. Additional costs to NTM (excluding existing staff time and costs covered by the O&M budgets) for water saved range from $0 to around $1,000 per acre-foot of water. Even the high end of costs per acre-foot is significantly lower than current costs of securing new water supplies along the Front Range which can easily range upwards of $15,000 per acre-foot. Decreasing demands slows the need for new water supplies as well as new and expanded infrastructure, resulting in additional savings.

For many programs, annual savings increase over time as water savings from previous' years program implementation continue. By 2015 annual conservation savings, which include existing industrial customer efforts, are estimated at 367 million gallons (or 1,127 af). Assuming that total per person water use in the District is 213 gallons per capita per day (gpcd) (includes Plan savings, see Table 13) water saved through conservation has the potential to serve an additional 4,732 people. Total cumulative water conservation savings for the 2009 through 2015 period are estimated at 2.26 billion gallons (or 6,946 af).

Table 12: Water Conservation Program Costs and Water Savings

Water Conservation Program	Program Start Dates	Estimated NTM Program Costs (excluding staff time)			Estimated Water Savings (1000 gallons)			Total 2009 through 2015 Cost per 1,000 Gallons Water Saved	Total 2009 through 2015 Cost per Acre-Foot Water Saved	Cost Assumptions
		Start Up	Ongoing Annual	Total 2009 through 2015	One-Year[1]	Annual in 2015[2]	Total 2009 through 2015[3]			
Water-efficient fixtures and appliances, including toilets, urinals, showerheads and faucets										
Free Water Conservation Kits	Ongoing	$0	$160	$800	2,258	7,904	31,618	$0.03	$8.24	Currently in stock. 40 kits annually at $4 each.
Upgrade NTM Office and Treatment Plant Fixtures and Appliances	2009	$1,250	$0	$1,250	131	131	920	$1.36	$442.81	In office and water treatment plant NTM will replace a total of 5 toilets, 4 bathroom sink faucets, 2 kitchen sink faucets, and 2 showerheads.
Toilet Rebate Pilot Program (2 year pilot)	2009 - 2010	$10,000	$0	$10,000	1,241	1,241	8,065	$1.24	$404.02	Up to 50 rebates of $25 for low flow toilets and 50 rebates of $100 for HET toilets. Also includes cost for consultant to help set up program.
Low water-use landscapes, drought-resistant vegetation, removal of phreatophytes and efficient irrigation										
Outdoor Watering Schedule	Ongoing	$0	$0	$0	19,634	23,887	149,109	$0.00	$0.00	
Waterwise Demonstration Garden	2009	$10,000	$0	$10,000						Initial costs include landscape and irrigation designer, plants, and landscaping and irrigation system materials. Garden will be installed by NTM staff. Ongoing costs will be rolled into annual maintenance budget.
New Development Soil Amendment Regulation	2009 - 2010	$3,000	$0	$3,000	2,595	17,210	58,268	$0.05	$16.78	Cost for assistance from consultant to draft regulation and related documentation.
New Development Common Area Landscape Regulations	2009 - 2010	$3,000	$0	$3,000	808	5,361	18,152	$0.17	$53.85	Cost for consultant to help draft regulation.
Irrigation Audit Pilot Program (1 year pilot)	2010	$7,560	$0	$7,560	704	704	4,226	$1.79	$582.87	Residential audits cost $100 each. Large area audits cost an average of $1,212 per property. 5 residential and 5 large audits will be completed.
Water Efficient Landscaping and Irrigation Educational Materials	Ongoing	$1,000	$0	$1,000						$500 estimated cost to purchase materials for lending library. Also includes cost for consultant to assist in identifying additional resources.
Annual Landscape and Irrigation System Seminar	2010	$0	$500	$3,000	83	499	1,745	$1.72	$560.26	Cost for landscape/irrigation expert to provide seminar.
Parks and HOA Water Use Evaluation	2011	$0	$0	$0						
Greenhouse Industry Education	Annual	$3,000	$0	$3,000	238	238	1,430	$2.10	$683.57	Cost for assistance from consultant to compile Greenhouse industry specific educational materials.
Smart Controller and Rain Sensor Rebate Pilot Program (2 year)	2010 - 2011	$2,250	$0	$2,250	108	216	1,188	$1.89	$617.07	20 rain sensor rebates (up to $25) and 10 $75 smart controller rebates ($1,250 total). Also includes cost for consultant to help set up program.

Table 12: Water Conservation Program Costs and Water Savings

Water Conservation Program	Program Start Dates	Estimated NTM Program Costs (excluding staff time)			Estimated Water Savings (1000 gallons)			Total 2009 through 2015 Cost per 1,000 Gallons Water Saved	Total 2009 through 2015 Cost per Acre-Foot Water Saved	Cost Assumptions
		Start Up	Ongoing Annual	Total 2009 through 2015	One-Year[1]	Annual in 2015[2]	Total 2009 through 2015[3]			
Water-efficient industrial and commercial water-using processes										
Existing Customer Efforts		$0	$0	$0	111,630	111,630	781,412	$0.00	$0.00	No cost to NTM.
Industrial and Commercial Customer Education	2011	$3,000	$0	$3,000	2,174	2,174	13,043	$0.23	$74.95	Cost for assistance from consultant to compile commercial and industrial customer specific educational materials.
Water reuse systems										
Water Treatment Plant Backwash and Wastewater Reuse	Ongoing	$0	$0	$0	103,979	126,506	789,670	$0.00	$0.00	Costs not conservation program specific. They are included in annual operations budget.
New Development Closed Loop Cooling System Regulation										
Distribution system leak identification and repair										
Meter Replacement Program	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual maintenance budget.
System Maintenance, Leak Detection and Repair	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual maintenance budget.
Individual Account Leak Detection Program	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Sonic Leak Detection Program	2009	$20,000	$8,000	$60,000	2,811	2,811	19,680	$3.05	$993.47	Leak detection costs approximately $8,000 to cover 20% of NTM's system pipes. All cast iron pipe (more likely to leak) will be covered in first two years for $20,000.
Systemwide Water Audit	2010 - 2012	$0	$0	$0						Audit software is free and will be completed by NTM staff.
Dissemination of information regarding water use efficiency measures, including by public education, customer water audits and water-saving demonstrations										
High Water Use Customer Assistance	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Increased Water Conservation and Water Use Education	2009 - 2010	$3,000	$0	$3,000						Cost for assistance from consultant to develop NTM specific (including water use data) educational materials.
Water Meter Monitor Loan Program	Ongoing	$450	$0	$450	83	290	1,162	$0.39	$126.24	Six meters at $75 each.
Educational School Program[4]	2010	$2,500	$3,500	$23,500	2,268	13,608	47,627	$0.49	$160.78	Start up costs are for assistance from consultant to set up program with schools and program organization. Ongoing costs are program fees described in footnotes.

Table 12: Water Conservation Program Costs and Water Savings

Water Conservation Program	Program Start Dates	Estimated NTM Program Costs (excluding staff time)			Estimated Water Savings (1000 gallons)			Total 2009 through 2015 Cost per 1,000 Gallons Water Saved	Total 2009 through 2015 Cost per Acre-Foot Water Saved	Cost Assumptions
		Start Up	Ongoing Annual	Total 2009 through 2015	One-Year[1]	Annual in 2015[2]	Total 2009 through 2015[3]			
Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner										
2008 Tiered Rate Structure Modifications and Annual Evaluation	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Billing System Software Upgrade	2009	$21,500	$0	$21,500						Costs not conservation program specific. They are included in annual operations budget.
Monthly Billing for Park and HOA Accounts	2010	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
High Volume (Monthly) Customer Criteria	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Regulatory measures designed to encourage water conservation										
Waste of Water Regulations	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures										
Included under other headings										
Other water management activities										
Association Memberships	Annual	$0	$2,500	$17,500						Costs not conservation program specific. They are included in annual operations budget.
Drought Mitigation Measures	As Needed	$0	$0	$0						Drought mitigation costs are not part of the conservation program budget.
Collaborative Water Conservation Relationships	Ongoing	$0	$0	$0						Costs not conservation program specific. They are included in annual operations budget.
Additional Savings Estimated										
Reflects Savings that are Difficult to Quantify[5]					44,830	52,866	335,990			
TOTAL		$91,510	$14,660	$173,810	295,576	367,279	2,263,307			

[1] Savings associated with first year of full implementation for each program, does not include savings from previous years' implementation (for existing programs). Annual savings for many programs increase over time due to previous years' implementation and an increased customer base.

[2] Estimated annual savings realized in 2015. Includes carryover savings associated with previous year's implementation. For example, continued water savings resulting from conservation kits installed in previous years are included.

[3] Total seven year savings. Some programs many not have been in place for entire period, which is reflected in savings.

[4] Education School Program: WaterWise™ program is for 5th graders at $35.18/student. One school has approximately 80 5th graders. Another has integrated 4th, 5th and 6th grade class of 50 students (program would be offered every 3rd year in this school). Program would be offered to about 100 students annually for average cost of $3,518. ProjectWET costs $150/teacher for 20 teachers at a cost of $3,000. ProjectWET could be offered every other year. Only one program will be selected with average annual costs ranging from $1,500 to $3,518. The high estimate is used in this Plan.

[5] To capture savings that may result from many of the less easily quantified conservation measures a 5% savings of total water billed (after other conservation savings have been subtracted) is assumed and included in total Water Conservation Plan savings. Details can be found in Attachment B.

7 Integrate Resources and Modify Forecasts

7.1 Demand Forecast Revision

Water conservation can play an important role in managing water demands. Figure 7 illustrates projected water demands for the 2009 through 2015 period. "Without Conservation" is an estimate of what demands would be if no conservation was taking place in the District. The "Without Conservation" data was developed by taking existing water use data and removing water savings estimated to result from existing conservation programs. The resulting per capita water use rate was then applied to population projections to estimate future demands without conservation. "Current Conservation Program" estimates future demands based upon current water use rates and existing conservation in NTM's service area. "2009-2015 Conservation Plan" estimates are predicted to occur as a result implementing all of the conservation measures and programs adopted in this Plan.

Demands are based upon a 4% annual increase in population (the 2000 to 2007 average growth rate). In 2015 annual demands without any water conservation would be 804 acre-feet (262 million gallons) higher on average than with existing conservation (including savings from existing industrial customer efforts). In 2015, demands will decrease by an additional 323 af (105 million gallons) as a result of Plan implementation.

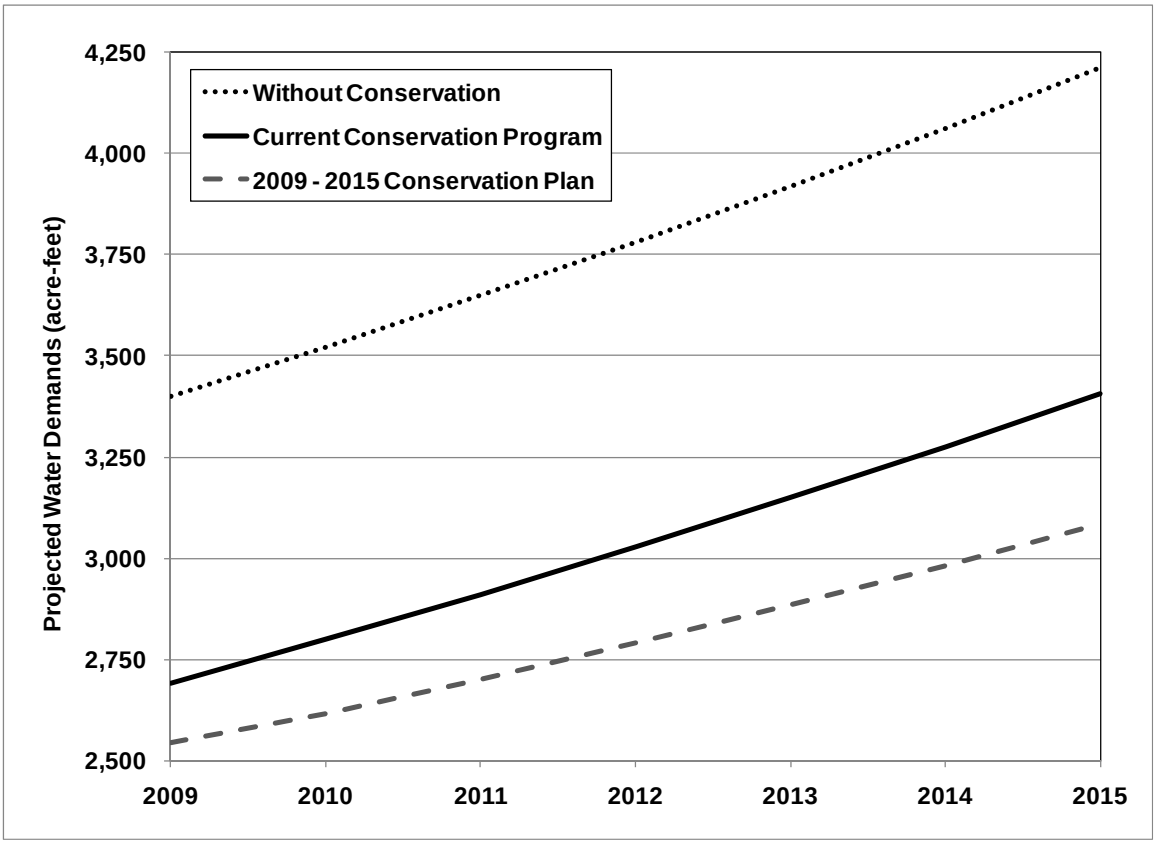

Figure 7: Projected Demands for Treated Water in the District's Service Area

Table 13 shows projected water use in gallons per capita per day (gpcd) for the Plan period (2009 – 2015). Actual water use for 2000 (pre-drought) and the 2006 and 2007 average (included to represent recent actual use) are also provided. All water use is the total water distributed which includes billed water for all account types and Unaccounted For water. Residential use was estimated at 66.2% of total water distributed based upon an analysis of historical data. 2015 water use shows a decrease of 46.8 gpcd for total water use and a decrease of 30 gpcd in residential use compared to 2000.

Table 13: Gallons per Capita per Day (gpcd) with 2009 – 2015 Plan

	Actual		Projected						
	2000	2006-2007 Avg	2009	2010	2011	2012	2013	2014	2015
All Water Use	259.5	235	222	219	218	216	215	214	212.7
Residential Use	171	152	147	145	144	143	142	142	141

Table 14 includes 2015 demand estimates for the projected population of 12,941 people under three scenarios: Pre-conservation program (based upon year 2000 water use), Current (based upon 2006-2007 average water use), and this Plan. Demands are shown in units of 1,000,000 gallons and acre-feet. Gallons per capita per day (gpcd) use rates for each of these scenarios were multiplied by the projected 2015 population to get total annual and residential use. Annual savings for total water use in 2015 (comparing water use between 2000 and NTM Plan water use) are 221 million gallons or 678 acre-feet. This is an 18% decrease in water use since 2000. Residential use, which is included in the total savings estimate, is expected to decrease by 143 million gallons or 439 acre-feet.

Table 14: Theoretical and Projected 2015 Demand Estimates Based upon Historical and Projected per Capita Use

	Projected 2015 Water Use (est. population 12,941)			
	Projected Total Annual Use		Projected Residential Use	
2015 Demand Projections Based Upon	1,000,000 gallons	acre-feet	1,000,000 gallons	acre-feet
Pre-conservation program (year 2000) water use rates (259 gpcd total, 171 gpcd residential)	1226	3761	808	2481
Current (2006-2007) water use rates (235 gpcd total, 152 gpcd residential)	1110	3406	718	2204
Water use rates resulting from NTM's Plan (213 gpcd total, 141 gpcd residential)	1004	3083	665	2042
Savings comparing pre-conservation (2000) use to NTM's Plan use	221	678	143	439
Percent savings (pre-conservation compared to NTM Plan)	18.0		17.7	

7.2 Impacts on Infrastructure Needs and Revenue

The 2009 – 2015 Water Conservation Plan will not have any major impact on projects currently planned by the District as these are all necessary to address current and upcoming needs. Water conservation savings will delaying or reduce the need for additional supplies or infrastructure as new development occurs. Demands will increase more slowly enabling NTM to implement future projects at later dates. It may also be possible for the District to downsize some projects. The District will update its 10 Year Capital Construction Plan in 2010. Until this is done, exactly how water conservation savings will impact infrastructure needs and scheduling is unknown.

The District collects the revenue it needs to operate through treated water and sewer charges and tap fees. Decreased water demands result in decreased revenue. Because the District's service area population is increasing at the same time that it is decreasing demands through conservation, it does not anticipate revenue impacts to be significant. NTM's Board of Directors reviews the District's tiered rate system annually. This provides the District with the ability to quickly adjust rates and fees if revenue issues emerge.

8 Implementation, Monitoring and Evaluation Plan

The State requires that Water Conservation Plans be accompanied by a schedule for their implementation and that plans are reviewed and updated at least every seven years. This Plan is designed to cover the 2009 – 2015 timeframe. The Water Conservation Plan is not meant to be a static document, but rather a guidance document which enables NTM to meet its water savings goals.

Table 16 lists each Plan component with a schedule for implementation and data that will be collected to assist with Program monitoring and evaluation. Begin dates are when initial actions toward implementing each program are scheduled to be initiated. Programs may not be available to District customers until the following year if program start up requires significant time. Additionally, the implementation schedule may be adjusted in response to the availability of staff and financial resources. District staff will be responsible for implementing programs and collecting and evaluating data, with assistance from other organizations and/or consultants as appropriate and necessary.

Water conservation activities will be monitored and evaluated on an ongoing basis. Costs and water savings data will be collected, along with customer feedback where possible. The District may make modifications to programs as a result of data collected. Changes in technology, State and Federal laws, public perceptions, climatic conditions, and financial considerations, among others, may also impact NTM's water conservation programs. In addition to ongoing program management and evaluation, NTM staff will review the Plan and progress made towards its goals on a quarterly basis during one of their monthly staff meetings. Results will also be presented to the Board of Directors.

In addition to the individual conservation measure and program schedule provided in Table 16, the District has developed the following overall program schedule:

Table 15: Water Conservation Program Schedule

Year	Action
2009 - 2010	Develop and initiate conservation programs and measures
2010 – 2011	Evaluate pilot programs utilizing data collected and participant feedback. If program will be continued, make modifications as appropriate and implement fully.
2009 – 2015	Ongoing program management, data collection, and modification (if appropriate)
2014 - 2015	Develop Updated Water Conservation Plan for 2016 – 2022 period

Table 16: Water Conservation Plan Implementation Schedule and Data Collection Requirements

Water Conservation Measure/Program	Begin Date[1]	End Date	Required Actions	Data to be Collected
Free Water Conservation Kits	Existing	Ongoing	• 2009: Review and possibly update kit contents • 2009: Increase promotion of kits • Ongoing: Restock kits a necessary	• Number of kits provided • Customer feedback • Program costs and estimated water savings
Upgrade NTM Office and Treatment Plant Fixtures and Appliances	2008	2009	• 2009: Finish purchasing and installing	• Quantities, old and new fixture/appliance water use ratings • Metered use
Low Flow and High Efficiency Toilet Rebate Pilot Program	2009	2011	• 2009: Develop approved list of toilets and rebate form • 2010 – 2011: Promote and manage program • 2011: Review pilot program results and determine if will continue	• Number of rebates • Models and water use ratings for models purchased and replaced • Water use and estimated savings • Customer feedback • Program costs and staff time • Lessons learned/modifications made
Raw Water Irrigation	Existing	Ongoing	• Continue existing program	• Raw water use data
Waterwise Demonstration Garden	2009	Ongoing	• 2009: Draft landscaping and irrigation system designs • 2009: Solicit review from Denver Water and finalize • 2009/2010 Purchase plants and materials and construct garden • 2009/2010: Provide plant list and other info to Denver Water for signage • Ongoing: maintenance	• Metered water use • Start up costs • Estimated number of visitors • Visitor comments • Lessons learned/modifications made
New Development Soil Amendment Regulation	2009	Ongoing	• 2009-2010: Draft soil amendment regulation • 2010: Solicit Board of Directors approval • 2010: Develop informational materials for developers/builders • Ongoing: On-site inspections for compliance	• Start up costs • For each development: soil amended acreage, common areas total, number of residences, and residential areas total • Developer/builder feedback • Visual site inspection data: date, location, non-compliance issues, follow up • Metered water use and savings estimates

Table 16: Water Conservation Plan Implementation Schedule and Data Collection Requirements

Water Conservation Measure/Program	Begin Date[1]	End Date	Required Actions	Data to be Collected
New Development Common Area Landscape Regulations	2009	Ongoing	• 2009 – 2010: Draft public area landscape regulations and approved landscape and irrigation designers certifications/trainings • 2010: Solicit Board of Directors approval • 2010: Develop informational materials for developers/builders • Ongoing: Review landscape and irrigation plans • Ongoing: Track water use and require modifications if parcels exceed water budget.	• Start up costs • Copies of approved landscape and irrigation plans • Developer/builder feedback • Metered water use and savings estimates
Irrigation Audit Pilot Program	2010	2011	• 2009: Contract with Center for Resource Conservation (CRC) • 2009: Develop list of high water use customers targeted for audits and provide to CRC • 2010: Develop list of qualified professionals to make post-audit irrigation system/landscaping modifications • 2010: CRC will schedule and complete audits and provide report • 2011: Review pilot program results and determine if will continue.	• Number and type of audits with approximate acreage. • Reports from CRC including findings and recommended modifications • Customer feedback • Metered water use and savings estimates • Program costs and staff time
Water Efficient Landscaping and Irrigation Educational Materials	2009	Ongoing	• 2009: Compile list of materials and websites • 2009/2010: Purchase materials and add links to website • Ongoing: NTM Report educational series • Ongoing: Promote materials	• Copies of all printed materials sent out • Items checked out or reviewed and frequency • Customer feedback • Start up costs
Annual Landscape and Irrigation System Seminar	2010	Ongoing	• 2010: Work with Colorado WaterWise (or similar organization) to develop and organize seminar • Ongoing: Promote and give seminar annually	• Topics covered and number of participants • Program costs • Participant feedback • Lessons learned/modifications made
Parks and HOA Water Use Evaluation	2010	2011	• 2010-2011: Estimate water use based upon irrigated area estimates and metered data • 2010- 2011: Work with owners to identify potential savings areas	• Irrigated area, water use, water use per area • Contacts with owners • Changes to landscaping and irrigation systems • Water savings

Table 16: Water Conservation Plan Implementation Schedule and Data Collection Requirements

Water Conservation Measure/Program	Begin Date[1]	End Date	Required Actions	Data to be Collected
Greenhouse Industry Education	2009	Ongoing	• 2009-2010: Develop educational materials • 2010-2011: Make initial contact with Greenhouse managers and provide materials • 2010-2011: Possibly organize manager meeting and tour • Ongoing: Update materials as appropriate	• Copies of all materials • Facility tour/meeting dates, topics, attendees • Customer feedback • Modifications made • Water use and savings estimates • Start up costs
Smart Controller and Rain Sensor Rebate Pilot	2009	2011	• 2009-2010: Develop approved list of Controllers and Sensors and rebate form • 2010-2011: Promote rebates and manage program • 2011: Review pilot program results and determine if will continue	• Number of rebates and models purchased • water use and estimated savings • Customer feedback • Program costs and staff time • Lessons learned/modifications made
Industrial and Commercial Customer Education	2009	Ongoing	• 2090-2010: Develop educational materials • 2010: Contact and hand deliver materials to industrial customers • 2010: Mail materials to commercial customers. • 2011: Possibly organize tour of industrial customer facilities to showcase existing water conservation • Ongoing: Update materials as necessary	• Copies of all materials • Customer feedback • Facility tour dates, topics, attendees • Modifications made • Water use and savings estimates • Start up costs
Water Treatment Plant Backwash and Wastewater Reuse	Existing	Ongoing	• Continue existing program	• Metered raw water and recycled water data
New Development Closed Loop Cooling System Regulation	2009	Ongoing	• 2009 – 2010: Draft regulation • 2010: Solicit Board of Directors approval • 2010: Develop informational materials for developers/builders • Ongoing: Track applicable developments for required proof of closed loop or air cooled system purchase and installation.	• Start up costs • Copies of required paperwork • Developer/builder feedback • Metered water use and savings estimates
Meter Replacement Program	Existing	Ongoing	• Continue existing program	• Meter replacement and recalibration data
System Maintenance, Leak Detection and Repair	Existing	Ongoing	• Continue existing program	• Problem, location and maintenance/repair work completed • Water savings estimates

Table 16: Water Conservation Plan Implementation Schedule and Data Collection Requirements

Water Conservation Measure/Program	Begin Date[1]	End Date	Required Actions	Data to be Collected
Individual Account Leak Detection Program	Existing	Ongoing	• Continue existing program	• Issues and how addressed • Water savings estimates
Sonic Leak Detection Program	2009	Ongoing	• 2009-2010: Set up contract with leak detection contractor and develop inspection schedule • Review Systemwide Water Audit results when complete to determine if leak detection program can be scaled back. • Ongoing: system inspection and repair	• Inspection locations, dates and findings • Maintenance/repairs made as a result • Water savings estimates • Program costs
Systemwide Water Audit	2010	2012	• 2010-2011: Complete AWWA Water Audit Software • 2011-2012: Make system repairs and modifications as necessary	• Audit findings and recommendations • Maintenance/repairs/modifications made as a result • Water savings estimates
High Water Use Customer Assistance	Existing	Ongoing	• Continue existing program	• Issues and how addressed • Water savings estimates • Customer feedback
Increased Water Conservation and Water Use Education	2009	Ongoing	• 2009-2010: Improve upon existing program • 2009-2010: Develop additional education materials • Ongoing: Increase promotion of materials	• Copies of all materials sent out • Customer feedback
Water Meter Monitor Loan Program	2009	Ongoing	• 2009-2010: Develop list of highest water users • Ongoing: Promote Water Meter Monitor Loan program among high water users	• List of customers meters loaned to • Customer feedback • Water use and savings estimates
Educational School Program	2009	Ongoing	• 2009 – 2010: With schools, select program for implementation • 2009 – 2010: Contract with program provider • Ongoing: Implement program in schools	• Program dates, number of students/teachers participating, quantities and contents of retrofit kits (if applicable) • Program costs • Project report including water use data (pre- and post-retrofit) (if applicable) • Participant feedback
2008 Tiered Rate Structure Modifications and Annual Evaluation	2009	Ongoing	• 2008: Review and modify rates • 2009: New rates implemented • Ongoing: Review rates annually	• Water use data • Annual Revenue • Rates and fee information
Billing System Software Upgrade	2009	Ongoing	• Purchase and install software upgrade • Ongoing: utilize to track and educate customers about their water use	• Copies of all educational billings

Table 16: Water Conservation Plan Implementation Schedule and Data Collection Requirements

Water Conservation Measure/Program	Begin Date[1]	End Date	Required Actions	Data to be Collected
Monthly Billing for Park and HOA Accounts	2010	Ongoing	• 2010: Move customers to monthly billing schedule and inform customers	• Customer classification in billing database • Water use data • Water savings estimates • Customer feedback
High Volume (Monthly) Customer Criteria	2009	Ongoing	• 2009: Develop criteria • 2009: Update customer classifications and inform customers	• Customer classification in billing database
Waste of Water Regulations	Existing/ 2009	Ongoing	• 2009: Solicit Board approval of change from summer to year round regulations • Ongoing: Enforce regulations	• Violations and enforcement activities
Association Memberships	Existing	Ongoing	• Ongoing: Maintain memberships	• List of memberships
Drought Mitigation Measures	Existing	Ongoing	• 2009 – 2010: Evaluate need for Drought Response Plan • Ongoing: Update drought policies as necessary • Ongoing: Enforce during drought periods	• Dates enforced • Water use during drought period
Collaborative Water Conservation Relationships	2009	Ongoing	• Ongoing: Maintain and develop relationships	• Document assistance provided and collaborative projects

[1] Begin date is when initial actions toward implementing the program will be initiated. The program may not be available to District customers until the following year if program start up requires significant time.

9 Public Participation

The support and involvement of NTM's customers is critical to the success of this Water Conservation Plan. To solicit their input on the conservation programs and measures that the District will implement over the next seven years, public input was solicited during a public comment period[3] which occurred from May 1 through May 31, 2009. A link to the draft Plan was posted on NTM's website (www.ntmwater.org). Notices of the Plan's availability and the public comment period were included in all bills, on the main page of the District's website, and in the Golden Transcript weekly newspaper. Copies of all notices, comments and NTM responses are included in Attachment D. Comments on the draft Water Conservation Plan were requested to be received by June 1, 2009. Comments could be delivered by phone, mail, or email or in person (by June 1, 2009) to:

Bart Sperry
Assistant Manager/Engineer
North Table Mountain Water and Sanitation District
14806 West 52nd Avenue
Golden, CO 80403
(303) 279-2854
conservation@ntmwater.org

Draft and Final Plans were also submitted to NTM's Board of Directors for their input. The Board passed a resolution adopting the Final Plan on June 9, 2009 (Attachment E).

10 References

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11 Attachments

Attachment A – NTM Billing Cycle Areas

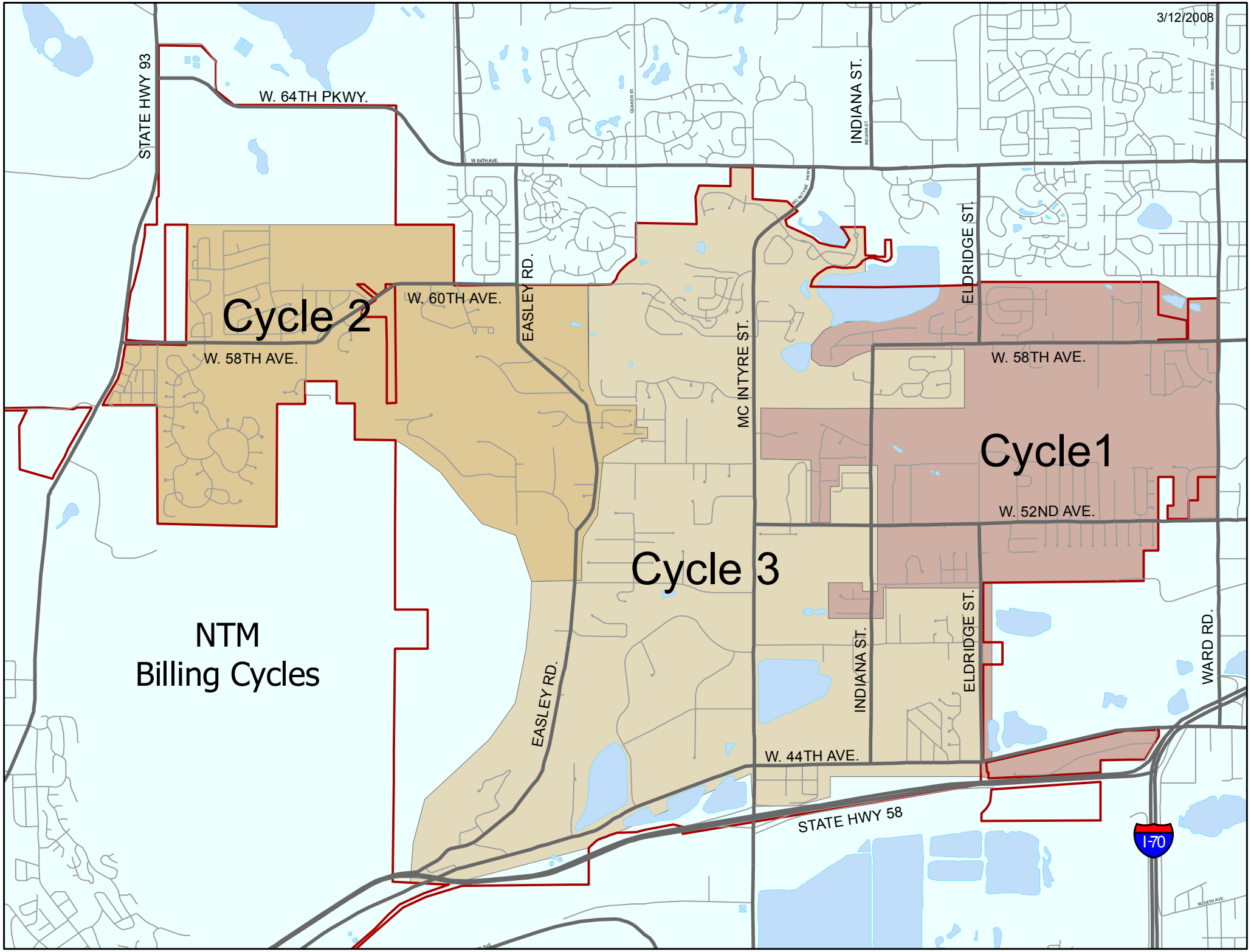
Attachment B – Water Conservation Savings Details

Attachment C – Board of Directors 30 Day Public Review Period Resolution

Attachment D – Notices of Public Review Period, Comments Received, Responses

Attachment E – Board of Director's Resolution Adopting 2009 – 2015 Plan

Attachment A
Billing Cycle Areas


3/12/2008
STATE HWY 93
W. 64TH PKWY.
INDIANA ST.
W. 64TH AVE.
QUAKER ST.
MC INTYRE PKWY.
ELDRIDGE ST.
WARD RD.
EASLEY RD.
W. 60TH AVE.
Cycle 2
W. 58TH AVE.
MC INTYRE ST.
W. 58TH AVE.
Cycle1
W. 52ND AVE.
Cycle 3
NTM
Billing Cycles
EASLEY RD.
INDIANA ST.
ELDRIDGE ST.
WARD RD.
W. 44TH AVE.
STATE HWY 58
I-70
W. 38TH AVE.

Attachment B
Water Conservation Savings Details

This attachment provides a narrative of how water savings were calculated followed by annual water savings (Table A-1). Water savings are estimates based upon available data, specific to NTM's service area and customers where possible. Many of the water savings estimates below are preliminary. Based upon the assumptions used, the District believes the savings it has estimated are realistic and may be on the conservative (low) side. As programs are implemented, the District will collect data to better quantify water savings.

Annual savings described below are the savings associated with the first year of program implementation. If it is an existing program, annual savings do not include savings associated with previous years. Note that as time goes by total annual savings will increase due to previous years' implementation. The average number of people per household in NTM's service area is estimated to be 2.62. Note that the source documents for Attachment B references are provided in the "References" section of the main body of North Table Mountain's Water Conservation Plan.

The following unit abbreviations are used in the descriptions below:

gal = gallons
min = minute
yr = year
/ = per (example: gal/yr means gallons per year)
ft2 = square foot
yd3 = cubic yard

Additional Plan Savings

To capture the savings that may result from many of the less qualitative conservation measures and programs, a 5% savings of total water distributed is assumed and included in total Water Conservation Plan savings. This would result in a total annual savings of 44,829,674 gallons in 2010 based upon a demand estimated at 912,097,038 gallons. 5% is believed to be a realistic estimate and was selected to help ensure that water savings resulting from other measures (as described in this attachment) are not double counted. Savings from all other programs in this Plan were first subtracted and then water savings of 5% estimated based upon remaining demands. "Additional Savings" are provided at the bottoms of Table 12 and Table B-1. Water conservation measures and programs for which it is difficult to quantify savings at the present time, but which are likely to result in savings include:

- Waterwise Demonstration Garden;
- Water Efficient Landscaping and Irrigation Educational Materials;
- Parks and HOA Water Use Evaluation;
- New Development Closed Loop Cooling System Regulation;
- Meter Replacement Program;
- System Maintenance, Leak Detection and Repair;
- Individual Account Leak Detection Program;
- Systemwide Water Audit;
- High Water Use Customer Assistance;
- Increased Water Conservation and Water Use Education;
- Educational Water Bills;

- Tiered Rate Structure Modifications and Annual Evaluation;
- Billing System Software Upgrade:
- Monthly Billing for Park and HOA Accounts;
- High Volume Customer Criteria;
- Waste of Water Regulations;
- Association Memberships; and
- Collaborative Water Conservation Relationships.

Water Savings Estimates for Specific Programs and Measures

Free Water Conservation Kits
NTM's conservation kits include 1 toilet displacement bag, 1 shower and 1 faucet restrictor, and toilet leak detection dye tablets. This District assumes that 40 kits will used by customers annually.

Each toilet bag displaces 0.5 gallons. Assuming an average of 5.1 flushes/person/day (Vickers, 2001) and 2.62 people/home, this results in a savings of 2,440 gal/home/yr. For 40 bags, the total annual savings will be 97,543 gallons.

Shower restrictors decrease maximum flow to 2.5 gal/min. Assuming 4 gal/min was being used before restrictor was installed, for one 8 minute shower/person/day (Aquacraft, 2006) this saves 12 gallons. For 2.62 people per home, 40 kits would result in a total annual savings of 459,024 gallons.

Sink restrictors decrease maximum flow to 1.5 gal/min. Assuming 2.5 gal/min was being used before restrictor was installed, for 8.1 min/person/day (Vickers, 2001), this results in a savings of 8.1 gal/person/day. For 2.62 people/home, 40 kits would result in a total annual savings of 309,841 gallons.

Toilet dye tablets: Assuming 5% of toilets in U.S. homes leak and that the average leaks 180 gal/day (estimated based upon data provided in Vickers, 2001), two toilets can be checked with each kit so 4 of the 100 toilets tested are estimated to leak. Assuming these are fixed, this would result in an annual savings of 262,800 gallons.

Total annual savings resulting from 40 kits (assuming only 5% of toilets tested need to be fixed for leaks) is 1,129,208 gallons.

Upgrade NTM Office and Treatment Plant Fixtures and Appliances
Three 1.6 gal/flush toilets were recently installed in NTM's office for a savings of 20 gal/toilet per day (Vickers, 2001). Two 1.6 gal/flush toilets installed in treatment plant for a savings of 16 gal/toilet/day (Vickers, 2001). For 260 work days in a year, this will result in an annual savings of 24,440 gal/yr.

A 1.0 gal/min bathroom aerator uses 1.5 gal/min less than an average bathroom faucet with a flow rate of 2.5 gal/min. For an average length of use of 8.1 min/person/work day (Vickers, 2001), an aerator saves 12.15 gal/person/day. For NTM's 4 sinks (assuming 5 people use each/workday on average), this would result in a total annual savings of 63,180 gallons.

A 1.5 gal/min kitchen aerator uses 1.0 gal/min less than an average kitchen faucet with a flow rate of 2.5 gal/min. For an average length of use of 8.1 min/person/workday (Vickers, 2001) an

aerator saves 8.1 gal/person/day. For NTM's 2 kitchen aerators (assuming 10 people use each/workday on average), this would result in a total annual savings of 42,120 gallons. Note that actual savings may be somewhat less as kitchen water use is frequently volume dependent (for example filling a teapot with water).

The 2.0 gal/min showerhead uses 2.0 gal/min less than an average showerhead with a flow rate of 4.0 gal/min. For an average shower length of 8 minutes (Aquacraft, 2006) the low flow showerhead uses 16 gallons less. Assuming NTM's shower two showers are each used once a week, this would result in a total annual savings of 1,664 gallons.

Total annual savings resulting from NTM's retrofit are 131,404 gallons.

Toilet Rebate Pilot Program (2 year pilot)
Low flow toilets use 1.6 gal/flush and high efficiency (HE) toilets use 1.3 gal/flush or less. Estimated water savings per 1.6 gallon toilet installed is 12.2 gal/person/day compared to a 4 gal/flush toilet (Vickers, 2001). Estimated water savings per HE toilet installed is 13.75 gal/person/day compared to a 4 gal/flush toilet (estimated based upon an interpolation of data provided in Vickers, 2001). Assuming an equal number of rebates (50 low flow and 50 HE) and NTMs service area average of 2.62 people/home, the total annual savings resulting from this program will be 1,240,800 gallons. In calculating total conservation savings in its Plan, NTM assumes that half of rebates will be made in year one of the program and half in year two.

Outdoor Watering Schedule
This project is a component of the "Waste of Water Regulations". An evaluation of gallons used outdoors for each residence over the 2000 through 2007 period shows that outdoor use has decreased on average. 2006 through 2007 average outdoor use per residential account was 83,086 gal/yr while 2000 outdoor use was 87,923 gallons. The difference in outdoor residential water use between 2000 and the 2006/2007 average shows an annual savings in outdoor use of 4,836 gal/home. For 3,903 residential accounts (2009) this results in an annual savings of 18,878,636 gallons. While all of these savings in outdoor water use are attributed to NTM's outdoor watering schedule for accounting purposes in this Plan, the decrease is likely due to a variety of influences including public education.

Raw Water Irrigation
This program decreases demands on treated water but does not decrease overall water use.

Waterwise Demonstration Garden
It is difficult to quantify water savings resulting from this educational program. Estimated savings from this program are included in "Additional Plan Savings".

New Development Soil Amendment Regulation
Properly amended soil is considered a key component to ensuring healthy landscapes and decreasing irrigation water needs. GreenCO's Executive Director has stated that soil amendments are key to outdoor water conservation (GreenCO, personal communication). However water savings resulting from soil amendments have not been well established. According to Denver Water (Denver Water, 2008), soil amendments applied in conjunction with applying low-water plants and trees and customer education, can decrease outdoor water use by 30 to 40 percent. According to the CSU Extension Service (CSU, 2007) "Proper irrigation practices can lead to a 30 to 80 percent water savings around the home grounds." This Plan estimates a 20% decrease in outdoor residential use for new development resulting from the soil amendment regulation. This is an average savings of 16,617 gal/yr/residence. Applying

this to the 156 new residential accounts expected in 2010, this would result in a total annual savings of 2,594,615 gallons. New development common area savings resulting from soil amendments are included under "New Development Public Area Landscape Regulations" below so are not included in the savings presented here. These calculations only consider residential lots. Additional savings are likely to been as a result of commercial and industrial customers' irrigated areas.

New Development Public Area Landscape Regulations

Jefferson County Land Development Regulations require that 10.5 acres be set aside for parks – including HOA common areas - for every 1,000 people (Jeffco, 2005). If it is assumed that 60% of park areas are irrigated, this results in a requirement of 6.3 acres of irrigated park area for every 1,000 people. An analysis of water use for several existing HOAs in NTM's service area found that average water use is 23.2 gal/ft2/yr for irrigated public areas. While NTM will develop the specifics of the landscaping regulation later this year, the preliminary concept entails limiting supplemental (in additional to natural precipitation) irrigation requirements to a maximum of 16 gal/ft2/yr. This would result in a savings of 7.2 gal/ft2/yr. Assuming an increase of 409 people, as is anticipated for 2010, this would result in an additional 4.3 acres of parks, 2.6 acres (or 112,241 ft2) of which would be irrigated (assuming 60% of park area is irrigated). Applying a savings of 7.2 gal/ft2 to this area would result in an annual savings of 808,306 gallons.

Irrigation Audit Pilot Program (1 year pilot)

5 residential and 3 large (most likely HOA) audits will be completed. According to the CSU Extension Service (CSU, 2007) "Proper irrigation practices can lead to a 30 to 80 percent water savings around the home grounds." If each audited residence decreases their (2006 -2007 average) outdoor water use by just 10%, based upon average residential outdoor use, that will result in an annual savings of 8,309 gal/household. For 5 participants, this totals 41,543 gal/year water savings. Actual residential savings may be higher because customers using the most outdoor use will be targeted for audits. On average HOA irrigation accounts use 1,326,000 gallons/account/year (2006 – 2007 average). If audited accounts decrease their total water use by 10%, this would result in an annual savings of 132,572 gallons. For 5 audits, the total savings would be 662,858 gallons. NTM believes this is a reasonable estimate knowing that several HOAs have been concerned about their water use and are interested in improving their systems. Total annual savings for the rebate pilot program are estimated at 704,401gallons.

Water Efficient Landscaping and Irrigation Educational Materials

It is difficult to quantify water savings resulting from this educational program. Estimated savings from this program are included in "Additional Plan Savings".

Annual Landscape and Irrigation System Seminar

It is difficult to quantify water savings resulting from this program. If it is assumed that each participant decreases their outdoor water use by 10% as a result of attending the seminar (based upon 2006-2007 average outdoor use of 83,086 gal/home) that will result in an annual savings of 8,309 gal/household. For 10 participants annually, this totals 83,086 gal/year water savings. The 10% estimate is believed to be realistic in that participants who are interested enough to attend the seminar will make water savings modifications to their landscaping, irrigation systems and scheduling. Actual savings could be up to 30 – 80% according to the CSU Extension Service (CSU, 2007).

Parks and HOA Water Use Evaluation
Program will initially involve further investigation into parks and HOA water use. NTM will work then work with park and HOA managers to decrease their water use. Large irrigated area educational materials will be developed and provided. Potential water savings are difficult to quantify at this time.

Greenhouse Industry Education
This program will initially involve further investigation into greenhouse water use. Educational materials will also be developed and provided and NTM will facilitate information sharing between greenhouses in its service area. Water savings are difficult to quantify at this time. If it is assumed that this program will result in a 1% savings in water use that would result in an annual savings of 238,345 gallons based upon 2006 through 2007 average annual use of 2,383,450 gallons.

Smart Controller and Rain Sensor Rebate Pilot
Rebates for 20 rain sensors (up to $25) and $75 rebates for 10 smart controllers will be made during the pilot period. Smart controllers can decrease outdoor water use by over 50%, with 20-25% representing more average savings (Aquacraft, 2003; Hunt T. et al., 2001; SBCWS et al. 2003). Assuming that rebates are made to residential customers and that the use of a smart controller results in a 20% savings in outdoor water use, average outdoor residential water savings per rebate would equal 16,617 gal/yr. For 10 controllers, annual savings would be 166,173 gallons. Assuming a 3% decrease in outdoor water use by controllers with a rain sensor (Vickers, 2001), each rebate would result in an annual savings of 2,493 gal/home. For 20 rain sensors, the savings would be 49,852 gallons. Total savings from this rebate program are estimated at 216,024 gal/yr. In calculating total conservation savings in its Plan, NTM assumes that half of rebates will be made in year one of the program and half in year two.

Existing Industrial Customer Efforts
Existing industrial customer water conservation efforts save an estimated total of 111,630,333 gallons per year based upon historical metered water use data.

Industrial and Commercial Customer Targeted Education
Potential water savings resulting from conservation measures in the Industrial, commercial and institutional (ICI) sector range from 15 to 50% with 15 to 35% being typical (Vickers, 2001). Educational materials geared specifically towards commercial and industrial customers will be developed and provided to each account. Because the program initially will not involve audits but rather will rely on education and potential cost savings to motivate customers, a 15% decrease in water use is assumed to represent some level of savings. Excluding water use for the two industrial customers who have already implemented aggressive programs, remaining commercial and industrial water use in 2007 was 14,492,333 gallons. A 15% decrease would result in an annual savings of 2,173,850 gallons annually. This value is held constant for 2009 through 2015 in savings estimates. Two industrial customers in NTM's service area realized 60 – 80% savings through conservation. Based upon these actual savings, the District believes 10% savings is a realistic estimate. This program may be expanded to include audits after initial evaluation is completed.

Water Treatment Plant Backwash and Wastewater Reuse
Backwash and reuse water is metered. Historically water recycled by the District has been around 11.4% of total water delivered. In 2007, approximately 90,000,000 gallons was recycled by the District. Based upon 2009 demand estimates, 99,979,868 gallons will be

recycled. 2009 – 2015 recycled water estimates are calculated as 11.4% of estimated demands.

Meter Replacement Program
It is difficult to quantify water savings resulting from this program at the present time. Estimated savings from this program are included in "Additional Plan Savings".

System Maintenance, Leak Detection and Repair
It is difficult to quantify water savings resulting from this program at the present time. Estimated savings from this program are included in "Additional Plan Savings".

Individual Account Leak Detection Program
It is difficult to quantify water savings resulting from this program at the present time. Estimated savings from this program are included in "Additional Plan Savings".

Sonic Leak Detection Program
It is difficult to quantify water savings resulting from this program at this time. Additional data collection will help with this in the future. According to the State of California's Department of Water Resources (California DWR, 2009) "A detailed water audit and leak detection program of 47 California water utilities found an average loss of 10 percent and a range of 30 percent to less than 5 percent of the total water supplied by the utilities." In the United Kingdom (UK) (which has been on the forefront of collecting leak detection and repair data) for the 2002 through 2003 period, leakage was estimated at an average of 23 percent of total water produced (AWWA, 2006). Because NTM has historically repaired only obvious leaks, potential savings for a proactive leak detection program are unknown. For preliminary estimates, if it is assumed that NTM detecting and repairing leaks will decrease annual Unaccounted For water (2006 – 2007 average) by 5%, this program will result in an annual savings of approximately 2,811,374 gallons. This value is assumed to be a constant in calculating annual savings. It may be a conservative estimate as it is much lower than average percent of water lost to leaks and is based on Unaccounted For water only rather than total water distributed. The value also was not adjusted up over time to account for increases in Unaccounted For water that are likely to occur as a result of increased water demands.

Systemwide Water Audit
It is difficult to quantify water savings resulting from this program at this time. Additional data collection will help with this in the future. A portion of potential savings are included under the "Expanded Leak Detection Program".

High Water Use Customer Assistance
It is difficult to quantify water savings resulting from this program at this time. Estimated savings from this program are included in "Additional Plan Savings".

Increased Water Conservation and Water Use Education
It is difficult to quantify water savings resulting from this program. Estimated savings from this program are included in "Additional Plan Savings".

Educational Water Bills
It is difficult to quantify water savings resulting from this program. Estimated savings from this program are included in "Additional Plan Savings".

Water Meter Monitor Loan Program

Water meter monitors are used primarily by residential customers. Customers who borrow the meter are likely to be somewhat interested in learning about and making modifications to their behavior and/or indoor fixtures and appliances and/or outdoor water use. Assuming total household water use is decreased by 3% by these customers, this will result in an annual savings of 4,148 gallons. If 10 customers borrow the meter annually, this would equal a water savings of 41,480 gal/yr.

Educational School Program

Education School Program water savings calculations assume the Waterwise school program will be selected. Each of the students involved in this program will receive a retrofit kit which includes, among other items, low flow kitchen aerator, bathroom aerator, and showerhead.

The 2.0 gal/min showerhead uses 2.0 gal/min less than an average showerhead with a flow rate of 4.0 gal/min. For an average shower length of 8 minutes (Vickers, 2001), the low flow showerhead uses 16 gallons less. For NTM's average household size of 2.62 people, this would result in a total annual savings of 15,300 gallons per household.

The 1.5 gal/min kitchen aerator uses 1.0 gal/min less than an average kitchen faucet with a flow rate of 2.5 gal/min. For an average length of use of 8.1 min/person/day (Vickers, 2001), the aerators saves 8.1 gal/person/day. For NTM's average household size of 2.62 people, this would result in a total annual savings of 7,746 gallons per household.

The 1.0 gal/min bathroom aerator uses 1.5 gal/min less than an average bathroom faucet with a flow rate of 2.5 gal/min. For an average length of use of 8.1 min/person/day, the aerators saves 12.15 gal/person/day. For NTM's average household size of 2.62 people, this would result in a total annual savings of 11,619 gallons per household.

The total savings for one kit (excluding toilet dye tablets savings) are 34,666 gal/yr. For the 100 students who will participants annually, assuming that 55% of kits are installed and left in place, this would result in a total annual savings of 1,906,630 gallons.

The retrofit kit also includes toilet leak detection dye tablets. Two toilets can be checked with each kit. Assuming 55% of kits are used, for 100 kits this will result in 110 toilets being checked. Assuming 5% of toilets in U.S. homes leak and that the average leaks 180 gal/day (estimated based upon data provided in Vickers, 2001), an estimated 5.5 toilets will leak. Fixing these will result in an annual savings of 361,350 gallons.

Total annual savings resulting from 40 kits (assuming only 5% of toilets tested need to be fixed for leaks) is 2,267,973 gallons.

These savings represent only the savings resulting from the retrofit. Behavioral or outdoor water use savings that result are not included.

2008 Tiered Rate Structure Modifications and Annual Evaluation

It is difficult to quantify water savings resulting from this program at this time. Estimated savings from this program are included in "Additional Plan Savings".

Billing System Software Upgrade
It is difficult to quantify water savings resulting from this program at this time. Estimated savings from this program are included in “Additional Plan Savings”.

Monthly Billing for Park and HOA Accounts
It is difficult to quantify water savings resulting from this program at this time. Estimated savings from this program are included in “Additional Plan Savings”.

High Volume (Monthly) Customer Criteria
It is difficult to quantify water savings resulting from this program at this time. Estimated savings from this program are included in “Additional Plan Savings”.

Waste of Water Regulations
It is difficult to quantify water savings resulting from this program. A portion of savings is estimated above under “Outdoor Watering Schedule”. Additional estimated savings from this program are included in “Additional Plan Savings”.

Association Memberships
It is difficult to quantify water savings resulting from this program. Estimated savings from this program are included in “Additional Plan Savings”.

Drought Mitigation Measures
Overall systemwide savings resulting from drought mitigation measures can be quantified. However these are invoked only during periods of drought and are not ongoing savings resulting from NTM’s water conservation programs so are not included in this Plan.

Collaborative Water Conservation Relationships
It is difficult to quantify water savings resulting from this program. Estimated savings from this program are included in “Additional Plan Savings”.

Table B-1: Annual and Total 2009 – 2105 Water Savings by Conservation Program

	Annual Water Savings (gallons)							
Water Conservation Program	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total 2009 through 2015**
Water-efficient fixtures and appliances, including toilets, urinals, showerheads and faucets								
Free Water Conservation Kits	1,129,208	2,258,416	3,387,623	4,516,831	5,646,039	6,775,247	7,904,455	31,617,818
Upgrade NTM Office and Treatment Plant Fixtures and Appliances	131,404	131,404	131,404	131,404	131,404	131,404	131,404	919,828
Toilet Rebate Pilot Program (2 year pilot)	620,400	1,240,799	1,240,799	1,240,799	1,240,799	1,240,799	1,240,799	8,065,195
Low water-use landscapes, drought-resistant vegetation, removal of phreatophytes and efficient irrigation								
Outdoor Watering Schedule	18,878,636	19,633,782	20,419,133	21,235,898	22,085,334	22,968,748	23,887,498	149,109,029
Raw Water Irrigation								
Waterwise Demonstration Garden								
New Development Soil Amendment Regulation		2,594,615	5,293,015	8,099,351	11,017,940	14,053,273	17,210,019	58,268,212
New Development Common Area Landscape Regulations		808,306	1,648,944	2,523,208	3,432,442	4,378,046	5,361,473	18,152,419
Irrigation Audit Pilot Program (1 year pilot)		704,401	704,401	704,401	704,401	704,401	704,401	4,226,405
Water Efficient Landscaping and Irrigation Educational Materials								
Annual Landscape and Irrigation System Seminar		83,086	166,173	249,259	332,345	415,431	498,518	1,744,812
Parks and HOA Water Use Evaluation								
Greenhouse Industry Education		238,345	238,345	238,345	238,345	238,345	238,345	1,430,070
Smart Controller and Rain Sensor Rebate Pilot (2 year)		108,012	216,024	216,024	216,024	216,024	216,024	1,188,134
Water-efficient industrial and commercial water-using processes								
Existing Customer Efforts	111,630,333	111,630,333	111,630,333	111,630,333	111,630,333	111,630,333	111,630,333	781,412,333
Industrial and Commercial Customer Education		2,173,850	2,173,850	2,173,850	2,173,850	2,173,850	2,173,850	13,043,100
Water reuse systems								
Water Treatment Plant Backwash and Wastewater Reuse	99,979,868	103,979,062	108,138,225	112,463,754	116,962,304	121,640,796	126,506,428	789,670,436
New Development Closed Loop Cooling System Regulation								

Table B-1: Annual and Total 2009 – 2105 Water Savings by Conservation Program

	Annual Water Savings (gallons)							
Water Conservation Program	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total 2009 through 2015**
Distribution system leak identification and repair								
Meter Replacement Program								
System Maintenance, Leak Detection and Repair								
Individual Account Leak Detection Program								
Sonic Leak Detection Program	2,811,374	2,811,374	2,811,374	2,811,374	2,811,374	2,811,374	2,811,374	19,679,617
Systemwide Water Audit								
Dissemination of information regarding water use efficiency measures, including by public education, customer water audits and water-saving demonstrations								
High Water Use Customer Assistance								
Increased Water Conservation and Water Use Education								
Water Meter Monitor Loan Program	41,485	82,970	124,455	165,939	207,424	248,909	290,394	1,161,576
Educational School Program[5]		2,267,973	4,535,946	6,803,919	9,071,893	11,339,866	13,607,839	47,627,436
Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner								
2008 Tiered Rate Structure Modifications and Annual Evaluation								
Billing System Software Upgrade								
Monthly Billing for Park and HOA Accounts								
High Volume (Monthly) Customer Criteria								
Regulatory measures designed to encourage water conservation								
Waste of Water Regulations								
Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures								
Included under other headings								
Other water management activities								
Association Memberships								
Drought Mitigation Measures								
Collaborative Water Conservation Relationships								
Additional Savings								
Reflects Savings for Programs that are Difficult to Quantify	43,614,126	44,829,674	46,295,428	47,832,473	49,438,042	51,114,878	52,865,831	335,990,452
TOTAL WATER SAVINGS	278,836,833	295,576,403	309,155,473	323,037,163	337,340,294	352,081,723	367,278,984	2,263,306,872

Attachment C
Board of Directors
30-Day Public Comment Period Resolution

RECORD OF PROCEEDINGS
February 12, 2008

The Board of Directors met at the District office, February 12, 2008, at 6:00 p.m. Present were Board Members Paula Corbin, Michael Ellis, Kathryn Jensen, William Karlin, Phil Wathier, District Engineer/Manager Rick Jeschke, Assistant Manager Bart Sperry, and Attorney Rick Fendel. Paula Corbin moved to approve the minutes of January 22, 2008, and the District Operations Report of February 8, 2008. Michael Ellis seconded, motion passed.

ANNEXATION PUBLIC HEARING - There was no public input to the annexation of CDOT property at 44th Avenue and Zang Street. Michael Ellis moved to approve the Inclusion of Property agreement as presented. Phil Wathier seconded, motion passed.

WATER CONSERVATION PLAN 30 DAY REVIEW - Phil Wathier moved to approve the resolution to abbreviate the 90-day public comment period for the water conservation plan to 30-days as presented. Paula Corbin seconded, motion passed.

ELECTION - The Board engaged in general discussion regarding the 2008 election for Board members.

OFFICE REMODEL - Michael Ellis moved to accept the bid of $42,738 from CG Construction Inc. for the office remodel. William Karlin seconded, motion passed. William Karlin moved to approve the expenditure of up to $30,000 for District staff to complete the office remodel for furniture, cabinets, shelves, HVAC, and other necessary items. Phil Wathier seconded, motion passed.

BILLS - The following bills were presented for approval:

Customer billing information has been removed for privacy reasons.

Customer billing information has been removed for privacy reasons.

Paula Corbin moved to approve the bills. Phil Wathier seconded, motion passed.

Meeting was adjourned at 6:38 p.m.

APPROVED

Paula Corbin

Kathryn Jensen

Michael D Ellis

Respectfully submitted,

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE NORTH TABLE MOUNTAIN WATER AND SANITATION DISTRICT ESTABLISHING A PUBLIC HEARING PROCESS FOR MAITERS INVOLVING ADOPTION OF WATER CONSERVATION AND OTHER WATER
PLANS

WHEREAS, the Board of Directors of the North Table Mountain Water and Sanitation District desires to adopt a public hearing process which will appropriately consider the water conservation plan so that reasonable opportunities will be available for receipt and consideration of public comment.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE NORTH TABLE MOUNTAIN WATER AND SANITATION DISTRICT, AS FOLLOWS:

Section 1. In all matters involving the creation, adoption and/or implementation of a water conservation plan, the staff of the District is directed to post a copy, and to place a notice of any scheduled public hearing on such plan, on the Districts' website no less than 30 days prior to the date of such scheduled public hearing.

Section 2. During the 30 day notice period identified in Section 1 of this Resolution, the District shall maintain a copy of the proposed plan in the District office available for review by any member of the general public during regular District business hours.

Section 3. Any property owner or resident of the North Table Mountain Water and Sanitation District may submit written comments relating to the proposed plan during the 30 day review period. In addition, any such resident or owner may appear at the scheduled public hearing and provide verbal comments relating to such plan.

Section 4. Any written or verbal comments received either within the 30 day notice period or at the public hearing shall be considered by the Board of Directors in making its decision as to adoption of such proposed plan.

Attachment D
Public Notices, Comments, Responses

TELEPHONE 279-2854

NORTH TABLE MOUNTAIN WATER AND SANITATION DISTRICT

14806 WEST 52ND AVENUE. GOLDEN. COLORADO 80403-1228

NORTH TABLE MOUNTAIN REPORT – FEBRUARY 2009

WATER CONSERVATION PLAN

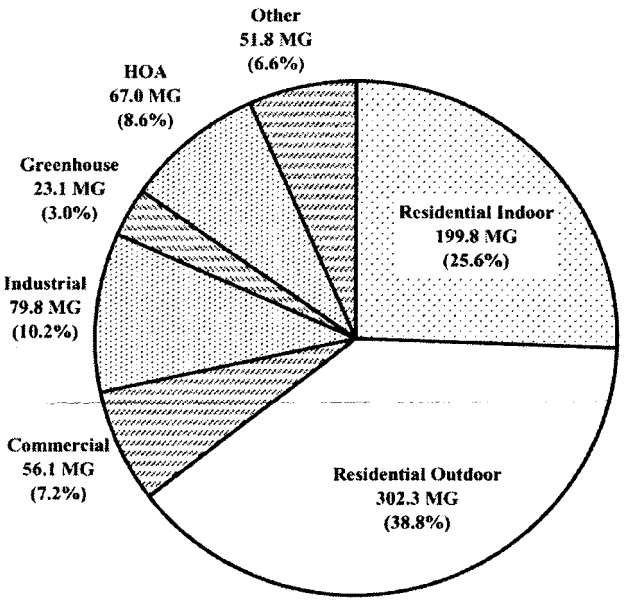
Water providers who annually supply over 650 million gallons of water to retail customers each year are required to submit a Water Conservation Plan (Plan) to the State Office of Water Conservation. Colorado's population is expected to grow to 7.8 million by 2035, a 65% increase from the 2005 population estimate of 4.7 million. Most of the state's growth is expected to occur along the Front Range. This is leading to increased concerns about the availability of water supplies as well as costs. Water conservation is extremely important to preserve our water supply. NTM recognizes that a well developed Plan will help manage current demands and ensure the long-term adequacy of our water supplies.

We would like to hear from you regarding our Plan. A draft of the Plan will be available for review at NTM's office throughout the month of May and will be posted at www.ntmwater.org. Or please share your ideas now by e-mailing us at conservation@ntmwater.org or leaving a message at 303-279-2854 ext. 333.

The Plan will evaluate the following programs:

- Water efficient fixtures and appliances (toilets, showerheads, faucets, etc.);
- Water efficient landscaping and irrigation systems;
- Distribution system leak identification and repair;
- Education materials and large user water audits;
- Rate structures and billing system designed to encourage wise water use;
- Regulations designed to encourage water conservation.

NTM 2007 WATER USE



Note: "Other" water includes water lost to leaks, system flushing, sampling, new water main construction activities, evaporation at the treatment plant, etc. The national accepted average is about 12%.

REMINDER – PHARMACEUTICAL DISPOSAL

NTM recommends never putting any pharmaceuticals down the drain. The consensus is that modern lined and engineered landfills are better suited to contain expired and unused pharmaceuticals than the sanitary sewer system. The public should remove unused pharmaceuticals from their containers and smash them up so that they are unrecognizable. They should then be mixed with other wastes and put in the garbage. The goal is to make them unrecognizable and unable to be used if someone were to find them in the garbage.

Proof of Publication

THE GOLDEN TRANSCRIPT

110 N. Rubey Dr. Suite 120 Golden,Co 80403

1. I, C. Stauffer am the agent of **The Golden Transcript**, newspaper printed and published in the city of Golden, County of Jefferson and State of Colorado, and has personal knowledge of all the facts set forth in this affidavit;
2. That the said newspaper is printed and published once each week on Thursday, and that it has a general circulation in the City of Golden and in the County of Jefferson and elsewhere, delivered by carriers or transmitted by mail to each of the subscribers of said paper, according to the accustomed mode of business in this office;
3. That the said newspaper was established and has been printed and published in the said City of Golden and the County of Jefferson uninterrupted and continuously during a period of at least 52 consecutive weeks next prior to the first issue there-of containing said publication, a copy of which is hereto attached;
4. That the said newspaper is a weekly newspaper of general circulation, and is printed and published in whole or in part in the City of Golden and the said County of Jefferson in which said publication is required by law to be published, a copy of which is hereunto attached;
5. That the said newspaper is a weekly newspaper qualified to publish legal notices, as defined by the Statutes of the State of Colorado;
6. That said newspaper had, prior to January 1, 1936, and has ever since that date, been admitted to the United States mail as second class matter under the provisions of the Act of March 3, 1979, or any amendments thereto;
7. That the said annexed publication was published in the regular and entire edition of the **Golden Transcript**, a duly qualified weekly newspaper for that purpose, within the terms and means of the Statutes of the State of Colorado;
8. That the said annexed publication is a full, true, and correct copy of the original which was regularly published in each of the regular and entire issues of the **Golden Transcript**, a legally qualified paper for that purpose, once each week on the same day of each week, for 1 successive weeks, by
9. 1 insertions and that the first publication thereof was on the
10. 23rd of April 2009
11. the last publication was in the issue dated April 23, 2009

Subscribed and sworn to before me this 23rd day of April 2009.

By: C Stauffer

STATE OF COLORADO SS

Witness my hand and official seal

County of Jefferson

Barbara Kay Stolte

BARBARA KAY STOLTE
NOTARY PUBLIC
STATE OF COLORADO

My Commission Expires 10/12/2012

Notary Public

North Table Mountain Water and Sanitation District has developed a draft 2009-2015 Water Conservation Plan. The Plan includes a variety of conservation programs for its customers and encourages public input.

The plan can be found on the District's website at www.ntmwater.org or can be viewed at 14806 W 52nd Avenue, Golden Colorado 80403.

Published: April 23, 2009

Golden Transcript 06522540

THE FOLLOWING COMMENT WAS RECEIVED DURING THE PUBLIC REVIEW PERIOD

From: BRUCE ANGELA BLAKESLEE, FAIRMOUNT IMPROVEMENT ASSOCIATION BOARD OF DIRECTORS

I am writing in response to the NTMWS request for public review of the draft water conservation plan that was circulated this May, 2009. I have reviewed the plan in the capacity of a member of the Board of Directors of the Fairmount Improvement Association.

I found the plan to be quite comprehensive and reasonable in its assumptions and focus. As such I do not have any significant comment on the conclusions drawn in the report or the projects that have been adopted for implementation. I would like to note that the while the projections are based on past history and reasonable assumptions regarding supply and demand there is an element under the control of NTMWS that was perhaps correctly not addressed in the report, but of significant potential impact to the practical availability of water for the current residents.

The area of consideration is District policy regarding supply of water to future developments. In some ways the District is controlling this passively by tap fees and surcharges, but a more succinct policy that either discourages growth or encourages lower water demand growth would certainly improve the long range supply for current residents. I feel that this is a primary objective of the District and any other elected governmental body; representation of current constituents.

Thank you for the opportunity to comment and keep up the good work.

NTM RESPONSE

NTM thanks you and the Fairmount Improvement Association for your review of our draft Water Conservation Plan. Your input is important and we appreciate your support of the plan and our attempt to ensure that customers in our service area use water efficiently and wisely. In response to your comment about a potential District policy regarding growth in our service area, providing a reliable, high quality supply to our customers is a primary objective of our staff and our Board. The District currently has a reliable water supply, though Denver Water, which provides this supply via a contract, rightly requires us to share in shortages during times of drought. As growth continues in the District's service area, as in many Colorado communities, developers will be asked to bring water supply with them. This will ensure that new development does not negatively impact the water supply that existing customers depend on. Our Water Conservation Plan will decrease per capita water use which will also help improve the long range supply for current customers. You, and all NTM customers, should feel secure in your water supply. Again we thank you for your input and hope this explanation is satisfactory.

Attachment E
Board of Directors Resolution Adopting Plan

RESOLUTION

RESOLUTION OF THE NORTH TABLE MOUNTAIN WATER AND SANITATION DISTRICT ADOPTING A WATER CONSERVATION PLAN

WHEREAS, pursuant to the laws of the Colorado Revised Statue (CRS) 37-60-124, and CRS 37-60-126 the District has prepared a Water Conservation Plan (Plan); and

WHEREAS, a notice was published announcing the availability of the Plan for public review and comment period in compliance with the above Colorado Revised Statues.

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the North Table Mountain Water and Sanitation District hereby adopts the Plan as written and herein incorporated as Attachment "A"

Passed and adopted at a regular meeting of the Board of Directors of the North Table Mountain Water and Sanitation District this 9th day of June, 2009.

By: Kathryn Jensen
President

Attest: _____
Secretary