City of Brighton
Water Conservation Planning Grant Application

Section 1
Background Information

Water Supply Sources

The City of Brighton (hereafter "The City), derives its water supply from eight wells in the South Platte Alluvium. These wells are located within the City limits. An additional three wells are located east of the City in the Beebe Draw Drainage Basin.

The City also owns surface water rights from various ditch companies that it uses for augmentation purposes and for non-potable irrigation water. Four augmentation plans have been developed by the City and have been submitted and filed with the State of Colorado for approval. Decrees for these augmentation plans are pending. Until a decree is granted, the City operates its wells under an annually approved substitute water supply plan (SWSP), also on file with the State.

Water demand in the City is met with both potable and non-table water supplies. Potable water is produced utilizing two treatment facilities. The City owns and operates a reverse osmosis water treatment plant constructed in 1993. This plant, which has a 7.9 million gallon per day (mgd) treatment capacity, receives groundwater from the wells located within the City limits. In 2002, the City built a green sand filter treatment plant to treat groundwater produced by the Beebe Draw wells. This treatment plant has a 5.83 mgd capacity.

To support maximum daily demand and provide some storage of treated water, the City maintains four storage tanks with a combined capacity of 16.8 million gallons. Maximum daily production from 2002 through 2004 was 8 to 9 times average daily production, which was about 4 mgd during those years.

In 1997, the City Council set a goal to increase the use of non-potable water for all park irrigation. The City uses a combination of Fulton Ditch shares and untreated groundwater to irrigate various public parks; Fishing is Fun Lake; and two cemeteries. Non-potable water; however, is not available at all park locations.

One of the major benefits of using non-potable water in the public parks is that it reduces demand for treated water on the RO and green sand systems. All water treated with RO creates a brine wastewater stream that is challenging to manage and expensive to dispose. Future water conservation efforts will be evaluated, in part, based on reducing and/or optimizing the use of treated water for domestic and commercial uses.

Water Demand and Population Growth

A summary of the water use supported by the City, differentiated by water user type is presented in Table 1. This table also indicates the population served, and the expected

increase in water demand, by segment, based on a 3 percent increase in residential population over the next 5 years.

Ongoing Water Conservation Practices
Current water conservation measures and programs practiced by the City include the following:

Water metering – The City maintains a program to monitor and replace inaccurate water meters. Ninety percent of household meters were replaced in the past 5 years. All water users in the City have meters.

Lawn watering restrictions – In order to reduce summertime peak demand, which can challenge the treatment capacity of the water supply system, the City has implemented an every third day lawn watering restrictions using a circle, diamond, square program. This has been in place since September 2002.

Tiered water rates – The City maintains tiered water billing rates for most residential and commercial customers.

Distribution system leak detection and prevention – The City has a program in place that monitors distribution system performance and identifies unusually high single entity water usage using billing records. The City also maintains an after hours "hotline" for report of leaks.

Water conservation education – The City maintains a year round water conservation education program related to our lawn watering restrictions.

Non-potable Irrigation – The City has implemented a non-potable irrigation program with selected parks and other City owned and maintained properties.

Section 2
Application Submittal Requirements

1. **Contact Information:**

Mr. Jim Landeck
Assistant Public Works Director
City of Brighton, Public Works Department
1901 Bridge Street
Brighton, Colorado 80601
Telephone: 303.655.2127
Fax: 303.655.2065
Email: jlandeck@brightonco.gov

2. **Project Team and Organization:**

The City's project team consists of the following individuals.

Jim Landeck, **a**ssistant Public Works Director, serving as Administrator over the Utilities Divisions of the Public Works Department of the City of Brighton will serve as Project Manager. Mr. Landeck has over 35 years experience in public sector administration having served previously as City Manager, Public Works Director, and City Engineer for several Denver metropolitan communities. He is well acquainted with water resource issues, organizational and customer interaction and project management. He will interact with the local governing council and other agencies to promote implementation of the project, be responsible for duties of the Project Manager, and supervise all efforts of the Project Team.

Dawn Hessheimer is the Water Resource Specialist for the City of Brighton and will serve as the Project Coordinator. Ms. Hessheimer has been an employee for the Utilities/Public Works division of the City for over twenty-nine years. She has been involved with all aspects of the utility from water and wastewater production, water resource acquisition and development, utility permit fee administration, water conservation plan development and utility billing monitoring. She will be responsible for gathering information for monitoring the success of program and coordinate communications between staff and citizens groups. Ms. Hessheimer is responsible for the City's water conservation booth in the annual Culturefest providing products and information to citizens for the past four years.

Holly Prather, AICP, is the senior city planner for the City of Brighton and has worked for the city for over seven years. Ms. Prather received her Bachelor's degree in Environmental Design from the University of Colorado at Boulder, and her Master's in Urban and Regional Planning from the University of Colorado at Denver with honors. Over her tenure, Ms. Prather has been responsible for processing numerous complex residential and commercial developments, including the 1,200 acre mixed use Prairie

Center development. Ms. Prather is a member of the Urban Land Institute (ULI) and the American Planning Association (APA).

Tracy Bouvette, Great Western Institute. Mr. Bouvette serves as the Executive Director of Great Western Institute, a Colorado non-profit focused on promoting the benefits of water conservation and water use efficiency. Mr. Bouvette has over 25 years of experience in water resources engineering and policy development. He was the primary author of the State's Water Conservation Plan Development Guidance Document and he has been traveling the state conducting workshops on water conservation planning and implementation. He is a professional engineer in the State of Colorado.

3. Retail Water Delivery

Table 1 summarizes the retail water delivery for each of the past five years in thousands of gallons by water user type (or segment). All potable retail water is supplied by groundwater. Non-potable retail water is a combination of ditch shares and groundwater.

Table 1 also includes a listing of municipal potable and non-potable uses, which are not sold as retail water use, but are a component of the City's overall water delivery.

A brief description of each of the water use categories is provided below:

Residential – This category includes indoor and outdoor residential water use based on a summation of residential accounts and residential irrigation only accounts. Residential irrigation only accounts exist for a small number of locations within the City Limits where a second tap exists at selected residents for outdoor irrigation only.

Commercial Accounts – This category includes all commercial and industrial accounts, including schools, for year round water use (i.e., indoor and outdoor).

Irrigation Accounts – This category includes only home owners associations that use water chiefly for outdoor water use.

Municipal (potable and non-potable) Accounts – These accounts track the City's water use, including indoor and outdoor water use from both potable and non-potable (ditch water) sources.

Other Non-Potable Accounts – This category currently includes the Seventh Day Adventist Church that uses non-potable groundwater from a single City well for outdoor irrigation. This category of use is expected to expand in the future as more non-municipal accounts are switched to non-potable water sources (i.e., untreated groundwater and ditch water) for outdoor irrigation.

Other Accounts – This category is for those a small group of commercial water users that are outside of the City limits. This category will not grow in the future.

4. **Does the City qualify as a covered entity?** Yes

5. **Background Information**
   a. Per capita water use in the City varies over the last five years, depending on the calculation method and the year, as indicated in Table 1. Per capita residential water use was calculated based on total residential water use and the end of the year population for the City. Per capita total water use was calculated based on total retail water use and the end of the year population.
   b. Past and current population served is provided in Table 1. Future population growth is expected to continue at roughly a 3 percent increase per annum, based on recent past growth.
   c. Water savings goals to be achieved through the Plan implementation are expected to be developed base on segment of water use. For example, residential water use will trend downward over time as older residences are retrofitted with new and more water efficient appliances. New home lot sizes are also trending downward, with an expected result of reducing outdoor watering needs per capita. The biggest water savings that the City will realize over the next planning period related to water conservation plan implementation, is expected to be related to commercial and irrigation accounts. These accounts grew by 12 and 41 percent, respectively, from 2004 to 2005, and therefore, water conservation measures and programs identified and selected in the 2007 Water Conservation Plan to be developed and implemented by the City will likely focus on improving water use efficiency in these two water use segments. Based on current and future water use, the City expects that water conservation goals, to be developed during planning, will be in the range of 1 to 1.5% per year occurring over the next 15 to 20 years, which will be a long term savings of 15 to 30 percent.
   d. The City's water supply is under stress from a number of sources. First, the City has a build-out population project of 96,000. Sometime within the next 8 to 20 years, the current RO and green sand filter water treatment plants will come to capacity, requiring the construction of new and/or expanded facilities. Second, RO generates a brine waste that is costly to dispose. Although the City currently operates effective and efficient water supply facilities, future community needs will overwhelm the existing facilities output. Water conservation will play an important role in reducing demand, and thereby saving augmentation, groundwater production, and water treatment costs in the future. Noteworthy is that the City is a member of both the Metro and South Platte River Round Tables, since the City is situated in both geographies in Adams County. The City shares in the water supply gap that is identified for the South

Platte River in SWSI Phase I. It is cooperating in the Chatfield Reallocation Project with numerous other Front Range communities, and is developing additional water supplies related to alluvial groundwater production using local gravel pits. As indicated in SWSI Phase I, currently identified projects and processes do not fulfill all of the City's future water supply needs.

6. **Project scope and tasks** (see Attachment 1)

7. **Project schedule** (see Attachment 1)

8. **Project budget and funding sources** (see Attachment 2)

9. **Signature** (see cover letter) (Attachment 3 contains a resolution from City Council regarding water conservation)

City of Brighton
Water Conservation Planning Grant Application

Attachment 1
Project Scope and Tasks, and Project Schedule

Approach
The City's Water Conservation Plan will be generally developed following CWCB's May 2005 Water Conservation Plan Development Guidance Document. This attachment outlines the tasks that the City will conduct to complete a Water Conservation Plan that adheres to the statutory requirements for Plan content, as well as integrates water supply and demand management activities into the planning process. The City's planning effort is anticipated to extend from the State's current fiscal year into the next, such that the planning project will need to be bifurcated to align with the funding constraints of the Office. Therefore, Steps 1 through 5 will be completed this fiscal year, and Steps 6 through 11 will be completed next. A project schedule is presented at the end of this attachment.

The key deliverables associated with this project are the Draft and Final Water Conservation Plan. A Draft Plan will be prepared for the City to review and comment. The Draft Plan will also be made available to the public for their review and comment at roughly the same time. Following the review process, the City and public comments will complied, and incorporated into the Plan, such that a Final Plan can be adopted and submitted to CWCB for final approval.

The development of the Plan is divided into subtasks similar to what is indicated in the CWCB Model Plan Template. These subtasks list the items that need to be included in the Plan for CWCB approval. Where possible, studies conducted by the City will be used to support Plan development.

Step 1 – Profile the Existing Water System

Purpose
The activities described under this task will provide information on the City's existing water supply system.

Tasks

1.1 Profile physical characteristics of the existing water supply system - describe the physical characteristics of the City's water system using Worksheet 1-1 as a guide. Included in the summary will be key system characteristics, geographic area served, population and connections served, types of key water users, key existing facilities, and water demand by segment or customer type.

1.2 Identify all water sources - identify and describe all of the system's water supply sources including attributes, age, and conditions of its use.

1.3 Identify system limitations - system limitations on the City's water supply will be discussed focusing on capacity and growth related issues.

1.4 Characterize water costs and pricing structures - in coordination with the City's finance department, document past and current history of water sales, and current water pricing structures.

1.5 Summarize current water conservation activities - in coordination with City staff, summarize current water conservation activities using Worksheet 1-3 as a guide.

Step 2 – Characterize Water Use and Demand Forecast

Purpose
The activities described under this task will provide information on the City's existing and projected water use.

Tasks

2.1 Characterize current water use - in coordination with City's finance department, review sales records, production and treatment records and billing records to summarize water use by segment. Included in the discussion will be quantifications of indoor and outdoor water use and potable and non-potable water use.

2.2 Select forecasting method - A demand forecasting method will be selected and described.

2.3 Prepare demand forecast - estimate future water demand by segment or customer class. Worksheet 2-1 will be used as a guide.

Step 3 – Profile Proposed Facilities

Purpose
The activities described under this task will provide information on the City's facility needs.

Tasks

3.1 Identify and cost potential facility needs - identify and describe options to improve and add capacity to the existing water system to meet the water demands outlined in Step 2. Worksheet 3-1 will be used as a guide for this subtask.

3.2 Develop preliminary supply-capacity forecasts – Estimate the timing for new infrastructure construction based on demand projections and current infrastructure capacity. Develop a timeline estimating the capacity of the water supply system, describing new additions and replacements based on previous and ongoing work performed by the City.

Step 4 – Identify Conservation Goals

Purpose
The activities described under this task will identify conservation goals for the City.

Tasks

4.1 Identify water supply potential gap – estimate timing and magnitude of gap between water supply availability and future water demands.

4.2 Identify areas of key savings – identify water savings needs and opportunities by water use segment, based on recent growth and expected impacts of measures and programs.

4.3 Develop preliminary water conservation goals - working with City staff, develop water conservation goals. Areas for water conservation will be identified. A specific water savings target, including percentage of water savings, timeframe during which water savings will occur, as well as how the savings will be measured will be identified.

Step 5 – Identify Conservation Measures and Programs

Purpose
The activities described under this task will identify and screen conservation measures and programs that the City may implement.

Tasks

5.1 Identify conservation measures and programs – identify candidate water conservation measures and programs using CRS 37.60.126 and Worksheets 5-1 and 5-2 as a guide.

5.2 Develop and define screening criteria - Describe the screening criteria used to eliminate some water conservation measures and programs from use or further consideration.

5.3 Screen conservation measures and programs – use the above developed criteria to screen the full list of conservation measures and programs to determine which ones will be evaluated further.

Step 6 – Evaluate and Select Conservation Measures and Programs

Purpose
The activities described under this task evaluate and select the optimal conservation measures and programs that the City may implement.

Tasks

6.1 Align measures and programs with identified gaps and goals - review all screened conservation measures and programs, develop groupings of complimentary measures and programs to address the identified gaps, and develop overall packages of measures and programs for further evaluation.

6.2 Estimate costs and water saving of conservation options - Using Worksheet 6-1 as a guide, estimate the cost of each packet of conservation measures and programs, and the associated water savings. A benefit/cost analysis will be included based on implementation cost and expected water savings.

6.3 Compare benefits and costs - summarize conservation measure costs and water savings, including a net benefit from all suggested measures using Worksheets 6-1 and 6-2.

6.4 Define evaluation criteria – develop criteria used to select the conservation measures/programs for implementation. Key will be cost for implementation and potential water savings, public expectations, overall implementability, and the cost of replacement water (including treatment and distribution).

6.5 Select conservation measures and programs - summarize the evaluation of each measure/program based on the evaluation criteria and indicate which measures/programs will be implemented. The water savings from the implementation will be estimated using Worksheet 6-3 as a guide.

Step 7 – Integrate Resources and Modify Forecasts

Purpose
The activities described under this task will modify the supply and demand forecasts to account for water savings from selected conservation measures and programs. The benefits of conservation as well as revenue effects will also be addressed.

Tasks

7.1 Revise demand forecast - revise the demand forecast prepared in Step 2 to account for the water savings of the measures/programs from Step 6. Worksheet 7-1 will be used as a guide.

7.2 Identify project-specific savings - identify the effects of conservation on proposed supply capacity issues specified in Step 3.

7.3 Summarize forecast modifications and benefits of conservation - develop a graph showing demand and supply with and without conservation.

7.4 Consider revenue effects - quantify impacts to revenues from implementation of water conservation. Strategies to address this issue will be developed.

Step 8 – Develop Implementation Plan

Purpose
The activities described under this task will establish the activities that will be performed to implement the Water Conservation Plan.

Tasks

8.1 Develop implementation schedule - identify significant implementation actions and obstacles that may prevent the implementation of the selected conservation measures from occurring.

8.2 Develop plan for public participation in implementation - describe how to involve the public in the implementation process.

8.3 Develop plan for monitoring and evaluation processes - describe how water conservation will be measured for effectiveness.

8.4 Develop plan for updating and revising the Plan - describe when and how the Plan will be updated, in part, in accordance with CRS 37.60.126.

8.5 Define plan adoption date/plan completed date/plan approved data - A copy of the approval resolution adopting the final water conservation plan will be included, to be executed after City and public review.

Step 9 –Prepare Draft Water Conservation Plan

Purpose
Compile Plan components and configure Plan in Draft format.

Task

9.1 Prepare Draft Plan – compile information, data and other content into Draft Plan for review and comment. Produce 10 copies total for public and City review. Include review cycle for Public Works and Planning Departments prior to completion of Draft Plan.

Step 10 – Present Plan

Purpose
Distribute Draft Plan to various entities and facilitate their understanding of the Plan's intent, content and recommendations and their review and comments.

Tasks

10.1 Provide/distribute Draft Plan for City review – provide copies to selected City departments and facilitate City discussion and review, as needed.

10.2 Provide/distribute Draft Plan for Public review – establish public review repository, produce public notice with 60 day review period, announce public meetings, and provide feedback forms and process for public comment.

10.3 Collect City and Public comments - collect comments from City and Public as required.

Step 11 – Finalize and Adopt Plan

Purpose
Revise Draft Plan based on public and City comments, document public review process, finalize Plan and have City Council adopt Final Plan.

Tasks

11.1 Revise Draft Plan – finalize Plan based on comments received from the City and public, document public comments and comment responses, and produce.

11.2 Adopt Plan – have City Council formally adopt the Final Plan.

Project Deliverables

- Monthly invoices and project status reports at 50% and 95% complete for submission to CWCB
- Meeting notes
- Draft Water Conservation Plan for public and City review
- Final Water Conservation Plan for Adoption by City Council
- Final Water Conservation Plan for submittal to CWCB

ATTACHMENT 2

Page 1 of 2

CITY OF BRIGHTON - WATER CONSERVATION PLAN

PROJECT FEE ESTIMATE

3/9/07

PREPARED BY: TCB

ITEMS OF WORK	TCB - Great Western HOURS $110	TCB - Great Western SUB TOTAL	City of Brighton Staff (In-Kind)* HOURS $56	City of Brighton Staff (In-Kind)* SUB TOTAL	Total	CWCB Grant Request
Step 1 - Profile of Existing Water System						
1.1 Profile Existing Water System	*8*	*$880*	*4*	*$224*	*$1,104*	*$800*
1.2 Identify Sources of Water	*4*	*$440*	*4*	*$224*	*$664*	*$400*
1.3 Identify System Limitations	*4*	*$440*	*4*	*$224*	*$664*	*$400*
1.4 Characterize Water Costs and Pricing	*4*	*$440*	*6*	*$336*	*$776*	*$400*
1.5 Summarize Current Water Conservation Activities	*4*	*$440*	*4*	*$224*	*$664*	*$400*
Sub-Total	***24***	***$2,640***	***22***	***$1,232***	***$3,872***	***$2,400***
Step 2 - Characterize Water Use and Forecast Demand						
2.1 Characterize Current Water Use	*10*	*$1,100*	*2*	*$112*	*$1,212*	*$1,000*
2.2 Select Forecasting Method	*4*	*$440*	*2*	*$112*	*$552*	*$400*
2.3 Prepare Demand Forecast	*8*	*$880*	*2*	*$112*	*$992*	*$800*
Sub-Total	***22***	***$2,420***	***6***	***$336***	***$2,756***	***$2,200***
Step 3 - Profile Proposed Facilities						
3.1 Identify and Cost Potential Facility Needs	*8*	*$880*	*12*	*$672*	*$1,552*	*$800*
3.2 Develop Preliminary Supply-Capacity Forecasts	*12*	*$1,320*	*24*	*$1,344*	*$2,664*	*$1,200*
Sub-Total	***20***	***$2,200***	***36***	***$2,015***	***$4,215***	***$2,000***
Step 4 - Identify Conservation Goals						
4.1 Identify Potential Gaps between Supply and Demand	*12*	*$1,320*	*12*	*$672*	*$1,992*	*$1,200*
4.2 Identify Areas of Key Water Savings	*8*	*$880*	*8*	*$448*	*$1,328*	*$800*
4.3 Develop Preliminary Water Conservation Goals	*4*	*$440*	*8*	*$448*	*$888*	*$400*
Sub-Total	***24***	***$2,640***	***28***	***$1,568***	***$4,208***	***$2,400***
Step 5 - Identify Conservation Measures and Programs						
5.1 Identify Conservation Measures and Programs	*12*	*$1,320*	*8*	*$448*	*$1,768*	*$1,000*
5.2 Develop and Define Screening Criteria	*8*	*$880*	*4*	*$224*	*$1,104*	*$800*
5.3 Screen Conservation Measures and Programs	*16*	*$1,760*	*8*	*$448*	*$2,208*	*$1,500*
Sub-Total	***36***	***$3,960***	***20***	***$1,120***	***$5,080***	***$3,300***
Fiscal Year 2007 Totals		**$13,860**		**$6,270**	**$20,130**	**$12,300**

ATTACHMENT 2

CITY OF BRIGHTON - WATER CONSERVATION PLAN

PROJECT FEE ESTIMATE

3/9/07

PREPARED BY: TCB

ITEMS OF WORK	TCB - Great Western HOURS $110	TCB - Great Western SUB TOTAL	City of Brighton Staff (In-Kind) HOURS $56	City of Brighton Staff (In-Kind) SUB TOTAL	Total	CWCB Grant Request
Step 6 - Evaluate and Select Conservation Measures and Programs						
6.1 Align Screened Measures and Programs with Identified Gaps and Goals	10	$1,100	4	$224	$1,324	$800
6.2 Estimate Costs and Water Savings of Conservation Options	10	$1,100	4	$224	$1,324	$600
6.3 Compare Benefits and Costs	10	$1,100	4	$224	$1,324	$800
6.4 Define Evaluation Criteria	4	$440	4	$224	$664	$400
6.5 Select Conservation Measures and Programs	6	$660	16	$896	$1,556	$600
Sub-Total	***40***	***$4,400***	***32***	***$1,792***	***$6,192***	***$3,200***
Step 7 - Integrate Resources and Modify Forecasts						
7.1 Revise Demand Forecasts	8	$880	2	$112	$992	$700
7.2 Revise Supply-Capacity Forecasts	8	$880	4	$224	$1,104	$700
7.3 Summarize Forecast Modifications and Benefits of Conservation	8	$880	4	$224	$1,104	$700
7.4 Consider Revenue Effects	6	$660	12	$672	$1,332	$600
Sub-Total	***30***	***$3,300***	***22***	***$1,232***	***$4,532***	***$2,700***
Step 8 - Develop Implementation Plan						
8.1 Develop Implementation Schedule	8	$880	4	$224	$1,104	$800
8.2 Develop Plan for Public Participation in Implementation	4	$440	6	$336	$776	$400
8.3 Develop Plan for Monitoring and Evaluation Processes	10	$1,100	4	$224	$1,324	$900
8.4 Develop Plan for Updating and Revising the Conservation Plan	2	$220	2	$112	$332	$200
8.5 Define Plan Adoption Date/Plan Completed Date/Plan Approved Date	4	$440	4	$224	$664	$400
Sub-Total	***28***	***$3,080***	***20***	***$1,120***	***$4,200***	***$2,700***
Step 9 - Prepare Draft Water Conservation Plan						
9.1 Prepare Draft Plan	24	$2,640	12	$672	$3,312	$2,200
Sub-Total	***24***	***$2,640***	***12***	***$672***	***$3,312***	***$2,200***
Step 10 - Present Plan						
10.1 Provide/Distribute Draft Plan to City for Review and Comment	2	$220	4	$224	$444	$200
10.2 Provide/Distribute Draft Plan to Public for Review and Comment	2	$220	4	$224	$444	$200
10.3 Collect Public and City Comments	8	$880	12	$672	$1,552	$600
Sub-Total	***12***	***$1,320***	***20***	***$1,120***	***$2,440***	***$1,000***
Step 11 - Adopt Water Conservation Plan						
11.1 Revise Plan per Comments	8	$880	6	$336	$1,216	$600
11.2 Finalize and Adopt Plan	2	$220	12	$672	$892	$200
Sub-Total	***10***	***$1,100***	***18***	***$1,008***	***$2,108***	***$800***
Fiscal Year 2008 Totals		**$15,840**		**$6,942**	**$22,782**	**$12,600**
Total Project Costs		**$29,700**		**$13,213**	**$42,913**	**$24,900**

Proposed Project Schedule
City of Brighton Water Conservation Plan Development Project