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WATER ENGINEERING & MANAGEMENT

WESTERN RESOURCE
ADVOCATES

June 30, 2008

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

Re: COVERED ENTITY RESEARCH PROJECT

Dear Ms. Deheza:

The goal of this project was to identify all water providers and utilities in Colorado that are considered "covered entities" under statute. A covered entity is currently 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.

Several existing resources served as a starting point for this project including: 2007 Drought and Water Supply Update project recently completed by Aquacraft and National Research Center; Colorado Water Resources & Power Development Authority, and other sources. Much of this effort involved aligning existing data sets and developing a single master list of covered entities.

A list of all covered entities and potential covered entities (i.e. providers that may have crossed the 2,000 AF delivery threshold) was prepared and is presented in electronic database format, see attached.

The following data on the entities is included in the final database:

- Address and contact info
- Annual water deliveries
- Service area population
- Other demographic data (SRF accounts as available)

A portion of this data was available from the 2007 Drought and Water Supply Update project. However for roughly 112 agencies, sufficient data did not exist and the research team contacted these organizations to obtain the relevant information to determine if the provider is in fact a covered entity. If yes, then the additional data was obtained.

Our research has shown that there are currently 76 covered entities providing and/or distributing at least 2000 AF of water in the State of Colorado. Nine entities are nearly covered but currently provide and/or distribute between 1800 and 1999 AF of water annually. While population growth may result in increased demand and thus an increase in deliveries pushing them over the 2000 AF threshold, it is also possible that these providers may cross over the 2000 AF threshold during dry years without any additional growth. This scenario was seen in 2002 in the City of Craig when they delivered 2200 AF, up approximately 300AF from their average annual deliveries. Additionally, two of those nine, Firestone and Castle Pines North Metropolitan District already have approved conservation plans on file with the Colorado Water Conservation Board, likely in anticipation of surpassing the 2000AF threshold in the near future.

Thirty-six entities did not respond to repeated attempts to contact via phone and e-mail and therefore insufficient data was available to determine if they qualified as a "covered" entity under state statue. Ten of these are metropolitan districts and likely do not deliver sufficient amounts of water to qualify.

296 water providers do not qualify as "covered entities" according to state statute. The vast majority of these, 148 providers, deliver less than 1000 AF annually. 27 Providers deliver more than 1000 AF but less than 2000, while 4 providers were unable to ascertain exactly how much water they deliver annually but knew it was significantly less than 2000 AF. An additional 117 providers were not contacted due to service area populations that were not likely to result in deliveries of greater than 2000AF. Most of these communities had populations of less than 1000 people. Four contacted entities do not provide any water at all.

Conservation Plans

The information extracted includes: water conservation goals, water conservation program budget, implemented water conservation program measures and planned/proposed water conservation program measures and type of water rate structure.

Most entities with approved conservation plans on file with the State have set conservation savings goals and have implemented a mix of conservation measures to help achieve that goal. While a few entities have dedicated fiscal resources to conservation (Denver, Aurora, Colorado Springs Utilities, Aurora, Ft. Morgan) others have yet to define a conservation budget or did not define the budget as part of the conservation plan. In fact some water providers note that funding may be a limiting factor in the implementation of proposed measures.

					Exisitng or Proposed Conservation Measures				
	Annual Conservation Budget	Goal (Residential)*	Goal (other)*	Rates	Incentives	Ordinances/ Regulation	Education	Xeriscape	C&I Measures
Arapahoe County Water and Wastewater Authority	Unknown	5%		Inclining block	x	x	x		X
Aurora	1.8Million	4%	10%	Inclining block	x	x	x	x	x
Castle Pines North	Unknown	decrease by 16-20 gpcd	25% HOA; 10% Irrigation	Inclining Block	x		x	x	x
Castle Rock	Unknown	18%		Inclining block	x	x	x	x	x
Cherokee Metropolitan District	Unknown	-	golf courses 30%	Inclining block			x	x	x
City of Alamosa	Unknown	30%	-	Inclining block	x		x		
City of Northglenn	Unknown	9%	-	Inclining block	x		x	x	x
CSU	400,000	10.70%	-	Inclining block	x	x	x	x	x
Denver Water	4.8 Million	10%	-	Inclining block	x	x	x	x	x
East Larimer County	Unknown	5%	UFW 50%	Flat	x		x	x	
Erie	8,000	17%	15%	Inclining Block	x	x	x		
Firestone	Unknown	5%	5-10%	Inclining Block	x		x		x
Ft. Lupton	0	5%	5%	Inclining block		x			
Ft. Morgan	10,000	-	-	Flat	x	x			

*Based on utility defined planning horizon

Water rates can also help to encourage efficient use of water and reward those who conserve. The majority of Water Providers with an approved conservation plan on file with the State have implemented an inclining block rate structure. This structure encourages conservation by charging more per unit as use increases. Consequently, high volume users, who place more stress on the system, pay their fair share. Two entities with approved conservation plans on file with the State have yet to adopt a conservation oriented rate structure; instead they have a flat or uniform rate structure in which all units are prices identically.

While data was extracted from conservation plans that have been approved by the Colorado Water Conservation Board, very few covered entities have up to date, approved water conservation plans on file with the State of Colorado, thus our ability to extract data was limited. Hopefully the creation of this database will enable to the state to pursue those entities that are "covered" as defined by state statute and work with them to submit updated water conservation planning documents.

Gaps in Data
Despite our best efforts there were some entities that we were unable to contact and therefore could not verify that were, or were not, a covered entity according to state statute. These entities are listed in a separate portion of the database.

Additionally, with some entities, covered or not, specific information such as number of single family residential accounts was not available due to their computer accounting systems or customer class categories. Standardizing how data is collected may alleviate this problem in the future.

Contact information for those entities that are not covered was not gathered as part of this project. Many of these water providers supply such small volumes of water they will not reach "covered" status for quite some time. However, any information that was readily available was included in the database.

Per Capita Water Use
One of the goals of this project was to start to examine best method to calculate basic water use metrics for covered entities in Colorado. Per capita water use is one of the most fundamental measurements by which providers can be compared. Numerous methods for calculating per capita use are available. Not all are applicable or even possible to implement given the limited data available. The most obvious methodology to use is simply total water deliveries divided by service area population, but even this method posses problems when used as a metric for comparing demand across different utilities. Providers with a large commercial, institutional, and/or industrial demand are likely to have a much higher per capita water use value under this methodology than utilities that are largely residential.

New Mexico Per Capita Methodology
The New Mexico Office of the State Engineer has recently made an effort to standardize they methodology for calculating per capita water use (GPCD) across the state as a way of providing a reasonable comparison metric. New Mexico contracted with consultants to develop a workable methodology and Colorado can now benefit from that effort by examining the New Mexico methodology for possible use here. Electronic draft versions of the New Mexico per capita spreadsheet tool and user instruction manual are provided along with this report.[1]

From the Executive Summary (overview of calculation method is shown in *italics*):

> Gallons per capita per day (GPCD) is a method utilized internationally to measure water use by drinking water suppliers. It is most commonly used to describe historical and current water uses, providing a baseline of water use that is not as susceptible to changes in population. GPCD is also used for planning purposes, allowing estimates of future demand requirements based on localized population projections. More sophisticated planning efforts utilize GPCD to determine

[1] New Mexico Office of the State Engineer, Gallons Per Capita Per Day Calculator, Instruction Module, Peer Review and Beta Testing Version, April 2008.

conservation potential, track the results of program implementation, and calculate projections based on conservation adjusted GPCD.

The New Mexico Office of the State Engineer (NMOSE) has developed a consistent, equitable and reproducible methodology that will standardize GPCD calculations in New Mexico. *The method uses specific attributes pulled from the most recent U.S. Census and data provided by the drinking water supplier. The US Census data includes number of persons per household, vacancy rates, and group quarters' population. This is combined with the drinking water suppliers' information on the number of single-family residential connections and multi-family residential units to determine a population served. The drinking water supplier also provides the total volume of water diverted and the volume delivered to specific sectors. Sector GPCDs are calculated by dividing single family residential populations into single-family residential gallons delivered, multi-family residential populations into multi-family residential gallons delivered and total system population served into gallons delivered to ICI (industrial, commercial and institutional) and other uses. The total system GPCD is calculated by dividing total population served (single family population plus multi-family population plus group quarters' population) into total system supplied.*

To assist with the calculations, the NMOSE has developed a GPCD Calculator. The NMOSE GPCD Instruction Module provides the details on how to work the Calculator. It allows for multiple data entry options depending on what data is available from the drinking water suppliers. With each option, the Instruction Module outlines how the Calculator will respond and when default values might be used.

Below is a list of the data that the drinking water supplier will need to collect in order to utilize the Calculator. Not all data will be required for each case. Check the Instruction Module to determine how the Calculator will respond if specific information is not available. Data can be collected on a monthly or annual basis.

- Total gallons of water diverted to the system
- Volume of water imported or exported by system
- Total gallons of water delivered to single-family residential, multi family residential, and ICI
- Number of single family connections (total or active)
- Number of multi-family units served by drinking water supplier
- Data retrieved from the most recent US Census

For questions regarding the Instruction Module or Calculator, please contact Cheri Vogel and 505-827-4272 or cheri.vogel@state.nm.us.

Although developed for the State of New Mexico, the proposed GPCD calculation method is well suited for application in Colorado and could be implemented with little or

no modification. Using the data developed for this project and the 2007 Drought and Water Supply Update combined with recent US Census data, it should be possible to provide comparable GPCD calculations for a number of water providers in Colorado.

Another useful metric to consider is average per household monthly winter water consumption for single-family customers. This can easily be converted into an annual usage value that represents an estimate of average annual indoor use in the single-family sector. By correcting with household size data, this information may be the single best way to compare water use and relative levels of water efficiency across providers.

Recommendations

1. Standardize data collection and methodology.
   By standardizing how data is collected and the methodology used to gather formulate that data the state can ensures that all entities are reporting identical information and can therefore make comparisons of like data. This need not be done for all areas, but a few important metrics would provide the State, as well as the water provider, with a wealth of useful information that can help to shape water conservation locally and Statewide.

   One possible data collection method would be to leverage the Colorado Department of Public Health and Environment water quality database. The CDPHE Water Quality Control Division currently collects data on many water providers in the state. CDPHE is in frequent contact with water providers as part of quality monitoring, and as such, this database might be more up to date.

   This data include population served and contact information. It might be worthwhile to approach CDPHE to determine if data already collected could be useful. While the CDPHE does not collect annual volume data, it may have other data that could be used to calculate annual volume. Another approach might be to add a second covered entity criterion such that if an entity meets either criterion it is considered a covered entity. For example, the CDPHE currently collects population data. If a certain threshold population is met, the entity could be considered a covered entity.
2. Require reporting on specific data sets such as volume of water delivered, service area population, number of accounts, number of Single Family Residential accounts, Commercial and industrial use, etc. – at least annually if not quarterly. An online database that is accessible via the web would make this easier for water providers to accomplish.
3. Reach out to covered entities that have yet to submit conservation plans for approval. Developing conservation plans is the first step in helping entities to integrate conservation saving potential into their long term water resource management.
4. Adopt the New Mexico Office of the State Engineer gallons per capita per day calculation methodology and work with all Colorado covered entities to obtain the necessary data. These data should be updated at regular intervals.

Should you have any questions regarding the content of this letter or database please contact Taryn Hutchins-Cabibi at Taryn@westernresources.org or Peter Mayer at mayer@aquacraft.com. We sincerely hope that this information will help the Colorado Water Conservation Board- Office of Water Conservation and Drought Planning to further their mission to promote water use efficiency while providing public information and technical and financial assistance for water conservation planning.

Sincerely,

Taryn Hutchins-Cabibi
Western Resource Advocates

Peter Mayer, PE
Aquacraft Engineering