Civil Engineering
Planning & Development
Construction Management
Product Development

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Ken Young P.E., Principal

December 18, 2008

Office of Water Conservation & Drought Planning
Colorado Water Conservation Board
Department of Natural Resources
1313 Sherman Street, Room 721
Denver, CO 80203
Attn.: Ben Wade

Re: 50% Progress Report—St. Charles Mesa Water District

Dear Mr. Wade:

As you are aware, the St. Charles Mesa Water District (SCMWD) staff, and Young Technology Group (YTG) are in the process of preparing a Water Conservation Plan, utilizing the Colorado Water Conservation Board (CWCB) 9-step approach. During this process, SCMWD and YTG staff have made every effort to compile the data as accurately as possible, in order to create a viable plan. To that end, we are proceeding in a step by step fashion as outlined in the grant request. The following is a summary of the status of each of the 9 steps outlined:

Step #1—Profile Existing Water System

The SCMWD staff has prepared Worksheets 1-1, 1-2 and 1-3 utilizing the latest census data, district boundary maps, distribution main inventories and mapping, metered water sales, treatment plant metered data and records. The system profile is complete, with the exception of further differentiating the water demand into customer use categories. This shall require some additional work by the staff.

Percent Complete: 66%

Step #2—Develop a Water Use Profile & Forecast Future Water Demand

YTG has compiled the data in Worksheet 2-1 from information supplied by the SCMWD staff. The original format of this Worksheet has been expanded slightly by analyzing the demand by population and by number of taps. This was done to help identify any correlations between population and the number of total taps, and between non-residential (business) use based on number of employees versus type of use. In addition, the scope of the current use and future forecasts has been expanded, in order to provide a more accurate demand baseline, and project future demands in line with the projected Capital Improvement Projects, which are detailed in Worksheet 3-1. The current, or baseline demand utilizes the years of 2006 and 2007. This is due to the fact that the demand for the year 2007 was slightly depressed due to a wet spring.

Percent Complete: 68%

Step #3—Profile Proposed Facilities

The SCMWD currently utilizes the “WaterCAD” Distribution Modeling Software, and, over the years, has compiled a detailed hydraulic model of the entire potable water distribution system. In order for a property owner or developer to obtain service, the applicant is required to provide the District with a plat which identifies the number of proposed lots, uses, and number and type of taps being requested. As part of the approval process, SCMWD incorporates the proposed use into the distribution model, and the applicant is required to pay for the associated tap fees, must provide raw water (in the form of irrigation shares) and mitigate any adverse impact to the system (financially). In addition to these requirements for future development, SCMWD has an extensive Capital Improvement Plan which includes some 35 separate

projects and extends to fiscal year 2025. Each one of these separate Capital Improvement Projects is detailed in Worksheet 3-1. In order to better quantify the costs and benefits associated with the proposed improvements, each project was individually modeled in the distribution system software. This process has been somewhat time consuming and has taken the better part of 3 weeks to reach the 60% complete stage. This is due to the variable amount of system benefit associated with each individual project. In some cases, several projects were combined, as the benefit from a single project may not be realized (especially for phased improvements) until a critical level is reached and the benefit is more substantial. I feel that this detailed analysis will provide a more accurate result and help predict future needs and identify any projects which may need modification or revise the order of implementation.

Percent Complete: 59%

Step #4 – Identify Conservation Goals

This step is in the beginning stages. There are several goals which have been discussed between SCMWD and YTG staff. The District Board members, staff and YTG have attended various training sessions and presentations which provided information related to other municipalities and water districts efforts at conservation and the methods employed. During this period some general goals have been discussed. The main focus is to aggressively pursue the elimination of "Non-Revenue" treated water. That is, the potable finished water which is pumped from the main treatment plant (and metered) which is not accounted for in the individual metered taps. Currently, this amounts to a full 10% of water which is treated and pumped into the distribution system. This is most likely due to leaks in the distribution system and inaccurate metering at the individual taps. One method of identifying the potential of leaks in the system is to simply inventory the system by age and type of material. Since portions of the system are almost 50 years old, it is logical to assume that these are the most likely candidates for failure. The same can be said for the individual meters. This process, along with other measures, are being considered. The inventory is being performed in conjunction with the creation of a GIS system for the District.

Percent Complete: 15%

Step #5 – Identify Conservation Measures and Programs

This step has not been initiated, with the exception of preliminary discussions related to the staging of the Capital Improvement Plan (CIP) which the district is currently implementing. Presently, SCMWD is scheduled to replace all existing individual meters to new, radio read meters during fiscal years 2023, 2024 and 2025. Given the fact that we suspect some of the older meters are not accounting for all of the delivered water, it has been suggested that this item be given a much higher priority. Also, this will be a cost saving measure. However, we are going to proceed as planned and allow the Conservation Planning Process to determine the order of implementation.

Percent Complete: 0%

Steps #6, #7, #8 & #9 have not been initiated at all.

Percent Complete: 0%

To date, we are approximately 1 month behind the anticipated schedule which was submitted with the grant request. This is mainly due to the extra time which has been spent evaluating the 35 CIP projects and correlating the benefit with the District's hydraulic model. Although this was somewhat cumbersome, I feel that it will provide a more accurate assessment. Also, there has been a learning curve associated with the Conservation Planning process. However, I would like to proceed without modification to the schedule. At this point, we have performed the necessary calculations and data acquisition to complete the remainder of steps 1 through 3. I believe that we can expedite steps 4 through 6 over the coming weeks, and complete the remaining items in accordance with the proposed schedule. We are planning to have the public comment period in January, 2009, as planned, and proceed from there.

The main challenge during the data acquisition stage, was determining the impact of the various CIP projects. It was found to be very difficult to quantify the benefits of some of the phased projects, in particular. This is due to the fact that some of the projects do not affect much of the system, or users, until all phases are in place. However, due to funding, these projects cannot be performed in one phase. The solution which was employed is to combine the phased projects and look at the impact upon completion of the sum of each of the phase projects.

Another situation which has come to light is the impact of data from varying weather cycles. For example, the year 2007 was a very "wet" spring and early summer, in this region. This reduced the usage for lawn irrigation. This is evident from the data for that year, which indicates a 6.7% reduction in annual residential sales from 2006. We believe there are

several factors at play. Namely, that the water users have shown a willingness to practice some common sense conservation in the past, and have demonstrated, through responsible irrigation practices, a high level of complying with voluntary restrictions. This was clearly evident during the drought of 2001. SCMWD was the only water district in Pueblo County which did not have to implement mandatory irrigation restrictions. This is due to the fact that when the users were notified of the voluntary restriction, they complied to a degree which did not necessitate mandatory restrictions. While the District appreciates the compliance, the reduced sales represent somewhat of a skew in the data, when compared to a "normal" year. Therefore, we expanded the analysis in Step #2.

We are planning to proceed as indicated above, and are open to input or suggestions related to the scheduling, or any of the other items mentioned above. I believe that the SCMWD is in a unique position, as they are substantially more sophisticated with regards to hydraulic modeling and future planning, than almost all of the rural systems which YTG has had interaction. I believe that this will be beneficial to the Conservation Planning process and also allow them a more detailed tracking system related to the effect of the implementation of the conservation methods, once determined. This will be enhanced by the creation and implementation of the GIS system, which is underway.

If you have any questions or comments, please contact me.

Sincerely,

YOUNG TECHNOLOGY GROUP

Ken Young, P.E., Principal

cc: David K. Simpson, SCMWD District Manager