One Des Combes Dr • Broomfield, CO 80020

March 28, 2012

Ms. Veva Deheza
Office of Water Conservation and Drought Planning
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203

RE: City and County of Broomfield Draft 2011 Water Conservation Plan

Dear Ms. Deheza:

The City and County of Broomfield (Broomfield) has completed its 2011 Water Conservation Plan (WCP). I want to express my appreciation to you and your staff for reviewing and providing comments on our draft WCP. We have incorporated the suggested changes and clarifications, and updated the information in the WCP to reflect historic data through 2010. Broomfield City Council approved the WCP on March 20, 2012.

We are submitting the enclosed 2011 WCP for the Colorado Water Conservation Board's (CWCB) review and approval. The 2011 WCP was prepared as a cooperative effort by Broomfield staff and technical consultants at Leonard Rice Engineers. For additional technical information on the enclosed draft WCP, please contact either:

Kathy Schnoor
Environmental Services Superintendent
City and County of Broomfield
One DesCombes Drive
Broomfield, CO 80020
303-438-6363
kschnoor@broomfield.org

Katie Fendel and Logan Burba
Leonard Rice Engineers
2000 Clay Street, Suite 300
Denver, CO 80211-5119
303-455-9589
fendel@lrcwe.com

In accordance with the CWCB submittal requirements, the table below summarizes Broomfield's population, retail water deliveries by customer class, and total water delivered for the five year period covered in the plan:

Water Deliveries by Customer Class (acre-feet)

Year	Population	Industrial and All Commercial	Residential Usage	Irrigation and Park	All Others	Total Water Delivered (acre-feet)
2006	52,660	2,509	6,574	2,060	249	11,392
2007	53,807	1,546	6,506	1,564	232	9,848
2008	54,586	1,603	6,676	1,471	227	9,977
2009	55,632	1,483	6,093	2,212	190	9,978
2010	56,466	1,494	6,868	1,287	215	9,864

Pursuant to state statutes, Broomfield held an initial 60 day public review period on the WCP from August 30- October 31, 2009. Due to significant changes in the draft Plan a second public review period was held from October 1- December 1, 2011. Notifications for the most recent comment period were published in the Broomfield Enterprise on October 2 and 6, 2011. In addition to making copies available at the City and County municipal offices and at the public library, the WCP was also posted on the Broomfield website. Prior to the close of the public comment period, reminders to submit comments on the WCP were published in the Broomfield Enterprise Newspaper on November 20 and 24, 2011, announced on Broomfield's local government access TV channel 8, and distributed via email message to Broomfield's Environmental B-in-the-Loop subscription email service. Appendix G of the WCP includes copies of all of the public outreach material for the public comment periods. Public comments and responses received to date are summarized in Appendix H.

In closing, the Broomfield Public Works Department 2012 budget includes $45,500 to begin implementing the programs and measures proposed in the draft WCP. Subsequent funding to continue with the proposed water conservation programs and measures will be included as part of Broomfield's annual budgeting process.

Please do not hesitate to contact the individuals listed above if you have any questions or require additional information. Thank you in advance for your assistance.

Sincerely,

David Allen
Director of Public Works

Enclosure

City and County of Broomfield

Water Conservation Plan

October 2011

Prepared by the City and County of Broomfield,
with support from Leonard Rice Engineers, Inc.
and the Colorado Water Conservation Board

Environmental Services
Public Works Department

One DesCombes Drive, Broomfield, CO 80020

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

Definitions and Abbreviations

AF	acre-feet – The amount of water it would take to cover one acre of land to a depth of one foot; approximately 325,851 gallons.
CBT	Colorado Big Thompson
cfs	cubic feet per second
CIP	Capital Improvement Project
Consumptive Use	Water that is consumed and not returned to the stream system.
CWCB	Colorado Water Conservation Board
DRCOG	Denver Regional Council of Governments
ET	Evapotranspiration
FRICO	Farmer's Reservoir and Irrigation Company
gpcd	gallons per capita per day
Maximum Day	The largest amount of water used in a single day. Also referred to as Peak Day.
MG or MGD	million gallons or million gallons per day
M&I	Municipal and Industrial
NCWCD	Northern Colorado Water Conservancy District
Nonpotable Use	Water that is not treated to drinking water standards used for irrigation of city parks, right-of-ways and golf courses.
Peak Day	Peak Day and Peak Hour: The largest amount of water used in a single day or hour – Peak Hour typically occurs on the Peak Day.
Potable Use	Water that is treated to drinking water standards for consumptive use, including residential and commercial uses.
PUD	Planned Urban Development
Reuse	Wastewater effluent treated a second time and used for irrigation purposes.
SWSI	Statewide Water Supply Initiative
TBD	To be determined
TE	Tap Equivalent – the amount of water used in a typical single-family home per year
WCP	Water Conservation Plan
WGFP	Windy Gap Firming Project

EXECUTIVE SUMMARY

The City and County of Broomfield (Broomfield) is committed to providing a reliable water supply for its residents into the future by implementing programs and measures that will promote water conservation. This Water Conservation Plan has been updated to comply with recent changes in state statutes and includes the development of water conservation goals, an examination of different water conservation activities that may help achieve these goals, and recommendations for programs and measures that will be continued or developed in the near future.

The keystone of Broomfield's water conservation efforts is the water reuse system. The water reuse system allows Broomfield to use treated wastewater effluent a second time for irrigation purposes. This one conservation measure, providing for second use, will have the greatest impact on limiting Broomfield's water needs in the future by reducing the amount of potable water being used for irrigation. Broomfield began planning for its water reuse system in 1994 and is currently operating the first phase of this system. The reuse water is a nonpotable water supply used for irrigation of parks, golf courses, and other landscaped areas in Broomfield. Currently, the reuse system provides a supply of 2,400 AF annually, which represents approximately 16% of overall water demand in Broomfield. The reuse water system is projected to expand over the next 30 years to 6,500 AF and supply as much as 25% of the projected total 26,783 AF water demands.

Broomfield has already accomplished considerable conservation through current conservation programs and measures, quantified by Statewide Water Supply Initiative (SWSI) defined Level 1 and 2 savings, including voluntary watering guidelines and modified irrigation practices. Current conservation practices have achieved approximately 4% of overall savings, according to SWSI estimates.

In addition to the systems currently being operated in Broomfield, new programs and measures are examined and recommended within this Water Conservation Plan. Full implementation of Broomfield’s 2011 WCP will result in an estimated water savings of 832,264,000 gallons per year or 15.8% through 2020. This will be achieved through the ongoing implementation of existing measures, implementation of new programs, and continued expansion of the reuse system.

INTRODUCTION

The City and County of Broomfield ("Broomfield") is located in the South Platte River Basin. Broomfield is committed to providing a reliable water supply into the future. Through the years Broomfield has made policy changes and process improvements to promote water conservation. In order to comply with current statutes, Broomfield is updating its Water Conservation Plan (WCP).

The purpose of this plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable Broomfield to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. Broomfield recognizes the value of its water and the need to use this resource wisely. Conserving water can help insure adequate water supplies for future generations and reduce the risk of water shortages. This commitment to water conservation is formalized in the recently adopted Sustainability Plan, a supplement to the 2005 Comprehensive Plan.[1]

> *Goal S-A.I: Protect the environment through the preservation of wildlife, reduction of waste, conservation of water, and enhancement of land, water and air quality.*
>
> *Policy S-A.3: Establish and use standards, policies and practices that encourage and support water conservation.*

Broomfield adopted a local WCP in March 1996. All providers who annually supply over 2,000 acre-feet (AF) of water to retail customers are required to submit a water conservation plan to the State Office of Water Conservation and Drought Planning (OWCDP) in accordance with the Colorado Water Conservation Act of 2004 (HB 04-1365). In order to satisfy more stringent requirements set forth in HB 04-1365, Broomfield intends to update its current WCP and submit it to the Colorado Water Conservation Board (CWCB) for approval.

This plan differs from other planning documents usually prepared by Broomfield because it follows the outline prescribed by the CWCB's "Water Conservation Plan Development Guidance Document." The WCP also complies with the requisite plan elements identified in §37-60-126 C.R.S. Finally, the WCP will be used to promote meaningful water conservation programs and to achieve a long-term increase in the highest productive use of Broomfield's water supply.

Broomfield's updated WCP was developed by Broomfield staff, with technical assistance from Leonard Rice Engineers, Inc., a $25,344 grant from the CWCB, and $10,500 from the Broomfield Water Fund. Comments from Broomfield City Council and Broomfield residents were integrated into the final draft of the WCP.

[1] City and County of Broomfield Sustainability Plan adopted January 25, 2011.

1.0 EXISTING WATER SYSTEM

1.1 Physical Characteristics of the Existing Water Supply System

Broomfield is located in the northwest portion of the Denver metropolitan area. Broomfield is one of Colorado's first master planned communities. It incorporated in 1961 as a home rule city with approximately 6,000 residents. The vision of a well balanced community included acres of open space for parks and recreational development along with residential, industrial, educational and commercial plans. Broomfield is ever changing and introducing amenities and services to meet the needs of the growing community.

In 2001 Broomfield became Colorado's newest county. With a service area of approximately 33.7 square miles within the City and County boundaries, Broomfield serves an estimated population of 56,466 (December 2010). Broomfield's current population projection for buildout in 2040 is 83,300; this number was used for water conservation planning purposes. The City and County of Broomfield boundaries are presently fixed; the boundaries are shown in Figure 1.

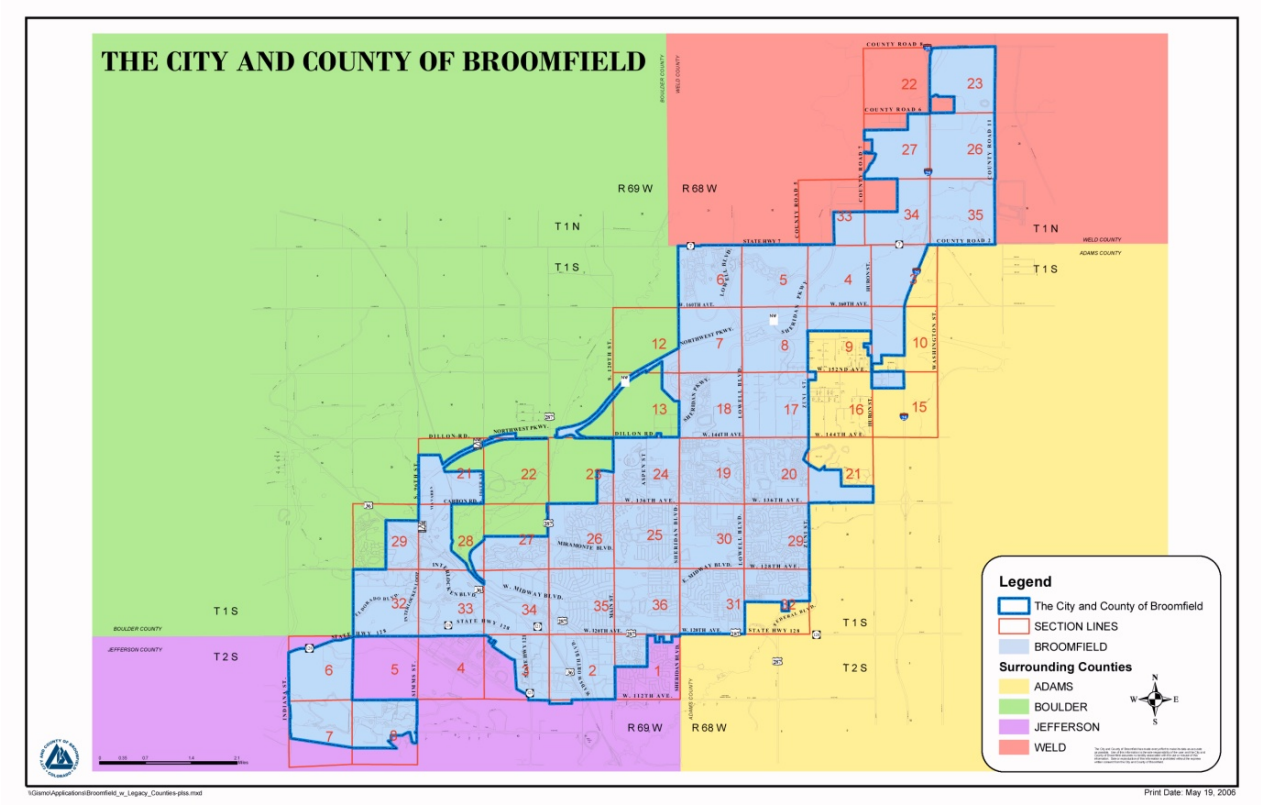


Figure 1. City and County of Broomfield Boundaries.

Broomfield plans to serve water to all of the use sectors within the county boundaries, as well as retail water services to the Rocky Mountain Metropolitan Airport (formerly the Jefferson County Airport, located in sections 3, 4 and 5 in Figure 1 above. Treated wholesale water is also provided to the Mile High Water District which is immediately adjacent to Broomfield in Sections 9 & 16 within Adams County and Section 13 in Boulder County as shown in Figure 1 above. Out-of-county water deliveries totaled approximately 54 million gallons (MG) in 2010.

Broomfield has two emergency interconnections with the City of Westminster's water system. The interconnections have valves and meters in both directions to enable either party to serve each others' adjoining areas in the event of a water break or other supply emergency. A similar arrangement is being discussed with the Town of Superior for added reliability and redundancy.

The various components of Broomfield's water distribution system are listed in Table I below. Appendix A is a map of these water system components.

Table I. Summary of Broomfield's Water Distribution System Components

System Component	Quantity
Domestic Water System	
Transmission and Distribution Piping	348 miles

System Component	Quantity
Valves	13,464
Fire Hydrants	3,100 (est.)
Potable Water Storage Tanks	4
Water Booster Stations	5
Pressure Regulator Valves	68
Chlorination Station	1
Water Treatment Plant	1
Metered Service Connections	16,975
Reuse Water System	
Reuse Piping	36 miles
Reuse Water Storage Tanks	2
Reuse Treatment Plant (WWTP tertiary treatment + Great Western Reservoir Treatment Plant	2
Metered Service Connections	58

1.2 Sources of Water

Broomfield has developed reliable systems for both potable and nonpotable water. The sources of water for both of these systems are described in this section.

Potable Water System

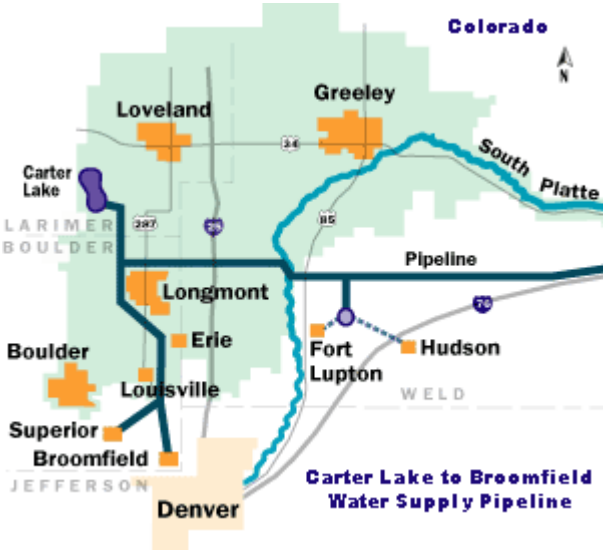
Broomfield's potable water is supplied from two major sources of high quality drinking water: (1) treated water purchased from Denver Water and (2) raw water treated at the city's Water Treatment Facility. These two treated water systems are blended together in the distribution system. All of Broomfield's drinking water, whether supplied by Broomfield or Denver Water, comes from surface water sources such as rivers, lakes, and reservoirs.

Denver Water's Source Water

Denver Water may deliver treated water to its municipal customers from any of its three treatment facilities. Raw water supplying these facilities comes from Denver Water's extensive Moffat and South Platte River collection systems. Broomfield has entered into a perpetual agreement with Denver Water that allows Broomfield to purchase up to 6,500 AF of treated water per year.

Broomfield's Source Water

Raw water is delivered to Glasser Reservoir at the City and County of Broomfield's Water Treatment Facility through a pipeline from Carter Lake. Carter Lake stores high quality water from both the Colorado Big Thompson (CBT) and the Windy Gap projects, which originate on the Colorado



and Fraser Rivers on the western slope of Colorado. The Windy Gap and CBT Projects are well established and well maintained systems that deliver water year round. Both projects contain components (pipelines, pump stations, tunnels) and regulations that create some limitations and restrictions on usage. These limitations are addressed below in Section 1.3.

Broomfield owns 56 of the total 480 Windy Gap Project units. Windy Gap supplies are not very reliable because excess capacity in the storage and delivery systems is not available in wet years and the water rights may not come into priority in dry years. To firm the Windy Gap rights, Broomfield is participating in the Windy Gap Firming Project (WGFP). The WGFP is administered by the Municipal Subdistrict of the Northern Colorado Water Conservancy District (NCWCD) and is currently in the federal permitting phase. A reservoir at the Chimney Hollow site is the preferred alternative identified in the August 2008 WGFP draft Environmental Impact Statement.

Broomfield currently owns 6,342 variable units of CBT water and 6,507 fixed units of CBT water for a total of 12,849 units. The amount of water available from each type of unit varies from year to year. The NCWCD Board of Directors adopts a quota each year based on the amount of storage in reserves and the projected runoff.

Nonpotable Water System

In addition to the potable system, Broomfield has developed an extensive reuse system where treated wastewater effluent and other raw water supplies are used for outdoor irrigation. The reuse system is extremely beneficial because it allows Broomfield to expand its water supplies beyond a single, one-time use and reduce overall demands on the potable water system. Broomfield's nonpotable water system consists of a water reclamation (reuse) system and pond system within the City and County boundaries. These systems have multiple water sources and are discussed below.

Reuse System

Initial planning efforts for the reuse system began in 1994 and the system became operational on a large scale basis in 2004. Reuse water is used to irrigate parks, golf courses, and other landscaped areas in many parts of Broomfield, including the Interlocken business park along Highway 36. Utilizing reuse water reduces the amount of more expensive treated domestic drinking water that would otherwise be used for these irrigation purposes.

The reuse system consists of: the reuse tertiary treatment facility and reuse pump facility (adjacent to the wastewater reclamation facility), the Great Western reuse treatment facility (located near Great Western Reservoir), two reuse storage tanks, as well as reuse transmission lines and lateral delivery lines. These facilities and the reuse service areas are shown in Figure 2 and in more detail on the Wastewater Reclamation Reuse System Map (Appendix B). Additional reuse transmission lines have recently been constructed to supply landscaped areas in northeast developments. The reclaimed reuse water can be distributed

directly through the dedicated nonpotable reuse system, or stored in Great Western Reservoir for later treatment and distribution in the reuse system.

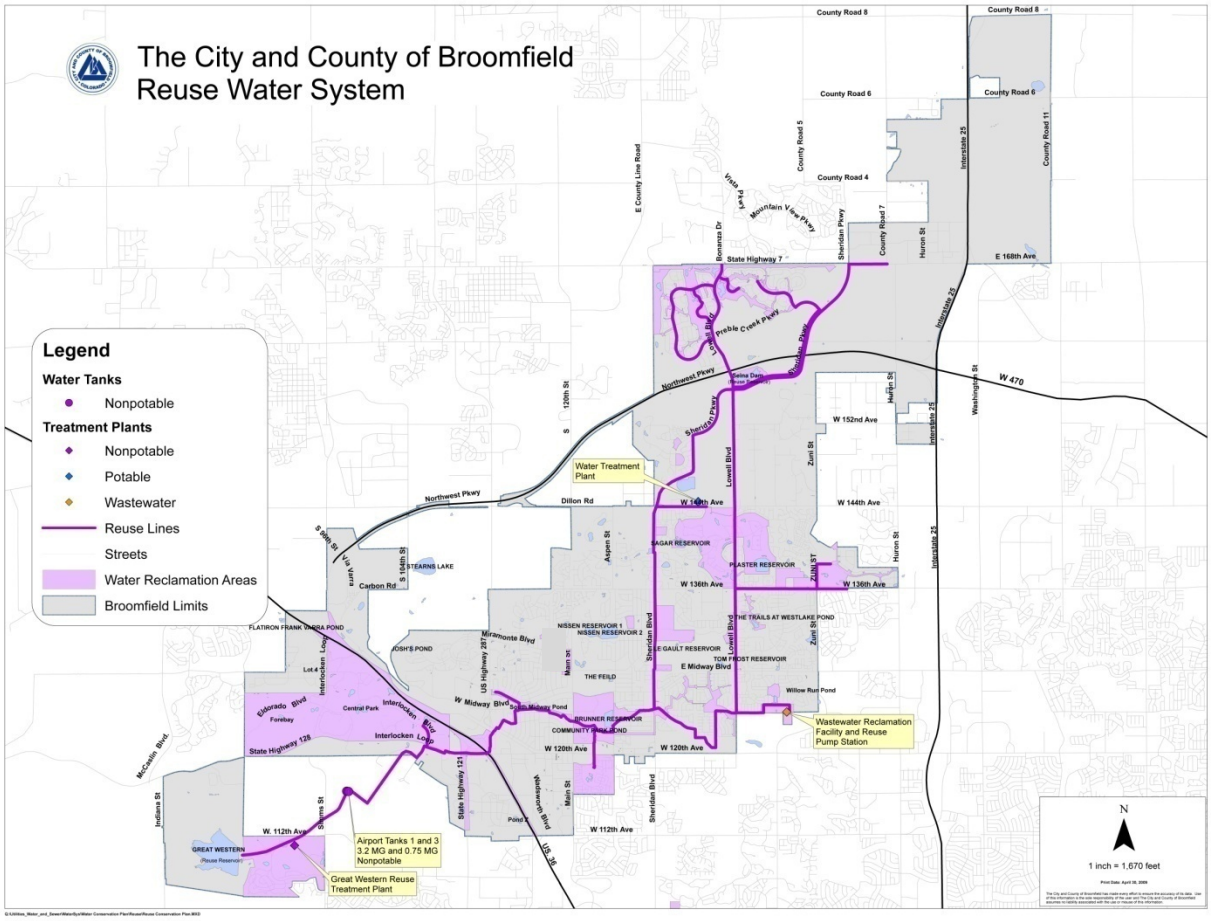


Figure 2. Broomfield Wastewater Reclamation and Reuse Project.

Windy Gap Effluent

The primary source of Broomfield's reuse system is Windy Gap effluent which represents the most reliable water source. Windy Gap supplies are a trans-mountain source, its effluent can be used to extinction without the same limitations on consumptive use and return flow requirements that are applied to native supplies. Reusing water again after its first use helps conserve a vital natural resource. Windy Gap water is therefore a preferred source for the reuse system.

Other Irrigation Supplies

Supplemental sources to the reuse irrigation system include surface water rights on Clear Creek, Coal Creek, Walnut Creek, and the South Platte River, but the annual yield from these sources is highly variable, ranging from zero to their full decreed amounts.

Clear Creek sources are represented by direct flow rights on Clear Creek and ownership of Church Ditch inches. All Clear Creek sources are delivered to Broomfield through the

Church Ditch. Priority dates for Church Ditch range from 1862 through 1886, making it one of the more senior rights on Clear Creek. Water can be available from April through November. However, Church Ditch was only in priority for a two to three week period during 2002. In more recent years, the relatively small number of inches represented a substantial delivery of water due to Broomfield's location at the end of the ditch. This water is delivered to the base of Great Western Reservoir where it is pumped into the reservoir for storage. Church Ditch and Great Western Reservoir storage water also may be delivered through the Dry Creek Valley Ditch system into Community Ditch for direct delivery for the uses listed under the Marshall water system.

The Coal Creek water sources include Upper Church and McKay Ditches. Upper Church Ditch has a priority date of 1870 for 18.11 cubic feet per second (cfs), but does not come into priority for a very long period of time during some years. McKay Ditch is used to convey water to Great Western Reservoir with priority dates of 1907 and 1943. Late snowstorms or early rainstorms within the Coal Creek basin provide the flows necessary for these rights to operate. Once the water is in the Great Western Reservoir, it becomes part of the reuse irrigation system supply.

Broomfield is also in the process of extending its reuse system to use water rights located on the South Platte River in conjunction with effluent from the CBT Project. These supply sources will allow Broomfield to further expand its reuse system to provide irrigation water for future development.

Pond System

Broomfield owns several Farmers Reservoir and Irrigation Company (FRICO) Marshall Division water shares. Water for this system originates from South Boulder Creek. The facilities associated with these rights are well maintained and operate only during the storage and irrigation seasons. These water rights provide water which can be delivered to accommodate Park and Open Space pond level and quality enhancements throughout Broomfield. This water can also be delivered to Siena Reservoir (reuse storage reservoir) and some of the ponds

within the Anthem residential development north of 144th Avenue. Some of the ponds and Open Space areas that benefit from this water include Tom Frost Reservoir, Le Gault Reservoir, Broomfield County Commons, Alexx and Michael's Pond, Sagar Reservoir, and Trails of Westlake Pond. Future improvement could also yield deliveries to Midway Pond, Community Park Pond, Brunner Reservoir, Nissen Reservoirs, Plaster Reservoir, and other areas to the north.

Diversity of Reuse Supplies

The overlap and the ability to mix the various supplies allow Broomfield great flexibility in moving water to needed locations. Under optimal conditions it also allows for selection and use of supplies based on priorities such as demand location, cost of pumping, cost of delivery, ease of operation, timing issues, and other legal priorities such as beneficial use. The abovementioned water rights are also located within five different drainages, which can be beneficial depending on variable precipitation and run-off patterns.

The overall mixing of these raw water rights (Church Ditch and Coal Creek) with Windy Gap effluent has provided benefit in reducing nutrient loading in the reuse system. The Marshall water rights improve the water quality in the ponds where this water is delivered. As Broomfield progresses further into increasing reuse demands, these supplemental water rights, as well as the South Platte water rights, will fill in needs for both supply and quality.

Water Storage Projects

One major component of Broomfield's current Water Master Plan is the Windy Gap Firming Project. The Windy Gap pump station was constructed on the Colorado River in 1985 to divert water through the CBT Project facilities to help meet the needs of East Slope communities. Windy Gap pumping is dependent upon storage availability in Granby Reservoir and subject to limitations during droughts and low flows. When Granby Reservoir is full, Windy Gap cannot divert water. Similarly, when flows are too low, the Windy Gap Project may not be in priority and cannot operate. Chimney Hollow Reservoir is the preferred alternative for firming Windy Gap water. Chimney Hollow is a 90,000 AF reservoir proposed for construction near Carter Reservoir west of Berthoud, Colorado. Broomfield's contemplated storage capacity in this reservoir is around 25,000 AF. Once a permit is issued, one to two years will be required for design and three to four years for construction. Based on those estimates, the earliest completion date for Chimney Hallow Reservoir is 2017. Additional time will be needed to fill the reservoir and firm the supplies. Depending on the runoff, filling may take up to three to four years.

Another important component of the potable system is Broomfield Reservoir. Staff is in the process of finalizing plans for this project. The reservoir will be located near the Anthem development. The reservoir will have a capacity of up to 5,000 AF of storage at an original estimated cost of $50 million. The reservoir will provide interim Windy Gap storage, peak day demand capacity, drought protection, recreation potential and aesthetic values. After the project has been finalized, construction will take approximately 2 years to complete. An additional pipeline from NCWCD was also considered at a cost of $40 to $60 million, but was not selected as the preferred alternative to meet Broomfield's needs.

Major planned improvements to the reuse system include water rights development on the South Platte River coupled with construction of a gravel pit storage facility to be completed by 2016. Broomfield is currently required to release CBT project effluent for subsequent deliveries within the NCWCD boundaries. The gravel pit will provide a source of substitute supplies for the CBT effluent which can then be delivered through the reuse system.

1.3 System Limitations

Broomfield's water rights in the CBT project and treated deliveries from Denver Water are limited to one use, while the Windy Gap rights can be reused to extinction. However, the Windy Gap rights are very junior and at certain times, such as low runoff or if there is little or no storage available in Granby Reservoir, Windy Gap deliveries can be zero. Windy Gap water is therefore not firmed in low flow years or high flow years and provides very little or no water during these times.

Other limitations exist in the other raw water supplies. For example, the South Boulder Creek water has relatively junior water rights (1885) with negligible firm yield. This presents a problem in low flow years or times of calls on the South Platte River.

Broomfield's water system does not experience frequent shortages or supply emergencies; however an extreme drought cycle (i.e. 2 or more consecutive years of drought conditions) may result in supply limitations or shortages. The system doesn't have substantial unaccounted-for and lost water. The system is experiencing a high rate of population and/or demand growth. The system planning does include substantial improvements and additions outlined in Section1.5. In 2010 the wastewater reclamation facility completed a three year expansion project to increase capacity from 8 MGD to 12 MGD.

1.4 Water Costs and Pricing

For 2010, water revenue from charges for service for all customer types (including reuse) totaled $ 19,311,154.93. Single-family residential class accounted for over half of the sales[2]. Monthly water service charges, as stated in the Broomfield Municipal Code, Chapter 13-12 Water and Sewer Service Charges, Title 13 Public Services (Appendix C), are determined based upon customer class. In 2010, residential customers were charged a monthly meter fee of $8.74 per dwelling unit plus a consumptive use charge of $2.80 additional charge per 1,000 gallons. Monthly meter fees for business, commercial, industrial and other nonresidential users were charged monthly meter rates based on connection size, ranging from $11.60 for a ¾-inch connection to $2,318.28 for an 8-inch connection. These customer classes also pay a consumptive use charge of $2.80 per 1,000 gallons.

[2] Water usage for previous years is discussed later in Section 2.1

In addition to the monthly meter fees and consumptive use charges, there are several one-time fees to connect to Broomfield's water system. A water license is required before making a service connection to the system. The 2010 water license fee for a ¾-inch tap was $24,636. A twenty-percent drought surcharge may also be added to the water license fee if the Broomfield Council has declared a drought condition in accordance with the Municipal Code. Tap connection fees and meter installation fees are based on the size of service required. For example, the tap connection fee for a ¾-inch connection is $75, a 1-inch connection costs $100, 1 ½ inch connection is $150, and a 2-inch connection is $200. Meter setting fees also gradually increase based on the cost to purchase and install the meter.

As described in the Broomfield Municipal Code, Chapter 13-32 Reclaimed Wastewater, reclaimed wastewater, or reuse water, can be used for landscape irrigation only. A contract is required between the city and the interested entity. The license and connection fees for reuse service is fifty percent of the current potable license fee as described above. The monthly meter fee and consumptive use charges for reuse water are also fifty percent of the rates described above. The City and County's ordinance regulating the use of reclaimed wastewater, found in Chapter 13-32 of the Municipal Code, is consistent with the State regulations (Appendix C).

An examination of recent billing records did not indicate any unusual trends in delinquent notices, late charges, turn-offs, or fines paid. Hydrant sales were up in recent years due to increased construction activities in Broomfield. It was also noted that construction water sales, as a percent of total consumption, were slightly higher in 1999-2002 due to the construction of FlatIron Crossing Mall, and 2005-2006 due to construction of the Anthem subdivision.

1.5 Current Policies and Planning Initiatives

This section discusses major policies that Broomfield currently has in place that affect water use under both normal and drought conditions. It also discusses major planning efforts related to water development planning.

Policies and Ordinances

Broomfield's Strategic Plan includes the following statement: "*The City will work to conserve water and to preserve water quality within our community*."[3] Broomfield's 2011 Sustainability Plan also contains the following goal and policy statements and action steps for implementation[4]:

Goal S-A.I*: Protect the environment through the preservation of wildlife, reduction of waste, conservation of water, and enhancement of land, water and air quality.*

[3] Broomfield City Council, City of Broomfield Strategic Plan, adopted May 26, 1998, page 41.
[4] Broomfield City Council, Broomfield Sustainability Plan, adopted January 25, 2011, page 2-5.

Policy S-A.3*: Establish and use standards, policies and practices that encourage and support water conservation.*

Action Step S-A.3.1: Encourage water conservation through program(s) that promote and/or reward citizens to use water-efficient appliances, etc.

Action Step S-A.3.2: Encourage water conservation and energy efficiency at Broomfield's wastewater treatment facilities by maximizing the Energy Star rating in the Energy Star Portfolio Manager.

Action Step S-A.3.3: Establish minimum water conservation standards for both public and private landscape and irrigation systems to further minimize water usage. Include drought tolerant plant material and efficient irrigation practices. For example, installing rain sensors with irrigation systems.

Action Step S-A.3.4: Adopt existing "green building" standards at or above national model codes that encourage water efficiency for all new construction and developments.

Action Step S-A.3.5: Encourage proposed developments to utilize Broomfield's reuse water system whenever possible.

Action Step S-A.3.6: Continue to review and develop water conservation practices for use during drought conditions, for government residents and businesses, which are implemented either on a voluntary or a mandatory basis, depending on the severity of drought conditions and available water supply.

Action Step S-A.3.7: Consider revising the Municipal Code to require, at time of installation, the use of 3 cubic yards of "Class 1 compost" per 1000 square feet of landscaped area for homeowners and government commercial properties, homeowner association common areas, and all other landscaped areas.

Action Step S-A.3.8: Encourage water conservation by determining best practices and investigating alternative rate structures.

Action Step S-A.3.9: Create incentives for the use of drought resistant grasses in lieu of traditional turf to encourage water conservation.

Action Step S-A.3.10: Coordinate with surrounding communities and the region to conserve water.

Goal C-I*: Community Education: Broomfield advances sustainability by educating and engaging our community in the implementation of environmentally, economically and socially sound practices.*

Policy S-C.1: *Community members understand the concept of sustainability and know they play a key role by the choices they make every day.*

Action Step S-C.1.1: Provide educational activities to accommodate the schedules of community members.

Action Step S-C.1.3: Offer environmental education materials and training to hard to reach and multi-lingual audiences.

Action Step S-C.1.4: Create environmentally themed sustainability events, and include sustainability within other organized activities.

Action Step S-C.1.5: The City will provide an "Environmental Information Packet" to organizations interested in practicing sustainability for their activities and events. Where feasible, encourage non-profits and other organizations that use city facilities to implement sustainable practices.

Action Step S-C.1.7: Utilize existing media to enhance education efforts regarding sustainability.

Action Step S-C.1.8: Connect and cooperate with other Broomfield education programs to integrate best practices of sustainability.

Policy S-C.2: *The City and County of Broomfield recognizes individual citizens, businesses and non-profits for outstanding environmental behaviors and practices.*

Action Step S-C.2.1: Develop citywide Sustainability Awards to inspire and provide models of sustainable practices for the community.

Action Step S-C.2.2: Develop a grant program to encourage citizens, businesses and non-profit organizations to participate in sustainable practices.

Policy S-C.3: *The City & County will offer training opportunities and work projects to individuals and groups related to environmental stewardship.*

Policy S-C.4: *The City & County of Broomfield will provide specific resources to sustainability programs.*

Policy S-C.5: *Consistently monitor and periodically evaluate the progress of Broomfield toward becoming a "Sustainable Community."*

Policy S-C.6: *Make additional resources available to local public, private and home-schooled students to promote sustainability education for K-12.*

Action Step S-C.6.1: Develop a grant program to fund sustainable projects, practices, and programs for students of all ages.

Action Step S-C.6.2: Develop programs on sustainability practices for use by students. The city will provide topic expert speakers as resources for the programs.

These action steps have been considered as part of the development of this conservation plan. Implementation of future water conservation programs will be evaluated for consistency with these steps as well as water savings and cost effectiveness.

Current water conservation practices are described in Section 1.6. Broomfield's Municipal Code also includes several chapters related to water conservation. For example, Chapter 13-24 prohibits the misuse or wasting of treated water. Broomfield has the ability to impose fines and penalties for violating this section. Chapter 13-36 allows the council to declare a drought emergency and impose any of three levels of mandatory drought watering restrictions, depending on the severity of the drought. It also imposes fines and other penalties for violations. The city council may also impose a twenty-percent drought surcharge to the water license fee at any time during which the city council has declared a drought condition, under Chapter 13-02-025. Chapter 13-16 requires temporary permits (with associated metering requirements and fees) for short-term water uses including construction

water, temporary irrigation, and special events. Appendix C contains the full text of all relevant ordinances.

Supply Planning Efforts

To help meet future water supply needs, Broomfield is one of many participants in the WGFP. As noted previously, Broomfield's Windy Gap units are unreliable from year-to-year, but they do yield water that is utilized in the system when it is available. This proposed project, currently in the federal environmental evaluation and permitting phase, would significantly increase reliability of Broomfield's Windy Gap water units, a key component of the future water supply.

The WGFP is a regional, coordinated, efficient solution that maximizes use of resources already invested. This helps address the issues surrounding competition for the same regional supplies. The WGFP is similar to other projects considered by various roundtables established under the "Water for the 21st Century Act" to evaluate options for the Statewide Water Supply Initiative (SWSI). Roundtable members specifically recommended that construction of new storage to maximize existing water rights and conditional storage rights be further evaluated to address the remaining municipal and industrial (M&I) gap[5]. WGFP is one such project, and Broomfield will utilize the Windy Gap effluent yielded from its units to the fullest extent possible. However, WGFP is not the only solution; entities will still need to pursue other projects and programs to meet future demands. Broomfield recognizes this, and includes water conservation as part of its long-term response to water supply needs.

In addition to the first use of Windy Gap water in the potable water system, Broomfield has constructed an extensive reuse water system utilizing Windy Gap effluent from the wastewater treatment facility as its primary water source. That system is currently being expanded to use CBT effluent to serve new developments in Broomfield. Improvements to increase the existing reuse system's annual yield include constructing additional facilities, optimizing operations and acquiring additional water.

Broomfield Reservoir is another water project needed to supply raw water to the water treatment plant for future peak day purposes and other benefits. Broomfield's CBT and Windy Gap units will supply the reservoir.

Demand Forecasting

A projection of needed system improvements was recently conducted based on expected water demand increases. This analysis is updated periodically by Broomfield as new information becomes available. This analysis does not take into account water conservation measures that could be implemented in the future (this is done as required in Section 7). The methods used in the analysis are briefly described below.

[5] Colorado Water Conservation Board, Statewide Water Supply Initiative (SWSI), November 2004, Section 10, pages 10-77 & 10-78. The M&I gap is the amount of water for municipal and industrial uses that cannot be met by the implementation of future water supply options, or Identified Projects and Processes including conservation, as defined in Section 6 of the SWSI Phase II Report

Demands were projected for new residents, new commercial and industrial facilities, and irrigation needs based on known and projected residential and commercial developments planned in Broomfield from 2010 through 2040. Single family residences were counted as one tap equivalent (TE) and commercial and industrial facilities were converted to TEs using a square footage conversion factor. Based on Broomfield's experience and recent data, multi-family units were converted into TEs using a multiplication factor depending on the type of unit (i.e., one multi-family unit = 0.4 TEs, town homes=0.6 TEs, etc.).

The water supply needed to meet projected growth was calculated using 0.50 AF per TE per year. This value was based on an assessment of actual data from 1996 through 2010 where potable water use per TE ranged from a high of 0.576 AF/TE in 2000 to a low of 0.449 AF/TE in 2004. (Note that, because the previous years' historical data are used to compute per-tap equivalent usage rates, savings accrued from conservation become incorporated into future needs projections as the demand projections are periodically updated.) The anticipated TEs per year were then converted to a projected water demand from 2010 through buildout in 2040.

A maximum day peaking factor of 2.3 was also incorporated into the analysis to determine the capacity of the future supply, treatment, and transmission facilities. Increased demand due to water losses, including evaporation, seepage from reservoirs, backwash waste, and conveyance losses were included in the total projected demands.

Future Capital Projects

This total projected yearly demand was compared to available firm and average yield supplies from Broomfield's Colorado-Big Thompson, Denver Water, and Windy Gap sources. Annual capacities in the existing system, including water supplies, water treatment capacities, treated water transmission and storage capacities, distribution system and pumping capabilities were also compared to the predicted annual demands. Potential limitations in system capacity were used to estimate the size and timing for future facility improvements. The results of this analysis showed the need for the following new capital improvement projects:

- 2011-2017– Chimney Hollow (WGFP preferred alternative) design and construction start
- 2011-2020– a 16.0 MGD increase in capacity of treated water transmission lines to the north storage tank (in process)
- 2012-2014– up to 5,000 AF of local reservoir storage to provide interim Windy Gap firming and 14 MG to meet peak summer demands
- 2015– a 3.15 MG new treated water storage tank in the north area pressure zone
- 2018 – a 6 MGD increase in water treatment capacity (from present 20 MGD)
- 2019– a 1 MG treated water storage tank for west area
- 2025 – a 6 MGD additional increase in water treatment plant capacity

1.6 Current Water Conservation Activities

Broomfield is committed to water conservation and was one of 28 jurisdictions that signed the Metro Mayors Caucus Memorandum of Understanding on Water Conservation and Stewardship in January 2005. Broomfield has undertaken many conservation measures in its own operations and provides programs and activities for its customers to help lower demand on the water system.

Reuse Irrigation System

The keystone of Broomfield's water conservation efforts is the ongoing and future expansion of the reuse irrigation system. The water reuse system allows Broomfield to use treated wastewater effluent a second time for irrigation purposes. This single conservation measure will have the greatest impact on limiting Broomfield's water needs in the future by significantly reducing the amount of potable water being used for irrigation.

Broomfield's highest water demand for government operations is city park irrigation. The reuse irrigation system addresses that large demand, as well as the high demand for golf course, street right-of-way and commercial landscape irrigation. The reuse system captures the city's treated wastewater effluent, provides additional treatment to the wastewater and distributes it through a separate piping system to be used a second time as irrigation water in parks, golf courses and street rights-of-way.

Broomfield's current reuse irrigation system supplies 2,400 AF of water annually, alleviating significant water demand on the potable system. The reuse distribution system has been expanded over the last twelve months to provide irrigation lines to an additional 145 acres of park and median landscaping, for a total of 469 acres. This represents 49% of the current 940 acres of irrigated park land in the city. There are plans to include an additional 1,497 acres of park on the reuse system in the future. Using re-treated wastewater effluent for irrigation purposes reduces demand on the water in the potable water system and helps avoid or defer the need to develop additional potable water supplies.

Reuse water can be produced year-round and stored in Great Western Reservoir until needed during the irrigation season. Raw water supplies are used to supplement the irrigation supply and help maintain high quality water in Great Western Reservoir. To optimize and protect the raw water supplies, select locations along ditches are treated to prevent the growth of phreatophytes (deep-rooted plants that use groundwater) that would impede water flow.

Park Operations

In addition to the conversion to the reuse system, the Parks Division, one of Broomfield's largest water customers, has implemented other conservation programs and measures to conserve outdoor water use. The department utilizes a centralized computer-based irrigation control system that uses actual ET (evapotranspiration) rates and current weather conditions to automatically adjust the watering days and times for individual irrigation zones throughout Broomfield. The system can also be operated remotely with information provided by moisture sensors to shut down all systems when it is raining. Solar panels power several irrigation boxes throughout the city to reduce energy cost. The parks irrigation program does not allow irrigation between 10am and 6pm to reduce evaporative loss during the heat of the day. In addition, the maximum irrigation rate for all parks was reduced to one inch per week.

Broomfield's standards and specification for new park areas requires proper soil preparation and amendments (five cubic yards of organic material per 1,000 square feet of soil area) prior to installing turf to encourage healthy roots and reduce watering requirements. Parks Division horticulture staff, in partnership with the NCWCD, developed a blend of bluegrasses to make up a drought tolerant sod well-suited to Broomfield's clay soil. The sod is grown on Broomfield's farm near Greeley and is used in right-of-way landscaping and low traffic passive park areas. Broomfield also installed an artificial turf playing field at the soccer/football complex to allow for a longer playing season and reduce water use. Finally, Park landscape design considers turf alternatives and low volume irrigation in shrub beds and right-of-way shrub areas. Xeriscape plants are used in newly designed shrub beds.

Through these measures the Parks Department has been able to reduce its annual water use by up to 10% below the original projections for the last five years.

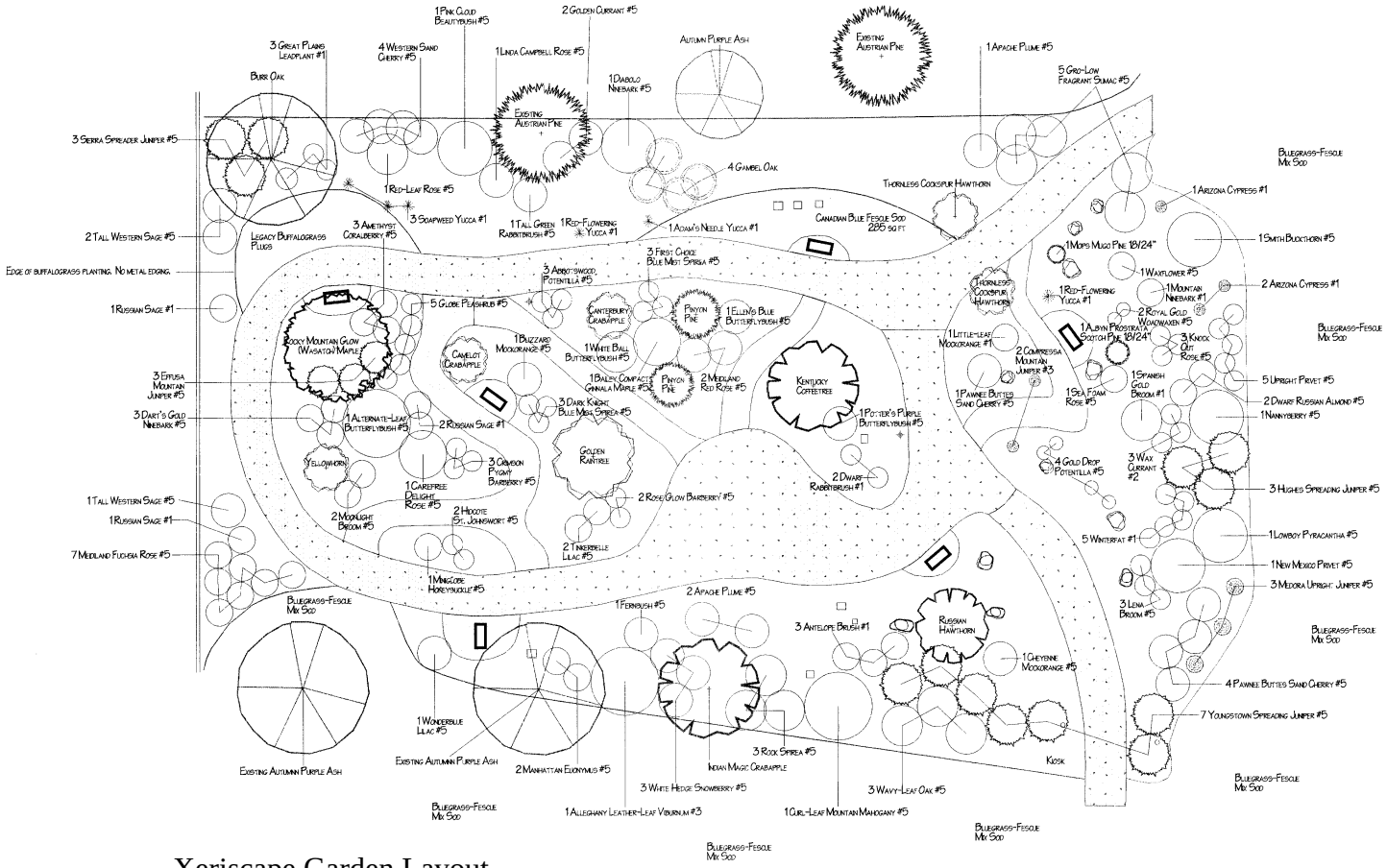
Residential Turf Restrictions

To encourage residents to conserve outdoor water use, Broomfield's municipal code Chapter 17-70-010 (Appendix C) restricts the turf area to 60% of the total residential lot, and requires proper soil preparation and amendments (three cubic yards of organic material per 1,000 square feet of soil area) prior to installing turf to encourage healthy roots and reduce watering

requirements. These requirements are enforced by the planning and building sections of the Community Development Department

Xeriscape Demonstration Garden

In 2004, Broomfield created a Xeriscape Demonstration Garden with assistance from the Colorado State University Extension. The 1/4 acre garden is located in the southeastern lawn of the City & County Building and showcases hundreds of flowers, shrubs, and trees that are compatible with our high plains climate, as well as various types of mulch and hardscape features. All of the Plant Select® plants for the Rocky Mountain and Plains States are included within the ¼-acre site. Flower bulbs start blooming in early spring and various plants continuously bloom through the summer into the late fall. The garden is grouped into several themed planting beds: the Border Garden, the Butterfly Garden, the Animal Garden, the Whimsical Garden, the Patriotic Garden, Grandma's Garden, XXX Rated Garden, Ornamental Grass Garden, Rock Garden, and Prairie Garden. The demonstration garden gives residents the opportunity to see which plants, or group of plants, could be used enhance their own yards and landscape areas.



Xeriscape Garden Layout

Another gardening aid to help conserve water is Broomfield's recycling program for tree limbs and Christmas trees. The trees are chipped into wood mulch and used in city parks. It is also available free to residents to use on their gardens and landscaping to cool the soil and hold moisture.

Loss Prevention and Leak Detection

Broomfield's overall water system loss for the last ten years averages 8.5 %. This total system loss is the sum of evaporative loss and reservoir seepage from Glasser Reservoir, line draining, toe drain loss, discrepant meter readings, backwash (potable treatment) loss to wastewater, and unknown losses within the potable system. To reduce water loss within the closed potable system, Broomfield conducts an internal water audit annually to account for all water in the treatment plant and distribution system. This audit captures distribution system water main breaks, water tank cleaning, meter error, small leaks in the distribution system, theft and miscellaneous projects (e.g., re-filling small fish/aesthetic ponds after dredging projects). After subtracting out the known losses, the ten-year average unaccounted loss for potable water is 3.8%. The water industry considers system water loss of <5 % to be very good.

The water distribution system is well maintained with 348 miles of potable pipe and 36 miles of reuse pipe; approximately $1 million is set aside for the annual waterline replacement program. Broomfield's leak detection program for the water distribution system ensures that all leaks are repaired in a timely manner.

Broomfield's subsurface sound detection system (LC2500) "listens" for leaks and estimates the size and location of the leak. This system works well with ductile pipe, but is less effective with PVC pipe. Metallic pipe pits and corrodes over time developing small pinhole leaks that grow and eventually cause the pipe to fail. Since Broomfield has very corrosive soils, all of the water line replacements for the last 20 years have replaced metallic pipe with PVC pipe. Currently over 60% of Broomfield's water lines are PVC. PVC pipe differs from metallic pipe in that it does not gradually develop slow leaks due to corrosion; instead it typically fails at a joint. A water break due to joint failure is usually readily apparent and is repaired immediately.

To maintain a tight system and facilitate accurate accounting of water used, all construction water and service connections are 100% metered. Periodic system flushing, for water quality purposes, is timed and reported as an estimate.

Broomfield's active meter replacement program ensures that all service meters are replaced at least every twelve years. Broomfield uses an Automatic Meter Reading system, in which miniature radio transmitters attached to the water meter can be read by handheld radio receivers from moving vehicles. This system minimizes access problems and increases the number of meters that may be read in a day, which allows for more timely billing. Broomfield's water billing system is currently set up to charge for water based on usage, as

described in the Broomfield Municipal Code Chapter 13-06 (Appendix C). Water bills are sent out monthly to allow time for customers to react to water use from the previous month.

Plumbing Fixtures

Broomfield follows the international plumbing code for all fixture standards (Appendix C, Chapter 15-24). All remodel and new installations require low flow toilets. Broomfield Facility Maintenance staff has also installed low flow, low use, and waterless fixtures and appliances in the city's public facilities. Demand use faucets and timed use shower heads are installed in the Broomfield Community Center and the Paul Derda Recreation Center to prevent water from running when unattended.

Public Education

Another major conservation focus area for Broomfield is public education and information dissemination. Public education is an important tool used to inform Broomfield residents of home water conservation tips, seasonal voluntary watering guidelines and, when necessary, mandatory watering restrictions. Broomfield will continue to use all of the following public outreach tools to promote rebates and the other water conservation programs and measures proposed for implementation in this plan.

Internet

Broomfield has an environmental website (www.Broomfield.org/environment) devoted to environmental issues and services. The events calendar is a good outreach tool that is used to promote conservation and other environmentally focused events. It is updated regularly and available for public display. The Public Works Department posts different water conservation tips for various seasons and situations to keep the public up to date on actions they can take to conserve water on their own. Broomfield has a "B in the Loop" email subscription service that is utilized regularly to provide conservation information.

Utility Bills

Water conservation tips are also included in a monthly "NewsNotes" insert provided to residents in their monthly utility bill. Annual water quality reports are mailed in June of each year to all water customers and are also available online. The annual water quality report includes a section dedicated to water conservation. An example of the NewsNotes insert and a copy of the 2010 report are included in Appendix D.

Video Programs

Broomfield produced a video titled "Green Broomfield." This video airs frequently throughout the week on Broomfield's public access channel and addresses various environmental topics, including energy and water conservation. Environmental Services filmed a water conservation video in July 2008 to educate residents on how to use Xeriscape principles to save water. The "Your Water, Your Future" video first aired on the local cable channel in September 2008. Both videos are also available on the web page for viewing.

Workshops and School Programs

Broomfield sponsors two annual Water-wise Workshops to give residents the information needed to implement the seven Xeriscape steps and other water-wise techniques in their own

yards. School programs, such as Earth Day presentations, help make children more aware of water saving techniques as well.

Information Booths

Another annual event is a community festival called "Broomfield Days." This celebration includes a parade, craft and informational booths, presentations, and other activities. Frequent participants in the parade are "Flow and Jo," the environmental mascots who promote water conservation and protection with their motto "Keep it clean, 'cause we're all downstream!"

Environmental Services provides an informational booth during the festival to inform residents of the city's successful water conservation efforts and to provide helpful tips on how people can save more water at home.

Water Conservation Kits

Home Water Conservation Kits are available to Broomfield residents free of charge. The conservation kits have instructions on how to perform a home water audit and include flow restrictors, dye tablets, a tank bank, drip gauge, and irrigation gauge. The information guides residents through a series of steps to improve lawn watering efficiency, check for and repair leaks, install low flow fixtures, and other water saving techniques. The kits are distributed to residents in several ways:

- Broomfield Days booth
- Drinking Water Week and Public Works Week in the lobby display at the City & County building
- booth at National Night Out picnic in the park,
- to all residents with shut-off notices, and
- to residents any time upon request.

2.0 Water Use and Forecast Demand

2.1 Current Water Use

Water use in Broomfield has been increasing over the past ten years, mainly due to population growth of 70% over that time period (from 32,413 in 1996 to 56,466 in 2010).

Total water usage dropped dramatically beginning in 2002, when mandatory water restrictions were adopted in response to the drought. Mandatory restrictions were replaced in May 2003 with voluntary conservation measures that are still in effect today. Since 2004, total water usage has continued to climb each year consistent with the rate of population growth. Broomfield's growth rate is expected to gradually increase through buildout.[6]

Total annual water delivered and population growth are shown in Table II and Figure 3. Data includes actual metered potable water usage, including residential, industrial and commercial, irrigation, parks, out-of-county water uses (Mile High Service Area and Rocky Mountain Metro Airport), and all other uses. Figure 4 shows annual use by customer class.

Table II. Population, Water Use by Class and Total Potable Water Delivered[7]

		Class								Total Potable	
		Industrial and All Commercial		Residential Usage		Irrigation and Park		All Other Potable Use			
Year	Population[8]	# of Accts	(AF)	# of Accts	(AF)	# of Accts	(AF)	# of Accts	(AF)	Total # of Accts	Total Water Delivered
1996	32,413	346	949	9,388	4,625	158	735	42	153	9,934	6,461
1997	34,657	350	866	9,552	4,325	146	618	41	152	10,089	5,961
1998	36,946	466	969	10,433	4,662	169	760	45	183	11,113	6,575
1999	37,521	479	1,140	11,009	4,801	198	1,143	46	253	11,732	7,337
2000	38,272	529	1,334	11,772	5,637	252	2,063	49	229	12,602	9,264
2001	40,320	598	1,509	11,975	5,717	334	1,489	52	183	12,959	8,898
2002	45,357	609	404	12,371	5,623	351	868	58	302	13,389	7,197
2003	47,137	628	1,431	13,340	5,180	391	1,439	64	167	14,423	8,218
2004	47,508	640	1,623	13,577	4,809	376	1,529	61	186	14,654	8,147
2005	49,900	643	1,599	14,155	5,562	402	1,381	63	211	15,263	8,752
2006	52,660	662	2,509	15,013	6,574	423	2,060	64	249	16,162	11,392
2007	53,807	599	1,546	15,101	6,506	455	1,564	54	232	16,209	9,848
2008	54,586	618	1,603	15,470	6,676	493	1,471	55	227	16,636	9,977
2009	55,632	639	1,483	15,601	6,093	506	2,212	57	190	16,803	9,978
2010	56,466	643	1,494	15,765	6,868	509	1,287	58	215	16,975	9,864

[6] The Colorado Water Conservation Board *2050 Municipal and Industrial Water Use Projection* indicates that population in the South Platte Basin where Broomfield is located will increase between 1.5-1.8% annually from 2008-2050.

[7] Broomfield switched from an HTE utility billing system to a new Innoprise system in August 2006. There are some discrepancies in the data between the two systems that have not been fully reconciled.

[8] Population figures provided by Broomfield's Planning Division and published in the City and County of Broomfield's annual budget documents from 1996-2010.

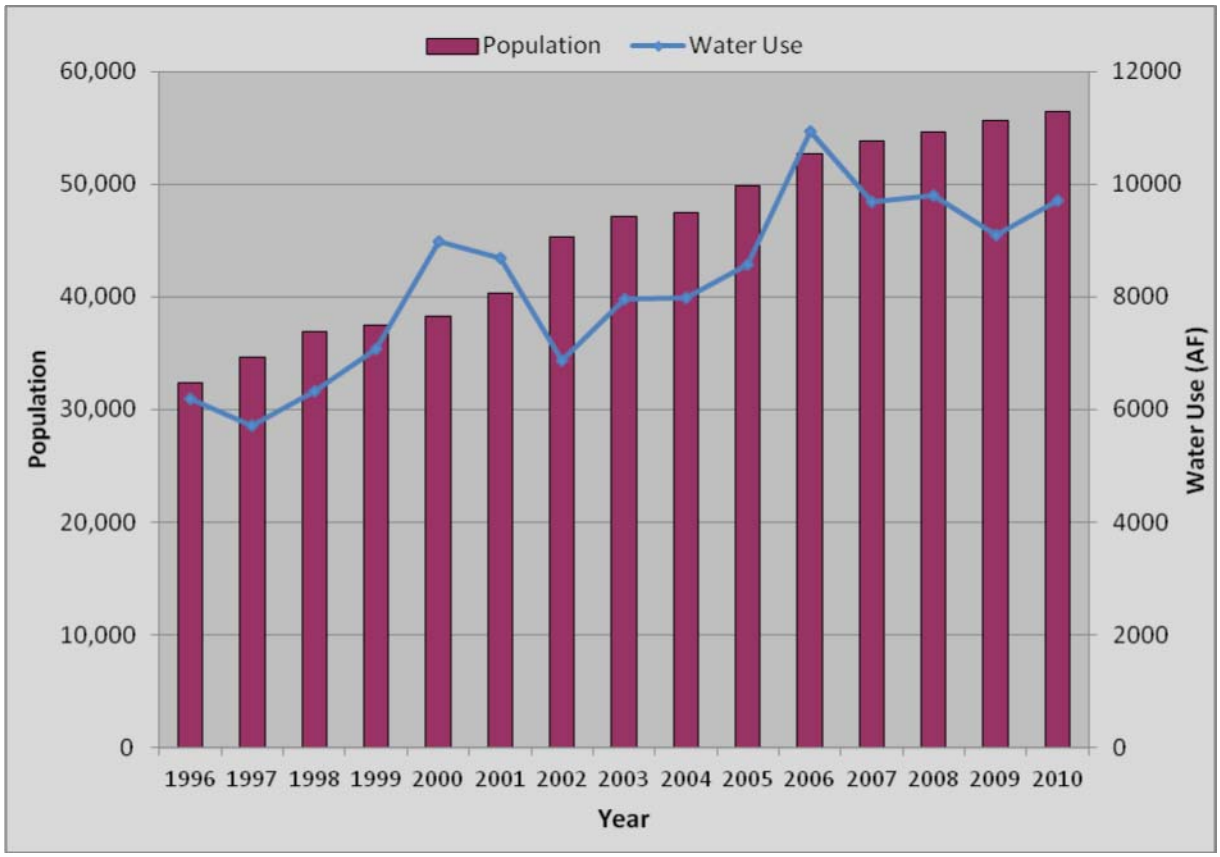


Figure 3. Population and Total Potable Water Delivered, 1996-2010

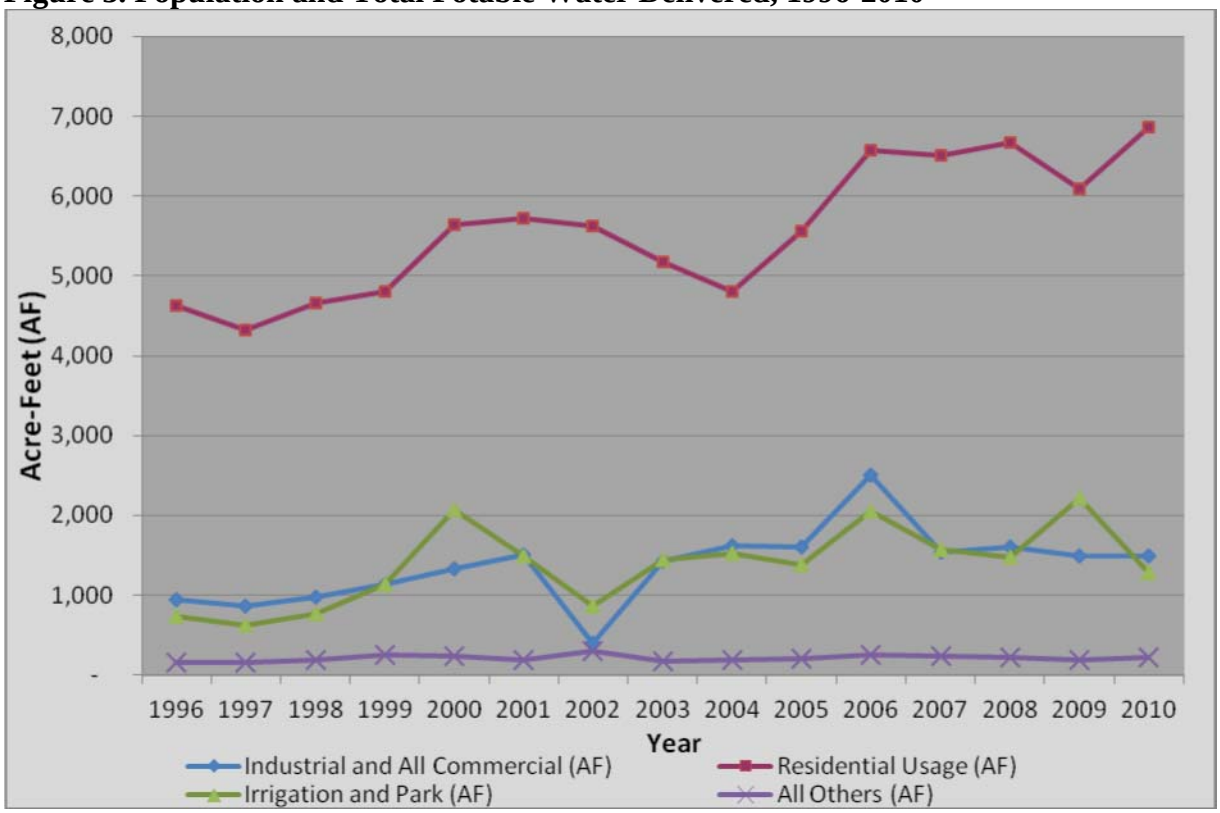


Figure 4. Annual Usage by Customer Class (1996-2010 Utility Billing Data)

Figure 4 shows water usage of various customer classes for the same time period. Residential uses account for over half of Broomfield's water demand. Utility billing data from 1996 through 2010 was used to develop the trends for annual usage by customer class.

The residential usage line starts dropping in 2002 due to mandatory watering restrictions during the drought and continues a downward trend before it rebounds somewhat due to a switch back to voluntary measures as well as additional growth. The residential increases in 2005 through 2008 are primarily attributed to the new Anthem residential development in north Broomfield. It is important to note that the Anthem development began installing significant quantities of sod in public areas around 2005, which was on potable irrigation until the end of 2006 when it was switched over to the reuse system.

The drought restrictions didn't have the same ongoing effect on commercial and irrigation. Commercial and industrial usage dipped in 2002 and rebounded the following year. Commercial use also peaked in 2006, and decreased in 2007. Peak summer month use has typically been approximately four times the lowest winter (non-irrigation season) use. However, in 2005 and 2007 this peak monthly usage increased to about 5 times the non-irrigation season and about 6 times the low season usage in 2000 and 2006. Varying precipitation levels may account for much of the increase in use seen from 2005 to 2006. Annual precipitation data for Broomfield are shown below in Figure 5. The lower precipitation values in 2006 may have also contributed to the increase in demands during the same year as shown on Figures 3 and 4.

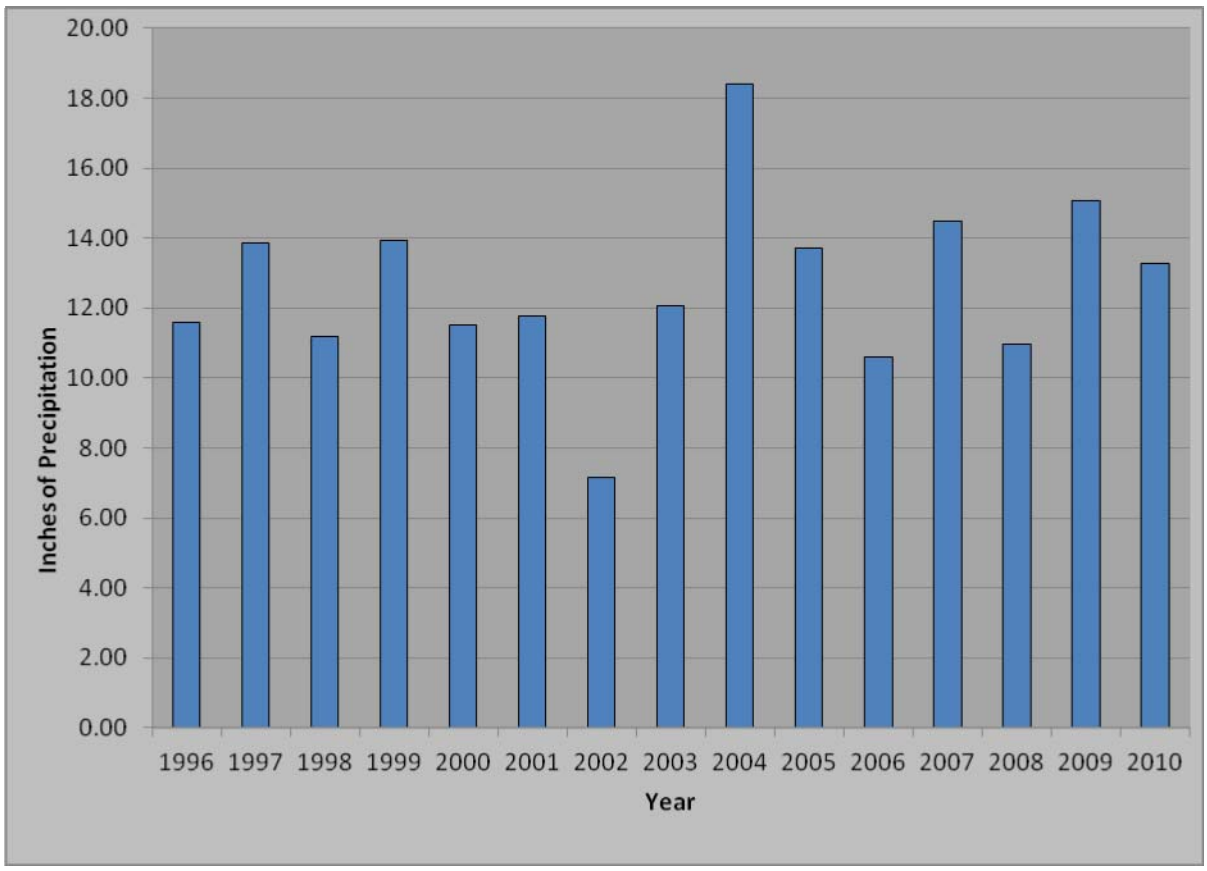


Figure 5. Annual Precipitation Data for Broomfield, 1996-2010

There is currently no standard method used to calculate gallons per capita per day (gpcd) usage. Some municipalities and consultants include all water uses, including residential, commercial, industrial, and agricultural in the calculation, while others only consider residential uses. This results in a wide range of gpcd values and makes it difficult to compare among water providers.

Even in Broomfield various methods have been used over time. For the purpose of this WCP, only the Broomfield population and Broomfield potable water usage were used in the calculation of gpcd. Due to the lack of population data for the service area outside Broomfield county limits, the out-of-county water usage was subtracted from the total metered potable water usage. All "in-county potable uses," including residential, commercial, industrial, irrigation, parks, and other uses, were used in the calculations. Table III summarizes the gallons per capita per day figures calculated for 1996 through 2010 for total in-county potable use.

Table III. Gallons per Capita per Day

Year	Population	Total In-County Potable Usage (gal.)	Calculated Consumption gpcd
1996	32,413	2,017,341,000	171
1997	34,657	1,862,516,000	147
1998	36,946	2,060,538,800	153
1999	37,521	2,301,823,000	168
2000	38,272	2,926,863,000	210
2001	40,320	2,827,780,000	192
2002	45,357	2,237,228,000	135
2003	47,137	2,597,486,000	151
2004	47,508	2,600,493,000	150
2005	49,900	2,795,547,600	153
2006	52,660	3,562,585,000	185
2007	53,807	3,153,078,000	161
2008	54,586	3,194,617,000	160
2009	55,632	2,961,626,000	146
2010	56,466	3,160,393,000	153

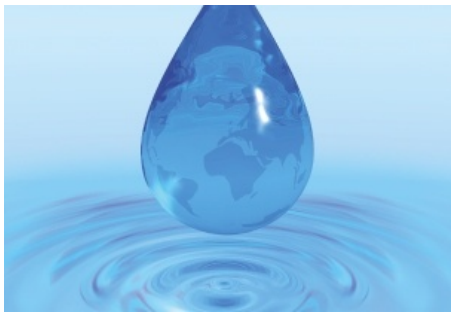


Table IV. Gallons/Capita/Day Summary for 1996-2010

Gallons per Capita per Day		
15 yr Max	210	in 2000
15 yr Min	135	in 2002
15 yr Ave	162	
1996 - 2001 Ave	173	Pre-drought
2002 - 2010 Ave	155	Post-drought

Table IV indicates that the annual in-county per capita usage has ranged from a high of 210 gpcd (in 2000, just prior to the drought) to a low of 135 gpcd (in 2002, during the drought). The average gpcd usage for the entire 15 year period from 1996 through 2010 is 162 gpcd. When broken down into pre-drought (1996-2001) and post-drought periods (2002-2010), the average annual per capita usage drops from 173 gpcd pre-drought to 155 gpcd post drought.

An analysis of Broomfield's highest water users is summarized in Tables V & VI. The top twenty water consumption accounts are listed in Table V. The non-potable reuse irrigation accounts are highlighted in purple. The highest ten potable water consumption accounts are listed in Table VI.

Table V. Twenty Largest Water Users for 2010 (Potable and Non-potable)

Name	Customer Class	Annual Usage (MG)
FRONT RANGE MOBILE PARK	Mobile home	47.8
CITY & COUNTY OF BROOMFIELD	Reuse	30.8
CITY & COUNTY OF BROOMFIELD	Reuse	29.5
MILE HIGH WATER DISTRICT	Single Family	25.9
CITY & COUNTY OF BROOMFIELD	Reuse	24.7
OMNI HOTELS MANAGEMENT CORP	Commercial	22.1
ORACLE AMERICA, INC	Commercial	20.6
CIMARRON ESTATES #5240	Mobile home	20.3
GREENWAY PK HOMEOWNERS ASSOC	Reuse	19.7
LEGACY HIGH SCHOOL	Reuse	19.2
FLATIRON PROPERTY HOLDING	Commercial	16.5
PULTE HOME CORPORATION	Reuse	15.8
ANTHEM RANCH COMMUNITY ASSOC INC	Reuse	14.0
FLATIRON PROPERTY HOLDING	Irrigation	13.7
CITY & COUNTY OF BROOMFIELD	Reuse	13.6
CITY & COUNTY OF BROOMFIELD	Reuse	11.8
FLATIRON PROPERTY HOLDING	Irrigation	11.1
PULTE HOME CORPORATION	Reuse	10.5
CITY & COUNTY OF BROOMFIELD	Reuse	9.5
ANTHEM RANCH COMMUNITY ASSOC INC	Reuse	9.5
BALL AEROSPACE	Commercial	9.2

Table VI. Ten Largest Potable Water Users for 2010

Name	Customer Class	Annual Usage (MG)
FRONT RANGE MOBILE PARK	Mobile home	47.8
MILE HIGH WATER DISTRICT	Single Family	25.9
OMNI HOTELS MANAGEMENT CORP	Commercial	22.1
ORACLE AMERICA, INC	Commercial	20.6
CIMARRON ESTATES #5240	Mobile home	20.3
FLATIRON PROPERTY HOLDING	Commercial	16.5
BALL AEROSPACE	Commercial	9.2
ORACLE AMERICA, INC	Commercial	9.0
SANDOZ, INC.	Industrial	8.9
LAKESHORE ATHLETIC CLUB-FLATIRON	Commercial	8.9

Twelve of the top twenty water users are reuse irrigation accounts. Six of the top ten potable users are commercial accounts. Three of the top five potable accounts are residential users.

Table VII identifies the five year average total retail water deliveries to various water use sectors during the period from 2006 through 2010. This data is also shown graphically in Figure 6. Table VIII identifies the five year average potable water deliveries to various water use sectors during the period from 2006 through 2010. This data is also shown graphically in Figure 7.

Table VII. Total Water Usage by Sector, Five-Year Average 2006-2010

5 Year Average and % of Total Consumption by Class							
Water Use Category	2006	2007	2008	2009	2010	5yr Ave	% of Total For 5yr Ave
CHURCH	13,722	14,681	15,530	13,298	14,085	14,263	0.4%
CITY PARKS	181,817	121,288	162,451	108,490	147,092	144,228	4.0%
COMMERCIAL	626,281	414,088	442,684	431,567	447,252	472,374	13.2%
INDUSTRIAL	191,397	89,648	79,715	52,908	39,572	90,648	2.5%
IRRIGATION	489,329	388,327	316,705	254,256	301,607	350,045	9.8%
MOBILE HOME	89,452	173,460	76,445	71,404	72,433	96,639	2.7%
MULTI UNIT APARTMENT	168,210	12,758	172,409	170,863	196,649	144,178	4.0%
MULTI UNIT DUPLEX	12,114	82,238	14,505	14,048	17,452	28,071	0.8%
MULTI UNIT TOWNHOME	40,538	47,413	58,803	64,901	61,888	54,709	1.5%
PUBLIC	23,075	21,335	12,426	11,977	15,535	16,870	0.5%
REUSE	215,799	276,458	379,006	358,047	389,768	323,816	9.0%
SCHOOL	44,879	39,652	46,023	37,256	40,588	41,680	1.2%
SINGLE FAMILY	1,831,875	1,804,271	1,853,076	1,684,121	1,887,104	1,812,089	50.5%
Total	3,928,488	3,485,617	3,629,778	3,273,136	3,631,025	3,589,609	100.0%

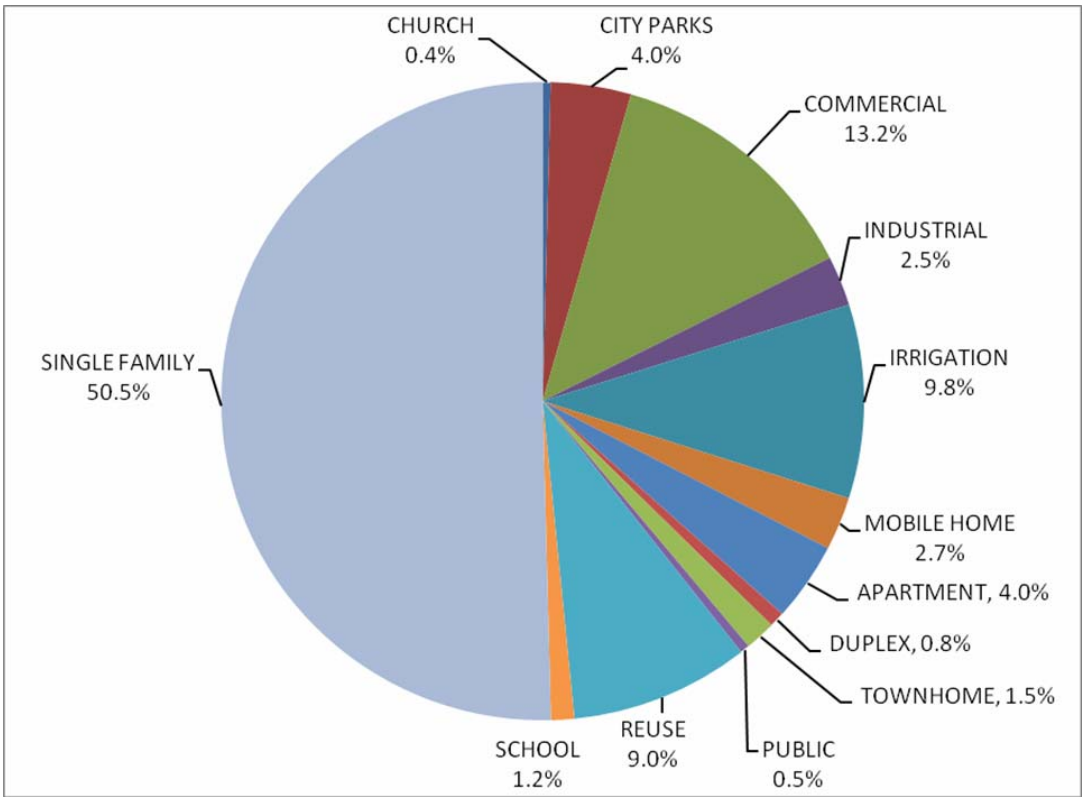


Figure 6. Total Water Use by Sector, Five-Year Average 2006-2010

Table VIII. Potable Water Usage by Sector, Five Year Average 2006-2010

5 Year Average and % of Potable Consumption by Class							
Water Use Category	2006	2007	2008	2009	2010	5yr Ave	% of Total For 5yr Ave
CHURCH	13,722	14,681	15,530	13,298	14,085	14,263	0.4%
CITY PARKS	181,817	121,288	162,451	108,490	147,092	144,228	4.4%
COMMERCIAL	626,281	414,088	442,684	431,567	447,252	472,374	14.5%
INDUSTRIAL	191,397	89,648	79,715	52,908	39,572	90,648	2.8%
IRRIGATION	489,329	388,327	316,705	254,256	301,607	350,045	10.7%
MOBILE HOME	89,452	173,460	76,445	71,404	72,433	96,639	3.0%
MULTI UNIT APARTMENT	168,210	12,758	172,409	170,863	196,649	144,178	4.4%
MULTI UNIT DUPLEX	12,114	82,238	14,505	14,048	17,452	28,071	0.9%
MULTI UNIT TOWNHOME	40,538	47,413	58,803	64,901	61,888	54,709	1.7%
PUBLIC	23,075	21,335	12,426	11,977	15,535	16,870	0.5%
SCHOOL	44,879	39,652	46,023	37,256	40,588	41,680	1.3%
SINGLE FAMILY	1,831,875	1,804,271	1,853,076	1,684,121	1,887,104	1,812,089	55.5%
Total	3,712,689	3,209,159	3,250,772	2,915,089	3,241,257	3,265,793	100.00%

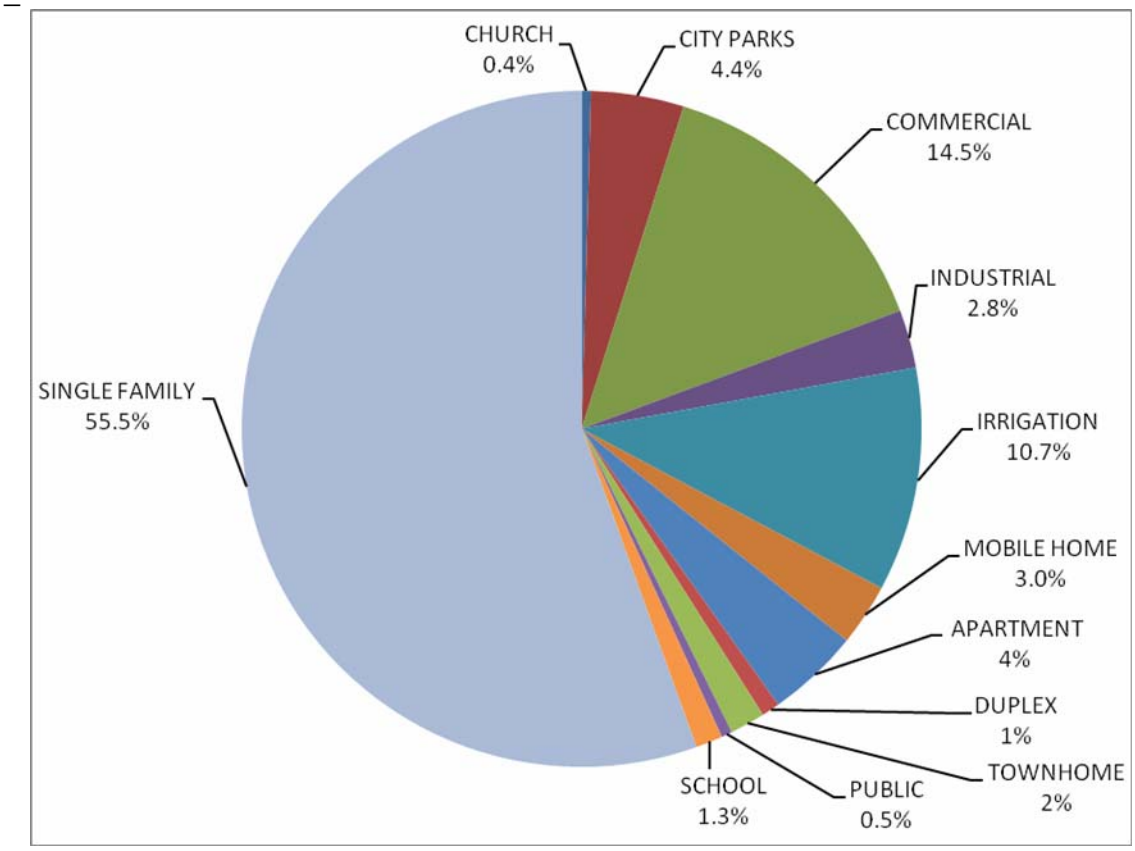


Figure 7. Potable Water Use by Sector, Five-Year Average 2006-2010

2.2 Growth Forecasting Method

Historically, Broomfield's population growth has fluctuated with the regional economy; however, in more recent years it has seen higher growth rates as compared with the region as a whole. Broomfield's growth rate since the early 1990s has exceeded Denver Regional Council of Governments' (DRCOG's) annual projection of 2.5%. Instead, Broomfield's growth rate has been more comparable to 3%, roughly twice the regional rate of growth of 1.5%. Figure 6 shows the historical and projected percent change in Broomfield's population and employment in five year intervals. Employment has been and will continue to be an important factor in planning for water and other services within Broomfield's boundaries. As of 2010, the current amount of commercial development (local retail, regional retail, and industrial) was only about 24% of the total projected commercial buildout[9], while the 2010 population was about 68% of the 83,300 persons projected at buildout.[10]

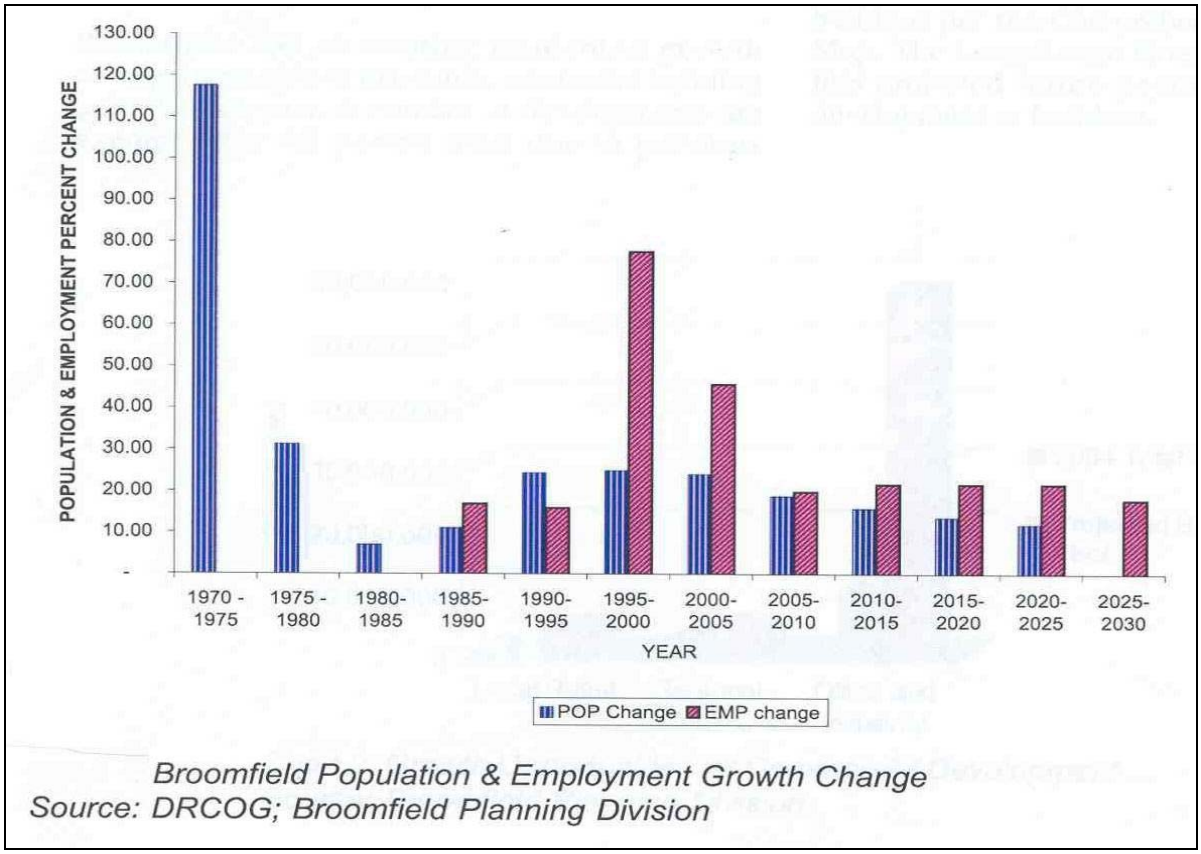


Figure 8. Projected Broomfield Population & Employment Growth Change

[9] 16,197,225 total square feet in 2010, vs. 67,600,000 square feet projected at buildout (City and County of Broomfield 2005 Comprehensive Plan, adopted October 25, 2005, page 37).

[10] Broomfield has an existing residential growth management system in place, which limits residential building permits each year. A number of developments, however, are exempt from the permit limits due to previous annexation or development agreements, or approvals by City Council exempting some multifamily projects. (City and County of Broomfield 2005 Comprehensive Plan, adopted October 25, 2005, page 37).

Therefore, given Broomfield's unique demographics and proposed future land uses in the Comprehensive Plan, it is prudent to forecast future water demands using a methodology that incorporates the significantly differing residential and commercial future growth rates described above. Broomfield has developed a forecasting spreadsheet that incorporates both the residential and commercial growth projections, as described below.

The estimated buildout population number is based on a combination of existing, approved (platted), and planned (approved PUD plans) numbers of dwelling units, plus projections for the number of dwelling units likely to be developed within any remaining undeveloped future growth areas based upon the 2005 Comprehensive Plan's Land Use Map. The Comprehensive Plan notes that the buildout projection is just that, a projection, and is not intended to identify or establish a population cap or policy for Broomfield. Instead, the buildout population projection number provides an analytical basis. As with the population projections, commercial projections are a combination of existing, approved, and planned development. Local retail is expected to expand from about 1.83 million square feet to 4.56 million square feet; regional retail (including malls) will increase from 2.77 to 5.04 million square feet. Office and industrial uses are anticipated to expand from 11.6 million to 58 million square feet.

2.3 Water Demand Forecast

Projected water usage demands for the three main customer classes (commercial, irrigation, and residential) were projected through 2040 and quantified by total acre-feet per year. The methodology used was briefly described in Section 1.5, under "Supply-Demand Planning Efforts" and is described in more detail below.

Broomfield develops yearly water tap equivalent (TE) projections for both residential and commercial users, by land use planning areas. These projections are based on specific known and anticipated residential developments and commercial/retail projects and information as to when they are expected to come on line, as well as the number of building permits anticipated for each development by individual year. The number of new residential and commercial TEs is projected for each year; these estimates range from 0 to 945 residential TE per year, and from 0 to 296 equivalent commercial TEs per year, depending on the particular year being modeled. As noted in Section 1.5, commercial facilities are converted into tap equivalents (TEs) through the use of a square footage per TE factor based on past data. Likewise, multifamily residences are converted to TEs using an experience-based conversion factor. Single family residences are assigned one tap equivalent.

The TEs are then converted into projected potable water demands using a factor of 0.50 acre-feet per TE per year (based on historical data from 1996 through 2007). Irrigation demands that can be converted to the nonpotable reuse system are subtracted from the potable water demands. System losses, which are the sum of evaporative loss and reservoir seepage from Glasser Reservoir, line draining, toe drain loss, differences in

meter readings, treatment loss backwash to wastewater, and unknown losses within the potable system are also added in to the potable water demands (see Section 1.6 discussion). As previously noted, these forecasts do not include adjustments for future water conservation activities identified in this plan. However, because the TE factor is based on the previous ten years' data, conservation savings realized from past efforts become incorporated in the demand projections over time.

The results of Broomfield's most recently updated[11] analysis is summarized below in Figure 9. This figure shows the projected demands measured in acre-feet, for the years 2010 through buildout in 2040. The most recent estimate for total potable demand, including losses, is 20,283 AF at buildout in 2040. Similarly, the projected demand for the reuse system at buildout is approximately 6,500 AF. Based on current forecasts, the reuse system is projected to grow at a slightly faster rate that the potable system through buildout. The net effect is that the percentage of Broomfield's reuse demands in comparison to the total water demands will be greater at buildout than they are currently.

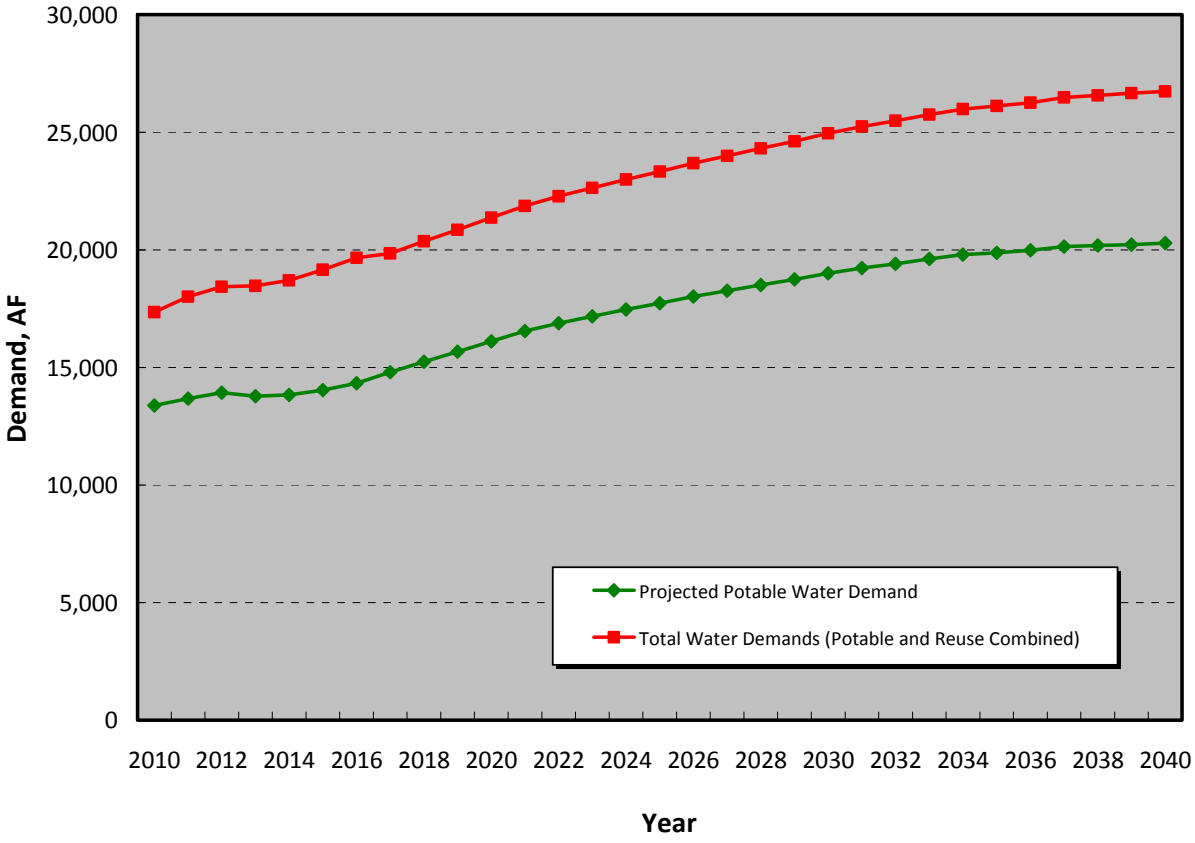


Figure 9. Future Projected Demand for Broomfield, 2010-2040

[11] Updated May 2011

3.0 PROPOSED FACILITIES

3.1 Potential Facility Needs and Costs

Broomfield's water supply model includes a system capacities and demands analysis. This information is used to determine when system improvements will be required. A full list of significant improvements and additions, as well as the expected timing and cost of improvements, are listed in Section 3.3. Project needs are based on many factors including compliance with regulations, replacement of older equipment or facilities, anticipated average and maximum-day demands, and future growth.

The capacity of various water system components, including water supply, raw water transmission, water treatment, treated water transmission to storage, treated water storage, distribution from storage, and pump stations, was compared year-by-year to projected water demand needs. Instances where demand would exceed capacity were identified. Options to improve and add capacity to the existing system were evaluated, and the best option was chosen.

For example, with respect to water treatment, peak day demand would approach capacity in 2018, when the treated demand would be 33.7 MGD. The capacity of the current water treatment plant is 20 MGD and the Denver Water system can supply up to 13.0 MGD of treated water. Since the Denver Water contract is for a fixed maximum annual amount of treated water, the option to expand Broomfield's water treatment plant by 6.0 MGD by 2018 was selected. Construction is scheduled to begin in 2017 to allow time for design, permitting, construction, and start-up. Estimated cost for the treatment plant expansion is $10.3 million; this amount is included in the 10-Year Capital Improvement Plan (CIP) for water facilities, with $1.5 million initially allocated in 2017 (for design) and $8.8 million in 2018 for construction.

Funding mechanisms for the expansion are evaluated as part of Broomfield's Long Range Financial Plan 2009.[12] Operating revenues included in the financial model include water sales, meter fees, leased water surcharges, late charges and turn-on fees, interest, and transfers from other funds. Capital expansion revenues include tap fees, license fees, drought surcharges, interest, bond proceeds, and drought surcharge fee reserves All components of the water system were similarly evaluated as part of the capacity-demand analysis.

All other system components that would need expansion or upgrading, the years in which the additional capacity would be needed at various points in the system, and preliminary cost estimates for the upgrades are identified in Section 3.3.

[12] City and County of Broomfield Long Range Financial Plan, 2009 Update, approved July 28, 2009 as Resolution No. 2009-118.

3.2 Incremental Cost Analysis

As noted above, several key factors must be addressed in order for Broomfield to continue to provide a safe, dependable supply of water to its customers. These factors include the need for peaking supplies, firming of Windy Gap supplies (both in the interim and long-term), provisions for drought protection, and source water considerations and treatment needs to continue to fully meet drinking water standards. As such, several of the planned improvements to Broomfield's existing system are designed to meet multiple goals.

For example, Broomfield Reservoir has several functions. It will allow firming of Broomfield's existing Windy Gap supplies until long-term storage in Chimney Hollow Reservoir or another alternative is permitted and constructed. Broomfield Reservoir will also provide critical drought protection and help meet peak day deliveries during the summer. Finally, it will provide recreational and aesthetic benefits for the public. Likewise, the firming of Windy Gap water will not only provide important supplies during high and low flow periods, but will also provide additional benefits by supplying reusable water for Broomfield's reuse system (thus saving the need to develop additional water supplies for irrigation water).

Due to these multiple functions, it is difficult to accurately break out the incremental cost-per-gallon for water supply purposes. Therefore, the estimated cost of $9,600 per acre-foot of firm yield for participants in the Windy Gap Firming Project[13] was used for cost analysis comparisons in the sections below.

3.3 Preliminary Capacity and Costs Forecasts

As described in Section 3.1, anticipated system improvements and additions have been projected using current system capacities and projected demands through 2040. Table IX is a summary of the significant anticipated improvements, timing, cost, and system component before additional conservation measures are implemented.

Table IX. Anticipated System Improvements and Additions (Potable System)

Year	Description	Primary Function	Estimated Cost
2012-2015	Chimney Hollow Reservoir (WGFP Proposed Alternative) design and construction start	Supply Storage	$75,160,000
2012-2020	New transmission line extensions and treated storage (to serve the north area)	Transmission	$15,450,800

[13] Western Resource Advocates December 2008 Comments on WGFP DEIS to U.S. Bureau of Reclamation states a cost of $9,600 per acre foot of firm yield for Windy Gap based on a 4:1 storage to yield ratio. For comparison purposes with other conservation measures, this cost per acre foot of firm yield estimate was used rather than a cost per acre foot of storage. Note that the Northern Colorado Water Conservancy District has estimated the cost per acre foot of Windy Gap firming storage as $2,400. Using the firm yield cost is thus conservative.

Year	Description	Primary Function	Estimated Cost
2014-2016	Local reservoir (Broomfield Reservoir) to provide interim storage and increased raw water transmission to Water Plant	Transmission Storage	$72,000,000
2015	New treated water storage tank in the north area pressure zone	Distribution Storage	$3,500,000
2018	6 MGD increase in water treatment capacity (from present 20 MGD)	Treatment	$10,300,000
2019	1 MG new treated water storage tank for west area	Distribution Storage	$2,500,000
2025	6 MGD increase in water treatment plant capacity	Treatment	$12,000,000

4.0 Conservation Goals

4.1 Development of Water Conservation Goals

Broomfield's 2005 Comprehensive Plan identifies a goal to "Promote a shared environmental ethic that strengthens our behavior to conserve resources."[14] Broomfield's Sustainability Plan, a supplement to the 2005 Comprehensive Plan, contains the following goal and policy statements more specific to water conservation.[15]

> *Goal S-A.I: Protect the environment through the preservation of wildlife, reduction of waste, conservation of water, and enhancement of land, water and air quality.*
>
> *Policy S-A.3: Establish and use standards, policies and practices that encourage and support water conservation.*

As previously listed in Section 1.5, there are several action steps identified in the plan to encourage sustainable water conservation. These resources provided the framework for establishing future water conservation goals. This process is further discussed in more detail in Section 5.2.

Preliminary general conservation goals were defined to aid in later screening steps. Through an iterative process, the preliminary goals were further refined in Section 7.0. Preliminary goals included the following:

- Realize the full potential of the Reuse System which is consistent with the goals and plans outlined in Broomfield's Long-Range Financial Plan.[16] The reuse

[14] City and County of Broomfield 2005 Comprehensive Plan, Adopted October 25, 2005, page 114
[15] City and County of Broomfield Sustainability Plan, Adopted January 25, 2011, page 2-5.
[16] City and County of Broomfield, Long-Range Financial Plan, 2009 Update, approved July 28, 2009 as Resolution No. 2009-118.

project currently supplies approximately 2,400 AF and is projected to produce an annual yield of approximately 6,500 AF at buildout.
- Realize savings from supply side and demand side conservation activities over the next 10 years.
- Focus selected conservation measures and programs on areas where there are the greatest potential savings. Based on the findings of Sections 1 and 2 the focus should be residential use and irrigation. These findings are described in further in Section 6.0.
- Continue to work to reduce peak-season and peak-day demands through water conservation efforts.

4.2 Documentation of the Goal Development Process

Staff developed the preliminary goals above by:

- evaluating the existing system and its limitations;
- reviewing Broomfield's planning policies and initiatives with respect to direction and guidance for prioritizing future water conservation activities, as well as continuing on-going conservation initiatives[17];
- evaluating existing programs and their effectiveness compared to the cost and effort required;
- analyzing the pattern of water demands, both temporally and by sector, to identify potential areas for savings.

The preliminary goals defined in Section 4.1 were the outcome of this evaluation. These goals were further refined and adjusted following the screening process documented in Section 7.

5.0 Identifying Conservation Measures and Programs

5.1 Conservation Measures and Programs

Broomfield has developed a full list of current and prospective conservation measures and programs on both the supply-side and the demand-side. Appendix E includes a full description of all the conservation programs and measures researched and considered. Appendix E also provides a justification as to why a program or measure was eliminated from consideration in this conservation plan. All measures and programs required for consideration as stated in §37-60-126 C.R.S. (Water conservation and drought mitigation

[17] Note that the Sustainability Goals and Policies were subject to a formal public participation as part of the adoption process. The Plan updates the Environmental Stewardship Chapter of Broomfield's 2005 Comprehensive Plan.

planning) were included for consideration in Appendix E. State Statues include the following requirements for water conservation plans:

In developing these measures and programs, each covered entity shall, at a minimum, consider the following:

> (I) Water efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;
>
> (II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation;
>
> (III) Water-efficient industrial and commercial water-using processes;
>
> (IV) Water reuse systems;
>
> (V) Distribution system leak identification and repair;
>
> (VI) Dissemination of information regarding water use efficiency measures, including public education, customer water use audits, and water-saving demonstrations;
>
> (VII) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner;
>
> (VIII)Regulatory measures designed to encourage water conservation;
>
> (IX) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures.

5.2 Developing and Defining Screening Criteria

Broomfield's Comprehensive Plan includes a supplemental Sustainability Plan that is intended to protect the environment. Each environmental theme in the Sustainability Plan includes a goal, a policy statement, and action steps for implementation. All of the policy and action steps related to a water conservation measure or program were used in the evaluation process. By relating the Sustainability goals in the Comprehensive Plan to proposed conservation activities, Broomfield was able to focus on those elements that best fit Broomfield's stated goals.

The 2005 Comprehensive Plan was created through a community visioning process with resident, business, commercial, industrial and institution input. A similar robust public process was used for the 2010 Sustainability Plan. While the use of environmental stewardship goals was the main screening process used for the development of this plan, other criteria were also taken into consideration. These included balancing cost/benefit, ease of implementation, public acceptance, and amount of expected conservation savings. These criteria were also used during early screening of conservation measures and programs.

5.3 Screening Conservation Measures and Programs

The screening criteria described above were applied to the measures and programs defined in Appendix E. After this initial screening, a subset of potential conservation program components was compiled and further evaluated in the next step. Measures and programs that were eliminated from further evaluation, and the reason(s) for their elimination, are listed in Appendix E. Measures and programs that were selected for further consideration and review are marked with a Y in the last column and included in the Cost/Benefit analysis in Appendix F and discussed in Section 6.

6.0 EVALUATING AND SELECTING CONSERVATION MEASURES AND PROGRAMS

Throughout the water conservation planning effort, much thought and attention was given to identifying areas that have the highest potential for sustainable water savings. The areas below were targeted based on consumption in specific areas, usage trends, and other factors that are important or unique to Broomfield. The targeted areas identified for the highest potential savings include:

1. Peak Summer Demand: During some recent years (e.g., 2000, 2005, 2006, and 2007), peak monthly demands have been five to six times higher in the summer months than during the winter (non-irrigation season) months (see Section 1.1). Therefore, water usage in the summer months is the area where the greatest potential benefit occurs. Potential measures to reduce peak summer demand would focus on more efficient irrigation practices, expansion of the reuse irrigation system, as well as an evaluation of the current rate structure to encourage savings during higher use months.
2. Reuse: Reuse allows a second and third use of the same water, thus reducing the need to purchase additional water rights and build larger treatment and distribution facilities. As described in Section 1.3 of this conservation plan, Broomfield's Windy Gap rights are able to be reused to extinction; however, they are not yet firmed in low or high run-off years. Measures that maximize the full potential of the reuse system will therefore be targeted.
3. New Growth: Broomfield anticipates that growth and expansion within its boundaries will continue in the future. Conservation measures could include new landscaping and new irrigation system standards and specifications/requirements. Residential and commercial indoor water conservation programs, such as voluntary water audits have potential for significant savings.
4. Single Family Residences: Single-family residential usage accounts for over half of the total water sales in Broomfield (see Section 1.4). This group of water customers represents a great potential for water savings. Programs and measures to address this heavy use class include voluntary water audits, landscape and

irrigation system standards and specifications and conservation education activities to affect behavior changes.

5. Largest Water Users: Finally, the ten largest potable water users, as shown in Section 2.1, Table VI, will be targeted for potential conservation. Seven of the top ten users are commercial facilities; therefore, some conservation programs will target commercial users. The twelve of the top twenty highest total water users in Table V are reuse or irrigation accounts. This fact confirms the importance of the continued expansion of this system.

6.1 Combinations of Measures and Programs

The approach Broomfield used to evaluate specific conservation measures and programs is based, in part, on whether they could achieve multiple goals. For example, a measure that would be effective for one of the five targeted areas above, is supported by Council's directives in the Comprehensive Plan, and is shown to be cost-effective was more likely to be chosen than one that meets only one of the screening criteria. In this way, a combination of programs and measures was developed to maximize the potential benefits that would derive from their implementation. These selected measures and programs, and the multiple goals they support, are detailed in Appendix E.

6.2 Costs and Water Savings of Conservation Options

In Phase 2 of the Statewide Water Supply Initiative (SWSI) Report, the CWCB formed a technical roundtable represented by municipal water providers, technical advisors, environmentalists, and agricultural, ditch, and reservoir companies. This roundtable was assembled to examine various water supply initiatives, including water conservation and efficiency. Subcommittees were formed within the roundtable to examine more specific topics, one topic being municipal and industrial (M&I) conservation and efficiency measures.

This subcommittee developed a list of M&I conservation measures believed to represent good examples of potential measures. From this list, the subcommittee used recent studies, papers, and actual water utility experiences to determine water savings, costs, and other traits that can be expected by implementing various groups of conservation measures. Table X summarizes the SWSI findings.

Table X. SWSI Roundtable Estimated Potential Costs and Savings by Measure

Measure	Estimated Cost Range of Program per AF of Savings ($/AF)		Potential Water Savings per Customer Account (1000's gals/year)	
	low	high	low	high
Sub-metering: Multi-Family Housing	$4,000/AF	$4,000/AF	6 (1000 gal/ apt/year)	17 (1000 gal/ apt/year)
Cooling Towers Increased Cycle Concentration	$1,000/AF	$5,000/AF	N/A	N/A

Measure	Estimated Cost Range of Program per AF of Savings ($/AF)		Potential Water Savings per Customer Account (1000's gals/year)	
Utility Loss Reduction Programs	$2,000/AF	$7,000/AF	(3% of total system demand)	(5% of total system demand)
Residential Landscape Audits	$2,000/AF[1]	$7,000/AF[1]	5	15
Commercial Landscape Audits	$2,000/AF[1]	$8,000/AF[1]	20	75
Rebates for Landscape Retrofits except Turf	$2,349/AF	$10,678/AF	11	36
Commercial Indoor Audits	$3,300/AF[2]	$16,300/AF[2]	10	50
Residential Indoor Audits	$3,600/AF[2]	$11,000/AF[2]	3	9
Washing Machine Rebates	$4,000/AF[3]	$28,000/AF[3]	3.6	8.5
Conservation-Oriented Water Rates[4]	$6,000/AF	$6,000/AF	variable	variable
Turf Replacement	$7,000/AF	$25,000/AF	30	60
Toilet Rebates	$7,230/AF[5]	$7,230/AF[5]	14.6	14.6

[1] Assuming utility pays $100 per residential audit and $500 per commercial audit; and customer pays system repair costs; audit includes irrigation system upgrades, shutoff devices, weather-based controllers, and other new technology)
[2] Assuming utility pays $100 per residential audit and $500 per commercial audit and customer pays any repair costs
[3] Assumes rebates in the range of $100 - $300
[4] Includes options such as increasing block rates, water budgets, excess use surcharges, information-oriented billing
[5] Assumes rebate of $150 per toilet (limit. 2 per customer account)

The SWSI information was used in Appendix F, a Cost/Benefit Analysis of Broomfield's proposed programs and measures. Using the SWSI pre-determined costs and savings for each measure, specific savings potential per customer was calculated using Broomfield's current water rate of $2.80 per 1000 gallons for both residential and industrial uses. The potential measures that are economically feasible were further evaluated for possible implementation.

Cost was one of several screening criteria used by Broomfield to select its conservation programs and measures. In order to compare the cost per AF of water savings to the cost to purchase and develop additional water supplies, a cost for new supplies had to be designated. As noted previously, for purposes of this calculation, the cost to firm Windy Gap water was used. According to Western Resource Advocates, cities participating in the Windy Gap Firming Project can "expect to pay approximately $9,600 per acre-foot of firm yield".[18] If the cost to implement a conservation measure is less than or equal to the cost of Windy Gap firmed supply then the measure could be economically justified for Broomfield. To allow side by side comparison of the programs and measure in Appendix F, the $9,600 cost per acre-foot is converted to $0.029 cost per gallon. If a measure is

[18] Western Resource Advocates, December 29, 2008, Comments on WGFP DEIS to U.S. Bureau of Reclamation.

higher in cost than Windy Gap water, then the measure is not cost effective, meaning that conservation costs more than firming Windy Gap water.

6.3 Comparison of Benefits and Costs

The SWSI-estimated cost and water savings were described in Section 6.2 and Broomfield's estimated cost and savings were compiled in Appendix F to quantify customer savings for each program or measure carried forward from Appendix E. As previously stated, the cost to firm Windy Gap water is estimated at $9,600/AF, which was the base cost used to determine whether a measure is cost effective. If a measure costs less than $9,600/AF to implement, which equates to $0.029 cost per gallon, it is considered a cost effective measure worth further evaluation.

Appendix F provides the anticipated costs and water savings (benefits) for this water conservation plan. It shows which measures fall into the range of being cost effective compared to Windy Gap firm yield. Note that although cost was used as one of the screening criteria, some measures were retained for further investigation even though by this definition they did not appear to be cost effective.

6.4 Evaluation Criteria

The following criteria were used to identify the conservation programs and measures for future implementation.

1) Supports Broomfield’s environmental stewardship goals and policies.
2) Uses Broomfield’s limited resources wisely and is cost effective.
3) Addresses one of the targeted areas identified in Section 6.0.
4) Supports one of the preliminary goals listed under Section 4.1.
5) Influences water demand, such that significant sustainable water savings can be anticipated.

Environmental Stewardship Goals

Broomfield’s Comprehensive Plan Goals and Policies were used to evaluate potential measures and programs for future implementation in Appendix E. This approach is described in Section 5.2. These goals and policies of the Comprehensive Plan were compared with Broomfield’s list of programs and measures. Points were given for balancing costs/benefits, ease of implementation, public acceptance and amount of water savings. These points were tallied and summarized in Appendix E. The more points a program or measure had, the higher it ranked for consideration for implementation or continuation. Proposed programs and measures carried forward to the cost/benefit analysis are marked with a Y (yes) in the last column of Appendix E.

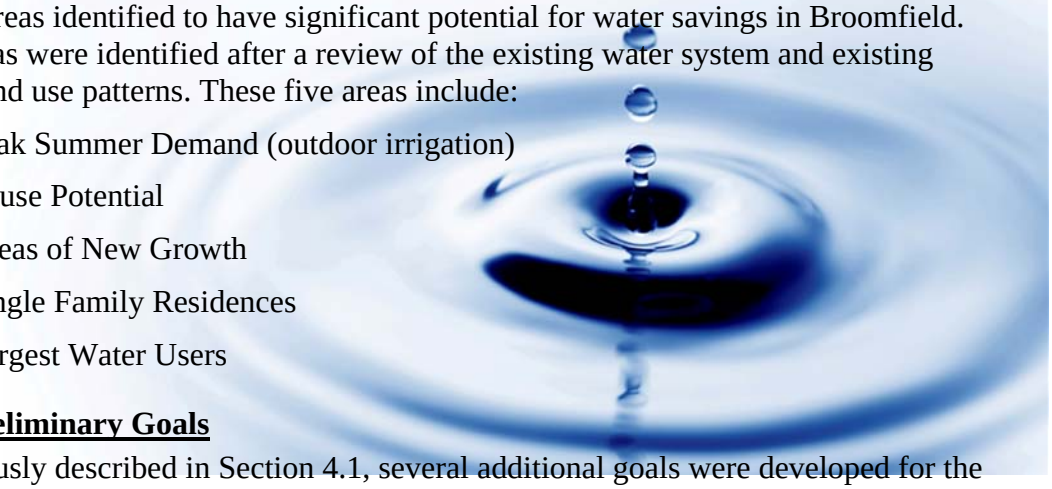
Cost Effectiveness

A cost-benefit analysis was completed in Appendix F, based on the SWSI Phase 2 Report and current and prospective measures for Broomfield's Conservation Plan. If the cost to implement a conservation measure is less than or equal to the cost of Windy Gap firmed supply on a per-acre-foot basis, then the measure could be economically justified for Broomfield. In addition, the estimated annual savings per customer for each measure was considered and used to evaluate measures according to estimated water savings. More weight was given to those particular measures that resulted in a greater savings per customer.

Target Areas

Additional weight was given to measures that would address one or more of these targeted areas identified to have significant potential for water savings in Broomfield. These areas were identified after a review of the existing water system and existing demand and use patterns. These five areas include:

1. Peak Summer Demand (outdoor irrigation)
2. Reuse Potential
3. Areas of New Growth
4. Single Family Residences
5. Largest Water Users



Other Preliminary Goals

As previously described in Section 4.1, several additional goals were developed for the screening process. These included realizing the full potential of the reuse system, focusing selected conservation measures and programs on areas where there are the greatest potential savings, and continuing to reduce peak season and peak day demands.

Impacts on Water Demand

Several factors have been found by various researchers to strongly influence water demand.[19] These factors can include:

- whether or not the variable is utility-controlled (e.g., price of water, rate structures, outdoor watering restrictions, public education, and rebates);
- seasonal effects (such as a higher price elasticity during the summer higher-use months than during winter);
- consumer awareness of price and available conservation incentives; declining marginal effects from multiple programs (i.e., the per program effectiveness declines as the total number of programs increases);
- and the effectiveness of public information campaigns (which can result in up to 25% water savings during short-term or crisis situations).

[19] Factors Influencing Residential Water Demand: A Review of the Literature, Bobbie Klein, Doug Kenney, Jessica Lowrey, and Chris Goemans, Working Paper Version 1.12.07, updated 1/12/07.

6.5 Selection of Conservation Measures and Programs

As described in the sections above, various criteria were used to help evaluate each potential conservation measure and program to determine whether or not that measure or program would be carried through to selection. Appendix E and F and Table X were very important tools used in the selection of conservation measures and programs. Appendix E summarizes each potential measure and program and states whether it is to be continued (C), selected for further cost analysis (Y), or eliminated (N). Table X summarizes generally accepted costs and benefits of the programs and measures. Appendix F is the detailed cost/benefit of the proposed programs and measures under consideration.

Table XI summarizes the selected measures and programs, reasons for the selection, and plans for implementation.

Table XI. Selected Measures and Programs.

Worksheet Category	Selected Program or Measure	Reasons for Selection (Evaluation Criteria)	Target Areas*	Plan for Implementation	Projected Implement-ation Date
Education/ Information Dissemination	Sustainability Tips including water conservation tip in "News Notes" insert included in each month's utility bill	Cost effective, supports Stewardship Goals, significant impact on water demand	Single Family Residence	Create a list of tips to be updated and maintained by City staff, dedicate one eighth of a page for conservation information, distribute every month	2011
	Conservation oriented activity for Earth Day	Cost effective, supports Stewardship Goals, significant impacts on water demand	Single Family Residence	Staff , in partnership with CSU Master Gardeners, to provide classes and workshops on Xeriscape Landscape principals, designing and retrofitting efficient irrigation systems, etc.	2012
	Additional conservation information for website-Audit check-list	Cost effective, supports Stewardship Goals, significant impact on water demand	Single Family Residence & Largest Water Users	Include a water audit check-list and step-by-step instructions on leak detection and other conservation tips for residential and business customers, to be supported by City staff	2011
	Public education program for primary school kids	Cost effective, supports Stewardship Goals, significant impact on water demand	Single Family Residence	Tours of water treatment plant and water reuse facilities by staff, sponsor a workshop through Project WET	2012

Worksheet Category	Selected Program or Measure	Reasons for Selection (Evaluation Criteria)	Target Areas*	Plan for Implementation	Projected Implement -ation Date
	Utility Bills-Add a couple of lines titled "Water Conservation Tips" at the bottom of each bill	Cost effective, supports Stewardship Goals, significant impact on water demand	Single Family Residence	Direct water customers to water conservation tips online at www.Broomfield.org	2011
	Customer Water Use Audits Indoor and landscape water use audits for residential and commercial users	Cost effective, measurable water savings	Single Family Residence & Largest Water Users	Explore opportunities with CSU extension, college students, internship opportunities, and investigate other funding ideas for implementation	2012
Rate Structures & Billing Systems Designed to Encourage Efficiency	Conduct water rate study to explore other rate options that encourage water use efficiency in a fiscally responsible manner such as an increasing block rate structure.	Measurable water savings, significant impact on water demand	Peak Demand, Reuse Potential, Single Family Residence & Largest Water Users	Conduct a water rate study per RFP 12-012 to evaluate increasing block rate structure and other options. RFP 12-012 is included in Appendix E.	2012
Regulations/ Ordinances	Plan review guidelines for new developments	Measurable water savings, cost effective, plan ahead for savings	Areas of New Growth	Work with Planning Division to develop a checklist for developers to address water use efficiency at plan review stage. City Planner will recommend water efficiency measures prior to Planning and Zoning Commission review. Review other ordinances for other water saving opportunities.	2012
Incentives	Landscape rebate program for making changes that improve efficiency through the use of irrigation controllers, high efficiency sprinkler heads, and water wise plants	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand & Single Family Residence	Expand current demonstration gardens and seminars to include irrigation efficiency. Set rebate guidelines, Evaluate anticipated costs and levels of participation prior to implementation	2012
	Incentives/rebates for toilets, washing machines.	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand, Reuse Potential, Single Family Residence & Largest Water Users	Set rebate criteria and guidelines, Evaluate anticipated costs and anticipated levels of participation prior to implementation	2012

Worksheet Category	Selected Program or Measure	Reasons for Selection (Evaluation Criteria)	Target Areas*	Plan for Implementation	Projected Implement-ation Date
	Contest for lowest residential water bill	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand & Single Family Residence	Plan a contest for residents through water bill stuffer. Have resident document at least10% savings over Apr, May, June of previous year to be entered in to a drawing for city to reimburse their water bill for one or two months.	2012
Water Efficient Fixtures and Appliances	Low-volume, auto flush toilet	Supports Stewardship Goals, cost effective, measurable savings	Areas of New Growth & Largest Water Users	Replace toilets as needed with high water efficiency toilets in city facilities.** Goal of 6 toilets per year. Investigate outside funding opportunities.	2013
	Ultra-low water urinals	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand & Largest Water Users	Replace urinals as needed to ultra-low flush urinals until all urinals in City facilities are ultra-low flush. Goal of 5 per year.** Provide water savings information to businesses to encourage them to do the same.	2013
	Push activated, low flow timed showerheads	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand & Largest Water Users	Replace showerheads in public buildings as needed with timed showerheads.** Goal of 4 per year. Provide water savings information to businesses to encourage them to do the same.	2013
	Motion activated, timed faucets	Supports Stewardship Goals, cost effective, measurable savings	Peak Demand & Largest Water Users	Replace faucets in public areas as needed with motion activated, timed use faucets.** Provide water savings information to businesses to encourage them to do the same.	2013
	High efficiency washing machines	Supports Stewardship Goals, cost effective, measurable savings	Single Family Residence	Replace washing machines in public buildings as needed with high efficiency models.** Goal of 2 per year. Provide water savings information to businesses to encourage them to do the same.	2013

Worksheet Category	Selected Program or Measure	Reasons for Selection (Evaluation Criteria)	Target Areas*	Plan for Implementation	Projected Implement-ation Date
Distribution System Efficiency	Uni-directional flushing	Supports Stewardship Goals, cost effective, measurable savings	Largest Water Users	City utilities department implements a flushing program to systematically push water in one direction through the system to minimize waste	2011
Source Optimization 	Develop reuse system to full capacity to maximize savings	Supports Stewardship Goals, measurable savings	Peak Demand, Reuse Potential & Areas of New Growth	Continue to add park acreage to reuse system as reuse lines are placed in developing areas; develop additional reuse supplies	Ongoing through build-out
	Update Drought Mitigation Plan	Supports Stewardship Goals, supported by working paper, helps to plan ahead to avoid crises	Peak Demand, Reuse Potential, Areas of New Growth, Single Family Residence & Largest Water Users	Investigate outside funding to help fund plan, create using Water Conservation Plan and analysis of current water system to find ways to protect supply during drought years	2012

*Target Areas: 1) Peak summer demand; 2) Reuse; 3) New growth; 4) Single family residences; 5) Top users

**Physical Inventory of Water Conserving Fixtures June 2011:

Water Conserving Fixtures as of June 2011									
Building	# manual faucets	timed electric faucets	# manual showers	timed-metered push	# manual toilets	electric toilets	#urinals	electric urinals	ultra-low flush
City & County Bldg	20	2	3	0	26		6	1	1
Paul Derda Rec Center	0	34	0	20	12	15	6	6	0
Workforce Center	2				4		2	6	
Library	13				14		2		
Auditorium	1				1				
#12 Garden Center	4				5		1		
PD/Courts	40		5		34		5		
Community Center	24		3		15		3	2	
HHS	14		1		12		2		
Service Center	13	2	6		7	5	6	6	
Water Plant	5		2		4		1		
Water Reclaim Fac.	4		2		4		2	1	
Detention Center	24		4			25	3		

7.0 INTEGRATING RESOURCES AND MODIFYING FORECASTS

7.1 Revised Demand Forecast(s)

The estimated potable water demand for Broomfield based on current license sales to date, as shown in Figure 9 of this report, is approximately 13,380 AF per year, and projected to reach over 16,110 AF by 2020. Water use projections and revised demand forecasts that incorporate estimated conservation savings have only been extended through the next ten years. This provides a more realistic analysis. Actual savings derived from water conservation programs need to be calculated after implementation before they can effectively be used in future demand forecasts. A ten-year period is appropriate because the water conservation plan will be required to be updated within that time period. Future savings based on actual evaluations can then be included in updated demand estimates.

In the SWSI Phase 1 Report, Section 8: Options for Meeting Future Water Needs, municipal and industrial conservation programs were categorized under five levels of water conservation savings. Using this as a guideline, Broomfield was able to identify and categorize current and selected conservation programs within these five levels and project water savings supported by SWSI. The five categories supported by SWSI include:

- Level 1: “Passive” water savings occurring due to codes, ordinances, and standards. These are termed “passive” because water utilities do not actively fund and implement programs and measures included in these savings.
- Level 2: “Basic” water savings due to metering and leak detection programs funded actively by water providers.
- Level 3: “Moderate” water savings corresponding with the implementation of the nine water conservation measures recommended by the CWCB for water conservation plans. Includes education, rebate, audit, and landscape programs.
- Level 4: “Aggressive” water savings due to programs above and beyond recommended “moderate” programs, including steep pricing rate, rebates, turf replacement, fixture retrofits, and sub-metering.
- Level 5: “Maximum” water savings assuming that there is total participation by all customers and represents the maximum level of effort in water use efficiency and conservation.

Based on the SWSI descriptions above and Broomfield's ongoing conservation programs identified in Appendix E, it is assumed that Broomfield has already fulfilled Levels 1 and 2 of water conservation savings. The estimated 4% water savings from these programs have already been incorporated into Broomfield’s Water Model Demand Projections. The current programs are denoted with a "C" (continue current program) in the last column of the table in Appendix E.

With the selected programs and measures described in Section 6, it is anticipated that all of Level 3 and a portion of Level 4 (about 25%) will be fulfilled when this plan is fully implemented. Note that SWSI projected that savings from various programs would be accrued over time, with more savings achieved as each program achieves a deeper penetration.

Table XII below details the assumed percentage of savings for Broomfield by selected SWSI categories through 2020. Based on the SWSI estimates, an additional water usage reduction of up to 4.8% will be experienced by Broomfield if the selected water conservation programs and measures are fully implemented. This is consistent with the estimated savings calculated in the detailed cost benefit analysis in Appendix F. Broomfield is planning to further expand its reuse irrigation system as part of this conservation plan. The total savings achieved through both program implementation and the expanded reuse system will be 2,544 AF, or approximately 15.8% of our 2020 projected demands. Estimated savings from each of the proposed programs are summarized in Appendix F.

Table XII. Estimated Water Use Reductions for Broomfield's Selected Conservation Measures and Programs, Based on SWSI Projections

		Percent Reduction Demand	
Level	**Selected Programs**	**Current 2010**	**Future 2020**
1	Plumbing Codes		n/a
	Fixture Standards		
2	Metering		n/a
	Leak Detection		
	Total reduction Level 1 & 2	4.0%	
3	Additional savings from:	0	3.2%
	Education		
	Rebates/incentives		
	Water Use Audits		
	Increasing Rate Structure		
4	Additional savings from:	0	1.6%
	Irrigation and Landscape Rebates		
	Residential and Commercial Audits		
	Total Reduction	**4.0%**	**4.8%**

7.2 Project-Specific Savings

Figure 10 below graphically shows the anticipated effects of the various levels of conservation on the future projected demand for the next ten years. This chart was used to determine the extent to which the proposed conservation programs and measures would enable elimination, downsizing, or postponement of projects or water purchases during the planning period. In addition, it shows that the greatest proportion of water savings will be achieved through the expansion of the reuse water system.

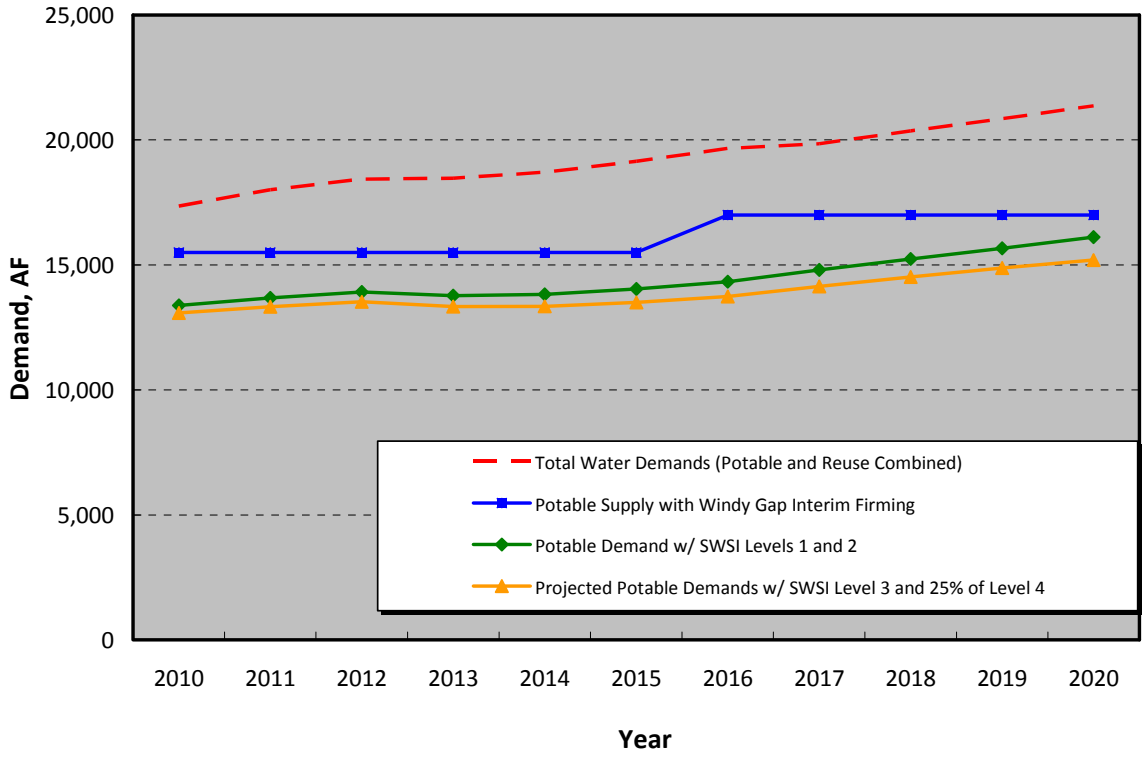


Figure 10. Projected Future Demand with Various Levels of Conservation

The green line in Figure 10 represents Broomfield's current potable demand with SWSI Level 1 and Level 2 savings and the Parks Department's 10% savings on irrigation use. The red dashed line represents total potable demand plus the reuse system demand. The blue line represents the current supply. The gold line shows the additional 4.8% savings predicted through implementation of 100% of Level 3 and 25% of Level 4 water conservation measures. This figure indicates that without the reuse system in place, the potable system demand would be significantly higher than the supply available.

Future System Improvements

Future planned system improvements and additions were previously summarized in Table IX, including project description, timing, and cost. These improvements are projected out through 2020, and consist of storage, transmission, and treatment components. The potential for deferment of each of these individual projects is discussed below.

Transmission Main Extensions – 2012 and beyond

A new transmission line and connection to the east zone service area is planned over the next several years, to be completed by 2017. This transmission line will service the new northern residential developments, and therefore is also needed at this time to serve existing residents.

Treated Water Storage – 2015

A 3.15 MGD water distribution storage tank is planned for construction in 2015. This is tank is needed for new residential development that is currently underway in the north portion of the city. Therefore, this project cannot be eliminated or delayed.

Local Supply Reservoir – 2016

The Broomfield Reservoir at Lowell and 152nd Avenue is necessary to provide interim firming for currently-owned Windy Gap water rights. After Windy Gap supplies are firmed through the construction of Chimney Hollow Reservoir, Broomfield Reservoir will be used to meet peak summer flows to the Water Treatment Facility, and provide emergency storage and drought reserve. It is prudent to begin the planning and design for large scale water projects due to the long lead time require to obtain the necessary permits and approval. It is standard industry practice to begin construction before the demand approaches 85% or 90% of the current capacity.

From Figure 10, it can be seen that current demand (without additional conservation) will be at about 90% of available supply in 2015 and 96% of available supply in 2017. With the addition of the planned Level 3 and a portion of the Level 4 conservation programs, these demands change to about 87% and 91% of available supplies in 2015 and 2017, respectively. Even with the implementation of the proposed water conservation, the amount of savings would not be enough in the near future to justify the postponement of either the Broomfield Reservoir or the WGFP, which are both presently planned to begin construction in the 2014 to 2016 timeframe.

Treatment Plant Expansion – 2018

In 2018, a 6 MGD increase in the water treatment plant capacity is scheduled. At the most, this project could be deferred for up to 6 months, based on the relation between supply and projected demand shown in Figure 10 There is presently $1.3 million in the 2017 budget for the design of this improvement. It is recommended that design proceed as planned, with construction to be completed by 2018, when the treatment capacity is needed according to current projections.

Treated Water Storage – 2019

A 1 MGD water distribution storage tank is planned for construction in 2019 in the west side of Broomfield. This is tank will provide additional reliability and fire protection for Broomfield's highest pressure zone. The tank is needed to provide adequate service levels to existing customers.

Treatment Plant Expansion – 2025

One planned improvement that could be postponed due to water savings from conservation is the 6 MGD additional increase in water treatment plant capacity currently planned for 2025. Assuming this project can be postponed at least 2 years based on Figure 10, at a current projected cost of $12.0 million and an interest rate of 5%, construction in 2028 instead of 2025 could save approximately $1.5 million. Potential postponement of this project will be re-evaluated prior to construction.

7.3 Revised Supply-Capacity Forecast(s)

It has been concluded that most of the planned system expansions and improvements can not be postponed, reduced, or eliminated by the implementation of this water conservation plan. However, the postponement of the 6 MGD additional water treatment plant expansion will be reconsidered prior to the next update of this plan.

7.4 Forecast Modifications and Benefits of Conservation

Figure 10 shows the anticipated demand and anticipated supply with and without implementation of the selected conservation measures and programs. Sections 7.1 and 7.2 described how the implementation of this conservation plan will help address the defined goals and targeted areas.

7.5 Revenue Effects

All of the recommended conservation measures and programs, with the exception of the increased block rate structure, were shown to be cost-effective when compared to the cost of Windy Gap Firming. Potential cost savings per customer are shown in Appendix F. Cost savings due to deferment of capital projects may not be realized until this conservation plan is updated before 2017. Any cost savings will be reevaluated and included with the update. The proposed rate study will also address the affect of system revenues related to new rate structures, for Council's consideration.

8.0 IMPLEMENTATION PLAN

8.1 Implementation Schedule

Specific actions to implement each selected measure or program and target implementation dates are included in Table XI and Appendix F. The 2011 budget has a $25,000 line item for plan implementation and the 2012 budget proposal has $25,000 earmarked for water conservation rebates and $20,500 for plan implementation. Program implementation will be tracked and reviewed as part of with service efforts and accomplishments review during the annual budget processes Full implementation of all of the selected measures and programs will depend on available resources, including

internal and external funding sources. Current economic conditions will be considered during budget planning.

8.2 Public Participation in Water Conservation Plan Development

The 2005 Comprehensive Plan, which was the basis for the initial screening of the universe of potential conservation measures and programs, was written by a Task Force of Broomfield residents and staff. City Council discussed the 2009 draft WCP at a study session on August 18, 2009. Broomfield held a 60 day public review period on the 2009 Water Conservation plan from August 30- October 31, 2009. The Sustainable Community Task Force, including 30 members of the public, The Task Force received the WCP for review and comment in August 2010. The plan was updated as a result of the comments received.

The 2009 draft WCP was revised in the spring of 2011 to include water supply and demand data through calendar year 2010, and to include comments received from the CWCB. Due to changes made to the 2009 draft WCP, and to respond to the CWCB's recommendation, the 2011 draft was made available for public comment from October 1 to December 1, 2011

The Plan was made available for online viewing and printing. Hard copies were also made available at the Broomfield City and County Building and Broomfield's Mamie Doud Eisenhower Public Library. Notification was posted in the Broomfield Enterprise on Sunday October 2 and Thursday October 6, 2011

Public comment periods were also advertised on Broomfield's local government access TV Channel 8, and an email message was sent to Broomfield's Environmental B-in-the-Loop subscription email service to 250+ subscribers. A reminder to submit comments was announced in the Broomfield Enterprise Newspaper on Sunday December 18, 2011. Copies of all of the public outreach material for the public comment period are compiled in Appendix G. The Plan was discussed at a public hearing on (future date-January 2012) before the Broomfield City Council. Public comments and responses received to date are summarized in Appendix H.

8.3 Monitoring and Evaluation Processes

Broomfield will evaluate the potential use of its Automated Meter Reading program to assist in the data collection to evaluate water savings achieved through various measures. Financial data on costs incurred through implementation of this plan will be compiled and evaluated to determine the effectiveness of various components of the program. This will be documented as part of the Service Efforts and Accomplishments Report, which is updated annually as part of the budget process. Table XIII indicates the parameters that will be tracked for each conservation program and measure

Table XIII. Tracking Matrix for Monitoring Water Conservation Measures

Conservation Measure or Program	Number of Rebates/ Giveaways (A)	Individual Customer Water Use (B)	Customer Class Water Use (C)	Per Capita Water Use (D)	Unaccounted for Water (E)	Peak & Annual Treated & Total Water (F)
Education/Information Dissemination						
Proposed Additional Public Education Programs				X		X
Landscape Residential Water Audits			X	X		X
Landscape Commercial Water Audit			X	X		X
Indoor Commercial Water Audits			X	X		X
Indoor Residential Water Audits			X	X		X
Rate Structure						
Proposed Tiered Rate Structure			X	X		X
Regulations/Ordinances						
Planning Water Efficiency check-list			X	X		X
Turf Restrictions			X	X		X
Incentives						
Toilet Rebate	X	X		X		
Irrigation Rebate	X	X		X		
Washing Machine Rebate	X	X		X		
Shower Rebate	X	X		X		
Drought Resistant Vegetation For Water Bill Credit	X	X		X		
Give-aways for Lowest Water Bill	X			X		
Water Efficient Fixtures and Appliances Owners Option						
Toilets	X	X		X		
Urinals	X	X		X		
Showerheads	X	X		X		
Faucets	X	X		X		
Washing Machines	X	X		X		
Landscape Efficiency Owners Option						
Low Water Use Landscapes (targeted towards existing households using retrofitting)	X	X		X		X
Efficient Irrigation (retrofit on existing homes)	X	X		X		X
Industrial and Commercial Efficiency						
Reuse System			X	X		X
Drought Mitigation Plan/ Ordinance				X		X
Distribution System Efficiency						
Water Metering		X		X	X	X
Leak Identification and Line Replacement				X	X	X

A The number of rebates and/or giveaways will be tracked for those installations that have been proven.
B Water use prior and post installation will be tracked to determine if a savings has occurred.
C These measures affect specific customer classes that can be tracked to determine savings.
D A reduction in the gpcd will show an overall savings
E The measures track uses that are not billed but are supply-side related.
F Reduction of peak and annual water use will show an overall savings.

8.4 Updating and Revising the Conservation Plan

Broomfield intends to update and revise the conservation plan within the next seven years. Annual reviews of each of the programs and measures will be conducted as part of the budget process and will be documented in the annual Service Efforts and Accomplishments Report. Future plan updates will be accomplished by Broomfield staff.

8.5 Plan Adoption Date/ Completed Date/ Approved Date

Broomfield City Council approved this conservation plan by resolution 2012-8 on March 20, 2012). A copy of this resolution is included in Appendix I.

Appendix A

The City and County of Broomfield Water System

Legend

- Chlorination Station

Pump Stations

- Potable

Water Tanks

- Potable
- Nonpotable

Treatment Plants

- Nonpotable
- Potable
- Wastewater
- Major Water Lines
- Streets
- Broomfield Limits
- Water Service Area

Proposed Tank
3.15 MG

Water Treatment Plant

Carbon Road No. 2 Pump Station

Carbon Road Tanks 1 and 2
3.0 MG Each

Carbon Road No. 1 Pump Station

Interlocken Tank
6.0 MG

Airport Pump Station

Airport Tank 2
3.0 MG

Interlocken Pump Station

Airport Tanks 1 and 3
3.2 MG and 0.75 MG
Nonpotable

Great Western Reuse Treatment Plant

Chlorination Station

Wastewater Reclamation Facility and Reuse Pump Station

Denver Water (Treated)

County Road 8
County Road 6
County Road 4
E County Line Road
County Road 5
County Road 7
County Road 11
Interstate 25
Vista Pkwy
Mountain View Pkwy
Bonanza Dr
Sheridan Pkwy
Huron St
State Highway 7
E 168th Ave
Lowell Blvd
Preble Creek Pkwy
Selna Dam
(Reuse Reservoir)
W 470
Washington St
W 152nd Ave
Zuni St
MATTHEW GLASSER RESERVOIR
W 144th Ave
Dillon Rd
Northwest Pkwy
S 120th St
S 96th St
Via Varra
US 36
S 104th St
Aspen St
SAGAR RESERVOIR
PLASTER RESERVOIR
W 136th Ave
Carbon Rd
FLATIRON FRANK VARRA POND
Interlocken Loop
JOSH'S POND
Miramonte Blvd
US Highway 287
Main St
NISSEN RESERVOIR 1
NISSEN RESERVOIR 2
Sheridan Blvd
THE TRAILS AT WESTLAKE POND
TOM FROST RESERVOIR
E Midway Blvd
THE FEILD
Willow Run Pond
Eldorado Blvd
Forebay
Central Park
W Midway Blvd
South Midway Pond
BRUNNER RESERVOIR
COMMUNITY PARK POND
W 120th Ave
McCaslin Blvd.
State Highway 128
State Highway 121
Wadsworth Blvd
Pond 1
Indiana St
Simms
W. 112th Ave
W 112th Ave
GREAT WESTERN
(Reuse Reservoir)

N

1 inch = 1,672 feet

Print Date: April 21, 2009

The City and County of Broomfield has made every effort to ensure the accuracy of its data. Use of this information is the sole responsibility of the user and The City and County of Broomfield assumes no liability associated with the use or misuse of this information.

Q:\Utilities_Water_and_Sewer\WaterSys\Water Conservation Plan\Water Conservation Plan.MXD

Appendix B

The City and County of Broomfield
Reuse Water System

Legend

Water Tanks

- Nonpotable

Treatment Plants

- Nonpotable
- Potable
- Wastewater

- Reuse Lines
- Water_Reclamation_areas
- Broomfield Limits

County Road 8
County Road 6
County Road 4
E County Line Road
County Road 5
Vista Pkwy
Mountain View Pkwy
Bonanza Dr
Sheridan Pkwy
County Road 7
Huron St
Interstate 25
County Road 11
E 168th Ave
State Highway 7
Lowell Blvd
Preble Creek Pkwy
Sheridan Pkwy
Seina Dam
(Reuse Reservoir)
Northwest Pkwy
S 120th St
Water Treatment Plant
W 152nd Ave
Washington St
W 470
Zuni St
Dillon Rd
W 144th Ave
Aspen St
SAGAR RESERVOIR
PLASTER RESERVOIR
W 136th Ave
S 96th St
Via Varra
S 104th St
STEARNS LAKE
US 36
FLATIRON FRANK VARRA POND
Interlocken Loop
Lot 4
JOSH'S POND
Miramonte Blvd
US Highway 287
NISSEN RESERVOIR 1
NISSEN RESERVOIR 2
LE GAULT RESERVOIR
TOM FROST RESERVOIR
ALEXX & MICHAEL'S POND
E Midway Blvd
THE FIELD
Main St
Willow Run Pond
Eldorado Blvd
Forebay
Central Park
Interlocken Blvd
W Midway Blvd
South Midway Pond
BRUNNER RESERVOIR
COMMUNITY PARK POND
State Highway 128
W 120th Ave / US Highway 287
W 120th Ave
McCaslin Blvd
Wadsworth Pkwy
Indiana St
Shrms St
Pond Z
W 112th Ave
GREAT WESTERN
(Reuse Reservoir)
US 36
Airport Tanks 1 and 3
3.2 MG and 0.75 MG
Nonpotable
Great Western Reuse
Treatment Plant
Wastewater Reclamation
Facility and Reuse
Pump Station

N

0 0.2 0.4 0.8 1.2
Miles

Print Date: June 7, 2011

The City and County of Broomfield has made every effort to ensure the accuracy of its data. Use of this information is the sole responsibility of the user and The City and County of Broomfield assumes no liability associated with the use or misuse of this information.

Path: \\Ccb-fs-01\CommunityDevelopment\GIS\Map_Production\Project_Maps\Public_Works\Reuse\Reuse_Water_System\Reuse Conservation Plan.mxd

Appendix C

Broomfield Municipal Code Applicable Chapters

TABLE OF CONTENTS

TITLE 13

PUBLIC SERVICES

Chapters:

TITLE 15

BUILDINGS AND CONSTRUCTION

TITLE 17

ZONING

Chapter 13-02

Water Licenses

13-02-010 Required.

It shall be unlawful to make a service connection to the city's water system without a water license therefor except for temporary connections for construction purposes made with the permission of the director of public works and in accordance with chapter 13-16. (Ord. 569 §5, 1984)

13-02-020 Water license fee.

Water licenses may be purchased from the city at a fee of $22,454.00 per three-quarter-inch equivalent tap. Tap fees and meter fees are separate and additional. (Ord. 710 §1, 1986; Ord. 752 §1, 1987; Ord. 805 §1, 1988; Ord. 871 §1, 1989; Ord. 887 §1, 1990; Ord. 918 §1, 1991; Ord. 949 §1, 1993; Ord. 1033 §1, 1994; Ord. 1105 §1, 1995; Ord. 1213 §1, 1996; Ord. 1304 §1, 1998; Ord. 1378 §1, 1999; Ord. 1430 §1, 1999; Ord. 1454 §1, 2000; Ord. 1516 §1, 2000; Ord. 1649 §1, 2001; Ord. 1702 §1, 2003; Ord. 1752 §1, 2003; Ord. 1786 §1, 2005; Ord. 1823 §1, 2006; Ord. 1852 §1, 2006; Ord. 1879 §1, 2008)

13-02-025 Water license fee drought surcharge.

(A) At any time during which a declaration of drought has been declared by the city council and a Drought Condition I, II, or III has been imposed pursuant to chapter 13-36, B.M.C., a twenty-percent drought surcharge shall be added to the water license fee charged in section 13-02-020, B.M.C.

(B) Such surcharge may be used for any of the following purposes:

(1) The purchase, lease, or acquisition of water rights, water, or use of water;

(2) The reimbursement of water customers for installation of city-approved water conservation devices;

(3) The payment of water fund debt service;

(4) The acquisition of real property for construction of water facilities; or

(5) To pay costs for the enforcement of drought restrictions.

(C) This section shall not apply to single-family, detached housing served by well water on the effective date of the enactment of this section. (Ord. 1720 §1, 2003; Ord. 1735 §1, 2003; Ord. 1838 §1, 2006)

13-02-030 Application.

Applications for water licenses may be made to the public works department on forms provided by that department by any person owning property within the city or by his or her agent. Applications must be accompanied by the license fee and must contain the following:

(A) A description of the lot, tract, or parcel owned and to be served, including a legal description, a street address, or such other description as may be required by the public works department.

(B) The size of the water tap and water meter requested.

(C) A description of the purposes for which the water is to be used.

(D) The name, address, and signature of the applicant.

(E) Other information required by the public works department to assist in administering this chapter. (Ord. 546 §6, 1984)

13-02-040 Issuance.

The department of public works shall issue a water license if the application complies with section 13-02-030. If the application does not comply with section 13-02-030, the department of public works shall deny the application. (Ord. 546 §6, 1984)

13-02-050 Required for building permit.

No building permit for a structure which will require a new water tap or connections shall be issued unless the applicant has a valid water license. (Ord. 546 §6, 1984)

13-02-060 Transfer provisions.

(A) A water license shall be issued for the lot, tract, or parcel described in the application and shall be issued to the owner of that property.

(B) Except as otherwise provided in subsections (D) and (E) below, a water license may not be transferred or sold except in conjunction with a sale or transfer of the underlying property, either as a whole or in smaller tracts, pursuant to the applicable provisions of title 16.

(C) If a water license is sold or transferred as provided in subsection (B), the city must be immediately notified in writing and may require evidence of such transfer or sale.

(D) The city manager may authorize the transfer of water licenses within the same development parcel on such terms and conditions as may be approved by the city manager, provided any such transfer is consistent with the provisions of this chapter. For purposes of this subsection, the term

development parcel means one or more lots, tracts, or parcels of land that are contiguous to each other and are planned, developed, owned, and managed as a unit.

(E) The city manager may authorize the transfer of water licenses from one lot, tract, or parcel to another lot, tract, or parcel on such terms and conditions as may be approved by the city manager, provided any such transfer is made for the purpose of allowing the holder of a water license to convert outside irrigation to the city's water reclamation system and further provided any such transfer is consistent with the provisions of this chapter. (Ord. 546 §6, 1984; Ord. 1221 §1, 1997)

13-02-070 Outside city.

No new water licenses may be issued for property outside the city except pursuant to existing contracts unless first approved by the city council. Where an existing contract allows service, or where the city council approves service, outside the city, the property owner may apply for a water license even though the property is outside of the city. (Ord. 546 §6, 1984)

13-02-080 Prior provisions.

(A) Holders of valid or expired water licenses issued under former chapters 13-04, 13-08, and 13-10 who wish to buy a new license shall receive credit towards the current fees for any fees now on deposit with the city, except to the extent the Denver Water Department has made charges in relation to such licenses.

(B) Holders of expired water licenses issued under chapters 13-04 and 13-08, who do not want a new license, may, on written request, receive refunds in an amount equal to the difference between deposits previously made and fifty percent of the water availability of service fees in effect at the time of application for the expired water license. Such refunds shall be made within sixty days of receipt of the written request.

(C) Holders of expired water licenses issued under former chapter 13-10 may, on written request, receive refunds of all fees previously paid, less a two-hundred-ten-dollar forfeiture to the city and less any penalties or administrative charges paid to the Denver Water Department. Such refunds shall be made within sixty days of receipt of the written request. (Ord. 546 §6, 1984)

13-02-090 Service charges.

The flat monthly water service charges established by chapter 13-12 shall begin on the date a water license is purchased. (Ord. 546 §6, 1984)

13-02-100 Definitions.

As used in this chapter, unless the context clearly indicates otherwise, the following terms shall have the meanings indicated:

(A) *Three-quarter-inch equivalent tap.* The basic unit of comparison based on demand on the water system. Demand is compared to the demand characteristics of three-quarter-inch connections serving single-family detached housing. Equivalence is determined on a case-by-case basis by the public works department, except for the following:

(1) Connections serving duplexes shall be equivalent to one three-quarter-inch equivalent tap per unit.

(2) Connections serving mobile homes shall be equivalent to eighty percent of a three-quarter-inch equivalent tap per unit.

(3) Connections serving townhouses or other single-family attached and detached housing with no individual outside irrigation shall be equivalent to sixty percent of a three-quarter-inch equivalent tap per unit.

(4) Connections serving apartments or apartment-style condominium units with no individual outside irrigation shall be equivalent to forty percent of a three-quarter-inch equivalent tap per unit.

(B) *City water system.* The water reservoir, plant, lines, pumps, facilities, assets, and appurtenances controlled by the city.

(C) *Tap.* A physical connection to a distribution main.

(D) *Stub-in.* A tap made to allow streets to be paved before a service connection is made. A stub-in line ordinarily extends only to just beyond the curb line. A stub-in does not provide service.

(E) *Service connection.* A tap and appurtenances capable of effecting water service to a water meter. (Ord. 546 §6, 1984; Ord. 1907 §1, 2009)

Chapter 13-06

Water Taps, and Tap and Meter Fees

13-06-010 Requirements for water taps and service connection.

(A) No water tap may be made unless all of the following conditions are met, except for temporary connections pursuant to chapter 13-16:

(1) The lot, tract, or parcel of land to be served must be properly platted and the plat therefor must be approved and recorded pursuant to title 16, if such platting is required by title 16.

(2) A distribution main providing sufficient pressure and volumes as determined by the public works department must be in place, ready to provide service, and approved for tapping by the public works department.

(3) All fees for the water tap have been paid.

(B) No service connection may be made unless all of the conditions for a water tap and the following additional conditions are met:

(1) There must be a valid water license for the service connection.

(2) All fees for the water meter and the water license have been paid. (Ord. 546 §7, 1984; Ord. 575 §2, 1984)

13-06-020 Fees for water taps.

(A) The following fees shall be paid for water taps up to two inches in diameter:

Tap Size	*Water Tap Fee*
¾"	$ 75.00
1"	100.00
1½"	150.00
2"	200.00

(B) For water taps of larger sizes, a tap inspection fee of $100.00 shall be paid to the public works department. Material and work conforming to city standards and specifications will be provided by the person making the tap.

(C) Fees for water taps shall be those in effect when the tap is made and shall be paid before a tap is actually made, whether for a stub-in or for a service connection. (Ord. 546 §7, 1984)

13-06-030 Fees for water meters. Fees for water meters will be paid at the same time the water license fee is paid. The fee will be based on the size of the meter, the cost of the meter at the time the fee is paid, and the cost for the installation of the meter. The city will maintain a current price listing for the cost of different-sized meters and the installation cost for the meters. (Ord. 546 §7, 1984; Ord. 1202 §1, 1996; Ord. 1253 §1, 1997; Ord. 1823 §3, 2006)

Chapter 13-12

Water and Sewer Service Charges

13-12-010 Monthly water service charges.

(A) *Residential water service charges.* Residential customers shall be charged for the use of water from the city water system as set forth below:

(1) Flat monthly charge (no gallonage included): $8.74 per dwelling unit; and

(2) Charge for all water use: $2.80 per 1,000 gallons.

(B) *Business, commercial, industrial, and other nonresidential water service charges.* Business, commercial, industrial, and other nonresidential customers shall be charged for the use of water from the city water system the charges and rates set forth below:

(1) Flat monthly charge: There shall be a flat monthly charge for all business, commercial, industrial, and other nonresidential customers based upon the size of the water connection serving the property or customer account (no gallonage included) as follows:

Connection Size	***Flat Monthly Charge***
¾"	$ 11.60
1"	23.17
1¼"	34.78
1½"	46.37
2"	92.73
3"	208.64
4"	417.28
6"	1,089.63
8"	2,318.28

(2) Charge for all water use: $2.80 per 1,000 gallons. Nonresidential accounts shall include schools, churches, public or institutional buildings, parks, and irrigation accounts.

(3) Standby fire protection charges:

Connection Size	*Monthly Charge*
2"	$ 10.81
3"	21.64
4"	43.26
6"	81.15
8"	108.19

(Ord. 709 §1, 1986; Ord. 872 §1, 1989; Ord. 888 §1, 1990; Ord. 919 §1, 1991; Ord. 950 §1, 1993; Ord. 1168 §1, 1996; Ord. 1305 §1, 1998; Ord. 1379 §1, 1999; Ord. 1650 §1, 2001; Ord. 1669 §1, 2002; Ord. 1686 §§1, 2, 2002; Ord. 1731 §1, 2003; Ord. 1752 §2, 2003; Ord. 1786 §2, 2005; Ord. 1823 §2, 2006; Ord. 1852 §2, 2006; Ord. 1879 §2, 2008)

13-12-020 Monthly sewer service charges.

(A) *Residential sewer service charges.*

(1) All residential accounts shall be charged a gallonage charge based on average winter water consumption. The monthly charge is $2.76 per 1,000 gallons, or $11.04 per dwelling unit, whichever is greater.

(2) Any new occupant of a residential unit served by a separate connection and any new residential unit shall be charged a $16.56 monthly sewer charge until average winter water consumption is established.

(3) Any new multi-unit account shall be charged a monthly sewer charge of $16.56 per dwelling unit until average winter water consumption is established.

(4) *Average winter water consumption* shall be the average water consumption for the four monthly bills reflecting usage between November 1 and the following March 31. The average winter water consumption for each account shall be calculated once annually and shall be the basis for determining charges for the following twelve months.

Chapter 13-16

Temporary Water Permits

13-16-010 Required.

A temporary permit is required whenever a temporary service connection is made to the city's water system. Special purposes for which temporary permits may be issued include:

(A) Temporary sales office;

(B) Construction water;

(C) Temporary irrigation; and

(D) Special events which require the use of water for a limited period of time. (Ord. 892 §1, 1991)

13-16-020 Application.

Applications for temporary permits may be made to the city and shall be accompanied by the deposit and permit fee. Applications must contain the following information:

(A) Proposed dates of water usage.

(B) The size of the water meter to be used.

(C) A description of the purposes for which the water is to be used.

(D) The legal description and address of the property on which the connection will be located, if applicable.

(E) The number and location of the fire hydrant to be used, if applicable.

(F) The name, address, and telephone number of the applicant.

(G) Other information required by the city to assist in administering this chapter. (Ord. 892 §1, 1991)

13-16-030 Sizes of meters allowed.Only three-fourths-inch and two-inch meters are available under a temporary permit. The permittee shall be allowed to furnish his or her own meter only if a meter is not available from the city. The meter must have a current annual inspection report and an approved backflow device. (Ord. 892 §1, 1991; Ord. 1567 §1, 2001)

13-16-040 Deposit and fees.

(A) The following deposit and permit fee shall be paid:

Meter Size	*Deposit*	*Permit Fee*
¾" (furnished by city)	$ 200.00	$50.00
2" (furnished by city)	1,000.00	50.00
2" (furnished by permittee)	500.00	50.00

(B) The deposit shall guarantee payment of water use charges and payment for damage to city equipment.

(C) All permittees shall pay the monthly water service charges as provided by section 13-12-010, B.M.C.

(D) If a water tap is required, the customer shall pay water tap or inspection fees. (Ord. 892 §1, 1991; Ord. 919 §5, 1991; Ord. 950 §5, 1993; Ord. 1379 §4, 1999; Ord. 1567 §2, 2001)

13-16-050 Requirements.

(A) A temporary permit shall be issued by the city manager or his or her designee if the following conditions exist:

(1) The applicant demonstrates compliance with all applicable zoning and building codes, city standards and specifications, this chapter, and other applicable laws.

(2) An approved backflow device is required for all temporary permit applications. The term *approved backflow device assembly* means a device that has been manufactured in full conformance with AWWA C511-97 and has met all laboratory and field conformance specifications outlined in the University of Southern California, Foundation of Cross Connection Control and Hydraulic Research (FCCC & HR) 69-2 or most current issue.

(3) All fees and deposits have been paid.

(4) The applicant has demonstrated a need for temporary water service.

(B) Permittees shall follow all city instructions regarding operation of the temporary connection.

(C) When not in use, equipment provided by the city shall be safely and securely stored.

(D) The meter shall be available for reading on the 28th day of each month and upon request by the city.

(E) The temporary permit shall be available for inspection on the property by the city.

(F) The permittee shall be responsible for, and shall pay the costs for, all line extensions and other construction which is required for temporary water service. (Ord. 892 §1, 1991; Ord. 1567 §3, 2001)

13-16-060 Expiration.

A temporary permit for a temporary sales office shall expire one year after it has been issued. All other temporary permits shall expire ninety calendar days after they have been issued. The permittee shall return all equipment provided by the city upon expiration of the temporary permit. The permittee may reapply for an additional temporary permit by following the same procedures as required to apply for a new temporary permit. (Ord. 892 §1, 1991)

13-16-070 Revocation.

The city may revoke a temporary permit for any one or more of the following reasons:

(A) Failure to comply with the provisions of this code;

(B) Failure to pay applicable fees or charges;

(C) Misuse of city equipment; and

(D) Use of the permit for other than the purposes stated in the application. (Ord. 892 §1, 1991)

13-16-080 Failure to obtain.

In addition to any other penalties provided by this Code, failure to obtain the temporary permit required by section 13-16-010 will result in charges being assessed to the violator for the permit and the approximate amount of water used. The user shall be subject to the following fees for failing to obtain the temporary permit: The fee for the first violation shall be $250.00; the fee for the second violation shall be $500.00; and the fee for the third violation shall be $750.00. Any user who has more than three violations shall be prohibited from obtaining a temporary water service connection under this chapter 13-16. (Ord. 892 §1, 1991; Ord. 1196 §18, 1996; Ord. 1567 §4, 2001; Ord. 1568 §17, 2001; Ord. 1821 §1,

Chapter 13-20

Water Rights Acquisition; City Manager

13-20-010 Authority.

The city manager is hereby authorized to purchase, lease, or otherwise acquire or take steps to acquire water rights, water, or the use of water for the use of the city and its residents in accordance with the provisions of this chapter. (Ord. 455 §1, 1981)

13-20-020 Authority; restrictions.

The city manager may:

(A) Purchase, lease, or otherwise acquire or take steps to acquire water rights, water, or the use of water.

(B) Purchase, lease, or otherwise acquire only that amount of water rights, water, or the use of water which can be paid for from the appropriations specified therefor in the annual budget of the city, including any adjustments to the budget made pursuant to the provisions of chapter XII of the Charter.

(C) Purchase or lease only enough water rights, water, or the use of water to fulfill the projected needs of the city for a five-year period. The city manager shall annually submit a report to the city council setting forth such projected needs.

(D) Request an ownership and encumbrance report as he or she deems advisable in connection with water transactions.

(E) Request an appropriate study from hydrological engineers as he or she deems advisable in connection with water transactions.

(F) Pay commissioner's or broker's fees in connection with water rights purchases or other water transactions.

(G) Employ such other professionals as he or she deems advisable in connection with water transactions. (Ord. 455 §2, 1981)

13-20-030 City manager; duties.

The city manager shall:

(A) Report all purchases, leases, other acquisitions or steps taken to acquire water rights, water, or the use of water to the city council at its next regularly scheduled meeting.

(B) Negotiate all water or water rights acquisitions in the manner he or she deems most beneficial to the city. (Ord. 455 §3, 1981)

Chapter 13-22

Groundwater

13-22-010 Appropriation of nontributary groundwater.

Pursuant to the authority granted to the city under section 37-90-137(8), C.R.S., the city hereby asserts the exclusive right to withdraw for beneficial use all groundwater from the Dawson, Denver, Arapahoe, Laramie-Fox Hills, and Dakota aquifers which underlies any and all land within the corporate limits of the city as they existed on January 1, 1985, and declares that all affected landowners do hereby consent to any and all such future withdrawals. (Ord. 698 §2, 1986)

13-22-020 Consent to groundwater appropriation.

Upon the effective date hereof, the owners of all land which overlies such groundwater hereby appropriated shall be deemed to have consented to the withdrawal by the city of all such groundwater, except that no such consent shall be deemed to be given with respect to any such portion of land if:

(A) Water service to such portion of the land is not reasonably available from the city and no plan has been established by the city allowing the landowner to obtain an alternative water supply;

(B) Said groundwater has been conveyed or reserved or consent to use such groundwater has been given or reserved in writing to anyone other than the city and such conveyance, reservation, or consent is properly recorded before the effective date hereof;

(C) Consent to use of such groundwater has been given to anyone other than the city by the lawful effect of an ordinance or resolution adopted prior to January 1, 1985;

(D) Such groundwater has been decreed or permitted to anyone other than the city prior to the effective date hereof; or

(E) Such portion of the land is not being served by the city as of the effective date hereof and such groundwater is the subject of an application for determination of a right to use groundwater filed in the water court prior to July 1, 1985. (Ord. 698 §2, 1986)

13-22-030 Drilling and extraction prohibited.

The drilling of any water well and the installation of any water well casing or pump by any person within the corporate limits of the city is hereby expressly prohibited without the written consent of city council. For any water well not in existence on the effective date of this provision of this code, the extraction or diversion of water from any such water well within the corporate limits of the city by any person is hereby expressly prohibited without the written consent of city council. The provisions of this

section shall not apply to water wells constructed by or under the direction of the city. (Ord. 698 §2, 1986)

Chapter 13-24

Misuse of Treated Water

13-24-010 Misuse prohibited.

It shall be unlawful for any person to flagrantly or wantonly misuse or waste, or cause to be misused or wasted, treated water supplied by the city, or through the city's water transmission facilities. For the purposes of this section, the following are specifically determined to constitute flagrant misuse and waste:

(A) Any irrigation of lawns or plants which, due to excess application of treated water alone or in conjunction with rain or snow, results in a flow of water running off the property being irrigated which, in aggregate, exceeds five gallons a minute.

(B) Use of any plumbing system, connection, or fixture used for treated water from the city's water system which by reason of damage, disrepair, inadequate maintenance, or dilapidation wastes water in a volume calculated to exceed five gallons a minute. (Ord. 450 §1, 1981)

13-24-020 Penalties.

The penalties for violation of the provisions of this chapter shall be as prescribed in chapter 1-12, B.M.C. (Ord. 450 §1, 1981)

Chapter 13-32

Reclaimed Wastewater

13-32-010 Purpose.

It is necessary for the health, safety, and welfare of the residents of the city to regulate the treatment and application of reclaimed wastewater to provide for maximum public benefit. This chapter sets forth uniform requirements for applicators of the city's reclaimed wastewater, and enables applicators and the city to comply with all applicable state regulations. (Ord. 1549 §1, 2001)

13-32-020 Applicability.

This chapter applies to the direct reuse of reclaimed wastewater for *landscape irrigation*. It also applies to use of reclaimed wastewater for *landscape irrigation* which is blended with or contains nonpotable surface or ground water. *Landscape irrigation* means irrigation of areas, grass, trees, and other vegetation that are accessible to the public including, but not limited to, parks, greenbelts, golf courses, and common areas at apartment, townhouse, commercial/business parks, and other similar complexes. (Ord. 1549 §1, 2001)

13-32-030 Regulatory compliance.

It is the policy of the city and the water reclamation enterprise to comply with the "Reclaimed Domestic Wastewater Control Regulation," Regulation #84 (5 CCR1002-84) as promulgated by the Colorado Water Quality Commission. Such regulations apply to the city as provider and user of reclaimed wastewater for landscape irrigation. The city determines that all requirements and provisions of Regulation #84 shall apply to any applicator of the city's reclaimed wastewater, whether applicator's contract was prior to the adoption of Regulation #84 or such contract is entered into following adoption of this chapter. (Ord. 1549 §1, 2001)

13-32-040 Allocation.

It is the policy of the city and the water reclamation enterprise to make reclaimed wastewater available for property within the city, subject to Regulation #84 and subject to the capacity of the facilities to produce reclaimed wastewater. The use of reclaimed wastewater will require separate contracts between the city and each entity desiring reclaimed wastewater, including a contract between the city and the water reclamation enterprise. Since the availability of reclaimed wastewater is limited, contractual allocations which are available shall be governed by the availability of reclaimed wastewater and the relative costs associated with such deliveries. Regulation #84 does not allow a reclaimed wastewater allocation to be available for individual homeowners' lots. (Ord. 1549 §1, 2001)

13-32-050 Contract required.

It shall be unlawful to make a service connection to the city's reclaimed wastewater system without a specific contract for reclaimed wastewater with the city. In addition to having a specific contract for reclaimed wastewater with the city, applicators of the city's reclaimed wastewater shall comply with all requirements contained in Regulation #84 and cooperate with the city in its efforts to comply with Regulation #84. (Ord. 1549 §1, 2001)

13-32-060 Connection fee.

For all reclaimed wastewater contracts following adoption of this chapter, the connection fee for reclaimed wastewater service shall be at the rate of fifty percent of the then-current potable license fee as prescribed in section 13-02-020 of the Broomfield Municipal Code. (Ord. 1549 §1, 2001)

13-32-070 Monthly service charges.

(A) For all reclaimed wastewater contracts following adoption of this chapter, the flat monthly and consumption charges for reclaimed wastewater service shall be at the rate of fifty percent of the monthly water service charges and the flat monthly charge as prescribed in subsection 13-12-010 (B) (1) and (2) of the Broomfield Municipal Code. Bills for the monthly reclaimed wastewater charges shall be submitted by the city and shall be paid by the reclaimed wastewater applicators monthly.

(B) In any calendar year, the applicator shall not be entitled to receive more reclaimed wastewater than provided in the applicator's specific contract for reclaimed wastewater. Should an applicator receive more than the amount of reclaimed wastewater that is set forth in the specific contract, that applicator shall pay a surcharge based on ten times the normal reclaimed wastewater charge per 1,000.00 gallons for the excess water in each calendar year. (Ord. 1549 §1, 2001)

13-32-080 Supply.

The city will use every reasonable means to furnish a continuous supply of reclaimed wastewater from its system. However, the city is not a guarantor of reclaimed wastewater supply or availability. In order to protect the health, safety, and general welfare of the public, the city may limit the use of reclaimed wastewater in times of reclaimed wastewater shortage or drought. (Ord. 1549 §1, 2001)

13-32-090 Service termination.

If a reclaimed wastewater applicator fails to comply with all of the provisions of this chapter, its contract for reclaimed wastewater, or the Reclaimed Domestic Wastewater regulations referenced in section 13-32-030, the city may, among other remedies, terminate reclaimed

wastewater service to the violating applicator. Pursuant to Regulation #84.5 (A)(4), the city must have authority to terminate service if an applicator fails to comply with the requirements of Regulation #84. If reclaimed wastewater service is terminated under this section, the city shall not be liable for any reimbursements to the violating applicator for prior payments to the city of any kind, including reclaimed wastewater connection fees paid to the city under contract. (Ord. 1549 §1, 2001)

13-32-100 Reporting of violations.

(A) Any violation of Regulation #84 shall be reported to the city and the Colorado Water Quality Control Division not later than thirty days after becoming aware of the violation.

(B) All violations by an applicator shall be summarized in the Annual Report required under Regulation #84.

(C) The following violations shall be reported orally to the city and the Colorado Water Quality Control Division within twenty-four hours of becoming aware of the violation and shall be followed up with a written report to the city and the Colorado Water Quality Control Division within five days:

(1) Any discharge to surface waters;

(2) A cross connection without a backflow prevention device; and

(3) Irrigation outside of the area approved in the Notice of Authorization. (Ord. 1549 §1, 2001)

Chapter 13-36

Drought Watering Restrictions

13-36-010 Purpose.

Whenever the city council declares a drought emergency and the necessity for mandatory water conservation measures, the provisions of this chapter shall implement such mandatory water conservation measures for the preservation of public property, health, peace, and safety of the public. (Ord. 1683 §1, 2002; Ord. 1693, §1, 2002; Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

13-36-020 Declaration of drought.

(A) The city council finds, determines, and declares a condition of severe drought, and said condition of drought has, and will continue to have, a deleterious effect upon the quantity and availability of potable water the city provides to its citizens and to others served by the city.

(B) The necessity of mandatory water conservation measures applicable to city water delivery systems is deemed warranted and is duly declared.

(C) The city council determines that it is necessary to implement mandatory water conservation measures for the preservation of public property, health, peace, and safety of the public. (Ord. 1693, §1, 2002; Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

13-36-030 Drought Condition I; mandatory drought watering restrictions.

Upon the declaration of a Drought Condition I drought emergency by resolution of the city council, all customers, owners, or occupants of any licensed premises, including all out-of-city water customers and members served by the Mile High Water Company, shall comply with the following water restrictions:

(A) *Watering days.* Irrigation of turf grasses of any kind shall be limited to two days each week of the month as follows:

(1) Single-family dwellings and duplex dwellings with an address ending in an odd number may irrigate only on Wednesdays and Saturdays of the week.

(2) Single-family dwellings and duplex dwellings with an address ending in an even number may irrigate only on Sundays and Thursdays of the week.

(3) Homeowners' associations; multiple-family dwellings of three or more families; mobile home communities, including residents therein; and business, commercial or industrial uses may irrigate only on Tuesdays and Fridays of the week.

(4) There shall be no irrigation of turf grasses on Mondays except by permit.

(B) *Time limit per day.* The irrigation of turf grasses permitted by subsection (A) above shall be limited to two hours at any time before the hours of 10:00 a.m. or after 6:00 p.m. on the authorized watering day. Residential turf grass areas that are greater than 12,000 square feet may be irrigated for an additional one hour on the authorized watering day at any time before the hours of 10:00 a.m. or after 6:00 p.m.

(C) *Large irrigation areas.* Business, commercial, or industrial irrigation turf areas, in addition to the irrigation limitations prescribed in subsections (A) and (B) above, shall be subject to the following limitations:

(1) Pop-up irrigation zones shall be limited to fifteen minutes.

(2) Full-rotor irrigation zones shall be limited to forty-five minutes.

(3) One-half rotor irrigation zones shall be limited to thirty minutes.

Employees or agents of the city are hereby authorized and permitted without a warrant to enter upon the property of any business, commercial, or industrial irrigation turf area for the limited purpose of examining irrigation clocks or timing devices.

(D) *Parks and athletic fields.* Public parks and athletic fields and school athletic fields are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided that such irrigation occurs at any time before the hours of 10:00 a.m. or after 6:00 p.m., and further provided that a thirty-percent reduction in irrigation use is established.

(E) *Golf courses.* Golf courses are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided that a thirty-percent reduction in irrigation use is established. Golf courses shall not water the roughs unless the golf course irrigation cannot separate fairway from rough watering.

(F) *New seed or sod.* Any newly sodded, seeded, or re-seeded turf areas in the city are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided the newly sodded, seeded, or re-seeded turf area is registered with the department of public works. Once registered with the department of public works, newly sodded, seeded, or re-seeded turf areas are subject to the following limitations:

(1) Newly sodded, seeded, or re-seeded turf areas may be irrigated twice each day for not more than two hours at any time before the hours of 10:00 a.m. or after 6:00 p.m. for a period of two weeks, provided that such newly sodded, seeded, or re-seeded turf areas are installed before June 16 or after September 1.

(2) Any newly sodded, seeded, or re-seeded turf areas that cannot be irrigated within the two-hour period, may be watered in accordance with the provisions prescribed for large irrigation areas in subsection (C) above.

(G) *System maintenance.* An irrigation system may be operated at any time for the purpose of repair or regular maintenance, provided that misuse or waste of water does not occur in violation of section 13-24-010, B.M.C.

(H) *Trees, shrubs, gardens.* The irrigation of trees, shrubs, or gardens may occur at any time if watered by hand, a drip irrigation system, a bubbler system, or by a soaker hose. *Hand watering* means holding in the hand a hose with an attached positive shutoff nozzle, and does not include operating a hose with a sprinkler or manually operating an irrigation controller.

(I) *Swimming pools.* The city shall not issue building permits for new swimming pools. Existing swimming pools may be filled once a year and the water level maintained in the swimming pool throughout the year.

(J) *Washing of vehicles.*

(1) Personal vehicles may be washed no more often than once each week using a hose with a positive shutoff mechanism.

(2) Vehicles in government or commercial operations or fleets may be washed no more often than once a week.

(3) Vehicles may be washed at a commercial car wash at any time.

(K) *Impervious areas.* Impervious surfaces, such as sidewalks, driveways, or patios, may not be washed by hoses, except when necessary for public health or safety reasons.

(L) *Building maintenance.* Buildings may be washed by a pressure washer to clean the surface in preparation for maintenance, provided that misuse or waster of water does not occur in violation of section 13-24-010, B.M.C.

(M) *Permits.* For good cause shown, the director or deputy director of public works may issue water variance permits in instances of personal hardship. (Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

13-36-040 Drought Condition II; mandatory drought watering restrictions.

Upon the declaration of a Drought Condition II drought emergency by resolution of the city council, all customers, owners, or occupants of any licensed premises, including all out-of-city water customers and members served by the Mile High Water Company, shall comply with the following water restrictions:

(A) *Watering days.* Irrigation of turf grasses of any kind shall be limited to two days each week of the month as follows:

(1) Single-family dwellings and duplex dwellings with an address ending in an odd number may irrigate only on Wednesdays and Saturdays of the week.

(2) Single-family dwellings and duplex dwellings with an address ending in an even number may irrigate only on Sundays and Thursdays of the week.

(3) Homeowners' associations; multiple-family dwellings of three or more families; mobile home communities, including residents therein; and business, commercial or industrial uses may irrigate only on Tuesdays and Fridays of the week.

(4) There shall be no irrigation of turf grasses on Mondays except by permit.

(B) *Time limit per day.* The irrigation of turf grasses permitted by subsection (A) above shall be limited to one hour at any time before the hours of 10:00 a.m. or after 6:00 p.m. on the authorized watering day. Residential turf grass areas that are greater than 12,000 square feet may be irrigated for an additional one-half hour on the authorized watering day at any time before the hours of 10:00 a.m. or after 6:00 p.m.

(C) *Large irrigation areas.* Business, commercial, or industrial irrigation turf areas, in addition to the irrigation limitations prescribed in subsections (A) and (B) above, shall be subject to the following limitations:

(1) Pop-up irrigation zones shall be limited to eight minutes.

(2) Full-rotor irrigation zones shall be limited to twenty-three minutes.

(3) One-half rotor irrigation zones shall be limited to fifteen minutes.

Employees or agents of the city are hereby authorized and permitted without a warrant to enter upon the property of any business, commercial, or industrial irrigation turf area for the limited purpose of examining irrigation clocks or timing devices.

(D) *Parks and athletic fields.* Public parks and athletic fields and school athletic fields are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided that such irrigation occurs at any time before the hours of 10:00 a.m. or after 6:00 p.m., and further provided that a forty-percent reduction in irrigation use is established.

(E) Golf courses. Golf courses are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided that a forty-percent reduction in irrigation use is established. Golf courses shall not water the roughs unless the golf course irrigation cannot separate fairway from rough watering.

(F) *New seed or sod.* Any newly sodded, seeded, or re-seeded turf areas in the city are subject to turf irrigation provisions set forth in subsections (A) through (C) above.

(G) *System maintenance.* An irrigation system may be operated at any time for the purpose of repair or regular maintenance, provided that misuse or waste of water does not occur in violation of section 13-24-010, B.M.C.

(H) *Trees, shrubs, gardens.* The irrigation of trees, shrubs, or gardens may occur at any time if watered by hand, a drip irrigation system, a bubbler system, or by a soaker hose. Hand watering means holding in the hand a hose with an attached positive shutoff nozzle, and does not include operating a hose with a sprinkler or manually operating an irrigation controller.

(I) *Swimming pools.* The city shall not issue building permits for new swimming pools. Existing swimming pools may be filled once a year and the water level maintained in the swimming pool throughout the year.

(J) *Washing of vehicles.*

(1) Personal vehicles may be washed no more often than once each week using a hose with a positive shutoff mechanism.

(2) Vehicles in government or commercial operations or fleets may be washed no more often than once a week.

(3) Vehicles may be washed at a commercial car wash at any time.

(K) *Impervious areas.* Impervious surfaces, such as sidewalks, driveways, or patios, may not be washed by hoses, except when necessary for public health or safety reasons.

(L) *Building maintenance.* Buildings may be washed by a pressure washer to clean the surface in preparation for maintenance, provided that misuse or waste of water does not occur in violation of section 13-24-010, B.M.C.

(M) *Water features.* Operation of outside water features, such as fountains or outdoor misting systems, is prohibited, except if such features or systems are used to sustain aquatic life or maintain water quality.

(N) *Permits.* For good cause shown, the director or deputy director of public works may issue water variance permits in instances of personal hardship. (Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

13-36-050 Drought Condition III; mandatory drought watering restrictions.

Upon the declaration of a Drought Condition III drought emergency by resolution of the city council, all customers, owners, or occupants of any licensed premises, including all out-of-city water customers and members served by the Mile High Water Company, shall comply with the following water restrictions:

(A) Watering days. The irrigation of turf grasses of any kind is prohibited.

(B) *Time limit per day.* The irrigation of turf grasses of any kind is prohibited.

(C) *Large irrigation areas.* The irrigation of turf grasses of any kind is prohibited.

(D) *Parks and athletic fields.* Public parks and athletic fields and school athletic fields are exempt from the turf irrigation water day and watering hour limitations prescribed above, provided that such irrigation occurs at any time before the hours of 10:00 a.m. or after 6:00 p.m., and further provided that a fifty-percent reduction in irrigation use is established.

(E) *Golf courses.* Only the tees and greens on golf courses may be irrigated.

(F) *New seed or sod.* The irrigation of turf grasses of any kind is prohibited.

(G) *System maintenance.* An irrigation system may be operated at any time for the purpose of repair or regular maintenance, provided that misuse or waste of water does not occur in violation of section 13-24-010, B.M.C.

(H) *Trees, shrubs, gardens.* The irrigation of trees, shrubs, or gardens may occur at any time if watered by hand, a drip irrigation system, a bubbler system, or by a soaker hose. *Hand watering* means holding in the hand a hose with an attached positive shutoff nozzle, and does not include operating a hose with a sprinkler or manually operating an irrigation controller.

(I) *Swimming pools.* The city shall not issue building permits for new swimming pools. Private swimming pools may not be filled. Public swimming pools, private club swimming pools, and homeowner's association swimming pools may be filled.

(J) *Washing of vehicles.*

(1) Personal vehicles may be washed no more often than once each week using a hose with a positive shutoff mechanism.

(2) Vehicles in government or commercial operations or fleets may be washed no more often than once a week.

(3) Commercial car washes shall have recycling capabilities in order to operate and are required to obtain a permit from the director or deputy director of public works as a condition of operation.

(K) *Impervious areas.* Impervious surfaces, such as sidewalks, driveways, or patios, may not be washed by hoses, except when necessary for public health or safety reasons.

(L) *Building maintenance.* Buildings may be washed by a pressure washer to clean the surface in preparation for maintenance, provided that misuse or waster of water does not occur in violation of section 13-24-010, B.M.C.

(M) *Water features.* Operation of outside water features, such as fountains or outdoor misting systems, is prohibited, except if such features or systems are used to sustain aquatic life or maintain water quality.

(N) *Permits.* Except as provided for commercial car washes, no permits shall be issued. (Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

13-36-060 Enforcement of drought watering restrictions.

The customer, owner, or occupant of the licensed premises shall be responsible for complying with the drought watering restrictions imposed by this chapter. In addition to the penalties imposed by chapter 1-12 B.M.C., for any violation of this chapter, the following charges shall be added to the monthly water service charges of the customer, owner, or occupant of the licensed premises:

(A) For the first violation of any drought watering restriction, the customer, owner, or occupant will be notified in writing served personally or by certified mail.

(B) For the second violation of any drought watering restriction at the same premises, $100.00 shall be added to the monthly water service charges of the customer, owner, or occupant of single-family dwellings and duplex dwellings and $200.00 shall be added to the monthly water service charges of all other customers, owners, or occupants.

(C) For the third violation of any drought watering restriction at the same premises, $300.00 shall be added to the monthly service charges of the customer, owner, or occupant of single-family dwellings and duplex dwellings and $600.00 shall be added to the monthly water service charges of all other customers, owners, or occupants.

(D) For the fourth violation of any drought watering restriction at the same premises, $500.00 shall be added to the monthly service charges of the customer, owner, or occupant of single-family dwellings and duplex dwellings and $1,000.00 shall be added to the monthly water service charges of all other customers, owners, or occupants.

(E) For the fifth and any subsequent violation of any drought watering restriction at the same premises, $1,000.00 shall be added to the monthly service charges of the customer, owner, or occupant of single-family dwellings and duplex dwellings and $2,000.00 shall be added to the monthly water service charges of all other customers, owners, or occupants. (Ord. 1713 §1, 2003; Ord. 1732 §1, 2003)

Chapter 15-24

International Plumbing Code

15-24-010 Amendments to the International Plumbing Code.

The following amendments are hereby made to the 2009 International Plumbing Code:

(A) Chapter 1 is hereby deleted. Refer to BMC chapter 15-03 for administrative requirements.

(B) Subsection 305.6.1, Sewer depth, is amended by inserting "36 inches" for the [NUMBER].

(C) A new section is added – Section 315 Irrigation Rain Sensors and will read as follows:

> Section 315 Irrigation Rain Sensors. An approved rain sensor device in an approved location will be required on all new irrigation permits.

(D) Subsection 605.3, Water service pipe, is hereby amended by adding the following sentence.

> There shall be a minimum of 20 feet of copper water service pipe extending from the building for the water pipe ground electrode.

(E) Subsection 904.1, Roof extension, is amended by inserting "12 inches" for the [NUMBER] and "(254 mm)" immediately thereafter.

(F) Subsection 905.4, Vertical rise of vent, is amended to read as follows:

> 905.4 Vertical rise of vent. Unless prohibited by structural conditions, every dry vent shall rise vertically to a minimum of 6 inches (152 mm) above the flood level rim of the highest trap or trapped fixture being vented. Vents that are less than 6 inches (152 mm) above the flood level rim of the fixture require approved drainage-type fittings with slope back to the drain.
>
> EXCEPTION: Vents for interceptors located outdoors.

(G) Section 715 is deleted in its entirety. (Ord. 1858 §1, 2008; Ord. 1926 §19, 2011)

Chapter 17-70

Residential Landscape Requirements

17-70-010 Residential landscape requirements.

(A) All new residential construction for which a building permit or certificate of occupancy is issued shall be subject to the residential landscape requirements established in this chapter.

(B) Prior to seeding turf grass or installing turf grass sod on any single-family or multiple-family residential lot, the area of such residential lot which is seeded or sodded shall first be treated with organic amendments incorporated into the soil at the rate of three cubic yards per 1,000 square feet.

(C) Not more than sixty percent of the landscape area of any single-family or multiple-family residential lot shall be comprised of turf grass.

(D) Irrigation systems installed on any single-family or multiple-family residential lot shall be designed to include drip irrigation for trees and shrubs on a separate circuit from the turf irrigation circuits.

(E) Irrigation systems installed on any single-family or multiple-family residential lot designed to water grasses shall be fitted with nozzles rated as "water efficient" on all pop-up irrigation heads.

(F) The city and county manager is hereby directed to promulgate administrative regulations consistent with this chapter to implement the provisions of this chapter.

(G) The penalty for violation of the terms of this chapter shall be as provided in chapter 1-12, B.M.C. (Ord. 1721 §1, 2003)

COLORADO'S WATER CONSERVATON PLANNING STATUTE

As published as of June 1, 2005 at:
http://www.state.co.us/gov_dir/leg_dir/olls/HTML/colorado_revised_statutes.htm

Colorado Statutes : TITLE 37 WATER AND IRRIGATION : WATER CONSERVATION BOARD AND COMPACTS : General and Administrative : ARTICLE 60 COLORADO WATER CONSERVATION BOARD : PART 1 GENERAL PROVISIONS :

37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities guidelines.

(1) As used in this section and in section 37-60-126.5, unless the context otherwise requires:

(a) "Covered entity" means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of two thousand acre-feet or more.
(b) "Office" means the office of water conservation and drought planning created in section 37-60-124.
(c) "Plan elements" means those components of water conservation plans that address water saving measures and programs, implementation review, water-saving goals, and the actions a covered entity shall take to develop, implement, monitor, review, and revise its water conservation plan.
(d) "Public facility" means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building, park or other recreational facility, school, college, university, or other educational institution, highway, hospital, or stadium.
(e) "Water conservation" means water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water conservation is a long term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.
(f) "Water-saving measures and programs" includes a device, practice, hardware, or equipment that reduces water demands and a program that uses a combination of measures and incentives that allow for an increase in the productive use of a local water supply.

(2) (a) Within five years after June 4, 1991, each covered entity that does not have a water use efficiency plan satisfying the provisions of subsection (4) of this section shall, subject to section 37-60-127, develop, adopt, make publicly available, and implement a plan pursuant to which such covered entity shall encourage its domestic, commercial, industrial, and public facility customers to use water more efficiently. Any covered entity that makes an initial determination that it has satisfied

subsection (4) of this section shall, within five years after June 4, 1991, give public notice of such determination at an official meeting of the appropriate governing body of the covered entity.
(b) The office shall review previously submitted conservation plans to evaluate their consistency with the provisions of this section and the guidelines established pursuant to subsection (7) of this section.
(c) On and after July 1, 2006, a covered entity that seeks financial assistance from either the board or the Colorado water resources and power development authority shall submit to the board a new or revised plan to meet water conservation goals adopted by the covered entity, in accordance with this section, for the board's approval prior to the release of new loan proceeds.

(3) The manner in which the covered entity develops, adopts, makes publicly available, and implements a plan established pursuant to subsection (2) of this section shall be determined by the covered entity in accordance with this section. The plan shall be accompanied by a schedule for its implementation. The plans and schedules shall be provided to the office within ninety days after their adoption. For those entities seeking financial assistance, the office shall then notify the covered entity and the appropriate financing authority that the plan has been reviewed and whether the plan has been approved in accordance with this section.

(4) A plan developed by a covered entity pursuant to subsection (2) of this section shall, at a minimum, consider the following plan elements:

(a) The water-saving measures and programs to be used by the covered entity for water conservation. In developing these measures and programs, each covered entity shall, at a minimum, consider the following:

(I) Water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;
(II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation;
(III) Water-efficient industrial and commercial water-using processes;
(IV) Water reuse systems;
(V) Distribution system leak identification and repair;
(VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;
(VII) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner;
(VIII) The department of local affairs may provide technical assistance to covered entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems;
(IX) Regulatory measures designed to encourage water conservation;

(X) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures;

(b) A section stating the covered entity's best judgment of the role of water conservation plans in the covered entity's water supply planning;

(c) The steps the covered entity used to develop, and will use to implement, monitor, review, and revise, its water conservation plan;

(d) The time period, not to exceed seven years, after which the covered entity will review and update its adopted plan; and

(e) Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan is implemented.

(5) Each covered entity shall follow the covered entity's rules, codes, or ordinances to make the draft plan available for public review and comment. If there are no rules, codes, or ordinances governing the covered entity's public planning process, then each covered entity shall publish a draft plan, give public notice of the plan, make such plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the draft plan is made publicly available. Reference shall be made in the public notice to the elements of a plan that has already been implemented.

(6) The board is hereby authorized to recommend the appropriation and expenditure of such revenues as are necessary from the unobligated balance of the five percent share of the operational account of the severance tax trust fund designated for use by the board for the purpose of the office providing assistance to covered entities to develop water conservation plans that meet the provisions of this section.

(7) By July 1, 2005, the board shall adopt guidelines for the office to review water conservation plans submitted by covered entities. The guidelines shall define the method for submitting plans to the office, how the office will prioritize the distribution of moneys, and the interest rate surcharge provided for in paragraph (d) of subsection (9) of this section.

(8) A covered entity may at any time adopt changes to an approved plan in accordance with this section after notifying and receiving concurrence from the office. If the proposed changes are major, the covered entity shall give public notice of the changes, make the changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them in accordance with subsection (5) of this section.

(9) (a) Neither the board nor the Colorado water resources and power development authority shall release loan proceeds to a covered entity unless such covered entity provides a copy of the water conservation plan adopted pursuant to this section; except that the board or the authority may release such loan proceeds if the board

or the authority, as applicable, determines that an unforeseen emergency exists in relation to the covered entity's loan application, in which case the board or the authority, as applicable, may impose a loan surcharge upon the covered entity that may be rebated or reduced if the covered entity submits and adopts a plan in compliance with this section in a timely manner as determined by the board or the authority, as applicable.

(b) The board and the Colorado water resources and power development authority, to which any covered entity has applied for financial assistance for the construction of a water diversion, storage, conveyance, water treatment, or wastewater treatment facility, shall consider any water conservation plan filed pursuant to this section in determining whether to render financial assistance to such entity. Such consideration shall be carried out within the discretion accorded the board and the Colorado water resources and power development authority pursuant to which such board and authority render such financial assistance to such covered entity.

(c) The board and the Colorado water resources and power development authority may enter into a memorandum of understanding with each other for the purposes of avoiding delay in the processing of applications for financial assistance covered by this section and avoiding duplication in the consideration required by this subsection (9).

(10) Repealed.

(11) (a) Any new restrictive covenant that prohibits or limits the installation or use of drought tolerant vegetative landscapes is prohibited.

(b) As used in this subsection (11), "restrictive covenant" means any covenant, restriction, or condition applicable to real property for the purpose of controlling land use, but does not include any covenant, restriction, or condition imposed on such real property by any governmental entity.

Source: L. 91: Entire section added, p. 2023, § 4, effective June 4. L. 99: (10) repealed, p. 25, § 3, effective March 5. L. 2003: (4)(g) amended and (11) added, p. 1368, § 4, effective April 25. L. 2004: Entire section amended, p. 1779, § 3, effective August 4.

Editor's note: This section was contained in a 2004 act that was passed without a safety clause. For further explanation concerning the effective date, see page vii of this volume.

Cross references:
(1) In 1991, this entire section was added by the "Water Conservation Act of 1991". For the short title and the legislative declaration, see sections 1 and 2 of chapter 328, Session Laws of Colorado 1991.
(2) For the legislative declaration contained in the 2004 act amending this section, see section 1 o chapter 373, Session Laws of Colorado 2004.

HOUSE BILL 04-1365

BY REPRESENTATIVE(S) Harvey, Frangas, May M., McFadyen, Plant, Rippy, Weissmann, and Wiens;
also SENATOR(S) Kester, Groff, Grossman, Hillman, and Tapia.

CONCERNING WATER PLANNING BY RETAIL WATER PROVIDERS.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Legislative declaration. (1) The general assembly hereby finds and declares that:

(a) Colorado was the first western state to enact statewide water conservation legislation;

(b) Water conservation and drought mitigation planning will benefit all citizens of the state of Colorado;

(c) The "Water Conservation Act of 1991", which fostered a statewide policy of improved urban water use efficiency and conservation, provides the foundation that can now be enhanced to provide new technical and financial opportunities for Colorado's communities regarding water conservation and drought mitigation planning.

Capital letters indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

(2) It is therefore the purpose and intent of this act and the policy of this state to:

(a) Encourage wise water use and conservation and drought planning by those privately and publicly owned water agencies, utilities, and others with the legal obligation to supply, distribute, or otherwise provide water through technical assistance, information dissemination, and where appropriate, financial support;

(b) Encourage the state, the Colorado water conservation board, and water providers with knowledge of water conservation and drought mitigation planning to work with other water providers in developing and implementing water conservation and water use efficiencies and managing water supplies during periods of drought;

(c) Encourage smaller water providers to take advantage of state-provided resources to support local planning efforts; and

(d) Encourage and support implementation of this act, in particular those components of this act that relate to the development and implementation of a statewide water supply initiative.

SECTION 2. 37-60-124, Colorado Revised Statutes, is amended to read:

37-60-124. Office of water conservation and drought planning - creation - powers and duties. (1) There is hereby created as an office under the Colorado water conservation board the office of water conservation AND DROUGHT PLANNING. The office shall have such staff as are necessary and appropriate to carry out the duties established for the office.

(2) The office of water conservation AND DROUGHT PLANNING shall promote water ~~use efficiency~~ CONSERVATION AND DROUGHT MITIGATION PLANNING by performing, to the degree feasible, duties including, but not limited to, the following:

(a) PARTICIPATING AS A MEMBER OR CHAIRPERSON OF ANY STATE WATER AVAILABILITY TASK FORCES ESTABLISHED TO MONITOR, FORECAST, MITIGATE, OR PREPARE FOR DROUGHT;

~~(a)~~ (b) Acting as a repository for water ~~use efficiency~~ CONSERVATION AND DROUGHT MITIGATION PLANNING information;

(c) DISSEMINATING WATER CONSERVATION, DROUGHT MITIGATION PLANNING, AND RELATED INFORMATION TO WATER PROVIDERS AND THE GENERAL PUBLIC;

~~(b)~~ (d) ~~Provision of~~ PROVIDING technical assistance to and working with municipal, ~~and other urban~~ INDUSTRIAL, AGRICULTURAL, AND OTHER water providers and state agencies as they plan for, evaluate, and implement water ~~use efficiency measures to provide necessary water services~~ CONSERVATION PLANS AND PROGRAMS, DROUGHT MITIGATION PLANS, OR BOTH;

~~(c)~~ (e) Coordination of the planning for and assistance in the implementation of water ~~use efficiency~~ CONSERVATION plans by state agencies pursuant to section 37-96-103 (4);

~~(d)~~ (f) Administration of financial assistance for water ~~use efficiency~~ CONSERVATION AND DROUGHT MITIGATION PLANNING AND IMPLEMENTATION measures and ~~water use efficiency~~ programs; ~~as authorized in section 37-60-125;~~ and

~~(e)~~ (g) ~~Preparation for review and approval by the board for transmittal to the general assembly such information and recommendations concerning water use efficiency projects and proposed water use efficiency measures by state and local governments, including the analysis of water use efficiency programs already in place.~~ EVALUATING WATER CONSERVATION AND DROUGHT MITIGATION PLANS RELATED TO THE USE OF SUCH PLANS BY WATER PROVIDERS TO ADDRESS WATER NEEDS AND TO PREPARE FOR WATER-RELATED EMERGENCIES BASED UPON POLICIES AND GUIDELINES ADOPTED BY THE BOARD PURSUANT TO SECTION 37-60-126.

(3) The personal services, operating, travel and subsistence, capital, and legal services expenses of administering the office of water conservation AND DROUGHT PLANNING and the programs and activities authorized by subsection (2) of this section may be paid from such moneys as are appropriated, allocated, or otherwise credited to the Colorado water conservation board construction fund.

(4) Repealed.

SECTION 3. 37-60-126, Colorado Revised Statutes, is amended to read:

37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities - guidelines. (1) As used in this section AND IN SECTION 37-60-126.5, unless the context otherwise requires:

(a) "Covered entity" means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and ~~which~~ THAT has a total demand for such customers of two thousand acre-feet or more. ~~in calendar years 1989 or thereafter.~~

(b) "OFFICE" MEANS THE OFFICE OF WATER CONSERVATION AND DROUGHT PLANNING CREATED IN SECTION 37-60-124.

(c) "PLAN ELEMENTS" MEANS THOSE COMPONENTS OF WATER CONSERVATION PLANS THAT ADDRESS WATER-SAVING MEASURES AND PROGRAMS, IMPLEMENTATION REVIEW, WATER-SAVING GOALS, AND THE ACTIONS A COVERED ENTITY SHALL TAKE TO DEVELOP, IMPLEMENT, MONITOR, REVIEW, AND REVISE ITS WATER CONSERVATION PLAN.

~~(b)~~ (d) "Public facility" means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building, park or other recreational facility, school, college, university, or other educational institution, highway, hospital, or stadium.

(e) "WATER CONSERVATION" MEANS WATER USE EFFICIENCY, WISE WATER USE, WATER TRANSMISSION AND DISTRIBUTION SYSTEM EFFICIENCY, AND SUPPLY SUBSTITUTION. THE OBJECTIVE OF WATER CONSERVATION IS A LONG-TERM INCREASE IN THE PRODUCTIVE USE OF WATER SUPPLY IN ORDER TO SATISFY WATER SUPPLY NEEDS WITHOUT COMPROMISING DESIRED WATER SERVICES.

(f) "WATER-SAVING MEASURES AND PROGRAMS" INCLUDES A DEVICE, PRACTICE, HARDWARE, OR EQUIPMENT THAT REDUCES WATER DEMANDS AND A PROGRAM THAT USES A COMBINATION OF MEASURES AND INCENTIVES THAT

ALLOW FOR AN INCREASE IN THE PRODUCTIVE USE OF A LOCAL WATER SUPPLY.

(2) (a) Within five years after June 4, 1991, each covered entity ~~which~~ THAT does not have a water use efficiency plan satisfying the provisions of ~~subsections~~ SUBSECTION (4) ~~and (5)~~ of this section shall, subject to section 37-60-127, develop, adopt, make publicly available, and implement a plan pursuant to which such covered entity shall encourage its domestic, commercial, industrial, and public facility customers to use water more efficiently. Any covered entity that makes an initial determination that it has satisfied ~~subsections~~ SUBSECTION (4) ~~and (5)~~ of this section shall, within five years ~~of~~ AFTER June 4, 1991, give public notice of such determination at an official meeting of the appropriate governing body of the covered entity.

(b) THE OFFICE SHALL REVIEW PREVIOUSLY SUBMITTED CONSERVATION PLANS TO EVALUATE THEIR CONSISTENCY WITH THE PROVISIONS OF THIS SECTION AND THE GUIDELINES ESTABLISHED PURSUANT TO SUBSECTION (7) OF THIS SECTION.

(c) ON AND AFTER JULY 1, 2006, A COVERED ENTITY THAT SEEKS FINANCIAL ASSISTANCE FROM EITHER THE BOARD OR THE COLORADO WATER RESOURCES AND POWER DEVELOPMENT AUTHORITY SHALL SUBMIT TO THE BOARD A NEW OR REVISED PLAN TO MEET WATER CONSERVATION GOALS ADOPTED BY THE COVERED ENTITY, IN ACCORDANCE WITH THIS SECTION, FOR THE BOARD'S APPROVAL PRIOR TO THE RELEASE OF NEW LOAN PROCEEDS.

(3) The manner in which the covered entity develops, adopts, makes publicly available, and implements a plan established pursuant to subsection (2) of this section shall be determined by the covered entity IN ACCORDANCE WITH THIS SECTION. The plan shall be accompanied by a ~~program~~ SCHEDULE for its implementation. THE PLANS AND SCHEDULES SHALL BE PROVIDED TO THE OFFICE WITHIN NINETY DAYS AFTER THEIR ADOPTION. FOR THOSE ENTITIES SEEKING FINANCIAL ASSISTANCE, THE OFFICE SHALL THEN NOTIFY THE COVERED ENTITY AND THE APPROPRIATE FINANCING AUTHORITY THAT THE PLAN HAS BEEN REVIEWED AND WHETHER THE PLAN HAS BEEN APPROVED IN ACCORDANCE WITH THIS SECTION.

(4) ~~In developing~~ A plan DEVELOPED BY A COVERED ENTITY pursuant to subsection (2) of this section ~~each covered entity~~ shall, ~~consider at least the following water-saving measures~~ AT A MINIMUM, CONSIDER THE

FOLLOWING PLAN ELEMENTS:

(a) THE WATER-SAVING MEASURES AND PROGRAMS TO BE USED BY THE COVERED ENTITY FOR WATER CONSERVATION. IN DEVELOPING THESE MEASURES AND PROGRAMS, EACH COVERED ENTITY SHALL, AT A MINIMUM, CONSIDER THE FOLLOWING:

(I) Water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;

~~(b)~~ (II) Low water use landscapes, DROUGHT-RESISTANT VEGETATION, REMOVAL OF PHREATOPHYTES, and efficient irrigation;

~~(c)~~ (III) Water-efficient industrial and commercial water-using processes;

~~(d)~~ (IV) Water reuse systems; ~~both potable and nonpotable;~~

~~(e)~~ (V) Distribution system leak IDENTIFICATION AND repair;

~~(f)~~ (VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;

~~(g)~~ ~~(f)~~ (VII) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner;

~~(H)~~ (VIII) The department of local affairs may provide technical assistance to covered entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems;

~~(h)~~ (IX) Regulatory measures ~~including standards for the use of water use efficiency fixtures and landscapes, and ordinances, codes, or other law~~ designed to encourage water ~~use efficiency~~ CONSERVATION;

~~(i)~~ (X) Incentives to implement water ~~use efficiency~~ CONSERVATION techniques, including rebates to customers ~~or others~~ to encourage the installation of water ~~use efficiency~~ CONSERVATION measures;

~~(5)~~ (b) ~~The plan to be adopted under subsection (2) of this section~~

~~shall contain~~ A section stating the covered entity's best judgment of the role of water ~~use efficiency~~ CONSERVATION plans in the covered entity's water supply planning;

(c) THE STEPS THE COVERED ENTITY USED TO DEVELOP, AND WILL USE TO IMPLEMENT, MONITOR, REVIEW, AND REVISE, ITS WATER CONSERVATION PLAN;

(d) THE TIME PERIOD, NOT TO EXCEED SEVEN YEARS, AFTER WHICH THE COVERED ENTITY WILL REVIEW AND UPDATE ITS ADOPTED PLAN; AND

(e) EITHER AS A PERCENTAGE OR IN ACRE-FOOT INCREMENTS, AN ESTIMATE OF THE AMOUNT OF WATER THAT HAS BEEN SAVED THROUGH A PREVIOUSLY IMPLEMENTED CONSERVATION PLAN AND AN ESTIMATE OF THE AMOUNT OF WATER THAT WILL BE SAVED THROUGH CONSERVATION WHEN THE PLAN IS IMPLEMENTED.

~~(6) Except for the elements of a water use efficiency plan which a covered entity has already implemented prior to June 4, 1991, the plan required under subsection (2) of this section shall set forth results of the consideration of the water-efficient measures and techniques set forth in subsection (4) of this section and adopted by the covered entity after June 4, 1991.~~

~~(7)~~ (5) ~~Except for the elements of a water use efficiency plan which a covered entity has already implemented prior to June 4, 1991, before adopting any other major elements of a plan under subsections (2) and (4) of this section,~~ EACH COVERED ENTITY SHALL FOLLOW THE COVERED ENTITY'S RULES, CODES, OR ORDINANCES TO MAKE THE DRAFT PLAN AVAILABLE FOR PUBLIC REVIEW AND COMMENT. IF THERE ARE NO RULES, CODES, OR ORDINANCES GOVERNING THE COVERED ENTITY'S PUBLIC PLANNING PROCESS, THEN each covered entity shall publish a draft plan, give public notice of the plan, make such plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the draft plan is made publicly available. Reference shall be made in the public notice to the elements of a plan that has already been implemented.

(6) THE BOARD IS HEREBY AUTHORIZED TO RECOMMEND THE APPROPRIATION AND EXPENDITURE OF SUCH REVENUES AS ARE NECESSARY FROM THE UNOBLIGATED BALANCE OF THE FIVE PERCENT SHARE OF THE

OPERATIONAL ACCOUNT OF THE SEVERANCE TAX TRUST FUND DESIGNATED FOR USE BY THE BOARD FOR THE PURPOSE OF THE OFFICE PROVIDING ASSISTANCE TO COVERED ENTITIES TO DEVELOP WATER CONSERVATION PLANS THAT MEET THE PROVISIONS OF THIS SECTION.

(7) BY JULY 1, 2005, THE BOARD SHALL ADOPT GUIDELINES FOR THE OFFICE TO REVIEW WATER CONSERVATION PLANS SUBMITTED BY COVERED ENTITIES. THE GUIDELINES SHALL DEFINE THE METHOD FOR SUBMITTING PLANS TO THE OFFICE, HOW THE OFFICE WILL PRIORITIZE THE DISTRIBUTION OF MONEYS, AND THE INTEREST RATE SURCHARGE PROVIDED FOR IN PARAGRAPH (d) OF SUBSECTION (9) OF THIS SECTION.

(8) A covered entity may at any time adopt changes to ~~the~~ AN APPROVED plan IN ACCORDANCE WITH THIS SECTION AFTER NOTIFYING AND RECEIVING CONCURRENCE FROM THE OFFICE. If the proposed changes are major, the covered entity shall give public notice of the changes, make the changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them IN ACCORDANCE WITH SUBSECTION (5) OF THIS SECTION.

(9) (a) ~~After five years following June 4, 1991,~~ Neither the board nor the Colorado water resources and power development authority shall ~~accept an application from~~ RELEASE LOAN PROCEEDS TO a covered entity ~~for financial assistance in the construction of any water diversion, storage, conveyance, water treatment, or wastewater treatment facility~~ unless such covered entity ~~includes~~ PROVIDES a copy of the water ~~use efficiency~~ CONSERVATION plan adopted pursuant to this section; ~~and a copy of other such plans, if any, otherwise adopted by the covered entity.~~ EXCEPT THAT THE BOARD OR THE AUTHORITY MAY RELEASE SUCH LOAN PROCEEDS IF THE BOARD OR THE AUTHORITY, AS APPLICABLE, DETERMINES THAT AN UNFORSEEN EMERGENCY EXISTS IN RELATION TO THE COVERED ENTITY'S LOAN APPLICATION, IN WHICH CASE THE BOARD OR THE AUTHORITY, AS APPLICABLE, MAY IMPOSE A LOAN SURCHARGE UPON THE COVERED ENTITY THAT MAY BE REBATED OR REDUCED IF THE COVERED ENTITY SUBMITS AND ADOPTS A PLAN IN COMPLIANCE WITH THIS SECTION IN A TIMELY MANNER AS DETERMINED BY THE BOARD OR THE AUTHORITY, AS APPLICABLE.

(b) ~~After five years from June 4, 1991,~~ The board and the Colorado water resources and power development authority, to which any covered entity has applied for financial assistance for the construction of a water diversion, storage, conveyance, water treatment, or wastewater treatment

facility, shall consider any water ~~use efficiency~~ CONSERVATION plan filed pursuant to ~~paragraph (a) of~~ this ~~subsection (9)~~ SECTION in determining whether to render financial assistance to such entity. Such consideration shall be carried out within the discretion accorded the board and the Colorado water resources and power development authority pursuant to which such board and authority render such financial assistance to such covered entity.

(c) The board and the Colorado water resources and power development authority may enter into a memorandum of understanding with each other for the purposes of avoiding delay in the processing of applications for financial assistance covered by this section and avoiding duplication in the consideration required by ~~paragraph (b) of~~ this subsection (9).

(10) Repealed.

(11) (a) ~~On and after April 25, 2003,~~ Any new restrictive covenant that prohibits or limits the installation or use of drought-tolerant vegetative landscapes is prohibited.

(b) As used in this subsection (11), "restrictive covenant" means any covenant, restriction, or condition applicable to real property for the purpose of controlling land use, but does not include any covenant, restriction, or condition imposed on such real property by any governmental entity.

SECTION 4. Article 60 of title 37, Colorado Revised Statutes, is amended BY THE ADDITION OF A NEW SECTION to read:

37-60-126.5. Drought mitigation planning - programs - relationship to state assistance. (1) AS USED IN THIS SECTION, UNLESS THE CONTEXT OTHERWISE REQUIRES, "DROUGHT MITIGATION" MEANS THE PLANNING AND IMPLEMENTATION OF ACTIONS AND PROGRAMS USED IN PERIODS OF UNUSUAL WATER SCARCITY, WITH A COMBINATION OF ACTIONS AND PROGRAMS TAKEN BEFORE A DROUGHT TO REDUCE THE OCCURRENCE AND SEVERITY OF WATER SUPPLY SHORTAGES, AND ACTIONS AND PROGRAMS TAKEN DURING A DROUGHT TO MANAGE WATER SUPPLIES AND WATER DEMAND APPROPRIATELY.

(2) THE OFFICE SHALL DEVELOP PROGRAMS TO PROVIDE TECHNICAL ASSISTANCE TO COVERED ENTITIES AND OTHER STATE OR LOCAL GOVERNMENTAL ENTITIES IN THE DEVELOPMENT OF DROUGHT MITIGATION PLANS.

(3) THE BOARD IS HEREBY AUTHORIZED TO RECOMMEND THE APPROPRIATION AND EXPENDITURE OF SUCH REVENUES AS IS NECESSARY FROM THE UNOBLIGATED BALANCE OF THE FIVE PERCENT SHARE OF THE OPERATIONAL ACCOUNT OF THE SEVERANCE TAX TRUST FUND DESIGNATED FOR USE BY THE BOARD FOR THE PURPOSE OF ASSISTING COVERED ENTITIES AND OTHER STATE AND LOCAL GOVERNMENTAL ENTITIES TO DEVELOP DROUGHT MITIGATION PLANS IDENTIFIED AS SUFFICIENT BY THE OFFICE.

(4) BY JULY 1, 2005, THE BOARD SHALL ADOPT GUIDELINES FOR THE OFFICE TO USE IN REVIEWING AND EVALUATING DROUGHT MITIGATION PLANS SUBMITTED BY COVERED ENTITIES IN ACCORDANCE WITH THIS SECTION. THE GUIDELINES SHALL DEFINE THE METHOD FOR SUBMITTING PLANS TO THE OFFICE AND SHALL SPECIFY HOW THE OFFICE WILL PRIORITIZE THE DISTRIBUTION OF MONEYS.

SECTION 5. Effective date. This act shall take effect at 12:01 a.m. on the day following the expiration of the ninety-day period after final adjournment of the general assembly that is allowed for submitting a referendum petition pursuant to article V, section 1 (3) of the state constitution (August 4, 2004, if adjournment sine die is on May 5, 2004); except that, if a referendum petition is filed against this act or an item, section, or part of this act within such period, then the act, item, section, or

part, if approved by the people, shall take effect on the date of the official declaration of the vote thereon by proclamation of the governor.

Lola Spradley
SPEAKER OF THE HOUSE
OF REPRESENTATIVES

John Andrews
PRESIDENT OF
THE SENATE

Judith Rodrigue
CHIEF CLERK OF THE HOUSE
OF REPRESENTATIVES

Mona Heustis
SECRETARY OF
THE SENATE

APPROVED 6/4/2004 at 11:05 A.

Bill Owens
GOVERNOR OF THE STATE OF COLORADO

Appendix D

CITY & COUNTY OF BROOMFIELD

2010 ANNUAL DRINKING WATER QUALITY REPORT

2010 REPORT

The City and County of Broomfield is again pleased to provide you with our Annual Water Quality Report, summarizing water quality data collected from January 1 to December 31, 2010. The Colorado Department of Public Health and Environment requires all public water systems to inform consumers about their water sources, water treatment processes, and levels of regulated contaminants in drinking water distributed to consumers during the past calendar year. Much more information about Broomfield's drinking water may be obtained by visiting the Environmental Services page of Broomfield's web site (www.broomfield.org) or by calling Laura Hubbard at **303-464-5606**. Broomfield's water supply, treatment, and delivery professionals are committed to providing you with drinking water that is safe, pleasing and dependable.

What's the bottom line?

Last year, as in years past, your tap water met or surpassed all EPA and Colorado health standards for drinking water. We're pleased to report that **our system has never violated a Maximum Contaminant Level or any other regulatory requirement.** Although some regulated contaminants were detected, the levels were far below the health-protection limits established by EPA.

You're Invited...

We welcome your input on any water quality or service issue. Broomfield City Council provides opportunities for public input and meets on the 2nd and 4th Tuesdays of each month at 6:00 pm at the City and County Building, One Descombes Drive. Notice of upcoming agendas is published in the Broomfield Enterprise, and is posted at the City and County Building and on our web site at **www.broomfield.org.**

En Español

Este informe contiene información muy importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Drinking Water Contaminant Sources

Drinking water contaminants may occur naturally, or result from human activity. Contaminants may be present in the source water, introduced during the treatment process, or develop after the water leaves the treatment facility.

Source Water. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the land surface or through the ground, it dissolves naturally occurring minerals and other contaminants resulting from the presence of animals or from human activity. For example:

- **Microbial contaminants** such as viruses and bacteria may come from sewage treatment plants, septic systems, agriculture, livestock operations, household pets, and wildlife.
- **Inorganic contaminants** such as salts and metals can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** may come from sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants** including synthetic and volatile organic chemicals, can be byproducts of industrial processes such as petroleum production, or come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants** can be naturally occurring or result from oil and gas production and mining activities.

Treatment Process. Some regulated substances are introduced during the water treatment process, or form as a result of treatment. Examples include fluoride, disinfectants, and disinfection by-products.

After Treatment. After treatment, the interaction of treated water with water mains and household plumbing may contribute other substances, such as lead and copper, to consumers' tap water.

Because contaminant sources cannot be completely eliminated, all drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. It's important to remember that the presence of contaminants does not necessarily indicate that water poses a health risk.

Public Water Supply ID# CO0107155

BROOMFIELD'S WATER SOURCES

Broomfield is fortunate to have two sources of high-quality drinking water – water treated at our Water Treatment Facility, and treated water purchased from Denver Water. The two sources are generally blended in the distribution system. All of Broomfield's drinking water, whether supplied by Broomfield or Denver Water, comes from surface water sources such as rivers, lakes, and reservoirs.

Denver Water may deliver treated water to its municipal customers from any of its three treatment facilities. Water supplying these facilities comes from Denver Water's extensive Moffat and South Platte River collection systems.

The water supply for Broomfield's treatment facility originates in the Colorado and Fraser Rivers west of the Continental Divide, and is delivered through the Northern Colorado Water Conservancy District's Colorado-Big Thompson (CBT) Project. On the eastern slope, Broomfield's water is stored in Carter Lake near Berthoud. From there, it is transported to Broomfield's treatment facility via a 33-mile pipeline, and stored in Matthew D. Glasser Reservoir, a small storage reservoir adjacent to the treatment facility.

Drinking Water Treatment Process

Broomfield's modern treatment facility, completed in 1997, is designed to treat 20 million gallons of water per day. Chemicals specially formulated for drinking water treatment are added to the raw water to remove particles, microorganisms and other contaminants. The water is then filtered to remove any remaining particles. Fluoride is added to help prevent tooth decay, and the treated water is disinfected with chloramines to inactivate bacteria and viruses and prevent harmful organisms from growing in the distribution system. Certified Water Treatment Operators monitor the treatment process continuously to ensure consistent quality and safety.

Water Conservation

In addition to protecting our source water, we can all increase our efforts to use water more wisely. Recent water quality concerns around the world have reminded us of the value of reliable water supplies. Water use has been growing at more than twice the rate of population increase in the last century. Costs for supplying drinking water and treating wastewater can increase more than necessary when water demand is inflated by wasteful water use and water loss. For information on what you can do to conserve water, visit the Environmental Services website at www.broomfield.org.

Source Water Protection

The best place to prevent or minimize contaminants is at the source! The State of Colorado has developed a Source Water Assessment & Protection (SWAP) program to provide information and encourage community-based source water protection and preventive management strategies to keep our water resources safe from future contamination. You may obtain a copy of the report by visiting **http://www.cdphe.state.co.us/wq/sw/swaphom.html** or by contacting Laura Hubbard at **303-464-5606.**

The Source Water Assessment Report provides a screening-level evaluation of potential contamination that **could** occur. It does not mean that the contamination **has or will** occur. We can use this information to evaluate the need to improve our current water treatment capabilities and prepare for future contamination threats. This can help us ensure that quality finished water is delivered to your home. In addition, the source water assessment results provide a starting point for developing a source water protection plan.

Contamination in our source water areas could possibly occur from discrete sources such as:

- Aboveground, underground and/or leaking storage tank sites (including gas and propane tanks)
- Existing/abandoned mine sites
- Other industrial/commercial facilities such as convenience stores, campgrounds, and motels

Land uses in our source water areas represent potential dispersed sources of contamination. These include commercial/industrial/transportation use, residential areas, fields, and forests. Septic systems, oil/gas wells and roads could also possibly contribute dispersed contaminants to our source water areas.

WATER QUALITY DATA

During 2010, Broomfield's Water Treatment Staff and Certified Drinking Water Laboratory performed more than 25,000 tests for about 100 different contaminants. Laboratory staff routinely sample more than 220 locations throughout Broomfield. The table below lists all the drinking water contaminants detected that Broomfield water consumers could have received during the 2010 calendar year. Contaminants not reported in the table were not detected.

Terms, Abbreviations, and Symbols Used in This Report:

ppm – parts per million, or milligrams per liter (mg/L). In dollars, 1 ppm = 1 cent in $10,000

ppb – parts per billion, or micrograms per liter (µg/L). In dollars, 1 ppb = 1 cent in $10,000,000

picoCuries per liter (pCi/L) – a picoCurie is a measure of radioactivity and equals one trillionth of a Curie.

Action Level (AL) – the concentration of a contaminant, which if exceeded, triggers treatment or other requirements a water system must follow.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level Goal (MCLG) – The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Secondary Maximum Contaminant Level (SMCL) – A non-enforceable, recommended limit for a substance that affects the taste, odor, color or other aesthetic qualities of drinking water, rather than posing a health risk.

Maximum Residual Disinfectant Level (MRDL) – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Running Annual Average (RAA) – An average of monitoring results for the previous 12 calendar months.

Turbidity – Turbidity is a measure of the cloudiness of the water. It is measured in "Nephelometric Turbidity Units," or NTU. Although turbidity has no known health effects, it is regulated because it serves as an indicator of treatment plant performance.

N/A – Not Applicable **ND** – Not Detected

Drinking Water and Health

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **EPA Safe Drinking Water Hotline (800-426-4791).**

Lead in Drinking Water and Its Effects on Children

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City and County of Broomfield is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the **Safe Drinking Water Hotline (800-426-4791)** or at **http://www.epa.gov/safewater/lead.**

Special Health Concerns

Immuno-compromised people, such as people with cancer undergoing chemotherapy, people who have had organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

Other Water Quality Concerns

Our 2010 monitoring results for other water quality characteristics that may be of interest are reported in the table below. These may affect water's taste, smell or appearance. Water hardness may affect how much detergent we use. For more information about water quality concerns or this report, please call **Laura Hubbard** at **303-464-5606**, or the Water Treatment Facility at **303-464-5600.**

Secondary and Unregulated Water Quality Characteristics

Constituent	Units	Recommended Limit (if any)	Range in Distribution System (Minimum – Maximum)
Secondary Constituents (Recommended Limit is the SMCL)			
Aluminum	ppm	0.050 – 0.200	0.011 – 0.047
Chloride	ppm	250	4.3 – 27
Copper	ppm	1.0	0.016 – 0.20
Fluoride	ppm	2.0	0.28 – 1.1
Iron	ppb	300	Not detected
Manganese	ppb	50	0.8 – 3.3
pH	Std. Units	6.5 - 8.5	7.2 – 8.3
Silver	ppm	0.10	Not detected
Sulfate	ppm	250	13 – 49
Total Dissolved Solids	ppm	500	69 – 170
Zinc	ppm	5	ND – 0.010
Unregulated Constituents			
Alkalinity (as $CaCO_3$)	ppm	N/A	35 – 89
Hardness (as $CaCO_3$)	ppm	< 50 = "soft" > 150 = "hard"	34 – 120
	grains per gallon	< 3 = "soft" > 8.8 = "hard"	2 – 7
Calcium	ppm	N/A	11 – 43
Magnesium	ppm	N/A	1.7 – 6.1
Potassium	ppm	N/A	0.89 – 1.9
Sodium	ppm	N/A	12 - 20

REGULATED CONTAMINANTS TABLE: What's in Broomfield's water?

Contaminant	CCR Units	EPA Goal (MCLG)	Highest Level Allowed (MCL)	Level Detected for Compliance	Range Detected (ND = not detected)	MCL Violation?	Sample Date/ Frequency	Likely Source of Substances
Regulated Leaving the Treatment Facility								
Barium [1]	ppm	2	2	0.037	0.017 – 0.039	No	Monthly	Erosion of natural deposits, discharge of drilling wastes
Cyanide [1]	ppb	200	200	ND	ND - 25	No	Monthly	Byproduct of drinking water disinfection
Fluoride	ppm	4	4 (SMCL=2)	0.96	0.96 – 1.1	No	Monthly	Water additive to promote strong teeth, erosion of natural deposits
Nitrate, as Nitrogen [1]	ppm	10	10	0.16	ND – 0.23	No	Monthly	Fertilizer runoff, sewage, septic tank leachate
Alpha particles [1]	pCi/L	0	15	ND	ND - 2	No	Quarterly	Erosion of natural mineral deposits that emit alpha radiation
Uranium [1]	ppb	0	30	ND	ND – 1.0	No	Quarterly	Erosion of natural deposits
Sodium (monitoring required, but no MCL) [1]	ppm	N/A	N/A	17	0 - 24	N/A	Monthly	Naturally present in the environment
Regulated in the Distribution System [2]								
Total Trihalomethanes (TTHM)	ppb	0	80	25.6	16.9 – 32.1	No	Quarterly	Byproducts of chlorine disinfection of drinking water
Haloacetic acids (HAA5)	ppb	0	60	22.4	12.4 – 53.5	No	Quarterly	
Total Chlorine (chloramine)	ppm	4 (MRDLG)	4.0 (MRDL)	1.9	ND – 3.8	No	20 per week	Drinking water disinfectant
Total Coliform Bacteria	Absent or Present	zero	Less than 5% positive per month	Highest monthly % positive samples: 0.9% (Jan.)	# positive samples of total 2010 samples: 2 of 1216	No	20 per week	Naturally present in the environment

Regulated at the Consumer's Tap								
Lead and copper monitoring is required only every 3 years because Broomfield has had consistently low results. We monitor again in 2011.			**Action Level (AL) [3]**	**90th percentile value**	**Number of Homes exceeding the AL**	**MCL Violation?**	**Sample Date/ Frequency**	**Likely Source of Substances**
Lead	ppb	0	AL = 15	7.3	Zero	No	Jul - Aug, 2008	Corrosion of household plumbing
Copper	ppm	1.3	AL = 1.3	0.206	Zero	No		

Regulated at the Treatment Facility					
Parameter	**Compliance Level/ Description**	**Requirement**	**Violation?**	**Sample Date/ Frequency**	**Likely Source of Substances**
Turbidity	0.15 NTU (maximum) on 11/8/10	At no time to exceed 1 NTU	No	Every 4 hours	Soil Runoff
	100% (minimum)	Each month, at least 95% of samples must be less than 0.3 NTU	No	Every 4 hours	
Control of Disinfection By-Product Precursors	Enhanced treatment was used to remove the required amount of natural organic material	Treatment technique	No	Monthly	Naturally present in the environment
Microscopic Particulate Analysis (MPA) [4]	3-log removal	Treatment technique	No	6/23/10 Annual	Pollen, phytoplankton, algae, insects and zooplankton

[1] Denver Water data. We report the maximum detected concentration that Broomfield water customers could have received, from either Broomfield or Denver Water sources.

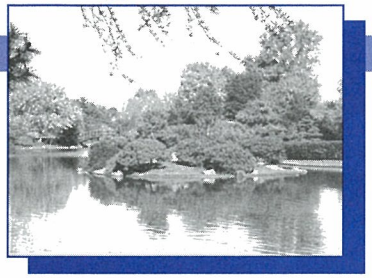
[2] TTHM, HAA5 and Total Chlorine are regulated as a running annual average (RAA), not a single value. "Level detected for compliance" is the highest RAA; the "range" is the minimum and maximum of the individual sample results.

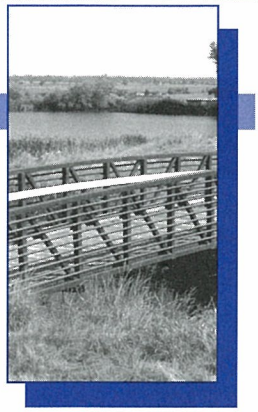
[3] The Action Levels for lead and copper apply to the 90th percentile of all samples collected; 90% of the samples must be below the Action Level.

[4] MPA is a test of our filters' particulate removal efficiency. Additional control of microbial contaminants is achieved by enhanced coagulation, and inactivation through disinfection.

NewsNotes: FOR YOUR INFO

August 2011





Coming up...

August 29: Family Night at The Bay, 250 Lamar Street. Bring the family from 4 to 8 p.m. for $10.

August 31: *A Little Noon Music* with Chamber Music con Grazia at the Brunner House, 640 Main Street, 12:15 to 12:45 p.m.

September 7: CU Jazz performs the music of Jerome Kern, 7 p.m. Free. Broomfield Auditorium, 3 Community Park Road.

September 10: Dog Daze at the Bay. The Bay closed to people on September 5, but it's gone to the dogs on September 10. The day is just for dogs and does not include owners in the pool. Three, two-hour sessions. Cost: $5 for residents and $7 for non residents. Use code 43041 for 9 to 11 a.m., 43042 for 11 to 1 p.m. and 43043 for 1 to 3 p.m. Register at http://econnect.ci.broomfield.co.us.

September 17: Colorado Fine Arts Association presents Hindustani Vocal Concert with Sri. Nachiketa Yakkundi. 3:30 to 5 p.m., social hour and 5 to 7 p.m. concert. Tickets: $100, $50, $20, children 3 to 10 years $5, students with ID $10. Broomfield Auditorium, 3 Community Park Road.

September 23: MOBIUS-an Original Comedy from BackStory Theater Company. 7 p.m. Tickets from www.brownpapertickets.com are: $12 adults, $9 seniors and students, $5 children 12 and under. Broomfield Auditorium, 3 Community Park Road.

September 24: Fishing at the Bay. The pool is stocked with trout, and children ages 12 and under, accompanied by an adult, can try to catch the wily fish. Registration is required. There are six timeslots. Cost is $8 for residents and $10 for non residents. Bring fishing tackle. Register at http://econnect.ci.broomfield.co.us. Call 303.460.6901 for information.

September 24: MOBIUS-an Original Comedy by Ron and Bret Carter from BackStory Theater Company. 2 p.m. and 7 p.m. Tickets from www.brownpaper tickets.com are: $12 adults, $9 seniors and students, $5 children 12 and under. Broomfield Auditorium, 3 Community Park Road.

September 30: ASTER Women's Choir presents "Quilters," 7 p.m. Tickets $15 available at the box office and at www.brownpapertickets.com. Broomfield Auditorium, 3 Community Park Road.

October 1: ASTER Women's Choir presents "Quilters," 2 p.m. and 7 p.m. Tickets $15 available at the box office and at www.brownpaper tickets.com. Broomfield Auditorium, 3 Community Park Road.

Don't miss Broomfield Days!

Broomfield Days is September 16 and 17 this year. This premier community festival offers something for everyone along with a heavy dose of community spirit.

On Friday, September 16, plan to participate in the David James Memorial Golf Tournament at Eagle Golf Club. Proceeds benefit Broomfield's senior programs. It's a shotgun-start, four-person scramble. Individual entry fee is $80, and team fee is $300 which includes greens fees, cart fee, practice balls, sleeve of balls, tees, divot repair tool, and a barbecue dinner.

Saturday, September 17, is the big day. Come to Midway Park for activities that include plenty of fun: a 5K race, clown contest, parade, trade fair, craft festival, food booths, three stages of entertainment, demonstrations and more, plus the ninth annual Rockin' Seniors Cool Classic Car Show. The $20 donation to enter a car in the show benefits Meals on Wheels.

Center closed for building maintenance

The Broomfield Community Center, including the Lakeshore Café, 280 Lamar Street, will be closed from August 29 to 31 for building maintenance. Passes will be honored at the Derda Center, 13201 Lowell Boulevard.

Broomfield City Council Meetings: September 13 and 27

Regular City Council meetings begin at 6 p.m. in the City Council Chambers, City and County Building, One DesCombes Drive.
The meetings also may be viewed on KCCB Channel 8 for Comcast subscribers, and on Broomfield's Web site. Visit www.broomfield.org for a schedule.

Check it out!

Broomfield's premier event venue, the 1STBANK Center, brings an exciting line-up of entertainment opportunities to Broomfield.

- **August 27** – Roller Dolls bout 7, 7 p.m.
- **September 3** – Ke$ha with LMFAO, Spank Rock, 7:30 p.m.
- **September 4** – Selena Gomez and The Scene with Allstar Weekend, 7 p.m.
- **September 17** – Roller Dolls bout 8, 7 p.m.
- **October 15** – Roller Dolls bout 9, 7 p.m.
- **October 16** – Roger Daltrey performs The Who's "Tommy," plus other Who classics and more, 7:30 p.m.
- **October 27**—Portishead, 8 p.m.

Visit http://1stbankcenter.com/ regularly to see what else is scheduled. For tickets, go to the 1STBANK Center box office, visit the website at http://1stbankcenter.com/ or visit www.Tickethorse.com.

Take a hike!

Active adults can enjoy a barbecue picnic in Estes Park and then take a hike in Rocky Mountain National Park for some elk viewing and bugling in this popular trip sponsored by Senior Resources of Broomfield. Mark the calendar for Wednesday, September 28.

Bring a camera and a jacket in case it's cool. Meet at the Broomfield Community Center at 1 p.m. Entrance to the park is $10 (pay on your own or use your Golden Age Parks Pass). Elevation is over 8,000 feet.

Call 303.464.5526 to register. Cost is $15 for residents, $17 for non residents, and includes the picnic and transportation. Return is about 8:30 p.m.

Closure

Broomfield city and county offices, the Mamie Doud Eisenhower Library, the Broomfield Community Center and Senior Center will be closed on Monday, September 5, for the Labor Day holiday. The Paul Derda Recreation Center will be open from 7 a.m. to 5 p.m. The Bay is open regular hours and closes for the season at the end of the day.

Think BROOMFIELD
Eat. Play. Shop. Stay.
thinkbroomfield.org

Whatever you need, whenever you shop,
Think Broomfield!
Shop and Support Broomfield Businesses and Support Your Local Community.
Visit ThinkBroomfield.org

9-11 Commemorative Ceremony set

Broomfield's commemorative ceremony for the tenth anniversary of the 9-11 tragedy is Sunday, September 11, from 11 a.m. to 2 p.m. at the Amphitheater in Community Park.

At 11 a.m., a ceremony will remember the civilians and first responders lost in the attacks on the Twin Towers in New York, at the Pentagon in Washington D.C., and those who died in the plane crash in Pennsylvania.

There will be a bugler, bagpipers, a Healing Field of flags, and a community procession. A quintet from the Denver Municipal Band will perform from noon to 1 p.m. After the ceremony, attendees may reflect at the 9-11 Memorial sculpture garden at the east end of Community Park.

Never forget…

Sustainability and green thinking –

Water conservation—Keep rivers and streams clean

- Never dump anything down storm drains.
- Sweep grass clippings off driveways, sidewalks and roads onto grass.
- Use phosphorous free brands of fertilizer.
- Direct downspouts away from paved surfaces.
- Take cars to a commercial car was instead of washing them in the driveway.

Energy conservation— Bag the box

Try buying cereal in a bag instead of a box. It takes 345 pounds of paperboard to make a year's supply of cereal boxes. That is the weight of 734 jumbo jets!

- Each year the U.S. produces 2.3 billion cereal boxes.
- There is a saving of 75 percent on packaging material without the box.
- By not manufacturing cereal boxes, 1.1 trillion BTUs of energy are saved in a year.
- 1.1 trillion BTUs will light ten 100-watt bulbs for 36,000 years.
- 1.1 trillion BTUs lights 36,000 15-watt bulbs for 10 years.

Printer tips:

Do not use fluorescent or dark colored paper for normal use. This paper cannot be recycled. Use pastel colored paper which can be recycled. Recycling paper saves trees, energy and protects the environment.

Tips provided by Broomfield Environmental Services. For more information, contact 303.438.6329.

Published by the City and County of Broomfield Public Information Office - 303.438.6308

Appendix E

Current and Prospective Water Efficiency Programs and Measures
(Measures required for consideration are highlighted in the table in yellow)

Table Metrics for Criteria Ranking

Criteria	Ranking Scale		
Balancing Costs/Benefits	**1** Benefits minimal with low or high cost	**2** Level of benefit justifies cost (e.g. 1:1)	**3** Significant benefits with low cost
Ease of Implementation	**1** Significant effort is needed to deploy with major behavioral change needed	**2** Effort is needed to deploy with moderate behavioral change needed	**3** Minimal effort is needed to deploy with minimal behavioral change needed.
Public Acceptance	**1** Citizen/ Business would not expect this activity/behavior and may question; may not demonstrate progress	**2** Some Citizens/Businesses questioning this activity/behavior, but progress would be demonstrated	**3** Citizens/Businesses would expect this activity/behavior and would support; progress would be demonstrated
Est. Amount of Water Savings	**1** Savings difficult to measure	**2** Moderate measureable savings	**3** Large scale significant savings

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
Demand-Side Programs											
Education/ Information Dissemination											
Public Education	Introduction to Xeriscape lecture	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue and may be expanded	C
	Xeriscape workshops-How to design and/or retrofit your landscape	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue and may be expanded	C
	Website information – Broomfield Services, Environmental Services, Recycling, water conservation link fall/winter, green video link spring/summer	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue and will continue to be updated and expanded	C
	Green Broomfield video on Channel 8	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue as it is currently	C
	Conservation Tips in Annual Water Quality Report (began in 2008).	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue as it is currently	C
	Pre-packaged water conservation kits are distributed at public events like “Broomfield Day” (annual city festival) and “National Night Out”; meter readers hand out the kits when shut off notices are issued.	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		2	3	3	1	9	This program will continue as it is currently – may consider additional hand out opportunities	C
	Broomfield Days Parade float with Flow and Jo (in Green Video and pictures)	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue as it is currently	C

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
	Sustainability Tips including water conservation tip in "NewsNotes," the monthly utility bill insert.	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8		X	3	3	3	1	10	This program is expected to have low cost, but non-measurable savings	Y
	Conservation oriented activity for Earth Day (April 22)	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1, Policy S-C.6 Action Steps S-C.1.1 through 1.8, Action Step S-C.6.2		X	3	3	3	1	10	This program is expected to have low cost, but non-measurable savings	Y
	Develop a conservation organizational chart showing departmental contribution/support and consider how different measures/programs are funded (individual departments versus line-item in Environmental Service's budget)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.10		X	2	3	3	1	9	Non-measurable savings/ benefits. Not well supported by goals, no measurable savings	N
Water-Saving Demonstra-tions	Xeriscape seminars and Xeriscape Garden (advertised through Broomfield Enterprise, website and offered for free)	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue as it is currently	C
School Programs	Earth Day program just for kids promoting environmental awareness and resource conservation	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1, Policy S-C.6 Action Steps S-C.1.1 through 1.8, Action Step S-C.6.1, Action Step S-C.6.2	X		3	3	3	1	10	This program will continue as it is currently	C
Displays at Special Events	Conservation displays and information booths at Earth Day, National Night Out, Public Works Week	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		3	3	3	1	10	This program will continue as it is currently	C
Shut-off Notices	Provide Conservation kits with shut-off notices	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8	X		2	3	3	1	9	This program will continue as it is currently	C
Web page Audit check list	Additional conservation information for website including a water audit-step-by-step instructions on how to check for leaks, etc. – track hits on this webpage	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8		X	3	3	3	1	10	This program is expected to have low cost, but non-measurable savings	Y
Utility Bill Inserts	"News Notes" insert included in each month's utility bill –designated section page for conservation info; (e.g. have had a Conservation section in the Water Quality beginning in 2002.)	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8		X	3	3	3	1	10	This program will have non-measurable savings, but may have long-term benefits	Y
School Programs	Public education for primary school aged kids (e.g. give tours of the water plant, hand out conservation kits, sponsor a workshop through Project WET)	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1, Policy S-C.6 Action Steps S-C.1.1 through 1.8, Action Step S-C.6.1, Action Step S-C.6.2		X	2	3	3	1	9	This program will have non-measurable savings, but may have long-term benefits	Y
Informative, Understand-able Water Bill	Add a couple of lines titled "Water Conservation tips" at bottom of each water bill or a phrase that reads "See water conservation tips at www.broomfield.org"	Goal S-A.I, Policy S-A.3 Goal S-C.I, Policy S-C.1 Action Steps S-C.1.1 through 1.8		X	3	3	3	1	10	This program will have non-measurable savings, but may have long-term benefits	Y
Commercial Water Use Audits	Indoor and irrigation conservation programs for commercial, industrial, and institutional users	Goal S-A.I, Policy S-A.3 Policy S-C.2, Policy S-C.5		X	2	2	2-3	2	8-9	Audits for large users and large landscapes	Y
Residential Water Use Audits	Indoor and irrigation water use audits for residential users (use CSU extension, college students or ReSource Conservation for support) List other funding ideas as goal	Goal S-A.I, Policy S-A.3, Policy S-C.3, Policy S-C.4		X	2	2	3	2	9	Cost Effective	Y

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
Water Conservation Expert Available	Have a designated Water Conservation Coordinator	Goal S-A.I, Policy S-A.3, Policy S-C.3, Policy S-C.4 Action Step S-A.3.10		X	1	1	1	1	4	Not feasible with current economic conditions.	N
Rate Structures & Billing Systems Designed to Encourage Efficiency											
Volume Billing	Pay a monthly service charge plus pay by the gallon.	Goal S-A.I, Policy S-A.3	X		3	3	3	2	11	This program will continue as it is currently	C
Increased (monthly) Billing Frequency	Water bills are sent monthly (allows time to react to water use from previous month)	Goal S-A.I, Policy S-A.3	X		3	3	3	1	10	This program will continue as it is currently	C
Conservation (Tiered) Rate Structure	Tiered rate billing structure (see attached RFP 12-019 Comprehensive Rate and Fee Cost of Services Study for Water, Wastewater, and Reclaimed Water Utilities)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.8		X	2	1	1	3	7	This program will be explored with council after a formal rate study is completed. Dependent upon council direction and results of rate study	Y
Regulations/ Ordinances											
Water Waste Prohibition	Water Waste Prohibition in Broomfield Municipal Code	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3	X		3	3	3	1	10	This program will continue as it is currently	C
Drought ordinance	If council declares a drought Broomfield can charge more for water	Goal S-A.I, Policy S-A.3 Action Step S-A.3.6	X		3	3	3	1	10	This program will continue as it is currently	C
Standards for Fixtures	International plumbing code	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	1	10	This program will continue as it is currently	C
Turf Restrictions	No more than 60% of a residential lot can be turf	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	1	10	This program will continue as it is currently	C
Landscape Design Layout	City Standards and Specifications for right-of-ways	Goal S-A.I, Policy S-A.3 Action Step S-A.3.9 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	2	11	This program will continue as it is currently	C
Soil Preparation	Soil amendment required	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4 Action Step S-A.3.7	X		3	3	3	1	10	This program will continue as it is currently	C
Irrigation Equipment	Backflow protection devices required for irrigation systems connected to the potable water system	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	1	10	This program will continue as it is currently	C
Update Ordinance to reduce allowable turf area	Amend the existing ordinance that limits turf area. Reduce the allowable amount of turf grass from 60% to 50% of landscaped area.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4 Action Step S-A.3.7	X		1	2	1	2	6	This measure was added at the request of the Sustainable Community Task Force.	N
Planning water conservation check-list	Plan review guidelines for new developments	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4 Action Step S-A.3.7, Action Step S-A.3.9		X	2	3	3	2	10	This program may have great savings in the long-term	Y
Time of Sale Upgrades	Require property owner to upgrade to current water conserving standards prior to re-sale	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3 Action Step S-A.3.4		X	2	1	1	1	5	Not considered for implementation	N

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
Incentives											
Landscape Rebates	Landscape rebate program for changes that improve water use efficiency (e.g. drip irrigation, changes to drought tolerant turf type)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, S-A.3.9		X	2	2	3	2	9	Cost Effective	Y
Fixture and Appliance Rebates	Incentives/rebates for new toilets, washing machines, sprinklers, trees, etc.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1		X	2	2	3	2	9	Cost Effective	Y
Awards/ Rewards	Contest for lowest water bill with award being water bill reimbursement for two months or gift card donated by a local business	Goal S-A.I, Policy S-A.3 Policy S-C.2, Action Step S-C.2.1		X	3	3	3	1	10	Savings will vary monthly, but cost-effective savings are expected	Y
Demand-Side Measures*											
Water Efficient Fixtures & Appliances											
Toilets	Low volume, auto flush toilet	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1	X	X	2	2	3	2	9	Currently used in City buildings, but will be considered for rebate program to expand use in commercial buildings.	Y
Urinals	Waterless, ultra-low water urinals Waterless urinals installed in City Hall public restrooms*	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1	X	X	2	2	3	2	9	Currently used in City buildings, but will be considered for rebate program to expand use in commercial buildings.	Y
Showerheads	Timed showerheads	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1	X	X	3	2	3	2	10	Currently used in City buildings and public showers in recreation facilities and will be considered for rebate program to expand use in commercial buildings.	Y
Faucets	Demand use faucets	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1	X	X	2	2	3	2	9	Currently used in City buildings, will be considered for rebate program to expand use in commercial buildings.	Y
Washing Machines	Will replace older washing machines with low use machines after failure	Goal S-A.I, Policy S-A.3 Action Step S-A.3.1	X	X	2	2	3	2	9	This measure will continue, but may be expanded to include rebate program for residents	C
Landscape Efficiency											
Low Water Use Landscapes	Xeriscape demonstration garden in front of City Hall (CSU extension agent/master garden license helps keep up the demo garden)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	2	11	This measure will continue as it is currently	C
Mulch Program	Current program to turn tree limbs and Christmas tree collection into woodchips could be expanded to use for Xeriscape mulch	Goal S-A.I, Policy S-A.3 Action Step S-A.3.9?	X		3	3	3	1	10	This measure will continue as it is currently	C
Drought Resistant Vegetation	Turf farm-Broomfield grows a specially developed drought tolerant sod at its turf farm in Greeley. The turf is used for street right-of-ways and passive park areas.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.9	X		3	3	3	2	11	This measure will continue as it is currently	C
Efficient Irrigation	Parks cut back irrigation by 10%	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	3	12	This measure will continue as it is currently	C
Equipment	Moisture sensors, solar computerized irrigation controllers	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	3	12	This measure will continue and may be expanded eventually	C
Scheduling	Irrigation controllers are programmed to apply only 1” of water per week.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	3	12	This measure will continue as it is currently	C

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
Industrial and Commercial Efficiency											
Water Efficient Processes	Reuse supply expansion to industrial and commercial accounts through build out	Goal S-A.I, Policy S-A.3 Action Step S-A.3.5	X		3	3	3	3	12	This measure will continue as it is currently	C
Cooling Equipment Efficiency	Cooling equipment reused for future Porocade (McData)	Goal S-A.I, Policy S-A.3		X	2	2	2	2	8	May be considered in future plan updates.	N
Supply Side Programs*											
Distribution System Efficiency											
Meter Source Water	100% of source water is metered (Northern water is metered at Hwy 7, Denver water is metered at 128th & Zuni, all ditches have flume recorders)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.10	X		3	3	3	2	11	This program will continue as it is currently	C
Meter Service Connections	100% of Broomfield's service connections are metered	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	2	11	This program will continue as it is currently	C
Non-account water metered	100% of construction water is metered. Flushing water is timed and calculated.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	2	11	This program will continue as it is currently	C
Meter Testing & Replacement	10 year meter replacement schedule. Program calibrates or replaces a minimum of 10% of the system's meters each year.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		2	3	3	2	10	This program will continue as it is currently	C
Water line replacement Program	For the past 10 years an average of 2 miles of water line have been replaced per year	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		2	3	3	1	9	This program has been very aggressive over the last 10 years. Due to the current economic conditions it will probably be scaled back in the future.	C
Leak Identification	Broomfield has a "Leak Correlator" and conducted an aggressive leak detection program for six years. The program was discontinued due to the relatively new distribution system and because only one leak was detected in the last 4 years of the program. A leak survey is done any time there is a suspected leak.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		2	3	3	2	10	This program will continue as it is currently	C
Improved Water Accounting	Rigorous analysis of non-account (flushing, backwash slurry) and unaccounted for water	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	3	2	11	This program will continue as it is currently	C
Distribution Flushing program for water quality	Uni-directional flushing program uses less water for "cleaning" the distribution system*	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4		X	3	2	3	2	10	Saves water , but requires additional manpower	Y

Worksheet Category	Details of Programs and Measures	Reference Number of Environmental Stewardship Goal, Policy and Action Steps addressed (see Section 1.5, pages 10-12)	Current Program/Measure	Prospective Program/Measure	Balancing Cost/Benefit	Ease of Implementation	Public Acceptance	Amount of Water Savings	Total Score	Considerations and Comments	Carried to Evaluations (Y,N) or Continue Program (C)
Supply-Side Measures*											
Distribution System Efficiency											
Leak Repair	Pipe replacement and repair provided for leaks	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		2	3	3	2	10	This measure will continue as it is currently	C
Removal of Phreatophytes	Select locations along ditches sprayed to prevent growth of phreatophytes (e.g. large cottonwood trees)*	Goal S-A.I, Policy S-A.3 Action Step S-A.3.3, Action Step S-A.3.4	X		3	3	2	1	9	This measure will continue as it is currently	C
Temporary Transfers from Agriculture											
Dry Year Leasing	Platte Valley Irrigation	Goal S-A.I, Policy S-A.3 Action Step S-A.3.10	X		2	2	2	2	8	May consider in the future but doesn't provide a firm supply.	N
Rotational Fallowing	A group of agricultural users agree not to irrigate for 1 year out of a set period of years corresponding to the number of agricultural users, making flows available to M&I users. For example a group of 10 users, each would take their turn not irrigating every 10 years.	Goal S-A.I, Policy S-A.3 Action Step S-A.3.10		X	2	2	2	2	8	Requires a large Agricultural area or multiple participants to be effective. May consider in the future.	N
Source Optimization											
Water Reuse Systems	Reuse water is being offered to most new developments; Interlocken and Flatirons Mall are already converted (there is a challenge getting pipes north fast enough due to the speed of development)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.5	X		2	3	3	3	11	This measure will continue as it is currently and will most likely be expanded	C
System Integration with Other Utilities	Two interconnects with Westminster for emergency use. Planned Superior interconnect (Coalton Rd)	Goal S-A.I, Policy S-A.3 Action Step S-A.3.10	X		2	3	3	2	10	This measure will continue as it is currently	C
Drought Planning	Drought Mitigation Plan	Goal S-A.I, Policy S-A.3 Action Step S-A.3.6		X	2	2	2	3	9	Will be considered for future implement.	Y

*Used or required only for City/County facilities

REQUEST FOR PROPOSALS (RFP 10-019)
Operations Performance Audit/Assessment
And Comprehensive Rate and Fee Cost of Services Study

Background

Broomfield is a city and county situated north of Denver. It has a population of approximately 54,000 with the capability to expand to approximately 95,000. Broomfield has 17,448 water customers. It operates its own water treatment plant and has 318 miles of water mainlines. Broomfield has 16,424 sewer customers. It operates its own wastewater treatment plant and has 220 miles of sewer mainlines. Broomfield also operates a non-potable irrigation system that uses treated reclaimed wastewater effluent.

During its consideration of new utility rates for 2008, the City Council requested that an Operations Performance Assessment and Audit of the Water and Wastewater Utilities be conducted as well as having an independent third party review Broomfield's rates and fees to ensure adequacy to recover costs and equity in the assignment of growth versus non-growth costs. An independent review by a third party to assess Broomfield's service rates and connection fees would identify charges required to fund current and future operating and capital costs.

An operations audit and comprehensive utility financial plan and rate study by an independent third party was last completed in 1996. The rate study was updated in 2003. In 2009, Broomfield staff updated the long-range financial plan for the utility enterprise funds based on the existing rate structure and Land Use Master plan.

The 1996 Operations Assessment proved valuable, resulting in modifications to the operation of Broomfield's systems including; shortening maintenance frequencies on water valves and hydrants, implementing a video inspection program for wastewater pipes, implementing a computerized work order tracking system, investigating potential outsourcing opportunities, and establishing weekly performance targets and staff meetings. Since that time, staff has continued work on improvements to operations including: review of water treatment, storage and distribution operations, development of a computerized tool to model and evaluate various supply scenarios to reduce costs and prepare for drought, modifications to wastewater treatment processes to reduce energy costs, and modifications to water treatment processes to reduce chemical costs. The Proposed Operations Performance Assessment and Audit is expected to identify and document steps that could improve current operations effectiveness and efficiency for the water and wastewater utilities.

Additionally, the City Council expressed interest in the review of costs and revenues by class of services and evaluating rate designs and structures other than the base fee and single rate

structure currently in use at Broomfield. Discussion by the City Council on the rate structure has focused on the use of the rate structure to encourage water conservation. In 2004, the City Council discussed a graduated rate structure intended to encourage water conservation and chose to retain the current base fee single rate structure now in use.

On November 21, 2006, City Council considered ordinances updating rates and fees for Broomfield's utilities for 2007. At that time the City Council reviewed a letter submitted by Trammel Crow Residential. Trammel Crow Residential is building apartments in the Parkway Circle and Arista projects in Broomfield. The letter suggested that Broomfield's water and sewer license fees assign an inappropriately large proportion of the costs of license fees to apartments, versus other housing types, and that the fees do not encourage water conservation. During its discussion of the comments, the City Council expressed an interest in looking at the utility license fee structure.

At the January 8, 2008 meeting, Council approved Ordinances 1879 and 1880 establishing water and sewer rates and fees for 2008. At the meeting, Council expressed interest in investigating utility rate and fee structures designed to promote conservation and/or reward low volume water consumers. The proposed Comprehensive Rate and Fee Cost of Services Study for Water and Wastewater Utilities (Comprehensive Study) will provide Council the opportunity to work with the consultants to develop priorities and objectives and review options for varied rate and fee structures to achieve those objectives.

Scope of Work

Separate scopes of services were developed for the Operations Performance Audit/Assessment and the Comprehensive Rate and Fee Cost of Services Study. The Operations Performance Audit/Assessment will review how Broomfield is operating its water and wastewater business lines to determine if there are opportunities to do things more efficiently and cost effectively. The Comprehensive Rate and Fee Cost of Services Study will review utility rate and fee structures and provide Council with possible changes that would promote Broomfield's objectives.

Staff evaluated the advantages and disadvantages of various approaches. Based on this work, staff developed scopes of services for Council's consideration.

The following are two key components of both scopes of services:

1. Utilize one firm with experience in conducting both types of studies. Combining the studies with a single firm will provide a consistent approach to the final recommendations of operations changes and potential changes in recommended rates and fees.

2. The selected firm will need to consider and incorporate other Broomfield Utility studies recently completed or in progress including:
   - Water Master Plan Update
   - Evaluation of Broomfield's Water Projects
   - Water Conservation Plan

The overall objectives and scopes of services for the studies are:

Operations Performance Audit/Assessment

Review Water and Wastewater operations to evaluate if Broomfield is doing everything it can or should to hold or reduce costs in the water and wastewater utility operations while maintaining levels of service expected by Broomfield customers. Provide recommendations on changes and related benefits.

- Conduct all work in compliance with Generally Accepted Governmental Auditing Standards.
- Trend and analyze the different cost categories, and document "Cost Drivers".
- Review current work processes to evaluate effectiveness, efficiencies, assess risks and identify cost controls.
- Assess the costs and benefits of current service levels provided to customers.
- Recommend practices that will support a reduction of total life cycle costs of providing utility services, while considering conservation, sustainability and environmental impacts.
- Identify possible mitigations with short term costs that translate into greater, long term savings.
- Identify discretionary, lower priority services that could be reduced or eliminated.
- Establish lowest, baseline costs.
- Project future costs.

Use the computerized water operations model developed by the City to evaluate operations for efficiencies and cost savings. Provide recommendations on changes and related benefits.

- Determine if there is any more capacity in the system by changing how it is operated to accommodate peak demands and reduce or delay new water supply purchases.
- Evaluate how the City operates the system with the use of Denver, CBT, and Windy Gap water to determine if it is the most cost effective in terms of total costs.

Comprehensive Rate and Fee Cost of Services Study

Evaluate utility rate and fee structures that would promote Broomfield's objectives including: promoting water conservation, providing rate equity between user classes and between past, present, and future rate payers, and covering costs to maintain and operate the system to meet future growth demands and maintain levels of service expected by Broomfield customers. Provide recommendations on changes and related benefits.

- Conduct a study and prepare a written report with documented methodology and recommendations in compliance with accepted methods of the American Water Works Association.
- Meet with City Council and staff to determine objectives and priorities of utility rate structure design.
- Review Utility capital improvement plans and coordinate timing with Utility Master Plans.
- Allocate costs of services into Growth and Non-Growth categories.
- Review the existing license fee structure, compare the structure to existing and projected use and costs and fee structures in neighboring communities, and make recommendations for any potential modifications. Look especially at multi family licenses, licenses for age restricted senior citizen projects and licenses for restaurants.
- Analyze consumption by customer class and meter size.
- Consider cost trends identified in Operations Audit phase of the studies.
- Analyze compliance with existing bond covenants and reserve policies.

- Develop financial plan to operate fiscally sustainable utilities.
- Develop proposed utility rate structures for review with City Council.
- Develop proposed utility license fees for review with City Council.

Consultant Selection

The selection process will consider experience in both Performance Audits and Rate Studies and expertise in the water and wastewater utility community. Special consideration will be given for experience with Government Financial Officers Association "Performance Auditing in Local Government", which closely reflects the Generally Accepted Government Auditing Standards and Generally Accepted Accounting Principles for government.

Broomfield staff has researched rate schedules and total costs that other utility providers paid for operations audits, financial plans and rate studies. This information was used to estimate project costs and will be used in evaluating proposals.

Deliverables

The consultant shall provide the following:

1.) Meet with staff to present draft reports on both studies.

2.) Written report of Findings and Recommendations for Operations Performance Audit/Assessment.

3.) Written report of Findings and Recommendations for Comprehensive Rate and Fee Cost of Services Study.

4.) Attendance and support of staff's presentation to Council at scheduled Study Session.

Project Schedule

Proposals will be evaluated and a contract developed for Council consideration by June 2010. The studies are estimated to take 6-8 months to complete with an estimated completion by January 2011.

Critical Dates

PRE-PROPOSAL CONFERENCE IS RECOMMENDED: A pre-proposal conference will be held on **April 19, 2010** at 2:00 p.m., City ad County Building, Zang Spur Conference Room, One Descombes Drive to discuss the scope of work. A representative of the consultant is encouraged to attend this conference in order to become familiar with the scope of work. This will be the only opportunity for the consultant to meet with staff prior to the submission of their proposal.

RESPONSE TO QUESTIONS: Questions which arise during the Response preparation period regarding issues around this Solicitation, purchasing and/or award should be directed, in writing, via fax, email or U.S. mail, to Joyce Newberry, *Purchasing Manager,* City and County of Broomfield, One DesCombes Drive, Broomfield, CO 80020, email: jnewberry@broomfield.org; fax number (303)464-5105. The vendor submitting the question shall be responsible for ensuring that the question is received by 5:00 p.m. **April 20, 2010**.

Any official interpretation of this Solicitation must be made by an agent of the City's Purchasing Division who is authorized to act on behalf of the City. The City shall not be responsible for interpretations offered by employees of the City who are not agents of the City's Purchasing Division.

SUBMITTALS DUE:
Submittals must be sent on or before **May 4, 2010 at 2:00 pm (our clock).** Submittals received after this time will not be considered and individual extensions to the due date will not be granted.

Mail:
Public Works Director
City and County of Broomfield
One DesCombes Drive
Broomfield, CO 80020
Email:
purchasing@broomfield.org

Consulting Agreement

Attachment 1 is a copy of the consulting agreement that the selected consultant will be required to execute upon selection by Broomfield. Submittal of a proposal indicates a firm's ability to execute the agreement as written.

Consultant Responsibility

1.) The consultant shall be responsible for all work required to provide the deliverables listed above.

2.) The consultant shall be responsible for collecting all necessary documentation and information for the studies.

3.) The consultant shall be responsible for conducting field inspections and staff interviews necessary for completing the studies.

4.) The consultant shall be responsible for all travel and other expenses associated with work performed at Broomfield.

5.) Invoices shall be attached to a Broomfield-prepared pay request (to be provided), as well as a monthly status report.

Proposal Requirements

Proposals should contain, at a minimum, the following information:

1.) A statement of your understanding of the project with a detailed scope of services. Consultant is responsible for providing the scope of services as required by the consulting agreement (Attachment A).

2.) Information regarding your firm's experience during the last three years with projects of similar nature and scope. Give amount of original contracts and cost of completed projects.

3.) A brief background of your key personnel who will be assigned to this project, their role, and how their previous experience relates to this project. Also, describe their method of keeping projects within budget and on schedule.

4.) A schedule for the project that outlines the scope of work tasks, the number of hours dedicated to each task, the anticipated duration of each task, and project milestones. Consultant is responsible for providing the project schedule and milestones as required by the consulting agreement (Attachment B).

5.) Certification of insurance in amounts required by the consulting agreement (Attachment D) and described by attached document – Professional Services, Low Risk.

6.) Your proposed total, not-to-exceed fee for the consulting services, including reimbursable costs. The final fee will be subject to final negotiations with the selected consultant subject to Broomfield travel policies.

7.) Provide a spreadsheet of cost breakdown listing tasks and proposed fees for the entire scope of the work, including sub-consultants if applicable. Separate the two studies.

8.) Include an hourly rate schedule of all personnel who will work on the project.

9.) Three (3) copies of your proposal must be received via mail or one (1) electronic copy (.pdf file) via email on or before by 2:00 p.m. on May 4, 2010. The proposals and questions regarding the proposal should be directed to the following:

Mail:
Public Works Director
City and County of Broomfield
One DesCombes Drive
Broomfield, CO 80020
Email:
purchasing@broomfield.org

ISSUANCE OF THIS RFP BY BROOMFIELD DOES NOT CONSTITUTE AN ORDER OF GOODS OR SERVICES AND DOES NOT CONSTITUTE A COMMITMENT BY BROOMFIELD TO AWARD A CONTRACT.

Proposal Terms and Conditions

Pursuant to the Colorado Public (Open) Records Act, §24-72-101 et seq. C.R.S., any proposals submitted in response to this RFP may be public records. If the consultant believes that any information submitted in response to this RFP is confidential and is protected from disclosure under the Public Records Act, as confidential trade secret, privileged information, or confidential commercial or financial data, or is protected from disclosure for any other reason, the supplier should clearly indicate in writing which information so provided is protected from disclosure and the reason for that protection.

All costs, terms and conditions contained in Proposals shall remain fixed and valid for 90 days from the date of submittal.

The costs of developing and submitting a Proposal is entirely the responsibility of the consultant and no cost shall be reimbursed by Broomfield.

Broomfield reserves the right to reject any or all Proposals or portions thereof received in response to this RFP and to waive minor irregularities and informalities in proposals received or to cancel this RFP if it is in the best interest of Broomfield to do so.

Late Proposals will not be accepted or considered.

The City reserves the right to conduct discussions with vendors and to accept revisions of proposals. During the evaluation period, the City will not disclose any information derived from proposals submitted or from discussions with other vendors. Once an award is made, the solicitation file and the proposals contained therein are in the public record.

Appendix F

Cost/Benefit Analysis of Proposed Conservation Programs and Measures

Appendix F

	Conservation Measure or Program	City Staff Hours: Management Staff Hours	City Staff Hours: Support Staff Hours	Total Cost to City per Household: Rebate	Total Cost to City per Household: Staff Labor	Total Cost to City per Household: Contract, Labor, or Materials	Number of Households per Year	Gallons Saved per Household per Year	Total Gallons Saved per Year (Thousand Gallons)	Annual Revenue Lost Related to Water Savings per gallons	Total Annual Cost to City	Cost per Gallon Saved	Comments
Demand Side Programs	**Education/Information Dissemination**												
	Proposed Additional Public Education Programs	120	200		$ 44.28	$ 10	518.52	535	277	$ 776.93	$ 28,922.13	$ 0.104	Assume all education programs result in savings of 0.5% of annual water use per household.
	Landscape Residential Water Audits	80	20		$ 128.53	$ 100	75	5000	375	$ 1,050.00	$ 18,190.00	$ 0.049	SWSI : 5-15,000gal/yr/cust account
	Landscape Commercial Water Audit	20	20		$ 316.00	$ 500	10	20000	200	$ 560.00	$ 8,720.00	$ 0.044	SWSI : 20-75,000gal/yr/customer account
	Indoor Commercial Water Audits	80	20		$ 964.00	$ 500	10	10000	100	$ 280.00	$ 14,920.00	$ 0.149	SWSI: 10-50,000gal per customer account
	Indoor Residential Water Audits	80	20		$ 48.20	$ 100	200	3000	600	$ 1,680.00	$ 31,320.00	$ 0.052	SWSI 3-9,000gal/customer account/yr
	Rate Structure												
	Proposed Tiered Rate Structure	120	40		$ 14,960.00	$ 215,000	n/a	TBD by rate study		TBD by rate study	$ 229,960	$6,000/AF*1AF/325851gal=.018/gal. SWSI	TBD by rate study [2]. Rate Study contract anticipated 8 months from contract award to final deliverable.
	Regulations/Ordinances												
	Planning Water Efficiency check-list	80	40		$ 10,640.00		# of development reviews				$ 10,640		Cost to set up program in 2012. Ongoing cost will be estimated .5% per household same as education programs.
	*Modify Turf Restrictions Ordiance (reduce from 60% down to 50% of landscaped area)	152	200		$ 26,416.00		95	5311	505	$ 1,412.69	$ 27,829	$ 0.055	First year cost. Based on 10% reduction in Broomfield turf area regulation change from 60% to 50% (17%)of estimated 31.7 gpcd for outdoor use. [1] 2010 had 95 SF housing starts
	Incentives												
	Toilet Rebate	16	66	$ 150	$ 50.28		100	14600	1460	$ 4,088.00	$ 24,116	$ 0.017	SWSI 14,600gal/customeraccount/yr
	Irrigation Rebate	16	21	$ 500	$ 555.60		5	36000	180	$ 504.00	$ 5,782.00	$ 0.032	SWSI Landscape retrofit estimate 11-36,000gal/yr/cust
	Washing Machine Rebate	16	66	$ 200	$ 251.40		20	3600	72	$ 201.60	$ 9,229.60	$ 0.128	SWSI 3,600-8,500gal/customer/yr
	Shower Rebate	16	18.5	$ 25	$ 29.48		90	2759	248	$ 695.37	$ 5,598.37	$ 0.023	Estimated annual savings 1022 gal/capita/yr[1]
	Water Bill Credit for Turf Replacement	120	120	$ 500	$ 1,896.00		10	30000	300	$ 840.00	$ 24,800.00	$ 0.083	SWSI Turf Replacement estimate 30-60,000gal/yr/cust
	Give-aways for Lowest Water Bill	20	30	$ 75	$ 183.00		20	10703	214	$ 599.34	$ 5,759.34	$ 0.027	During summer months only (May throught September) - awarding highest percent decrease from previous year for the same month, one per billing cycle (4 billing cycles per month)
Demand Side Measures	**Water Efficient Fixtures and Appliances City Facilities**												
	Toilets	1	3		$ 258.00	$ 180	6	14600	88	$ 245.28	$ 2,873.28	$ 0.033	Based on savings of 10.3 gpcd. [1]
	Urinals	1	3		$ 258.00	$ 200	5	1971	10	$ 27.59	$ 2,317.59	$ 0.235	Based on savings of 2 gpcd. [1]
	Showerheads	1	3		$ 258.00	$ 25	5	2759	14	$ 38.63	$ 1,453.63	$ 0.105	Based on savings of 2.8 gpcd. [1]
	Faucets	1	3		$ 258.00	$ 300	10	2000	20	$ 56.00	$ 5,636.00	$ 0.282	Based on savings of 0.1 gpcd. [1]
	Washing Machines	1	3		$ 258.00	$ 600	2	4928	10	$ 27.59	$ 1,743.59	$ 0.177	Based on savings of 5 gpcd. [1]
	Landscape Efficiency Owners Option												
	Low Water Use Landscapes (targeted towards existing parks using retrofitting)	80	40		$ 10,640.00		na	na	39926	$ 111,792.80	$ 122,432.80	$ 0.003	Based on 180 days parks watering and 10% savings.
	Efficient Irrigation (retrofit on parks)	80	40		$ 10,640.00		na	na	5311	$ 14,870.41	$ 25,510.41	$ 0.005	Average water-use efficiency is 50%. [1]
Supply Side Measures	**Industrial and Commercial Efficiency**												
	Water Efficient Processes/ Reuse System						na	na	782042	$ 1,094,859.36	$ 1,746,454.36	$ 0.002	Reuse is billed at 50% of potable price, operating expenses are $651,595
	Drought Mitigation Plan	80	20		$ 9,640.00	$ 20,000	n/a	na		$ -	$ 681,235.00		No measurable savings
	Distribution System Efficiency												
	Continue Water Metering				no additional		n/a						Currently 100% metering in place - no additional anticipated savings (SWSI 3-5% of total demand)
	Continue Leak Identification and Line Replacement		1900		$ 1,648.92		58	5420.3	312	$ 874.38	$ 95,874.38	$ 0.307	3% leaks detected and savings of 5.5 gpcd per leak repair. [1]
	Total								**832,264**			**$ 1.911**	**832264 thousand gallons = 2554 AF water savings**

Notes: *Measure added for consideration at the request of the Sustainable Community Task Force
1 Based on "Handbook of Water Use and Conservation" by Amy Vickers
2 Based on "Factors Influencing Residential Water Demand"

Note:
2554 AF savings/16,110 AF 2010Demand = 15.8% savings

City and County of Broomfield Water Conservation Plan

	Category	2010 Data		
3	**General Information (B)**	**(C)**	**(D)**	**(E)**
4		Population	56466	Planning: Land Use Accounting Summary
5		Number of Households	17,284	Planning: Land Use Accounting Summary
6		People per household	2.7	Planning: Land Use Accounting Summary
7		Cost per 1000 gallons charged	$ 2.80	Municipal Code
8		Avg cost per support staff hour	$ 50.00	HR
9		Avg cost per management staff hour	$ 108.00	HR
10		Cost of Windy Gap per Gallon	$ 0.029	any measure less that 0.029 is considered cost effective
11		Cost of Windy Gap per AF	$ 9,600.00	based on Western Resource Advocates letter
12		Number of commercial accounts	643	Utility Billing Summary
13		Annual Population growth rate	3%	assumption based on Broomfield's planning projection
14		Annual useage residential	6868	AF
15		Number of building permits in 2009	885	from building dept
16	9864AF*325851	total Annual Potable Water Use	3,214,194,264	
17		number of developments in 2010	2	
18	1494AF*325851=486,821,394	Commercial total annual use	486,821,394	gal/year
19		Average commercial use per acct	757,109	gal/year
20	9864AF*325851/365/56466=155.9	Total gpcd	155.9	
21	6868*325851/365/56466=108.6	Residential gpcd	108.6	calculated from residential use
22		Outdoor residential use gpcd	31.7	
23	**Education/Information Dissemination**			
24	Public Education Programs	Assumed penetration affected by education programs and will make changes	3%	
25	Landscape Residential Water Audits	Avg cost for contracted water audit per hour	$100	SWSI $100
26	Landscape Commercial Water Audit		$500	SWSI $500
27	Indoor Commercial Water Audits	Avg cost for contracted water audit per hour	$500	SWSI $500
28	Indoor Residential Water Audits	Avg cost for contracted water audit per hour	$100	SWSI $100
29	**Rate Structure**			
30	Tiered Rate Structure	hours for management and support staff prep	80	Management of rate study contract (PW + Finance staff) (same assump. for turf restrictions, but with inspector, reviewer, etc. for 200 hrs/yr)
31			72	hours for 3 council meetings at 2 day prep each, 1 day present and followup
32			40	1 week for finance/billing dept to change over billing system
33	**Regulations/Ordinances**			
34	Drought Ordinance			
35	Turf Restrictions	going from 60% turf to 50% turf for new lots	17%	percent decrease in turf area

36	**Incentives**			
37	**General Information**	Est'd number of bathroom remodels in Broomfield/year	173	
38		*assummed percent of all households do bathroom remodel in a year	1%	
39		Assumed percent of bathroom remodels to replace all sink faucets to HE in house	70%	
40	Toilet Rebate	Budget for total cost on toilet rebates	$ 7,500.00	SWSI $150/toilet rebate, total of 25 households
41		Toilets per household	2	limit 2/customer
42	Irrigation Rebate			
43	Washing Machine Rebate	Budget for total cost on washing machine rebates	$ 4,000.00	SWSI $200/wash mach, total of 20 households
44		Assume 5% of all households replacing washing machine in a year with HE machine	850	
45	Shower Rebate	Shower Rebate Based on approx starting cost of $30/HE showerhead		
46	Drought Resistant Vegetation For Water Bill Credit	Water bill credit per household for landscape	$500	assuming 2 weeks staff time for council presentations,development implementation for water billing; 8 hours per household for filing, paperwork, and tracking of ongoing water use to show savings
47	Give-aways for Lowest Water Bill	Assumption for number of annual low water bill giveaways	5	months every year
48			4	awarded each month
49			10%	savings on average
50	**Water Efficient Fixtures and Appliances Owners Option**			
51	Toilets			
52	Urinals	For urinals, assume that only places of business will be using them	64.3	Assuming 5% of businesses will be upgrading urinals, and average 2 urinals per business
53	Showerheads			
54	Faucets	Assumed sinks per house	4	
55	Washing Machines			
56	**Landscape Efficiency Owners Option**			
57	Low Water Use Landscapes (targeted towards existing households using retrofitting)	total gallons (season approx Apr-Oct)	3992590	assume 10% savings
58	Efficient Irrigation (retrofit on existing homes)			

59	**Industrial and Commercial Efficiency**			
60	Reuse System			
61	Drought Mitigation Plan	For Drought Mitigation Plan, assuming cost for consultants	$ 20,000.00	For drought mitigation plan and drought ordinance, assuming that no water will be saved annually as this is only implemented in drought years
62	**Distribution System Efficiency**			
63	Water Metering			
64	Leak Identification and Line Replacement	Number of lines replaced due to leak identification from 2000-2008	0.33%	per year (SWSI 5% of total system demand)
65		staff time in 2008	1900	hours

66

67

68 Table 6.2: Typical Savings by Water Conservation Measure*

	Measure	Non-conservation typical Use	Typical Conservation use	Typical Savings	Estimated Annual Savings
70		gpcd	gpcd	gpcd	gpcy
71	Washing Machines	15	10	5	1825
72	Toilets	18.5	8.2	10.3	3759.5
73	Improved Landscape Efficiency	31.7	15.85	15.85	5785.25
74	Waterless Urinals in non-res	2	0	2	730
75	Timed/low volume Showerheads	11.6	8.8	2.8	1022
76	Demand use Faucets	10.9	10.8	0.1	36.5
77	Leaks	9.5	4	5.5	2007.5

*Data from "Handbook of Water Use and Conservation" by Amy Vickers

SWSI Estimates

[1] Assuming utility pays $100 per residential landscape audit and $500 per commercial landscape audit; and customer pays system repair costs; audit includes irrigation

[2] Assuming utility pays $100 per residential indoor audit and $500 per commercial indoor audit and customer pays any repair costs

[3] Assumes washing machine rebates in the range of $100 - $300

[4] Includes options such as increasing block rates, water budgets, excess use surcharges, information-oriented billing

[5] Assumes rebate of $150 per toilet (limit. 2 per customer account)

Appendix G

Proof of Notification of Public Comment Period

Broomfield's Water Conservation Plan was made available for a 60-day public comment period from August 30, 2009 through October 30, 2009. The Plan was made available for online viewing and printing. Hard copies were also made available at the Broomfield City and County Building and Broomfield's Mamie Doud Eisenhower Library.

The public comment period was advertised using the methods (attached):

1. City and County of Broomfield, Environmental Services web page from August 28-October 30, 2008
2. Broomfield local newspaper, The Enterprise:
    a. 5" x 7" display ad August 30
    b. reminder ads September 3 and October 25, 2009
3. Broomfield local access television channel 8:
    a. ran slides from August 28-October 30, 2008
    b. Announcement of public comment period at a televised City Council meeting on August 18 and 25.
4. Environmental News-B in the Loop subscription email distribution list: a public comment period notice was sent to 250+ subscribers on August 28, 2009.

Due to substantial changes in the Plan, CWCB requested a second public comment period that was held from October 1, 2011 through December 1, 2011. As with the previous comment period, the Plan was made available for online viewing and printing. Hard copies were also made available at the Broomfield City and County Building and Broomfield's Mamie Doud Eisenhower Library.

The second public comment period was advertised using the methods (attached):

1. City and County of Broomfield, Environmental Services web page from October 1-December 1, 2011
2. Broomfield local news paper, The Enterprise:
    a. 5" x 7" display ads October 2 and 6, 2011
    b. Feature Story October 13
3. Broomfield local access television Channel 8:
    a. ran slides from October 1, 2011- December 1, 2011
    b. Announcement of public comment period at a televised City Council meeting on September 27, 2011.
5. Environmental News-B in the Loop subscription email distribution: a public comment period notice was sent to 250+ subscribers on September 30, 2011.

Public Works Department
Environmental Services

Your comments are requested!

Broomfield's Draft Water Conservation Plan is now available. The public comment period will run through Friday, October 30, 2009.

Hard copies of the Plan are also available at:

- the City and County Building located at 1 DesCombes Drive,
- the Mamie Doud Eisenhower Public Library, 3 Community Park Road.

Comments will be accepted until Friday, October 31, 2009.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to:

Kathy Schnoor,
Environmental Services Superintendent
1 DesCombes Drive
Broomfield 80020 or by email to kschnoor@Broomfield.org

For more information, call 303-438-6363

Fall & Winter Water Use Efficiency and Conservation Guidelines

Related Links:

American Water Works Association

Denver Water

Green Industries of Colorado (GreenCO)

Northern Colorado Water Conservancy District

EPA Water Sense

EPA Water Use Efficiency

WaterWiser: The Water Efficiency Clearinghouse

city meetings

Here is a brief look at what's on tap for the city this week. For more information, go to www.broomfield.org and click on calendar in the left-hand bar.

Wednesday

Local Licensing Authority meeting — 5:30 p.m., City Council Chambers, City and County Building, 1 DesCombes Drive

Thursday

Cemetery Committee meeting — 8 a.m., Aspen Conference Room, Paul Derda Recreation Center, 13201 Lowell Blvd.

Library Board meeting — 6:30 p.m., Library Conference Room, Mamie Doud Eisenhower Public Library, 3 Community Park Road

Sept. 7

City and County Offices closed for Labor Day.

The City and County of Broomfield does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in the provision of services. Disabled persons needing reasonable accommodation to a city service, program or activity, call 303-469-3301 or TDD 303-465-5411 as far in advance as possible or at least 48 hours in advance.

FIND AND REPLACE.

BroomfieldClassifieds.com

Renewing hope.
Restoring independence.

- Specialized rapid recovery program
- Therapy available seven days a week
- Inpatient or outpatient levels of care available
- Physical, occupational and speech therapy
- Emphasis on returning to home
- Medicare/Medicaid certified

2451 Pratt Street
Longmont, CO 80501
(303) 776-5000
www.lcca.com/longmont

Let our Life Care family care for your family.

Life Care Center of Longmont

08-29033

City-County Info

Visit www.broomfield.org

Your comments are requested!

A draft of the City and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment/index.shtml. Copies are also available at the City and County Building located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until **Friday, Oct. 30, 2009.**

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to Kathy Schnoor, Environmental Services Superintendent, 1 DesCombes Drive, Broomfield 80020 or by email to kschnoor@Broomfield.org .

For more information, call 303-438-6363.

Craig D. Johnson & Associates, P.C.
Attorneys at Law

CRAIG JOHNSON HENRY A. SAND

- Business Law
- Civil Litigation
- Wills & Estates
- Insurance Coverage and Bad Faith
- Personal Injury
- Criminal Law
- DUIs

8 Garden Center
Broomfield, CO
303.466.2335
email: cdj@lawyer.com

Serving Broomfield Since 1980

FREE
Homeowners Guide to Remodeling your Home
303-222-8051
How to protect your most Valuable Investment
Limited Quantities - ACT NOW !

Broomfield Meadows Animal Hospital

At **Broomfield Meadows Animal Hospital**, we are committed to providing high quality care for your pet.

James T. Sumerfield DVM

13606 Xavier Ln. • 303-404-3636

thursday briefings

City to spray weeds through Friday

Broomfield has contracted with Horizon Vegetation Management to spray broadleaf weeds in parks throughout the city. The spraying began Wednesday and will finish Friday.

Firefighters hoping to boot muscular dystrophy

Friday through Monday, firefighters from the North Metro Fire Rescue District's union Local 2203 will collect money for the Muscular Dystrophy Association as part of their annual Fill the Boot Campaign.

People who would like to contribute can find fire personnel collecting donations from 8 a.m. to 6 p.m. at the intersection of Chase and First Street, the Broomfield Home Depot at 12171 Sheridan Blvd., and at the intersection of West Flatiron Crossing Drive and Interlocken Boulevard, just north of McDonald's.

RV waste stations closing for upgrades

Broomfield's waste dump station for recreational vehicles will close Wednesday while the city makes major improvements.

The station, which is at the Wastewater Treatment Facility, 2985 W. 124th Ave., will reopen Nov. 15.

While the station is closed, Broomfield residents will be able to use Westminster's station at 13150 Huron St.

"Westminster is repaying the favor Broomfield gave its residents when Westminster's dump station had to be closed," said Ken Rutt, Broomfield's wastewater superintendent.

When the improvements are complete, permitted RV users won't have to check in or out at the administration office. Instead they will be issued cards that can be used in an electronic card reader.

Other improvements include redesigning the receiving area and adding a security fence. Signs will make it easier to find the station, and instructions on using it will be clearer. The station also will be easier to operate.

Broomfield residents that want to use Westminster's facility should call Broomfield's Wastewater Division at 303-438-6339 for information on how to access the Westminster dump station and directions to the location.

City wants feedback on water plan

A draft of Broomfield's Water Conservation Plan is now available for public comment. The plan can be accessed by visiting www.broomfield.org/environment. Copies also are available at the City and County Building, 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until Oct. 30.

The purpose of the Water Conservation Plan is to develop water conservation goals and select programs and measures, both ongoing and planned, that will enable the city to meet those goals. The plan also will allow the city to apply for grants from the state.

The city's Public Works Department is required to submit a water conservation plan to the Colorado Water Conservation Board.

Written comments should be mailed to Kathy Schnoor, Environmental Services superintendent, at 1 DesCombes Drive, Broomfield 80020, or submitted by e-mail to kschnoor@broomfield.org. Residents wanting more information can call 303-438-6363.

The Bay closing to swimmers after weekend

This will be the last weekend Broomfield residents of the two-legged variety can enjoy The Bay Aquatic Park.

The park is open from 10 a.m. to 8 p.m. Friday, and 10 a.m. to 6 p.m. Saturday, Sunday and Monday. Then it closes for the season.

The park will reopen Sept. 12 for Dog Daze at the Bay. Dogs are allowed to use the pools, but people are not. To book a spot call Dana Cabot at 303-464-5530.

The Bay will reopen Sept. 26 for Fishing at the Bay. The pools will be stocked with trout, and children ages 12 and younger will be able to catch up to two fish.

BROOMFIELD ENTERPRISE

Vol. 35 ■ No. 323

3400 Industrial Lane, Suite 2,
Broomfield, CO 80020

PHONE NUMBERS:

Main number	303-448-9898
Main fax	303-466-8168
Circulation	303-473-1234
Classified	303-466-3636
Classified fax	303-442-1508

Newsroom:

Editor	303-410-2650
Business news	303-410-2655
City/county news	303-410-2649
Police/court news	303-410-2649
Arts/entertainment	303-410-2655
Schools	303-410-2655
Sports	303-410-2651
Photography	303-410-2653

Advertising Manager:

Christine Labozan	303-410-2640

Sales consultants:

Pete Christiansen	303-410-2646
Karla Mulligan	303-410-2642
Keith Kratochvil	303-410-2647

ON THE WEB:
BroomfieldEnterprise.com
MyTown.BroomfieldEnterprise.com

Access the editorial content of the Broomfield Enterprise as well as Web-only features online.

F.Y.I.

To submit press releases, Upcoming calendar entries, birth announcements, wedding announcements and anniversaries, obituaries, letters to the editor and school briefs: fax to editor, (303) 466-8168 or e-mail to baxterj@broomfieldenterprise.com. There is no charge for publishing announcements etc. but they are published on a space-available basis.

Deadlines: 10 a.m. Monday for consideration in the Thursday edition and 10 a.m. Wednesday for consideration in the Sunday edition.

Photos: If you would like to include a photo with an announcement, please e-mail an electronic version to baxterj@broomfieldenterprise.com, mail the photo to 3400 Industrial Lane, Suite 2, Broomfield 80020 or drop one by the office.

Corrections: The Broomfield Enterprise is committed to accuracy and corrects errors. Readers who spot mistakes are urged to notify us: baxterj@broomfieldenterprise.com or (303) 410-2650.

Delivery times: The Broomfield Enterprise is delivered by mail on Thursday. Sunday editions are home delivered by carrier.

Published: The Broomfield Enterprise is published two times weekly by Boulder Publishing Inc. and is a general circulation newspaper in Broomfield County and portions of Adams and Jefferson counties.

Postmaster send address changes to:

BOULDER PUBLISHING INC.
P.O. Box 4579,
Boulder, CO 80306-4579

Bill

Let your voice be heard.

Vote for experience & fiscal responsibility.

Vote for commitment to representing your voice.

Bill Bates
Ward 5
Broomfield City Council
www.BillBatesForYou.com

Paid for by Bill Bates for Ward 5

WANTED TO BUY

Instant Cash Paid! Instant Cash Paid!

Buying the following at record breaking prices!

GOLD Wanted- All forms **OLD or NEW**
Broken or Whole 10-24K Dental
Placer Gold Rings Earrings Bracelets
Necklaces Scrap Gold Bullion

STERLING SILVER
We buy all Sterling Silver Items.
Flatware Holloware
COINS Bullion

Sell us your unwanted jewelry for CASH!

GOLD COINS
DOMESTIC $1 - $50 Denominations
FOREIGN Mapleleaf Mex 50 peso Sovereigns Fr. 20 francs Aust. 100 Cor. Krugerrands

PLATINUM
Rings - Earrings - Broaches
Bracelets - Necklaces
Antique or Contemporary

DIAMONDS
ALL SIZES - Rings -Necklaces
Solitaires - Earrings
GIA / EGL Certificates

HIGH PRICES PAID FOR ANTIQUE JEWELRY!

Old Watches Could be Worth a FORTUNE!
BRING IN ALL ITEMS!! **FREE EVALUATIONS!!**

WE PAY TOP DOLLAR FOR: Diamonds • Rolex • Sterling Silverware
Unwanted Jewelry • Ruby & Diamond Rings • Deco Jewelry • Old Guns & Swords

WE MAKE HOUSE CALLS! FREE EVALUATIONS
No obligation, private, confidential or come to our store
120th & Main

BROOMFIELD PAWN
303-465-5626

sunday briefings

CASA fundraiser at Great Scott's

Great Scott's Eatery on Wednesday is hosting a fundraiser for Court Appointed Special Advocates of Adams and Broomfield Counties.

The restaurant at 7510 U.S. 287 will donate a share of its proceeds to CASA, a program that trains volunteers to watch over abused or neglected children as their cases move through the child welfare and judicial systems.

The event, from 11 a.m. to 9 p.m., is one of CASA's twice monthly "Dining Out for CASA" fundraisers. CASA will receive 15 percent of total food sales.

Water conservation plan still open to comment

The Public Works Department has written a new water conservation plan, and residents can comment on the plan through Friday.

The purpose of the plan is to develop water conservation goals and determine what conservation programs and measures will enable the city to meet its goals.

The plan is a component of Broomfield's long-term water supply plan, which is intended to ensure adequate water supplies in the future and reduce the risk of water shortages.

The city estimates current measures and new ones recommended by the plan will lead to potential water savings of 18.5 percent by 2018. The savings are to be achieved by upgrading the city's water delivery system and encouraging residents to install more efficient fixtures in their homes.

Links to the plan can be found at www.broomfield.org/environment. Hard copies are available at the City and County Building, 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road.

Comments can be sent to Environmental Services Superintendent Kathy Schnoor, 1 DesCombes Drive, Broomfield 80020, or by email to kschnoor@Broomfield.org.

Diaper drive to aid FISH of Broomfield

DrainBusters Plumbing is sponsoring a diaper drive for FISH of Broomfield. Diapers are in huge demand and the local food bank is having a hard time keeping them in supply.

Diapers, sizes newborn through 4T, can be dropped off at: King Soopers, 12167 Sheridan Blvd.; Nativity Of Our Lord Catholic Church, 900 W. Midway Blvd., and Walgreen's, 6603 Wadsworth Blvd., Arvada. The drive will run through December.

Diapers also can be dropped at FISH, 26 Garden Center.

New locations are being sought for donations and will be added to the DrainBusters Web site, www. broomfield-plumber.com.

City channel wins national awards

Broomfield's KCCB Channel 8 last month was judged as one of the top government access stations in the nation at the 2009 National Association of Telecommunications Officers and Advisors Government Programming Awards.

KCCB entered videos in eight categories and claimed three first-place awards, two second-place awards and two third-place awards. Overall, the channel took second place for "Excellence in Programming" for stations with budgets of less than $200,000. Channel 8's budget is less than $100,000.

The channel won first-place awards for an instructional video on xeriscaping, a video on Broomfield public art and a video about high school football. The channel's videos can be watched online at www.broomfield.org/channel8.

Channel 8 is available through Comcast Cable.

BROOMFIELD ENTERPRISE

Vol. 35 ■ No. 338

3400 Industrial Lane, Suite 2, Broomfield, CO 80020

PHONE NUMBERS:

Main number	303-448-9898
Main fax	303-466-8168
Circulation	303-473-1234
Classified	303-466-3636
Classified fax	303-442-1508

Newsroom:

Editor	303-410-2650
Business news	303-410-2655
City/county news	303-410-2649
Police/court news	303-410-2649
Arts/entertainment	303-410-2655
Schools	303-410-2655
Sports	303-410-2651
Photography	303-410-2653

Advertising Manager:
Christine Labozan 303-410-2640

Sales consultants:

Pete Christiansen	303-410-2646
Karla Mulligan	303-410-2642
Keith Kratochvil	303-410-2647
Doreen Talarico	303-410-2644

ON THE WEB:
BroomfieldEnterprise.com
MyTown.BroomfieldEnterprise.com

Access the editorial content of the Broomfield Enterprise as well as Web-only features online.

F.Y.I.

To submit press releases, Upcoming calendar entries, birth announcements, wedding announcements and anniversaries, obituaries, letters to the editor and school briefs: fax to editor, (303) 466-8168 or e-mail to baxterj@broomfieldenterprise.com. There is no charge for publishing announcements etc. but they are published on a space-available basis.

Deadlines: 10 a.m. Monday for consideration in the Thursday edition and 10 a.m. Wednesday for consideration in the Sunday edition.

Photos: If you would like to include a photo with an announcement, please e-mail an electronic version to baxterj@broomfieldenterprise.com, mail the photo to 3400 Industrial Lane, Suite 2, Broomfield 80020 or drop one by the office.

Corrections: The Broomfield Enterprise is committed to accuracy and corrects errors. Readers who spot mistakes are urged to notify us: baxterj@broomfieldenterprise.com or (303) 410-2650.

Delivery times: The Broomfield Enterprise is delivered by mail on Thursday. Sunday editions are home delivered by carrier.

Published: The Broomfield Enterprise is published two times weekly by Boulder Publishing Inc. and is a general circulation newspaper in Broomfield County and portions of Adams and Jefferson counties.

Postmaster send address changes to:

BOULDER PUBLISHING INC.
P.O. Box 4579,
Boulder, CO 80306-4579

WATER CONSERVATION

Broomfield's Water Conservation Plan is now available!

Your comments are requested!

Broomfield's Draft Water Conservation Plan is available for public comment. The plan may be accessed by visiting

http://www.broomfield.org/environment/index.shtml

Copies are also available at

- ❑ the City and County Building, 1 DesCombes Drive,
- ❑ the Mamie Doud Eisenhower Public Library, 3 Community Park Road.

- Comments will be accepted until **Friday, Oct. 30, 2009**.

Water Conservation Plan

Purpose of the Water Conservation Plan

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

Water Conservation Plan

Submit Comments by October 31, 2009!

- Broomfield is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board.
- Please submit written comments by Friday, October 30, 2009 to:

Kathy Schnoor
Environmental Services Superintendent
1 DesCombes Drive
Broomfield 80020

- or by email to: kschnoor@Broomfield.org .
- For more information, call 303-438-6363.

Kathy Schnoor

To: B in the Loop Distribution List
Subject: Comments Wanted on Water Conservation Plan

From: Public Works
Sent: Friday, August 28, 2009 9:24 AM
Subject: Comments Wanted on Water Conservation Plan

Environmental News

Having trouble viewing this message? Visit our website.

Your comments are requested!

A draft of the City and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment. Copies are also available at the City and County Building, located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until Friday, October 30, 2009.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, that will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to:

Kathy Schnoor
Environmental Services Superintendent
1 DesCombes Drive
Broomfield 80020

or by email to kschnoor@broomfield.org.

For more information, call 303-438-6363.

City and County of Broomfield
To unsubscribe, go to B in the Loop login page.
1 DesCombes Drive
Broomfield, CO 80020
info@broomfield.org
(303) 469-3301

City-County Info

Visit www.broomfield.org

Your comments are requested!

A draft of the City and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment/index.shtml. Copies are also available at the City and County Building located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until **Tuesday, Jan. 3, 2012**.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to Kathy Schnoor, Environmental Services Superintendent, 1 DesCombes Drive, Broomfield 80020 or by email to kschnoor@Broomfield.org .

For more information, call 303-438-6363.

Kathy Schnoor

From: Kathy Schnoor
Sent: Thursday, September 29, 2011 12:33 PM
To: Carla Schumacher
Subject: PPT for Ch8-Public Comment Period for Water Conservation Plan
Attachments: 2011 WCP Public Comment Notice.ppt

Hi Carla,
The attached .ppt is for the next public comment period on the Water Conservation Plan.
Please run on Ch8 from October 1 through December 1.
Thanks so much for your help!

Best wishes,
Kathy

Kathy Schnoor
Environmental Services Superintendent
City and County of Broomfield
1 DesCombes Drive
Broomfield, CO 80020
303.438.6363

Please print with care. Trees grow slowly.

WATER CONSERVATION

Broomfield's Water Conservation Plan is now available!

Your comments are requested!

Broomfield's Draft Water Conservation Plan is available for public comment. The plan may be accessed by visiting

http://www.broomfield.org/environment/index.shtml

Copies are also available at

- ❑ the City and County Building, 1 DesCombes Drive,
- ❑ the Mamie Doud Eisenhower Public Library, 3 Community Park Road.

- Comments will be accepted until **Thursday Dec. 1, 2011**.

Water Conservation Plan

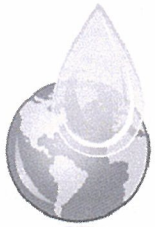
Purpose of the Water Conservation Plan

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

Water Conservation Plan

Submit Comments by December 1, 2011!

- Broomfield is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board.
- Please submit written comments by Thursday, December 1, 2011 to:



Kathy Schnoor
Environmental Services Superintendent
1 DesCombes Drive
Broomfield 80020

- or by email to: kschnoor@Broomfield.org .
- For more information, call 303-438-6363.

Kathy Schnoor

From: Kathy Schnoor
Sent: Thursday, September 29, 2011 12:32 PM
To: Ellen Cancino
Subject: BITL for WCP Public Comment Period Oct 1-Dec 1

Hi Ellen,
Would you please send out a BITL message on October 1 to the public works and environmental groups. Here is the text for the message:

Your comments are requested!

A draft of the city and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment. Copies are also available at the City and County Building, located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until Thursday, December 1, 2011.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, that will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plant to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to:

Kathy Schnoor
Environmental Services Superintendent
1 DesCombes Drive
Broomfield, CO 80020

or by email to kschnoor@broomfield.org

For more information, call 303-438-6363

Thanks Ellen!

Kathy Schnoor
Environmental Services Superintendent
City and County of Broomfield
1 DesCombes Drive
Broomfield, CO 80020
303.438.6363

Please print with care. Trees grow slowly.

City-County Info

Visit www.broomfield.org

Your comments are requested!

A draft of the City and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment/index.shtml. Copies are also available at the City and County Building located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until **Thursday, Dec. 1, 2011**.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to Kathy Schnoor, Environmental Services Superintendent, 1 DesCombes Drive, Broomfield, CO 80020, or by email to kschnoor@Broomfield.org.

For more information, call 303-438-6363.

The City and County of Broomfield does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in the provision of services. Anyone needing reasonable accommodation to attend or participate in a city program, service, or activity, is asked to call 303.469.3301 or TDD 303.465.5411 as far in advance of the scheduled event as possible. We would appreciate at least 48 hours' notice.

3 Co

Sunday, October 2, 2011

City-County Info

Visit www.broomfield.org

Your comments are requested!

A draft of the City and County of Broomfield's Water Conservation Plan is now available for public comment. The plan may be accessed by visiting http://www.broomfield.org/environment/index.shtml. Copies are also available at the City and County Building located at 1 DesCombes Drive, and the Mamie Doud Eisenhower Public Library, 3 Community Park Road. Comments will be accepted until **Thursday, Dec. 1, 2011**.

The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, which will enable the city to meet these goals. Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval, will allow the city to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

The city's Public Works Department is required to submit a water conservation plan to the State of Colorado, Colorado Water Conservation Board. Please submit written comments to Kathy Schnoor, Environmental Services Superintendent, 1 DesCombes Drive, Broomfield, CO 80020, or by email to kschnoor@Broomfield.org.

For more information, call 303-438-6363.

The City and County of Broomfield does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in the provision of services. Anyone needing reasonable accommodation to attend or participate in a city program, service, or activity, is asked to call 303.469.3301 or TDD 303.465.5411 as far in advance of the scheduled event as possible. We would appreciate at least 48 hours' notice.

Kathy Schnoor

From: Public Works
Sent: Thursday, September 29, 2011 3:28 PM
To: Kathy Schnoor
Subject: Your Comments are Requested

Environmental News

If you are having difficulty viewing this message, please visit the website.

Draft Water Conservation Plan - Your Comments are Requested!

A draft of the City and County of Broomfield's Water Conservation Plan is available for public comment beginning October 1. The plan may be accessed by visiting the website. Copies are also available at the George Di Ciero City and County Building, located at 1 DesCombes Drive, and at the Mamie Doud Eisenhower Public Library, 3 Community Park Road.

The public comment period opens Saturday, October 1, and comments will be accepted until Thursday, December 1, 2011.

Broomfield's Public Works Department is required to submit a water conservation plan to the State of Colorado Water Conservation Board. The purpose of the Water Conservation Plan is to develop water conservation goals and select water conservation programs and measures, both ongoing and planned, that will enable Broomfield to meet these goals.

Water conservation is an important and necessary component in the long-term water supply plan. This update and subsequent plan approval will allow Broomfield to apply for state grant funds to implement projects within the plan for Broomfield's water customers.

Please submit written comments to:

Kathy Schnoor
Environmental Services Superintendent
1 DesCombes Drive
Broomfield, CO 80020

or email Kathy.

For more information, call 303.438.6363.

City and County of Broomfield
To unsubscribe, go to the B in the Loop login page
Environmental Services
City and County of Broomfield
1 DesCombes Drive
Broomfield, CO 80020
publicworks@broomfield.org
303.438.6363

THURSDAY

Columns from council candidates, Pg. A17-18

Ball games are part of their bloodline, Pg. A30

Enterprise

OCTOBER 13, 2011 SERVING BROOMFIELD COUNTY broomfieldenterprise.com

Drilling down on how to save water

City taking comments on draft of conservation plan, which could cut use by 15 percent by 2020, Pg. A3

Residents asked to help hone city's water wisdom

Conservation plan could cut usage by as much as 15% by 2020

By Joe Rubino
Enterprise Staff Writer

Broomfield is seeking residents' help in crafting the best possible water conservation plan.

A draft of the plan is available for public review through Dec. 1, and comments are being sought on the plan during that period. The new plan is the first update to the water conservation policies since 1996, though water use has since been addressed in other policies, including the 2005 Comprehensive Plan.

The draft plan lays out measures that will promote water conservation, and according to estimates, could lead to a 15.3-percent decrease in usage by 2020.

"We just want to make sure that we have considered all of the options," Environmental Services Superintendent Kathy Schnoor said of seeking public comment. "Someone from the public might come forward with a suggestion that we hadn't considered that maybe ... we could gain more savings."

In the plan, the city laid out four action steps it hopes will create the greatest changes in water usage. The steps were created after a review of ongoing conservation efforts, and were spurred by measures the city was required to consider under state statute.

The four steps are:

- Realize the full potential of the reuse system. The reuse system supplies approximately 2,400 acre-feet of water and is projected to produce an annual yield of approximately 6,500 acre-feet at build-out, which for the reuse system, is projected to be 2040.
- Realize savings from supply-side and demand-side conservation activities over the next 10 years.
- Focus selected conservation measures and programs on areas where there are the greatest potential savings. Based on the findings, the focus should be residential use and irrigation.
- Continue to work to reduce peak-season and peak-day demands.

"The keystone of Broomfield's water conservation efforts is the water reuse system," according to the executive summary of the plan,

The reuse system provides non-potable water for irrigation, Schnoor said. The system recaptures water for second use, which is processed and treated at the wastewater treatment plant.

Right now, Schnoor said the system features 36 miles of pipeline and provides water to 469 acres of public land. If the city chooses to build it to its proposed maximum capacity, more than doubling it's output, it could supply about 25 percent of the city's total water needs.

Expansion of the system would cost an estimated $1.7 million, according to the draft plan.

David Allen is deputy director of Broomfield Public Works and is an authority on the city's water usage. He said the reuse system and other conservation methods will be critical in helping Broomfield meets it usage demands, which are expected to jump from around 17,000 acre-feet each year to an estimated 26,000 acre-feet by 2040.

"(Conservation) is important primarily because, given the geographic area that we're in and the limited amount of resources we have, we are required to maximize the resources that we have available to us," Allen said. "And water conservation is one of the avenues we have to stretch those water supplies."

After comments are collected, the draft plan could be revised before going to City Council for approval in early 2012, Schnoor said. After that, implementation of any specific steps in the plan will be based on annual funding from the city or potential grants from the Colorado Water Conservation Board.

HOW TO COMMENT

The draft water conservation plan is available for public comment through Dec. 1.

Copies of the plan are available at the Mamie Doud Eisenhower Public Library, 3 Community Park Road, and the George Di Ciero City and County Building, 1 DesCombes Drive. An online version can be downloaded at www.broomfield.org/environment.

Comments can be mailed to Water Conservation Plan Comments, c/o Kathy Schnoor, Environmental Services Superintendent, City and County of Broomfield, 1 DesCombes Drive, Broomfield, CO 80020. They also can be e-mailed to kschnoor@broomfield.org; include water conservation plan comments in the subject line.

Information: 303-438-6363

Appendix H

Public Comments and Responses

The Draft Broomfield Water Conservation Plan was presented to the City Council for their review and comment at an August 18, 2009 Council Study Session. While this meeting was noticed and convened as a public meeting, no public comments were received at the meeting.

In accordance with C.R.S. §37-60-124(5), Broomfield's 2009 Water Conservation Plan was available for public a 60-day comment period from August 30 through October 30, 2009. Due to significant changes and the lapse of time, the updated 2011 Water conservation Plan was available for a second public comment period from October 1 through December 1, 2011. Announcements for the public comment period are included in Appendix G. An electronic copy of the draft plan was made available at www.Broomfield.org/environment. Hard copies of the draft plan were also available at the following locations:

Mamie Doud Eisenhower Library
3 Community Park Road
Broomfield, Colorado 80020

City and County Building
Citizen's Assistance Center
One DesCombes Drive
Broomfield, Colorado 80020

The first six comments were received during the first 60-day public comment period in 2009. Comments provided to the Natural Resources Workgroup of the Broomfield Sustainability Task Force were accepted after the close of the 2009 public comment period. An additional 14 comments were received during the second public comment period in 2011. A summary of the all the comments and the responses are provided in the table below:

Comment Number	Comment Received From	Comment	Response	Change to Plan
1	Public	• Reduce the allowable turf area for new residential homes from 60% to 50% of the total landscaped area.	• Staff conducted an informal survey of communities along the Front Range. All of the communities allow turf area greater than 50% except for Boulder and (50%) and Parker (15%). Based on the survey results, no change is recommended.	No change to plan.
2	Public	• Increase the required application rate for soil amendments from the 3 cubic yards currently required to 4 cubic yards per 1,000 square feet of turf area.	• Staff conducted an informal survey of communities along the Front Range. The soil amendment requirements ranged from 3 to 6 cubic yards per 1,000 square feet. Staff will investigate an amendment to the Municipal Code to require that all turf area must include soil amendments at a rate of 4 cubic yards per 1,000 square feet. This is consistent with the Denver Water lease agreement.	No change to plan, but staff will investigate an amendment to Municipal Code as noted.
3	Public	• Stop watering streets along Sheridan.	• Staff has met with this individual to address her concerns.	No change to plan.
4	Public	• Anthem Ranch is a lovely development – but it	• Broomfield's Planning Commission approved	No change to plan.

Comment Number	Comment Received From	Comment	Response	Change to Plan
		should be reflecting the arid country side for which it resides. It has lush landscaping better suited to the East Coast than Colorado. Broomfield should have Pulte reduce the number of trees, replace the Kentucky Bluegrass with Buffalo grass, and reduce the number of ponds. The parking strip between the sidewalk and road should be eliminated or Xeriscaped.	the landscaping plan. Broomfield has not accepted maintenance responsibility for this new development. This comment will be forwarded to Pulte to review the % native vs. % landscaped areas. Broomfield does limit the residential lots to no more than 60% manicured turf area. • It has been the city's practice to require manicured turf in the parking strip of new developments to produce a consistent, cohesive, high quality neighborhood look. The green edge and tree canopy produced enhance walkability and cool the neighborhood streets and sidewalks.	
5	Sustainability Task Force Member	• Increase the required application rate for soil amendments from 3 to 6 cubic yards per 1,000 square feet of turf area. • Require a specific sod type for landscape • Use volunteers to provide school education programs	• See response to comment 2. • Water efficient turf type is specified for park developments. Staff will investigate how sod types could be required for residential developments. • Staff is soliciting volunteers through city's volunteer coordinator.	No change to plan, but staff will investigate items as noted.
6	Council	• Review Broomfield Standards and Specifications for street, median and right-of-way landscaping. Make sure we are specifying water efficient slopes and plant materials.	• Median and right-of-way landscaping specifications were updated in 2007. The updated approach is to restrict the types of irrigation systems that can be used in landscaped strips. All newly constructed median and right-of way landscaping meets the new specifications. Old medians and right-of-ways will be upgraded as they are replaced.	No change to plan
7	Public	• Wildgrass neighborhood. Tried to install Xeriscape in strip between the sidewalk and the street. HOA told us that it was a city requirement that it had to be grass. Why is Broomfield not moving away from manicured turf to Xeriscape? How do we change it?	• It has been the city's practice to require manicured turf in the parking strip of new developments to produce a consistent, cohesive, high quality neighborhood look. The green edge and tree canopy produced enhance walkability and cool the neighborhood streets and sidewalks. • In order to change the current city requirement a formal request would have to be submitted to the city. The request would follow the normal planning process.	No change to plan

Comment Number	Comment Received From	Comment	Response	Change to Plan
8	Public	• Anthem Ranch neighborhood. I like the comprehensive nature of the plan. One observation…water is a precious commodity and our water is too cheap at $2.80/1,000 gallons. In Flagstaff AZ, tiered rates: o Tier 1 (0-3,700 gal) $2.82/gal o Tier 2 (3,701-6,400gal) $3.44/gal o Tier 3 (6,401-11,700 gal) $4.88/gal o Tier 4 (11,701+) $9.01/gal	• Council has directed staff to conduct a rate study. The Request for Proposals for the rate study is attached in Appendix E.	No change to plan
9	Public	• I advocate using a bucket in the shower or bath to catch the cold water as it warms up. You can save up to 5 gals/week for use in cleaning, flushing, and pet or plant watering. It is amazing the awareness you gain.	• Comment noted. Suggestion will be included as one of the conservation tips distributed with future educational materials.	No change to plan
10	Public	• Money is close to as cheap as it can be. A cost analysis on benefit of spending the $1.7 Million for reuse system. Maybe the benefit will support a special purpose municipal district. If not fold the $1.7 into a GO offering (the city should already be considering another refunding of the sales & use tax revenue bonds)	• Comment noted and forwarded to City Manager's Office.	No change to plan
11	Public	• It does not come out clearly that summer irrigation is driving your water demand. Cutting down irrigation watering will really help put off some large capital expenditures. I did not see a help in your rebate structure to include the following rebates that Denver Water is offering. o Weather-based smart controllers o Wireless rain sensors o New rotary type nozzles • You should have a phone # to call to follow-up on water abuses. Now it appears that you have to go to city council. • Anthem neighborhood wastes a lot of water.	• Page 40 under the heading of Target Areas states that the number one area identified to have significant potential for water savings is peak summer demand. The peak summer demand is from outdoor irrigation. • As a Denver Water customer, Broomfield's proposed rebates are very similar to the ones offered by Denver Water. The rebates suggested in this comment are included in Table XI, page 42 under incentives. • The phone number for the Water Conservation Hotline is 303.438.6210. You may leave a message with the location and nature of the concern. Parks division staff investigates and returns calls within one business day.	Page 40 Add the words "from outdoor irrigation" to the end of the sentence to make it clear that peak summer demand is from outdoor irrigation.
12	Public-phone	• City is not enforcing misuse of treated water ordinance. An irrigation leak in Anthem reported to Pulte a month ago has still not been repaired.	• Once aware of the problem, staff followed up and found that the leak is in an HOA maintained park area. The HOA was contacted and repaired the leak. Drainage issue may be a contributing factor to the standing water.	No change to plan

Comment Number	Comment Received From	Comment	Response	Change to Plan
13	Public	• Assuming the expansion of the reuse system would allow for it, it would be good to provide the reuse water to new residential lots for lawn irrigation. It would require more piping to allow for the distribution system, but the new piping could be installed near the new sewage piping that gets installed. I don't think this would create any issues with kids drinking the irrigation water. Parents could simply teach the kids not to drink that water.	• Broomfield's reuse irrigation system is classified as Category 2 under Colorado Reuse Regulation 84. The state does not currently allow reuse irrigation in residential neighborhoods for Category 2 systems. It would require several million dollars in capital improvements for treatment and distribution in order to upgrade the system for residential use.	No change to plan
14	Public	• Anthem Ranch neighborhood. Requested to Xeriscape the strip between the sidewalk and the street. HOA said no, it is a city requirement. City said it has to be manicured turf according to site development plan. I must request a variance to change it, but it isn't likely that it will be approved. • This is a difficult, inefficient strip to water. Water is running down the gutter all the time because water runs off of everyone's strip into the street. Eventually this will cause the street to fail. • Broomfield should reconsider this policy. I moved here from AZ and I find it unconscionable to waste so much water!	• See response to comment 7. • The planning department has a process in place for a resident to request a variance from the plan.	No change to plan
15	Public-phone	• When is the rate study going to happen? By whom? Will they be looking at tiered rates? Please make sure they do!	• Council has directed staff to conduct a rate study. The Request for Proposals for the rate study is attached in Appendix E.	No change to plan
16	Public	• I would like to suggest that the city initiate changing the requirement to have a grass section between the sidewalk and the street. I live in the Broadlands and I see at least half of the water used to sprinkle these areas going into the street or on the sidewalk. I live on a corner so I have about 200 feet of this space for just one house. If communities would allow low water use plants and cobble or mulch in these areas they could be drip irrigated and save large amounts of water. Maybe there is a way to encourage people to convert the grass to low growing plants?	• See response to comment 7. • The planning department has a process in place for a resident to request a variance from the plan.	No change to plan

Comment Number	Comment Received From	Comment	Response	Change to Plan
17	Western Resource Advocates	• The organization advocates for tiered water rates to encourage water conservation. They would be happy to speak to council regarding the benefits of an inverted block rate structure.	• Comment noted.	No change to plan
18	City of Arvada Planning Dept	• Glad to see that regulatory consideration that would require homeowners to upgrade to current water conserving standards prior to re-sale is NOT being considered for implementation.	• Comment noted.	No change to plan
19	Public	• The Water Conversation Plan is very thorough until it came to putting forth actions to address reducing usage in the largest use category - residential users. The programs for promoting high efficiency appliances are all good for reducing overall usage but this is just nipping at the tail of the elephant. • The metro area receives 15 to 18 annual inches of moisture but the bluegrass yards that were and continue to be planted take about double that amount to stay green. This is a terrible waste by a population that in general doesn't know any better, by developers only wanting to make a sale and by the City too wimpy to do much about the issue. Comment 4 of the 2009 round went right to the issue (although it may have been too specific) of working with developers to initially plant water wise turf and plants. I was disappointed by the flippant response that didn't look to the bigger picture of what was being suggested. What can the City do: • Take comment 4 to heart and work with developers to install water wise turf and plants around new homes and in common areas. (Once any turf has been installed most homeowners will be reluctant to take on a turf replacement project.) • Work with CSU to put forth recommendations for replacement water wise turf grasses along with pros and cons of the different types and locations where the grasses can be obtained. Be	• Appendices E and F list the details of all of the programs currently offered and proposed for future implementation. In addition to rebates for high efficiency appliances, examples include several education programs, Xeriscape demonstration garden, residential water use indoor and outdoor audits, landscape retrofit rebates, rebates for irrigation controllers, spray heads and water wise plants. See response to comment 4. • Broomfield Parks staff has worked with CSU to develop water efficient turf for use in passive park and street right-of-way landscaping. Broomfield offers two Xeriscape seminars every March to educate residents on the different turfs	No change to plan

		able to discuss the different planting methods that the grasses may require such as plugs, seed and availability of sod. Discussion will also be necessary to address the health of trees and other plants that may have been relying on the high water area that they are planted. • Besides offering a financial incentive, work with homeowners that would be willing to take on turf replacement projects and make these demonstration projects so other homeowners can see what they might expect. (I have experienced that reluctance to change to a different turf type is not knowing how it will look and feel.) • Water wise turf uses much less water, but some also take very little mowing and maintenance. The labor and cost savings for the homeowner should be emphasized in the education component. What replacing turf can do for the homeowners is more important to them than what it can do for the community (in some cases.) The whole turf thing and continuing water shortage issue has been around for as long as I can remember. It continues to amaze the reluctance to address the issue when alternatives are out there. We should be looking ahead to making changes rather than using a drought or other crisis to make the decision easier. As comment 4 referenced - we do not live in the east where they have ample water, we live in a high desert and maybe we should start living with the means of our environment.	and turf alternatives. There is also a "Your Water, Your Future" video on the Broomfield Web page at www.Broomfield.org/environment that discusses how to use water efficiently in residential landscaping. • Examples of the various turf types are included in the Xeriscape demonstration garden in front of the George Di Ciero City and County Building at 1 DesCombes Drive. • Turf irrigation and maintenance are discussed in the education classes and video provided.	

Appendix I

RESOLUTION NO. 2012-8

A RESOLUTION APPROVING AND ADOPTING THE 2011 BROOMFIELD WATER CONSERVATION PLAN

WHEREAS, The City & County of Broomfield is committed to water resource sustainability and water conservation; and

WHEREAS, Broomfield is committed to do its part to preserve water for future generations; and

WHEREAS, Broomfield understands the needs and benefits of long-term water conservation and is committed to the implementation of a Water Conservation Plan; and

WHEREAS, Broomfield desires to approve and adopt a Water Conservation Plan to submit to the Colorado Water Conservation Board; and

WHEREAS, the Colorado Water Conservation Board requires City Council approval of the Water Conservation Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY AND COUNTY OF BROOMFIELD, COLORADO:

Section 1. The 2011 Broomfield Water Conservation Plan attached hereto is adopted.

Section 2. The staff is hereby authorized and directed to submit the Water Conservation Plan to the Colorado Water Conservation Board for consideration of approval.

Section 3. This resolution is effective upon its approval by the City Council.

APPROVED and ADOPTED on March 20, 2012.

SEAL

ATTEST:

Tricia Kegerreis
City & County Clerk, Deputy

THE CITY AND COUNTY OF BROOMFIELD, COLORADO

Mayor

APPROVED AS TO FORM:

City & County Attorney

Working in partnership with the community, the City and County of Broomfield provides superior services in an efficient, respectful and courteous manor to enhance and protect the quality of life of Broomfield citizens.