

## MEMORANDUM

**TO:** Town of Frederick – Brian Frank & CWCB – Tammie Petrone, Kevin Reidy

**FROM:** Civil Resources, LLC - Andy Rodriguez

**DATE:** February 2, 2011

**RE:** 50% Progress Report for the Town of Frederick Water Conservation Plan

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Civil Resources is working with the Town of Frederick (Town) on developing their Water Conservation Plan (WCP) per the April 2010 Grant application to the Colorado Water Conservation Board (CWCB). Currently fifty percent (50%) of the Water Plan has been completed; this includes *Tasks 1 through 5* with preliminary assessment of *Task 6*. The majority of *Task 3* has been completed with additional detail still needing incorporation. Below is a summary of what has been analyzed to date.

### Supply

The Town owns 3,470 shares of Colorado Big-Thompson (C-BT) water stored at Carter Lake and currently contracts with Central Weld County Water District (Central) to treat and deliver the water from Carter Lake to its residents east of I-25 via a network of pipelines. The Town also utilizes native water rights diverted from Boulder Creek to irrigate parks and open space and one municipal golf course, however this WCP exclusively analyzes the treated water from Central.

The Town's 3,470 shares of C-BT at a firm yield of 0.5 acre-feet per share (1 acre-foot = 325,872 gallons) equates to 1,735 acre-feet of raw water. The average yield is 0.7 acre-feet per share which equates to 2,429 acre-feet of raw water the Town has available to transfer to Central. A twenty percent (20%) system loss charge is assessed against the Town's deliveries by Central. This loss is fairly high considering unaccounted-for-loss should be typically less than five percent (5%). Preliminary discussions concerning reducing this value from Central and any reductions in Central's loss charged to the Town will not be credited to the Town in its water conservation efforts.

### Demand & Population

The water use between November 1, 2009 and October 31, 2010 as metered to the Town by Central was approximately 531 million gallons (1,630 af). The Town billed, to its residents, approximately 446 million gallons (1,249 af) and 22 million gallons of bulk water for a total of 468 million gallons. This is approximately 12 percent (12%) less than Central reports to have delivered. The Town is working on identifying and addressing the apparent losses as soon as possible which includes replacing broken water meters and metering all the fire hydrant flows that are used in hydrant flushing and testing along with adding the water use to the accounting software for the construction water sales from the fire hydrants.

The current population estimate is approximately 7,500 residents east of I-25. The population estimates will use the same percentages presented in the Grant Application of one percent (1%) for the first two years and an increasing rate of one percent (1%) per year until four percent (4%) is attained, i.e. (yr 1 =1%, yr 2 =1%, yr 3 = 2%, yr 4= 3% etc..) where it remains constant for the ten year planning period (2012 through 2021). The projected 2010 demand presented in the Grant Application to the CWCB was 231 gallons per capita per day including the Central 20% system wide loss. From this point forward in analyzing current and future per capita usage rates for the WCP the Town is proposing to use only the actual total usage as metered by Central through their master meters (this will not include the 20% Central system-wide loss). The Town will continue to repair and replace meters so that all Town customers water usage is accurately reflected and there can be a reliable audit of actual water usage by the Town.

### Water Conservation Measures and Preliminary Goals

Civil Resources and the Town have analyzed various water conservation measures attached as Table 1. These measures will be the basis for the water savings and used in the revenue calculations.

*Table 1: Water Conservation Measures*

<i>WCP Measures</i>	<i>Implementation</i>	<i>Further Evaluation</i>
<i>Utility Maintenance</i>		
Install Meters in the Distribution System	None	Not at this time
Leak Detection and Repair Program	Existing	Ongoing
Leak Detection for Master Meter Communities	None	Not at this time
Meter Testing and Replacement Program	Existing	Ongoing
Sub-Meter Master Metered Communities	None	Not at this time
Town Irrigation Improvements and Irrigation Audits at Town Properties	Existing	Ongoing
Water Reuse System	None	Not at this time
Wetting Agent for Town Properties	None	Possible
<i>Regulatory Control and Standards</i>		
25% of Lot Irrigation Restriction	None	Possible
Decorative Water Feature Requirements	None	Not at this time
High Efficiency Appliance Requirements/Standards	None	Possible
Landscape and Irrigation System Standards	None	Possible
Mandatory Outdoor Watering Restrictions	Partial	Ongoing
New Car Wash Standards	None	Possible
Removal of Phreatophytes	Partial	Ongoing
Requiring Smart Controllers for Commercial and Open Space Irrigation	None	Possible
Restrictive Covenants Ordinance	None	Possible
Soil Amendment Ordinance for New Landscaping	None	Not at this time
Temporary Irrigation Taps for Native Landscaping	Existing	Ongoing
Water Rate Structure Changes	Existing	Ongoing
Water Waste Ordinance	Existing	Ongoing
<i>Educational Programs</i>		
Billing Statements that Encourage Water Savings	Partial	Ongoing
Commercial BMPs on Website or as Bill Stuffers	None	Yes
Designated Water Conservation Officer	None	Not at this time
ET Irrigation Scheduling on Website or as Bill Stuffers	None	Possible
Online Access to Water Bill and History	None	Yes
Public Education - Bill Stuffers, Classes, Newsletters and Website	None	Yes
Water Conservation Website Upgrades	Existing	Yes
Website Water Use Calculator	None	Yes
<i>Rebates and Incentive Programs</i>		
Commercial Toilet Rebates	None	Possible
High Efficiency Water Fixture Rebates	None	Possible
Irrigation System Rebates	None	Possible
Point System	None	Possible
Rebates for Smart Controllers	None	Possible
Turf Replacement and Xeriscape Incentives	None	Possible

Table 1: Water Conservation Measures (continued)

WCP Measures	Implementation	Further Evaluation
<i>Audit Programs</i>		
Commercial and Industrial Water Audits	None	Possible
Residential Audit Kits	None	Possible
Residential Irrigation Audits	None	Possible
Sprinkler System Audit Kits and Instructions	None	Possible

The Grant Application assumed a reduction of twenty percent (20%) for the total water use. In consideration of the reduction in the current per capita water usage rates this has been revised to a twenty percent (20%) reduction for residential use as presented below in Table 2. If more savings are fiscally possible the Town will make an effort to reduce use further. The current planned reduction results in an overall water use reduction of sixteen percent (16%).

Table 2: Water Conservation Goals

Water Use Type	Existing Usage (2010)		Study Period (2012 - 2021)			
	Water Use acre-feet	Capita 7,509 gpcd	Water Use acre-feet	Reduction		Capita 8,874 gpcd
				%	acre-feet	
Residential	1,198	142	1,430	20%	286	115
Commercial & Industrial	132	16	157	5%	8	15
Public	88	10	105	5%	5	10
Unaccounted-for Losses	212	25	253	3%	8	25
<i>Total</i>	1,630	194	1,946	16%	307	165

Notes: Water use for 2010 is based on actual use from November 2009 to October 2010.

Capita is based on Rate Study Projections.

The study period water use is the average use from 2012 to 2021.

16% total reduction is the total reduction divided by the total water usage.

### Summary

Civil Resources will continue to refine the Water Conservation Measures and begin to analyze the water savings and cost revenue impacts. Due to the delay in receiving grant authorization until September, 2010, Civil Resources has provided an updated project schedule presented below.

<u>Task #</u>	<u>Work</u>	<u>Start Date</u>	<u>Finish Date</u>
<i>Task A: Water Conservation Plan</i>			
A-1	Profile Existing Water Systems	October 2010	December 2010
A-2	Water Use & Demand Forecast	October 2010	December 2010
A-3	Profile Proposed Facilities	October 2010	December 2010
A-4	Identify Conservation Goals	Nov/Dec 2010	December 2010
A-5	Identify Conserv. Measures & Programs	Nov/Dec 2010	December 2010
A-6	Eval & Select Cons. Measures & Progr.	Dec 2010/Jan 2011	January 2011
A-7	Integrate Resources & Modify Forecasts	Dec 2010/Jan 2011	January 2011
A-8	Develop Implementation Plan	Dec 2010/Jan 2011	January 2011
A-9	Monitor, Evaluate and Revise Cons. Activities and the Conservation Plan	Dec 2010/Jan 2011	Aug 2011
<i>Task B: CWCB Submittals</i>			
1)	50% Submittal	Dec 2010	Jan 2011
2)	Revised 50% Submittal	Feb, 1 <sup>st</sup> 2011	Feb, 2 <sup>nd</sup> 2011
3)	75% Submittal		
	• Report Completion	Feb, 1 <sup>st</sup> 2011	Mar, 1 <sup>st</sup> 2011
	• Board Review	Mar, 8 <sup>th</sup> 2011	Mar, 8 <sup>th</sup> 2011
	• Submittal to CWCB	Mar, 8 <sup>th</sup> 2011	Mar, 15 <sup>th</sup> 2011
<i>Task C: Public Outreach</i>			
	Public Outreach	April 15, 2011	July, 1 <sup>st</sup> 2011
<i>Task D: CWCB Approves Final Plan</i>			
	Final Approval	Aug 1 <sup>st</sup> , 2011	60 days after Aug 1 <sup>st</sup> , 2011 or before Nov 1 <sup>st</sup> , 2011