COLORADO DROUGHT AND WATER SUPPLY UPDATE 2007

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Colorado Water Conservation Board

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Jean Van Pelt of the Southeast Colorado Water Conservancy District served as the project manager and provided insightful comments on the survey instrument and initial results. Her leadership was invaluable throughout the project.

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EXECUTIVE SUMMARY

Water is fundamental to Colorado and the life and livelihood of all her citizens. Drought is a naturally recurring phenomena that can have significant impacts on public water supplies across the state. The Colorado Drought and Water Supply Update 2007 (CDWSU) was conducted to obtain new information on the current status of drought planning and preparedness, water conservation planning and programs, and water supply. This study was conducted for the Colorado Water Conservation Board with the assistance of the Southeastern Colorado Water Conservancy District. The research team included Aquacraft, Inc., National Research Center Inc. (NRC) and Aspen Media and Market Research.

Focused on municipal and urban water providers in Colorado the CDWSU implemented a detailed telephone survey to evaluate key components of water supply planning. A similar study was conducted in 2003 with a much broader focus that included agriculture and other water use sectors in the state (Bouvette, et. al., 2003). The 2007 CDWSU had a more limited schedule and budget, hence the focus was restricted to municipal and urban water providers.

Response Rate

The response rate to the telephone survey was excellent. By late September, when the survey effort was ended, a total of 200 of the 324 providers had completed the survey, for a response rate of 62 percent. Most impressively, these agencies reportedly provided water to more than 4.2 million Coloradoans, more than 85 percent of the State's population.

Findings – Drought Status and Preparedness

- The effects of Colorado's recent drought (1999-2003) still linger among municipal providers. Although snowpack in Colorado improved after the extremely dry year in 2002, the state as a whole has not exceeded an average snowpack level since 1998.

- The majority (64 percent) of respondents indicated that they were "fully recovered" from the recent drought, 24 percent indicated that they were "about halfway to recovery", and 4 percent reported that their agency was still in severe drought.

- Six basins had snowpack below 80% of average in 2006 and 2007. This has resulted in a slow recovery of water supplies for a number of Colorado providers.

- Only 27 percent of Colorado municipal water providers had a drought response plan in place and only 37 percent had assigned someone to be in charge of drought planning.

- There is discrepancy in drought planning between large urban providers and smaller rural agencies. While most urban providers had a drought plan in place, the majority of Colorado water providers consisting predominantly of smaller, rural utilities had not developed a drought response plan.

- The lack of drought response planning was an issue in all seven Colorado Water Divisions.

Findings – Water Conservation Planning and Programs

- 48 percent of Colorado utilities either had a water conservation plan or were in progress developing one. But a similar number of agencies (48 percent) did not have a conservation plan on the books or in progress.

- It was small utilities that did not have a conservation plan. Only 8 percent of the population resides in an area not covered by a conservation plan.

- Conservation planning activities have accelerated in recent years. More than 70 percent of the existing and pending conservation plans in Colorado were completed since 2004.

- Only 30 percent of respondents had a water conservation program budget, nearly 70 percent did not.

- The total utility funding for water conservation in Colorado in 2007 was $11,224,500. However, $8,000,000 of this came from a single agency.

- The median conservation program budget was $25,000 – so half of the programs in the state had a budget smaller than $25,000.

- The importance of offsetting the increased demand of future growth through conservation was rated at an average of 3.4 on a scale where 1 is not at all important and 5 is extremely important.

- The most popular conservation program tool was residential indoor audits and leak detection. This type of program was implemented at 35 percent of the responding agencies. Incentives for the purchase of efficient toilets were implemented at 22 percent and showerhead and clothes washer programs at 17 and 15 percent respectively.

Findings – Climate Change and Long Term Planning

- Sixty percent of the agencies surveyed had water supply master plans for raw and/or treated water and 35 percent did not have such plans. This result was identical to what was found in the 2003 survey.

- Generally the prevalence of water supply master plans in 2007 is evenly spread across Colorado's seven water divisions (between 50 and 65 percent had a long range plan), but Division 3 – Rio Grande – had a significant lower rate of supply master planning.

- The availability of new supplies, peak demands, population change, changes in usage patterns, and drought recurrence topped the list of considerations for water utilities when conducting long term supply planning.

- About 27 percent of the survey respondents had considered the impact of climate change on long term water supply planning while 72 percent had not.

Findings – Needs Assessment for Colorado Water Providers

- Respondents expressed strong support for state assistance to Colorado water providers.

- The area of greatest need was funding project evaluations and feasibility studies followed by loans for capital projects, grants for planning activities, and grants for infrastructure management.

- Other areas of high need included communicating the value of water, improving conservation planning, and various loan programs.

- Respondents expressed strong support (85 percent in favor) for the State implementing future drought assessment surveys such as this project.

- Less than 50 percent of the responding agencies collected data in support of water conservation planning.

- More than 85 percent of the agencies surveyed expressed interest in contributing data to a statewide water data repository project.

- Colorado water providers want the State to conduct statewide water availability research. Strong support was expressed for statewide water availability studies with 82 percent of respondents supporting the idea and only 10 percent opposed.

INTRODUCTION

Water is fundamental to Colorado and the life and livelihood of all her citizens. Drought is a naturally recurring phenomena that can have significant impacts on public water supplies across the state. The Colorado Drought and Water Supply Update 2007 (CDWSU) was conducted to obtain new information on the current status of drought planning and preparedness, water conservation planning and programs, and water supply.

Focused on municipal and urban water providers in Colorado the CDWSU implemented a detailed telephone survey to evaluate key components of water supply planning. A similar study was conducted in 2003 with a much broader focus that included agriculture and other water use sectors in the state (Bouvette, et. al., 2003). The 2007 CDWSU had a more limited schedule and budget, hence the focus was restricted to municipal and urban water providers.

Some Coloradoans can recall the drought of the 1950s (1950-56) that for many years defined dry years for water planners. But it is the recent drought of 2000-03, where many regions of the state experienced the driest conditions in instrumented history, that has propelled interest in drought planning and response as well as water conservation programs and planning. Significant planning efforts such as the Statewide Water Supply Initiative (SWSI) Phase 1 and Phase 2 and the 1177 basin roundtable process exemplify renewed interest in broader and more coordinated water planning on a broad level.

The Colorado state government and the CWCB, recognizing the importance of drought preparedness and water conservation planning, conduct periodic assessments of the water supply, drought conditions, and planning initiatives of water suppliers and users in Colorado. The 2007 CDWSU is the latest of these efforts. The results of this study, which includes responses from 200 municipal providers serving more than 4.2 million Coloradoans (approximately 85% of the state population), provide a snapshot of the status of water planning in the State. This study identifies strengths and weaknesses in current water planning efforts and provides a basic needs assessment for decision makers to consider when developing new policy initiatives.

The Colorado Water Conservation Board commissioned the 2007 CDWSU and contracted with the Southeastern Colorado Water Conservancy District (SCWCD) who in turn contracted with Aquacraft, Inc. Water Engineering and Management of Boulder, Colorado to perform the research. Aquacraft teamed with subcontractors National Research Center, Inc.(NRC) and Aspen Media and Market Research to complete the project. Jean Van Pelt of the Southeastern Colorado Water Conservancy District served as the project manager.

Current Drought Status

According to the U.S. Drought Monitor web site run by the National Drought Mitigation Center (NDCM) at the University of Nebraska, Colorado is not experiencing any significant drought conditions at the moment. The NDCM maintains climate and drought data for the entire United States and publishes regular updates on the web. Figure 1 shows the national drought monitor from January 8, 2008. Here the serious drought in the Southeast can be seen. Figure 2 shows the drought monitor for the State of Colorado from the NDCM. The entire eastern portion

of the state is registering abnormally low precipitation, but the status of the mountain regions is normal.

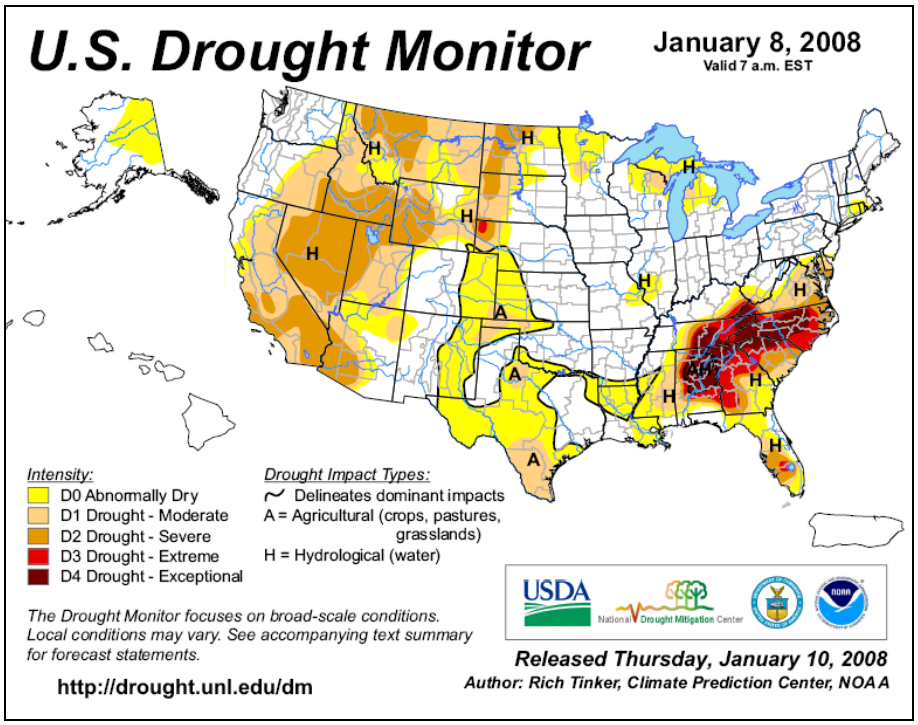


Figure 1: Drought monitor for the United States

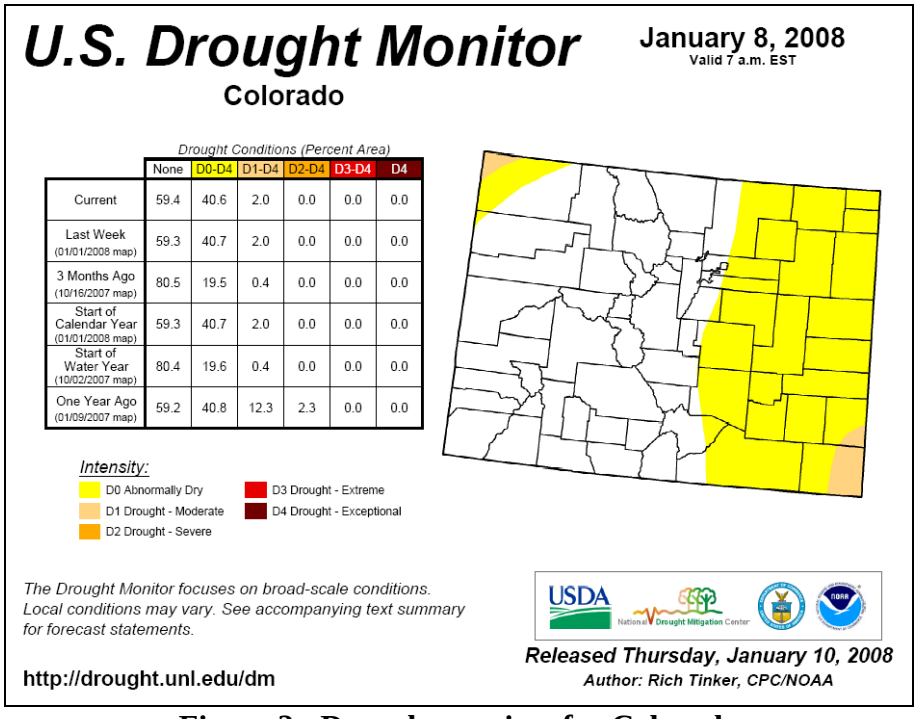


Figure 2: Drought monitor for Colorado

Even though the drought monitor site shows large areas of Colorado to be relatively drought free in January 2008, results from the survey conducted for this study indicated that 4% of responding water providers were still in "severe" drought and 24% were about half way to recovery from the 1999-2003 drought.

Overview of Report

This report was designed to provide a snapshot of water planning related to drought and conservation in Colorado in 2007. The authors have endeavored to make the report easily accessible and to put key findings where they can be found quickly. The Executive Summary presents a quick overview of the research and the essential findings. Most readers can simply read the Executive Summary and get a good understanding of the project and the key findings. Details of the research methodology, survey design, and survey implementation are presented in the Methodology chapter.

Results from the survey are presented in the following chapters:

- Drought Status and Preparedness
- Water Conservation Planning and Programs
- Climate Change and Long Term Planning
- Needs Assessment From Colorado Water Providers
- Conclusions and Recommendations

A copy of the survey instrument used in this study is presented in Appendix A. A summary of all responses to the survey is presented in Appendix B and much of this information is presented in the body of this report. A summary of all responses to the survey by Colorado Water Division is presented in Appendix C. Questions and comments about this study, the methodology, the findings, etc. can be directed to Peter Mayer – mayer@aquacraft.com.

METHODOLOGY

The Colorado Drought and Water Supply Update 2007 (CDWSU) was implemented to obtain new information on the current status of drought planning and preparedness, water conservation planning and programs, and water supply. A similar study was completed in 2003 with a broader focus that included municipal, agriculture and other water use sectors in the state (Bouvette, et. al., 2003). The 2007 CDWSU had a more limited schedule and budget and as such focused on a telephone survey of municipal and urban water providers.

Survey Planning and Instrument Development

The 2003 (Bouvette, et. al.) study was used as a starting point for the 2007 CDWSU design. Copies of the 2003 final report, survey instrument, survey response database, and a contact list of utilities and phone numbers were obtained at the beginning of the process.

Using the contact list from the 2003 study, the research team identified all the municipal water providers for inclusion in the 2007 study. This list was reviewed by the research team and CWCB staff to update missing contact information. The final list contained 395 municipal water providers. Once interviewing began, 37 on the list were identified as duplicates and correct phone numbers could not be located for 34 providers, so 324 agencies comprised the survey population for this study.

NRC and Aquacraft staff worked closely with Veva McCaig of the CWCB and Jean Van Pelt of the Southeastern Colorado Water Conservancy District to develop the survey instrument for the current study. The research team carefully reviewed the 2003 survey instrument and selected a number of questions to include in the 2007 survey that would permit a useful comparison of results. For those selected questions, virtually identical wording was used in the 2007 survey. Additional subject areas were then identified and new questions were crafted. Several iterations of the draft instrument were developed and reviewed with each successive version building upon the previous version. The final survey instrument contained 68 questions some with multiple parts.

Once the content of the telephone survey script was finalized, a meeting with the research team and the implementation team, Aspen Media and Market Research, was held in Aspen Media's offices in Boulder. Aspen Media is a Colorado company specializing in telephone research and surveying. At this meeting the researchers went through the survey line by line with the telephone implementation team. This process resulted in some changes in question order and wording to increase the ease and flow of the interview. The version of the survey instrument that was completed after this meeting became the "final" telephone script that was implemented by Aspen Media. This final version can be found in Appendix A.

Survey Implementation

Aspen Media programmed the survey and sample into their computer aided telephone interview (CATI) system. CATI manages the list of contacts, keeping track of the number of attempts to call each contact and the disposition of each call (e.g. no answer, refused interview, rescheduled interview, completed interview). The CATI system was also used to schedule call

backs at more appropriate times for the interviewees. Questions and skip patterns are programmed into CATI so interviewers are automatically "skipped" to the appropriate question based on the individual responses being given.

The research team met with all the Aspen Media telephone interviewers who would be participating in the project to review the telephone script. The overall goal for the research was discussed as was each question in the survey. Survey implementation began in mid-July 2007 with Aspen Media interviewers phoning municipal/urban water providers across the state. In early September Aspen Media provided a list of respondents and non-respondents to Aquacraft and NRC. Although the response rate was quite good, a list of 20 key non-respondents were identified and Aspen Media was asked to focus their final efforts on these remaining few agencies.

Use of a CATI system means all collected data are entered into the dataset at the time of the interview. Before the data were analyzed, an in-depth cleaning of the data was conducted by Aspen Media as part of quality control procedures. Aspen Media then provided the electronic data set to Sonya Wytinck at NRC.

Response Rate

By late September, when the survey effort was ended, a total of 200 of the 324 providers with contact information had completed the survey, for a response rate of 62 percent. Most impressively, these agencies reportedly provided water to more than 4.2 million Coloradoans, more than 85 percent of the State's population. Figure 3 shows the response rates for each Water Division.

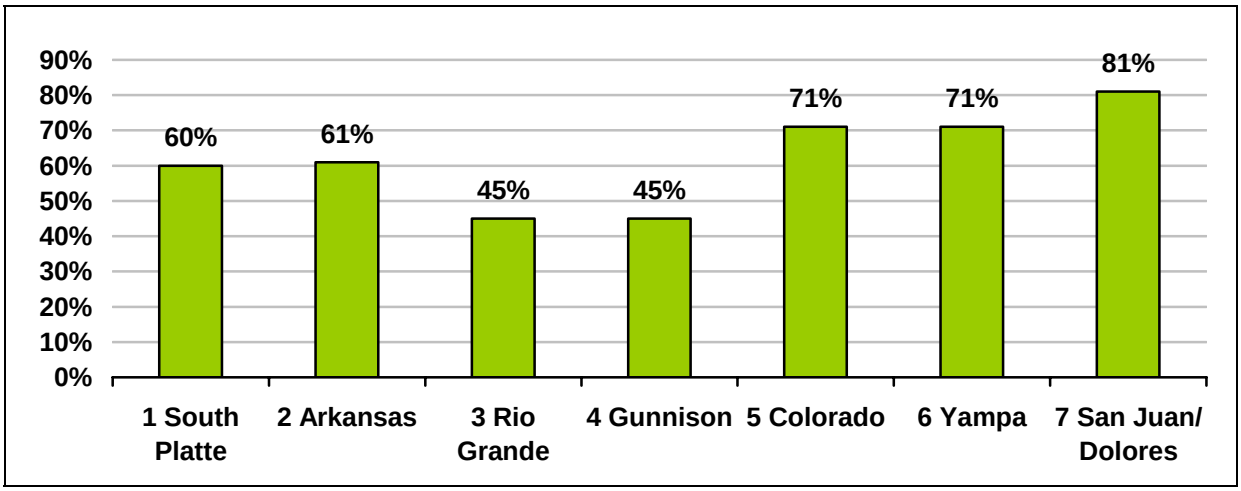


Figure 3: Response Rates by Water Division

Divisions 1 and 2 are the most populous areas of Colorado and they are the areas that the majority of our responding agencies serve.

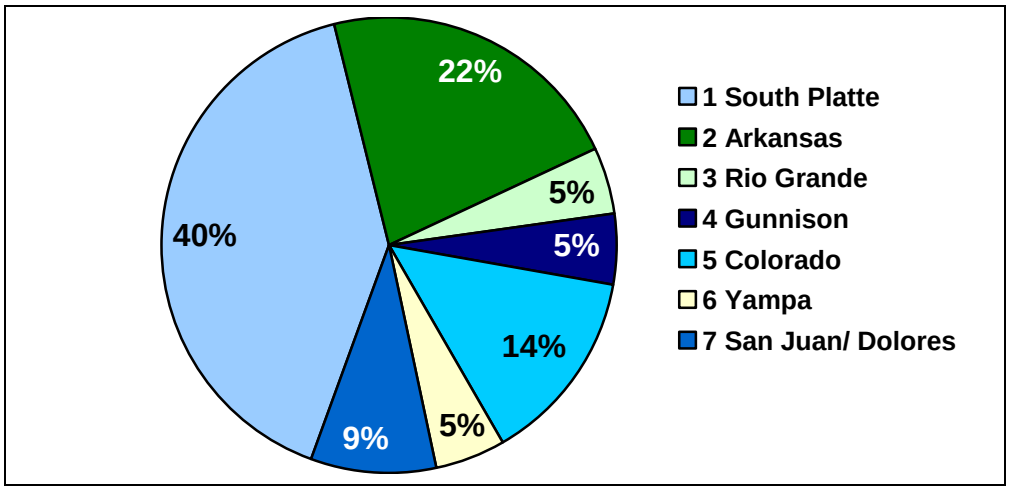


Figure 4: Proportion of Population Served by Respondents in each Water District

Data Analysis

A summary of preliminary survey results was prepared and provided to the project team, project managers and sponsors for an initial review. Additionally, an electronic version of the survey responses from the 2003 drought and water supply update was obtained from Tracy Bouvette. This data file enabled the research team to easily compare survey responses from the 2003 and 2007 surveys.

Analysis of the survey response data was conducted by Aquacraft and NRC and the key results are presented in this report. The analysis effort was divided into key subject areas defined within the survey. These divisions also form the basis for chapter divisions within the final report. Electronic versions of the survey response dataset were provided to the CWCB and are also maintained by Aquacraft and NRC so that this information can be used again when these data are updated over the coming years. Tracking trends in the water industry in Colorado is an important component of this research.

DROUGHT STATUS AND PREPAREDNESS

The effects of Colorado's recent drought (1999-2003) still linger among municipal providers. Although snowpack in Colorado improved after the extremely dry year in 2002, the state as a whole has not exceeded an average snowpack level since 1998. Figure 5 shows the snowpack level in Colorado (averaged across all river basins) on May 1 over the 40 year period from 1968 – 2007. The overlayed trend line indicates that the past 15 years have been substantially drier than the previous. From 1968 – 1987 there were 14 years in which snowpack exceeded the average on May 1. From 1988 – 2007 there were only 5 years in which snowpack exceeded the average.

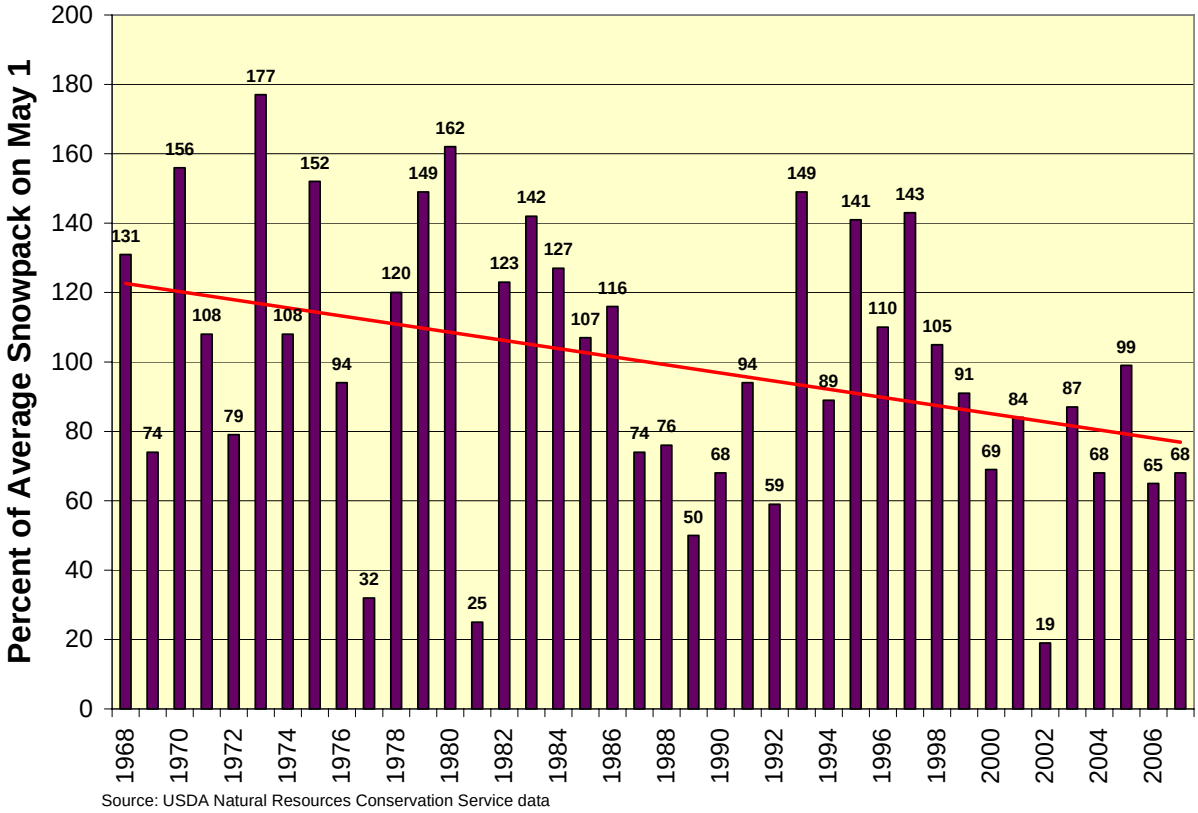
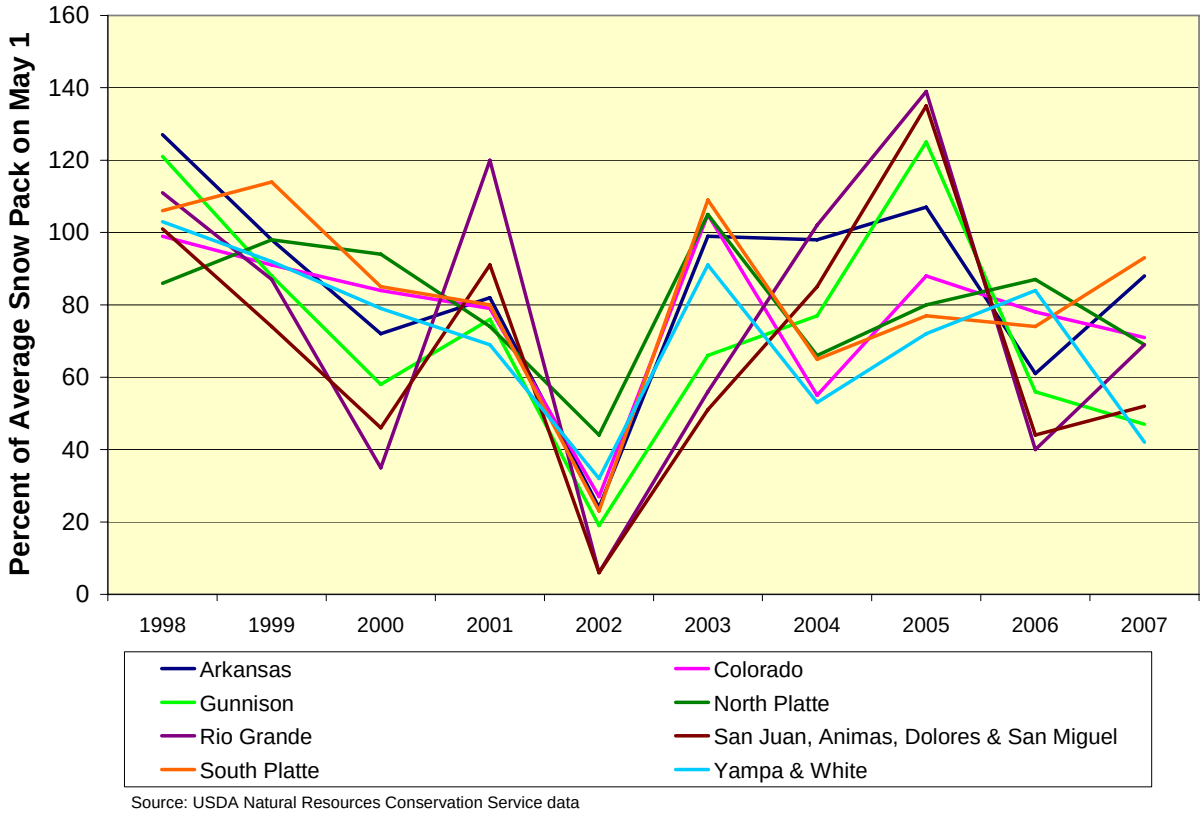


Figure 5: Colorado average snowpack on May 1, 40 year time series (1968 – 2007)

Snowpack over the past 10 years from 1998 – 2007 is shown for the eight major river basins in Colorado in Figure 6. This covers Colorado's most recent drought period and provides a simple look at likely recovery patterns across the State. While 2002 was the single worst year for each of the eight river basins, snowpack was below 60% of average in 3 basins in 2006 and 2007. Six basins had snowpack below 80% of average in 2006 and 2007. This has resulted in a slow recovery of water supplies for a number of Colorado providers.



Source: USDA Natural Resources Conservation Service data

Figure 6: Colorado river basin snowpack on May 1, 10 year time series (1998 – 2007)

Drought Status Among Colorado Providers

The current drought status of municipal water providers as reported in the 2007 CDWSU survey is presented in Table 1. The current implementation of drought response measures is shown in Table 2. Although the majority of respondents indicated that they were "fully recovered" from the recent drought, 24 percent indicated that they were "about halfway to recovery", and 4 percent reported that their utility was still in severe drought. Five percent of respondents indicated that they implemented distinct drought response measures in 2007 while 94 percent did not. This suggests that most of the agencies that reported being "about half way to recovery" felt confident enough about their supply status and current climate conditions to remove drought restrictions from their customers.

Table 1: Extent of recovery from recent drought

To what extent have water supplies recovered from recent drought (1999-2003)?	***Number of Respondents***	***Percent of Respondents***
Still in severe drought	7	4%
About half way to recovery	47	24%
Fully recovered, reservoirs are full	127	64%
Don't know/ refused	19	10%
Total	200	100%

Table 2: Drought response implementation status

Currently implementing any drought response measures?	*Number of Respondents*	*Percent of Respondents*
Yes	10	5%
No	188	94%
Not sure/depends	2	1%
Total	200	100%

A breakdown of drought recovery status by water division is shown in Table 3. Here it can be seen that Division 3 Rio Grande remained in the most serious drought situation with only 33 percent of providers fully recovered from the recent drought. In contrast, in Division 6 Yampa, 90 percent of respondents reported full recovery.

Table 3: Extent of drought recovery by water division

To what extent have your water supplies recovered from the recent drought (from about 1999 to 2003)?							
	Colorado Water Division						
	1 South Platte	*2 Arkansas*	*3 Rio Grande*	*4 Gunnison*	*5 Colorado*	*6 Yampa*	*7 San Juan/ Dolores*
Still in severe drought	4%	0%	11%	0%	7%	0%	6%
About half way to recovery	18%	32%	44%	30%	19%	10%	29%
Fully recovered, reservoirs are full	67%	59%	33%	60%	67%	90%	53%
Don't know/refused	11%	9%	11%	10%	7%	0%	12%
Total	100%	100%	100%	100%	100%	100%	100%

Drought Response Planning

Only 27 percent of Colorado municipal water providers had a drought response plan in place while 37 percent had assigned someone to be in charge of drought planning. Most of the large providers had a plan and, based on reported population served, it was estimated that approximately 71 percent of the population was served by a provider that had a drought plan. These results are shown in Table 4. This points out a discrepancy in drought planning between large urban providers and smaller rural agencies. The majority of Colorado water providers consisting predominantly of smaller, rural utilities had not developed a drought response plan. These utilities serve more than 1 million Coloradoans. This could impede their ability to respond to a rapidly developing drought situation similar to what was encountered in 2002. A further potential problem is that a majority of water agencies (63%) did not have a staff person in charge of drought planning. Staffing levels at many small agencies simply may not afford such an assignment to be made until drought conditions are encountered.

Table 4: Drought response planning status

Does your organization have a drought response plan?	*Number of Respondents*	*Percent of Respondents*	*Customers Represented*	*Percent of Customers*
Yes	54	27%	3,008,841	71%
No	138	69%	1,116,416	26%
Don't know/ refused	8	4%	95,063	2%
Total	200	100%	4,220,320	100%

The lack of drought response planning was an issue in all seven Colorado Water Divisions. None of the respondents from Division 6 had a drought response plan in place and only 11 percent of the respondents from Division 3 had a drought plan. Division 1 led the way with 33% of providers reporting that they had a drought response plan.

In the 2003 Colorado Drought and Water Supply Assessment, 49 percent of respondents reported having a drought management plan in place compared with only 27 percent in the 2007 Update. The reduction in the number of agencies with a drought response plan in place is a surprising and troubling finding given the recurring likelihood of drought in Colorado. A possible explanation for the 20 percent decrease in the number of agencies reporting having a drought management plan is the recent drought itself. When the 2003 survey was conducted many agencies surveyed were still actively responding to drought conditions and may have responded "yes" to the question because drought measures were in place. This does not necessarily translate into having a drought response plan, on the shelf and ready to pull out and implement if necessary (in 2007).

A small minority of providers set aside money for implementing drought response measures in 2007. Only 10 percent of respondents (19 water providers) indicated that their agency had established a budget for possible drought response measures in 2007. The amount of money set aside by these respondents ranged from less than $5,000 to $3,000,000. The mean amount set aside for drought response was $467,000 and the median was $45,000.

WATER CONSERVATION PLANNING AND PROGRAMS

Water conservation is increasingly becoming an important component of water resource planning and management. Conservation can help a provider stretch their supply and is often the lowest cost planning alternative among new supply options. The original Colorado Water Conservation Act of 1991 (HB91-1154) created the Office of Water Conservation within the Colorado Water Conservation Board (CWCB). This act also required that all covered entities (retail water providers who sell 2,000 acre-feet or more of water annually) submit a water conservation plan to the CWCB for approval as a condition for receiving a CWCB grant or loan.

In 2004 the Colorado General Assembly, under HB04-1365, amended the role and duties of the Office of Water Conservation. This legislative effort is known as the Water Conservation Act of 2004. The 2004 Act amended the list of minimum required plan elements necessary of all water conservation plans needing CWCB approval. It also reaffirmed the requirement that all covered entities must have an approved water conservation plan on file with the State and that each plan must comply, at a minimum, with the newly amended requisite plan elements.

Conservation Planning and Program Funding

The 2007 survey results indicated that 48 percent of Colorado utilities either had a water conservation plan or were in progress developing one. But a similar number of agencies (48 percent) did not have a conservation plan on the books or in progress (see Table 5). The agencies that had completed conservation plans were typically larger providers. As shown in Table 5, 92 percent of customers were represented by the agencies that had a conservation plan on the books or in progress. Only 8 percent of the population resided in an area not covered by a conservation plan. Future conservation planning outreach may be best targeted at small providers without dedicated staff as these were the organizations most in need of assistance in developing a conservation plan.

Table 5: Conservation planning status

Does your organization have a water conservation plan?	*Number of Respondents*	*Percent of Respondents*	*Customers Represented*	*Percent of Customers*
Yes	87	44%	3,804,447	90%
In progress	8	4%	73,313	2%
No	96	48%	330,613	8%
Don't know/ refused	9	5%	11,947	0%
Total	200	100%	4,220,320	100%

Conservation planning activities have accelerated in recent years. More than 70 percent of the existing and pending conservation plans in Colorado were completed since 2004. This suggests HB04-1365 is having a significant impact and is encouraging water providers to complete their conservation plans.

Water Division 1, 2, 4, and 7 led the way in conservation planning with between 50 and 53 percent of respondents reporting that a conservation plan was in place or pending. In

Divisions 3 and 6 only 20 percent of respondents had a plan in place. In Division 5, 40 percent of the agencies reported having a conservation plan.

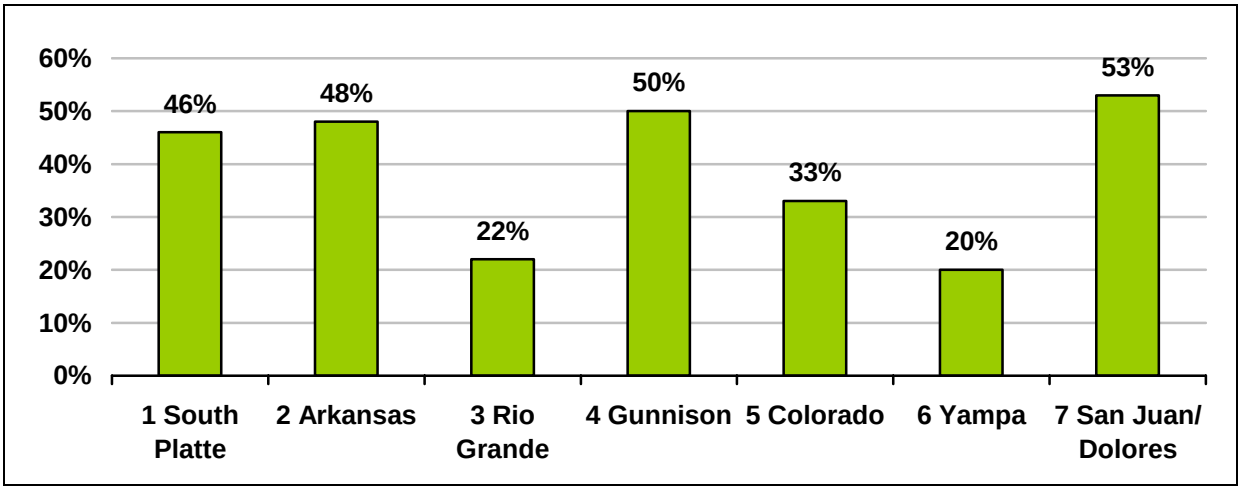


Figure 7: Percent of Agencies in Division who had a Water Conservation Plan

A relatively small percentage of Colorado water providers had a budget for water conservation programs. As shown in Table 6 only 30 percent of respondents had a water conservation program budget, nearly 70 percent did not. Of the 48% who had a water conservation plan or one in progress, 53% had funding for water conservation programs.

Table 6: Conservation program budget status

Does your organization have a budget for water conservation programs?	***Number***	***Percent***
Yes	59	30%
No	137	69%
Don't know/ refused	4	2%
Total	200	100%

The survey asked agencies that had a conservation budget, about program funding for 2007. The total utility funding for water conservation in Colorado in 2007 was $11,224,500. However, $8,000,000 of this came from a single agency. The median conservation program budget was $25,000 – so half of the programs in the state had a budget smaller than $25,000. The smallest reported conservation budget was $500. The overall average budget was $273,768, but this number was heavily influenced by the single enormous budget. None of the respondents from Division 4 had a conservation program budget. Less than 10 percent of the respondents from Division 6 and 7 had a conservation program budget.

Rationale for Conservation

Water providers were asked their reasons for having a conservation plan or program. Although, as discussed above, state mandates have increased the number of conservation plans, most agencies were implementing conservation for other reasons, particularly because it is understood to be the "right thing to do". Drought preparedness and environmental benefits were

also important factors for agencies with a plan, indicating that conservation is part of a long term water management program for these agencies.

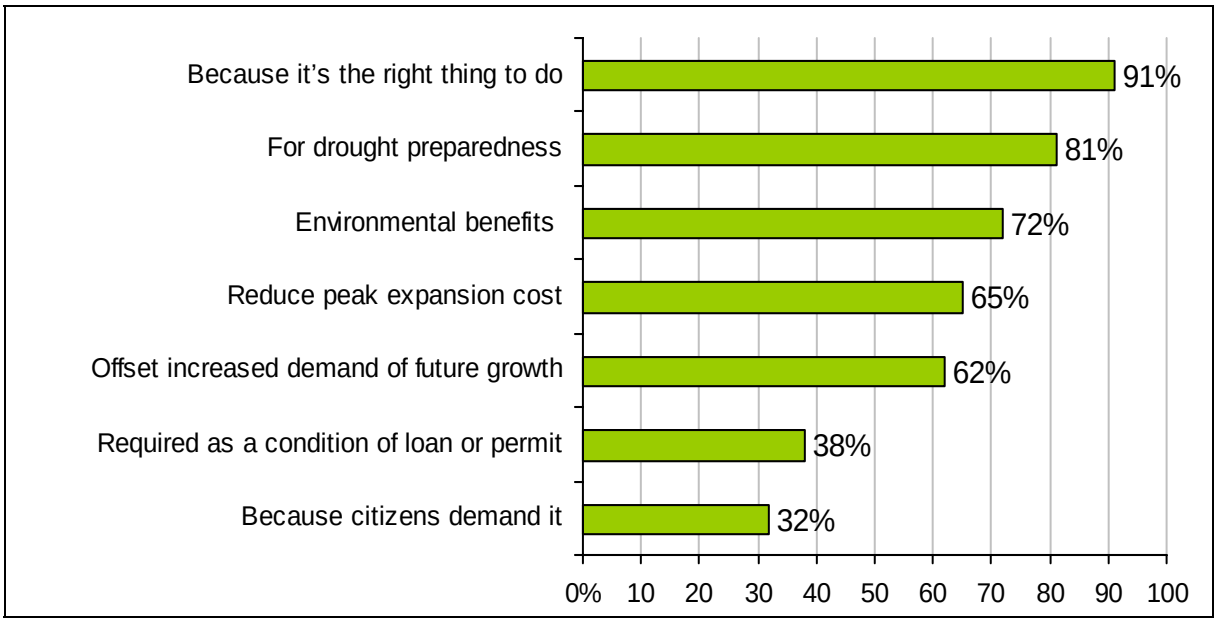


Figure 8: Reasons for having a conservation plan or program

Ability and Importance of Conservation to Offset Future Demand

The average rating that Colorado water providers gave their ability to offset future demand through water conservation programs was 3.2 on a scale where 1 is poor ability and 5 is excellent ability to offset demands. Agencies with conservation plans in place were more likely to be optimistic about the capability of conservation to meet future needs. Those with a plan in place or pending rated their ability to offset future demand with conservation at 3.4 vs. 3.1 for agencies without a plan. This also defines a split between larger urban water providers and smaller rural providers who make up the bulk of agencies without a conservation plan.

The importance of offsetting the increased demand of future growth through conservation was rated at an average of 3.4 on a scale where 1 is not at all important and 5 is extremely important. Twenty one percent of respondents answered with a score of 1 or 2 indicating that they did not see conservation as particularly important to meeting future demands. Respondents with a conservation plan in place or pending tended to see conservation as more important for offsetting future demand. These agencies had an average score of 3.7 vs. 3.2 for agencies without a plan.

Preferred Conservation Program Tools

Public information campaigns and increasing block rate billing structures were the most popular water conservation program tools among Colorado providers. Sixty two percent of respondents use public information campaigns such as bill stuffers, newsletters, brochures, etc. Thirty eight percent of respondents implement school conservation education programs. An increasing block rate water billing structure had been implemented in 56 percent of Colorado

agencies. This compares favorably to the national average which shows that overall about 30 percent of utilities use an increasing block rate structure (Mayer et.al., 2007).

Standard residential indoor conservation program measures were implemented at relatively few water agencies in Colorado. Table 7 provides a ranked list of the residential indoor conservation program measures implemented. The most popular program tools were residential indoor audits and leak detection. This type of program was implemented at 35 percent of the responding agencies. Incentives for the purchase of efficient toilets were implemented at 22 percent and showerhead and clothes washer programs at 17 and 15 percent respectively.

Outdoor conservation program tools were also implemented at relatively low rates (as shown in Table 8). Automatic irrigation system audits were the most popular measure with 30 percent of respondents offering that service. Programs that offer landscape design assistance and incentives for installing water-wise landscapes were practiced by about 20 percent of respondents. Incentive programs for the purchase of irrigation technology were implemented by 12 percent of respondents.

Table 7: Indoor residential conservation program tools

Does your organization use indoor residential use tools and programs?	***Yes***	***No***	***Don't know/ refused***	***Total***
Residential indoor audit and leak detection	35%	64%	1%	100%
Efficient toilet incentives	22%	77%	2%	100%
Showerhead incentive/distribution	17%	82%	2%	100%
Residential clothes washer incentives	15%	84%	1%	100%
Faucet aerator (<1.5 gpm) distribution	15%	83%	2%	100%
Dishwasher incentives	7%	92%	2%	100%
Low income retrofit program	4%	95%	2%	100%
Hot water recirculation system incentives	3%	96%	2%	100%

Table 8: Outdoor conservation program tools

Does your organization use outdoor use tools and programs?	***Yes***	***No***	***Don't know/ refused***	***Total***
Irrigation system audits	30%	69%	1%	100%
Water-wise landscape design assistance	20%	79%	2%	100%
Water-wise landscape incentives	19%	80%	2%	100%
Irrigation technology incentives (smart controllers, soil sensors, etc.)	12%	88%	1%	100%

Commercial conservation program tools had a very low implementation rate as shown in Table 9. Water efficiency audits offered to commercial, industrial and institutional customers

was the most frequently implemented program, but only 5 percent of respondents offered this service. Four percent offered financial incentives to commercial customers to upgrade fixtures and appliances. Toilet, urinal, clothes washer, and pre-rinse spray valve incentives were implemented by 3 percent (or less) or respondents. Commercial conservation is an area where Colorado providers could increase their conservation program implementation.

Table 9: Commercial conservation program tools

Does your organization use commercial tools and programs?	***Yes***	***No***	***Don't know/ refused***	***Total***
Commercial Industrial Institutional audits and efficiency planning	5%	94%	2%	100%
Financial incentives for commercial water-saving upgrades	4%	95%	2%	100%
Commercial toilet and urinal incentives	3%	96%	1%	100%
Commercial clothes washer incentives	2%	98%	1%	100%
Distribute pre-rinse spray heads to restaurants	2%	98%	1%	100%

Regulatory tools and programs played a large role in Colorado water conservation efforts. As shown in Table 10, more than 50 percent of respondents had an ordinance against water waste and nearly 50 percent utilized time of day irrigation restrictions. Other popular regulatory measures included landscape and irrigation standards for new development (implemented by 38 percent of agencies) water efficient plumbing codes (36 percent) and landscaping guidelines for public facilities (29 percent).

Table 10: Regulatory Conservation Tools and Programs

Does your organization use regulatory tools and programs.	***Yes***	***No***	***Don't know/ refused***	***Total***
Ordinance against water waste	55%	45%	1%	100%
Time-of-day irrigation restrictions	49%	51%	1%	100%
Landscape & irrigation standards for new development	38%	62%	1%	100%
Water efficiency plumbing codes for new buildings	36%	59%	5%	100%
Require dedicated tap for irrigation for large properties	31%	67%	3%	100%
Establish landscaping guidelines for public facilities	29%	69%	3%	100%
Limit turf areas & or narrow strips	21%	77%	2%	100%
Require new car washes to recycle	17%	77%	7%	100%
Restrictive covenants ordinance - no prohibition of xeriscape or mandate for turf	15%	83%	3%	100%
Soil amendment ordinance (new construction)	12%	87%	2%	100%
Require rain shut-off devices	5%	95%	1%	100%
Prohibit new single-pass cooling systems	4%	92%	5%	100%
Retrofit on resale ordinance	3%	91%	6%	100%

CLIMATE CHANGE AND LONG TERM PLANNING

Long term water supply planning is a staple of Colorado water providers. In recent years the threatening wrinkle of climate change has entered the long term supply planning picture. The 2007 CDWSU survey sought information on long term supply planning and how utilities in Colorado have incorporated climate variability and uncertainty into their forecasts. The results indicate that climate change was slowly being incorporated into water supply planning, but was by no means the norm.

Prevalence of Water Supply Master Planning

Sixty percent of the agencies surveyed had water supply master plans for raw and/or treated water and 35 percent did not have such plans. This result was identical to what was found in the 2003 survey where 60 percent reported having a water supply master plan. In 2003, 37 percent of the respondents who did not have a water supply master plan indicated that they had plans to develop one in the future. The results from the 2007 survey suggest that few, if any, of these agencies developed the plans as intended.

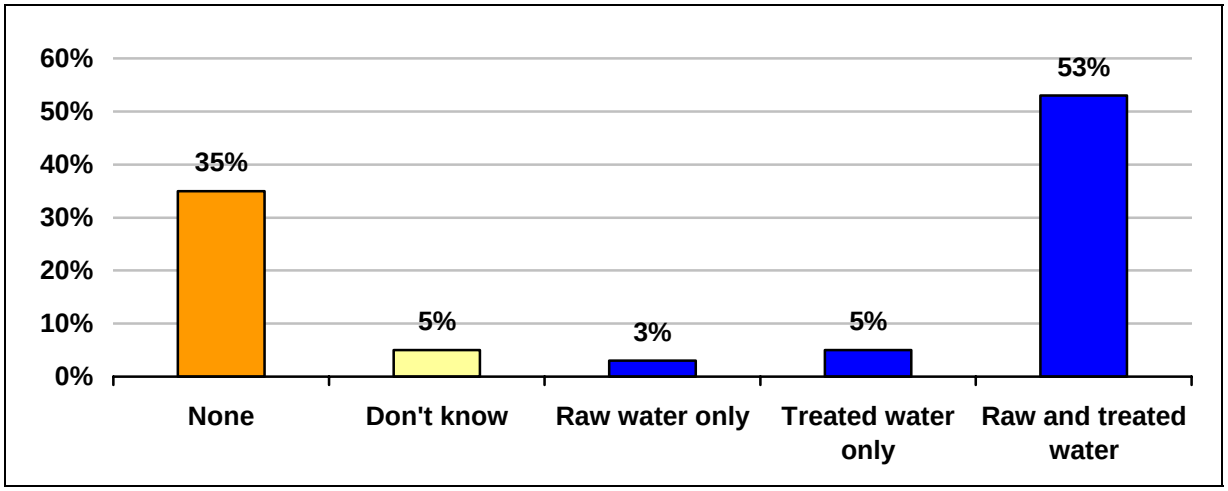


Figure 9: Do you have a water supply master plan?

Generally the prevalence of water supply master plans in 2007 was evenly spread across Colorado's seven water divisions (between 50 and 65 percent have a long range plan), but Division 3 – Rio Grande – had a significantly lower rate of supply master planning. In Division 3, only 33 percent of respondents had a raw and/or treated water supply master plan. Ideally all water providers should have a water supply master plan or equivalent document that identifies long term water supply goals and options for providing safe and clean water to customers into the future.

Key Considerations in Long Term Supply Planning

The availability of new supplies, peak demands, population change, changes in usage patterns, and drought recurrence topped the list of considerations for water utilities when conducting long term supply planning (see Table 11). More than 70 percent of respondents listed these five items. Snow pack was the next most frequent consideration at 63 percent

followed by groundwater levels at 58 percent. Climate variability (38 percent) and El Niño/La Nina conditions (30 percent) were among the least considered long term supply planning concerns.

Table 11: Issues Considered in Long Term Supply Planning

Which of the following are considerations in your organization's long term water supply and conservation planning? Has your organization considered…?	***Yes***	***No***	***Don't know/ refused***	***Total***
Climate variability	38%	61%	2%	100%
Snow pack	63%	36%	1%	100%
El Niño/La Nina conditions	30%	70%	1%	100%
Ground water levels	58%	42%	0%	100%
Drought recurrence	70%	30%	0%	100%
Population change	77%	24%	0%	100%
Availability of new water supply	79%	22%	0%	100%
Changes in water use/demand patterns	73%	28%	0%	100%
Peak demand	78%	22%	0%	100%

Is Climate Change Considered?

Given the typical ten year planning cycle, this suggests that Colorado utilities have taken climate change into consideration when their plans were updated. As a scientific consensus on the issue of climate change (i.e. that it is real and will have serious impacts on North America) has only been achieved over the past five years, Colorado utilities appear to be responding fairly quickly and are actively involved in incorporating the uncertainties of climate change into long range plans. This will be an important question to track in future iterations of this survey.

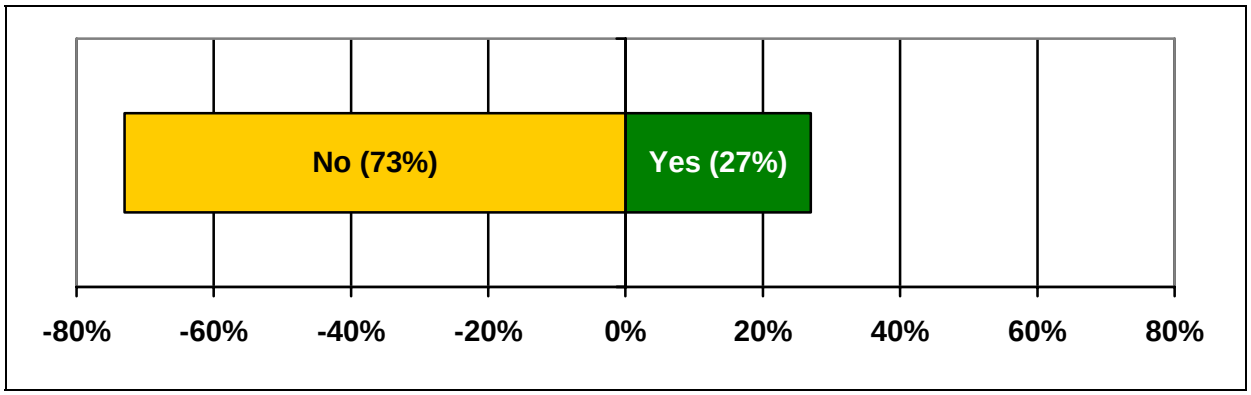


Figure 10: Have You Considered Climate Change In Long Term Planning?

The 54 providers (27 percent) said they considered the impact of climate change were asked to specify how it had been incorporated in their long term planning. As seen in Table 12, most of these providers (94 percent) had at least started informal discussions and 43 percent had started formal discussions. Many of these utilities were actively seeking new supplies as a response (67 percent) and 50 percent had increased their water conservation program efforts.

Only about one third of these agencies (37 percent) had fully integrated potential climate change impacts into long range water supply planning.

Table 12: How Have Climate Change Impacts Been Considered?

How has your organization integrated potential impacts into long term planning?	***Yes***	***No***	***Don't know/ refused***	***Total***
Started informal discussions	94%	4%	2%	100%
Started formal discussions	43%	56%	2%	100%
Implemented formal research/study	28%	69%	4%	100%
Actively started seeking new supplies	67%	33%	0%	100%
Increased the expected drought severity scenarios	50%	46%	4%	100%
Full integrated them into your long term plan	37%	59%	4%	100%
Increased water conservation program efforts	50%	48%	2%	100%

NEEDS ASSESSMENT FOR COLORADO WATER PROVIDERS

Colorado municipal water providers frequently look to the State for assistance with planning for conservation, drought response, and water supply. In general providers look to the State for grant funding for projects and planning studies rather than for technical information and research that is developed at the state level. Table 13 provides a ranked list of the areas of need identified by the surveyed providers. Respondents were asked to rank each need area on a scale where 1 is no need at all and 5 is extreme need. All items on the list were needed by at least some providers and the lowest mean score was 2.4. Providers indicated a stronger need for State grant and loan programs than for studies and assistance with cooperative agreements.

Table 13: Areas of Provider Need for State Assistance

For the following areas, how much does your organization needs assistance from the State of Colorado? **where 1=no need at all and 5=extreme need*	***Number reporting***	***Mean***	***Standard Error***
Grant funding for project evaluations/feasibility studies	198	3.6	.10
Loans for capital projects	198	3.5	.10
Grant funding for planning activities	198	3.5	.10
Grant funding to implement planning	198	3.5	.10
Grant funding for infrastructure management	198	3.5	.10
Communicating the value of water	199	3.2	.09
Create or improve conservation planning	199	3.0	.08
Loans for project evaluations/feasibility studies	197	3.0	.10
Loans for planning activities	198	3.0	.10
Improve or enhanced water conservation methods	199	2.9	.08
Create or improve master plans for future water supply and demand	199	2.9	.09
Improve public education and awareness	199	2.8	.08
Improve or enhance water conservation measurement methods	199	2.8	.08
Create or improve drought planning	199	2.8	.08
Pre-fabricated conservation programs and materials (e.g., “fixture rebate program in a box”, educational materials, bill stuffers)	199	2.7	.08
Technical information on climate and forecasting	199	2.7	.09
Conduct hydrologic studies	196	2.5	.10
Conduct water rights studies	198	2.5	.10
Create cooperative agreements	198	2.4	.09

The area of greatest need was funding project evaluations and feasibility studies followed by loans for capital projects, grants for planning activities, and grants for infrastructure management. Other areas of high need included communicating the value of water, improving conservation planning, and various loan programs.

Respondents expressed strong support for state assistance to Colorado water providers. Communicating the value of water and providing loans for capital projects topped the list of services they would like to see the Sate provide, followed by grant funding for project evaluations and planning activities, as well as improving public education and awareness. These results are shown in Table 14. In general there was strong support for state services in all areas listed in the survey. The lowest level of need for State assistance was for creating cooperative agreements.

Table 14: Provider Support for State Services

For these same areas for assistance; for each, please tell me how strongly you agree or disagree that the state should provide the service. **where 1=no need at all and 5=extreme need*	***Number reporting***	***Mean***	***Standard Error***
Communicating the value of water	200	3.9	.08
Loans for capital projects	200	3.9	.08
Grant funding for project evaluations/feasibility studies	200	3.8	.08
Grant funding for planning activities	200	3.8	.08
Grant funding to implement planning	200	3.8	.08
Improve public education and awareness	199	3.7	.08
Loans for project evaluations/feasibility studies	200	3.7	.08
Grant funding for infrastructure management	200	3.7	.09
Loans for planning activities	200	3.6	.08
Create or improve drought planning	200	3.5	.08
Conduct hydrologic studies	198	3.5	.09
Improve or enhanced water conservation methods	199	3.4	.08
Improve or enhance water conservation measurement methods	199	3.4	.08
Create or improve conservation planning	200	3.4	.08
Technical information on climate and forecasting	198	3.4	.08
Conduct water rights studies	199	3.3	.09
Create or improve master plans for future water supply and demand	200	3.2	.09
Pre-fabricated conservation programs and materials (e.g., “fixture rebate program in a box”, educational materials, bill stuffers)	199	3.2	.08
Create cooperative agreements	197	2.9	.08

Strong Support for Drought Assessment Projects

Respondents expressed strong support (85 percent in favor) for the State implementing future drought assessment surveys such as this project. There was clearly great interest in the State keeping track of drought and drought response efforts.

Data Collection and Reporting

Less than 50 percent of the responding agencies collected data in support of water conservation planning. Of the 85 agencies that indicated they collected data in support of

planning, almost all collected total consumption data and 88 percent collected per capita per day usage data. Eighty-six percent collected data on water loss (unaccounted for use), but only 42 percent collected data on the water saved through conservation programs.

Table 15: Data Metrics Collected by Colorado Providers

For which of the following metrics does your organization collect data? [Check all that apply]*	***Number of respondents***	***Percent of respondents***
Total consumption/demand	84	99%
Gallons per capita per day (GPCD)	75	88%
Water loss (unaccounted for water)	73	86%
Water saved by conservation	36	42%
Total	85	100.0%

**asked if the agency collects data, percents do not sum to 100% as respondents could choose more than one category.*

The 85 providers that did collect and maintain data seldom reported the data to any county, state, or federal agency. Nineteen percent responded that reported data to the State, but all other data reporting was between 0 and 2 percent. It was more common for these providers to report the data internally or to a board of directors, trustees, governing board, or city council.

Interest in Statewide Water Data and Water Research

More than 85 percent of the agencies surveyed expressed interest in contributing data to a statewide water data repository project. As shown in Table 16, 15 percent were "very interested" in the data repository project, 48 percent were "somewhat interested" and 26 percent were "slightly interested". Some agencies were concerned that some data might be proprietary and participation would probably depend upon the data sought by the State and the level of access granted to users. These comments can all be found in Appendix B. Ninety percent of the respondents said that data in a state repository would be useful for planning purposes and for making comparisons with other entities.

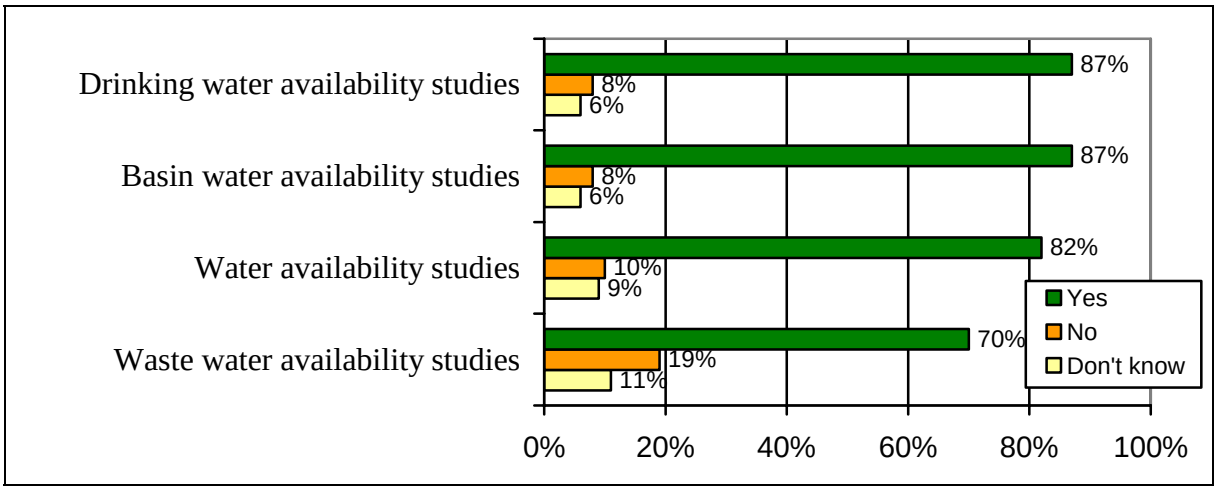


Figure 11: Do You Think the State Should Conduct Statewide Studies?

Colorado water providers want the State to conduct statewide water availability research. Strong support was expressed for statewide water availability studies with 82 percent of respondents supporting the idea and only 10 percent opposed. Eighty-seven percent supported the idea of the state conducting basin level water availability studies and only 8 percent opposed. Seventy percent of respondents were in favor of the state conducting statewide wastewater availability studies and 87 percent supported the idea of statewide drinking water availability studies. Clearly there is strong support for this type of research across the board.

Table 16: Interest in Statewide Data Repository Project

To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project?	***Number***	***Percent***
Not at all interested	19	10%
Slightly interested	52	26%
Somewhat interested	95	48%
Very interested	29	15%
DK/depends	5	3%
Total	200	100%

Information Access Preferences

E-mail and the internet are now the preferred delivery methods for water information from the State among water providers. Respondents were asked which communication methods they preferred and these results are shown in Table 17. Other popular communication methods were face to face meetings, US mail, and regional workshops and seminars. The least popular communication methods were attending CWCB board meetings, through the media, and through phone consultations. These results suggest that bolstering state web resources and internet communications would have broad support from Colorado water providers.

Table 17: Preferred Communication Methods

Which methods of communication you prefer for getting information from the state about water and drought issues. **where 1=the worst and 5=the best*	***Number reporting***	***Mean***	***Standard Error***
E-mail	199	4.0	.09
Internet	199	3.9	.09
Face-to-face	199	3.4	.09
Mail	199	3.3	.08
Regional Workshops/seminars	198	3.3	.08
Organizational meetings	198	3.0	.07
Phone consultations	199	2.3	.08
Through the media	199	2.2	.08
Attending CWCB Board Meetings	197	2.1	.07

CONCLUSIONS AND RECOMMENDATIONS

The 2007 Colorado Drought and Water Supply Update implemented an extensive telephone survey to 200 municipal water providers in the State. These providers serve a reported 4.2 million customers, which according to recent census data is more than 85 percent of the total population of Colorado. This suggests an excellent response rate to this survey among the major water providers in Colorado. Responses were received from all water divisions and from providers of all sizes.

The results from the Colorado Drought and Water Supply Update 2007 lead to a number of important conclusions and recommendations for decision makers to consider. There are clearly areas of strength and weakness in Colorado's overall municipal water supply, drought response, and conservation planning and the weaknesses in particular deserve close attention. Providers are generally supportive of the State's role in water supply planning and drought preparation and welcome efforts to assist by providing grants, loans, and information.

Current Drought Status in Colorado

The effects of Colorado's recent drought (1999-2003) still linger among municipal providers. Although snowpack in Colorado improved after the extremely dry year in 2002, the state as a whole has not exceeded an average snowpack level since 1998. While 2002 was the single worst year for each of the eight major Colorado river basins, snowpack was below 60 percent of average in 3 basins in 2006 and 2007. Six basins had snowpack below 80 percent of average in 2006 and 2007. This has resulted in a slow recovery of water supplies for a number of Colorado providers.

The majority of respondents to this survey indicated that they were "fully recovered" from the recent drought, but 24 percent indicated that they are "about halfway to recovery", and 4 percent reported that their utility was still in severe drought. Five percent of respondents indicated that they implemented distinct drought response measures in 2007 while 94 percent did not. This suggests that most of the agencies that reported being "about half way to recovery" feel confident enough about their supply status and current climate conditions to remove drought restrictions from their customers. Division 3 - Rio Grande remained in the most serious drought situation with only 33 percent of providers fully recovered from the recent drought. In contrast, in Division 6 - Yampa, 90 percent of respondents reported full recovery.

With respect to drought status there are a number of activities that the State could undertake. We recommend that the State enhance its activities in statewide drought awareness programs and that will track drought conditions and disseminate information to each of the water providers via the internet and emails. The State should also increase the public awareness of its activities related to drought warning and response through the various channels for public communications available to it. Providing speakers to local citizen groups would also be a good way to communicate the State's involvement in drought activities.

It is not clear from the survey responses the degree to which the various utilities share a common terminology with respect to droughts. The state could provide a valuable service by making an effort to obtain a common set of criteria for defining the start, the level of severity and

the end of droughts within the state. Adoption of such a common terminology would greatly facilitate drought planning and would assist utilities in better coordinating drought response.

Drought Response Planning

Only 27 percent of Colorado municipal water providers have a drought response plan in place. Most of the large providers did have a plan and based on reported population served it was estimated that approximately 71 percent of the population was served by a provider that had a drought plan. This points out a discrepancy in drought planning between large urban providers and smaller rural agencies. The majority of Colorado water providers consisting predominantly of smaller, rural utilities had not developed a drought response plan. These utilities serve more than 1 million Coloradoans. This could impede their ability to respond to a rapidly developing drought situation similar to what was encountered in 2002. A further potential problem is that a majority of water agencies (63%) did not have a staff person in charge of drought planning. Staffing levels at many small agencies simply may not afford for such an assignment to be made until drought conditions are encountered.

In order to improve the overall level of drought response planning in Colorado the state should consider taking one or more of the following actions. Because so many communities report not having a drought plan in place, the State could take actions to fill this void. Examples of good drought response plans could be posted on the internet to serve as guides. The State could offer training seminars on drought planning to which national and international experts could be invited to speak. A drought preparation manual could be produced from these seminars and made available on-line and in print. Regional and statewide drought simulation exercises could be held periodically. The State may also be the proper entity to hold discussions of regional co-operation including emergency supply sharing. Such agreements and interconnections have proved very useful in droughts elsewhere. These types of activities would be very useful to allow systems with drought plans in place to update those plan, and for systems without plans to develop them.

An area where State assistance with drought planning could be helpful is in the area of research and data generation with respect to drought damages and drought response technologies. In order to apportion shortages fairly, providers need better information on the size of damages to users in various categories caused be increasing levels of water shortages. This will allow them to determine what the proper levels of curtailment should be among users in order to spread economic losses among them fairly. There are a number of technologies available for using water more efficiently, recycling, and/or eliminating the use of water during short term emergencies. The CWCB (or other State entity) could establish a repository of information on these topics for use throughout Colorado.

Water Conservation Planning and Programs

The 2007 survey results indicate that 48 percent of Colorado utilities either had a water conservation plan or are in progress developing one. But a similar number of agencies (48 percent) did not have a conservation plan on the books or in progress. The agencies that had completed conservation plans were typically larger providers. Based on reported population values, 92 percent of customers were represented by the agencies that had a conservation plan on the books or in progress. Only 8 percent of the population resided in an area not covered by a

conservation plan. This means that future conservation planning outreach should be made to small providers without dedicated staff. These are the organizations most in need of assistance in developing a conservation plan.

Conservation planning activities have accelerated in recent years. More than 70 percent of the existing and pending conservation plans in Colorado were completed since 2004. This suggests HB04-1365 is having a significant impact and is encouraging water providers to complete their conservation plans.

A relatively small percentage of Colorado water providers actually had a budget for water conservation programs. Only 30 percent of respondents had a water conservation program budget, nearly 70 percent of responding providers had none. Of the 48% who had a water conservation plan or one in progress, 53% had funding for water conservation programs.

The total utility funding for water conservation in Colorado in 2007 was $11,224,500. However, $8,000,000 of this came from a single agency. The median conservation program budget was $25,000 – so half of the programs in the state had a budget smaller than $25,000. The smallest reported conservation budget was $500. The overall average budget was $273,768, but this number is heavily influenced by the single enormous budget. None of the respondents from Division 4 had a conservation program budget. Less than 10 percent of the respondents from Division 6 and 7 had a conservation program budget.

Considering these results plus that fact that the biggest reason provided for having a conservation plan was that is was considered the “right thing to do” rather than the best way to operate a system, an un-escapable conclusion is that water conservation is still viewed as a politically correct activity, but not one that is central to the operations of most Colorado water utilities. If water managers considered conservation as a critical element of their long range water plan it’s likely there would be even more resources devoted to it. It is recommend that the State further emphasize the role of water conservation planning as part of a long term drought response plan in its communications and outreach efforts.

While the number of conservation plans in place is encouraging, their level of commitment from providers appears tentative. One way to encourage more aggressive actions with respect to conservation would be to rate the plans with respect to their effectiveness as measured by the reductions in water use sought under the plans.

In order to improve the ability to measure the effectiveness of conservation it is recommended that the State develop benchmarks for reporting water use and consumption that are uniform for all systems. In general, the practice of rating water use based on system-wide per-capita use values should be discouraged in favor of reporting on disaggregated water use by customer category. Each system should be encouraged to monitor water use at least according to the following categories: single family, multi-family, irrigation, commercial, industrial, institutional (CII) and public/municipal accounts. Information on the number of customers in each category should be gathered. Collection of additional information such as the amount of irrigated area served, the number of multi-family units served, and the types or sub-categories of the commercial and industrial and institutional customers should also be encouraged.

Better accounting for water will result in better management. One way to improve water accounting in Colorado would be to adopt the International Water Association/American Water Works Association methodology for water loss accounting.[1] This approach accounts for all water input into the water system, and results in improved estimates of real and apparent losses. Use of this standard for water audits would improve the accuracy of leakage estimates and bring Colorado into line with this AWWA endorsed set of tools.

Water Supply Master Planning

Sixty percent of the agencies surveyed had water supply master plans for raw and/or treated water and 35 percent did not have such plans. This result was identical to what was found in the 2003 survey were 60 percent reported having a water supply master plan.

Generally the prevalence of water supply master plans in 2007 was evenly spread across Colorado's seven water divisions (between 50 and 65 percent have a long range plan), but Division 3 – Rio Grande – had a significant lower rate of supply master planning. In Division 3, only 33 percent of respondents had a raw and/or treated water supply master plan. Ideally all water providers should have a water supply master plan or equivalent document that identifies long term water supply plans and options for providing safe and clean water to customers into the future. Towards this end the State could use its already existing mandate for water conservation planning as a way to encourage a more general planning approach for overall water supply planning, since conservation planning is normally considered a portion of a good water supply plan.

Climate Change and Long Term Planning

About 27 percent of the survey respondents had considered the impact of climate change on long term water supply planning while 72 percent had not. Given the typical ten year long range planning cycle, this suggests that Colorado utilities are taking climate change into consideration when their plans are updated. Considering that a scientific consensus on the issue of climate change (i.e. that it is real and will have serious impacts on North America) has only been achieved over the past five years, Colorado utilities appear to be responding fairly quickly and are actively involved in incorporating the uncertainties of climate change into long range plans.

In order to assist with understanding the impact of climate change on Colorado water supplies and water supply planning it would be helpful for the State to continue to make information available on the state of knowledge on this topic to the suppliers. The likely impacts on the timing and quantities of precipitation need to be understood. It would make sense to tie in the climate change information as part of the water conservation and drought planning efforts discussed above.

[1] *Applying worldwide BMPs in Water Loss Control.* AWWA Journal, August 2003, pgs 65-79

Needs Assessment for Colorado Water Providers

Colorado municipal water providers frequently look to the State for assistance with planning for conservation, drought response, and water supply. In general providers look to the State for grant funding for projects and planning studies rather than for technical information and research that is developed at the state level. All items presented to respondents received support from providers, but there was more support for State grant and loan programs than for studies and assistance with cooperative agreements. This suggests the State may not be communicating the value of its education and research efforts clearly, or that it is missing areas where these activities would be perceived of value to the suppliers.

The area of greatest need identified by the respondents was for funding project evaluations and feasibility studies; these were followed by loans for capital projects, grants for planning activities, and grants for infrastructure management. Other areas of high need included communicating the value of water, improving conservation planning, and various loan programs.

Respondents expressed strong support for state involvement in providing services to Colorado water providers. Communicating the value of water and providing loans for capital projects topped the list followed by grant funding for project evaluations and planning activities, as well as improving public education and awareness.

It is clear from the survey that the suppliers expressed a need for both financial support and technical support/information. Both large and small systems could benefit from additional support in these areas. The State should continue its efforts to provide funding and leadership in the areas of drought, water system, and conservation planning. Efforts to bring consistency to the planning and reporting of drought and conservation activities will be rewarded.

Strong Support for Drought Assessment Projects

Respondents expressed strong support (85 percent in favor) for the State implementing future drought assessment surveys such as this project. There is clearly great interest in the State keeping track of drought and drought response efforts. In light of this the State should move forward with the drought assessment and education programs discussed in this report. There clearly is an appetite for more activities as well. It would be very interesting to have more discussion with the providers about the apparent contradiction between their intense interest in drought and their hesitancy to embrace water conservation in a more aggressive manner.

Data Collection and Reporting

Less than 50 percent of the water providers responding to the survey collected data in support of water conservation planning. Only 43 percent of respondents indicated that they had collected such data while 55 percent indicated that they did not.

Of the 85 agencies that collected data in support of planning, almost all of these respondents collected total consumption data and 88 percent collected per capita per day usage data. Eighty-six percent collected data on water loss (unaccounted for use), but only 42 percent collected data on the water saved through conservation programs.

This highlights once again the need for direction with respect to definitions of terms, data collection, units of measurement and uniformity in approach for the three interlinked areas of water conservation, drought planning, and overall water system planning. The State is ideally suited to take on this effort.

Interest In Statewide Water Data and Water Research

More than 85 percent of the agencies surveyed expressed interest in contributing data to a statewide water data repository project. Fifteen percent were "very interested" in the data repository project, 48 percent were "somewhat interested" and 26 percent were "slightly interested". Some agencies were concerned that some data might be proprietary and much would probably depend upon the data sought by the State and the level of access granted to users. Ninety percent of the respondents said that data in a state repository would be useful for planning purposes and for making comparisons with other entities.

Colorado water providers want the State to conduct statewide availability research. Strong support was expressed for statewide water availability studies with 82 percent of respondents supporting the idea and only 10 percent opposed. Eighty-seven percent supported the idea of the state conducting basin level water availability studies and only 8 percent opposed. Seventy percent of respondents were in favor of the state conducting statewide wastewater availability studies and 87 percent supported the idea of statewide drinking water availability studies. Clearly there is strong support for this type of research across the board.

Given the support provided by the survey responses we believe the State is justified in moving ahead with the following activities. All of these activities should be conducted in co-operation with citizens, appropriate local water officials and interested water professionals:

- Develop a common set of customer classifications that all providers can use in their billing systems.
- Develop a uniform set of parameters that can be used to measure water demands and their relative efficiencies.
- Adopt the water auditing procedures specified by AWWA and the International Water Association.
- Hold training seminars using national experts on drought recognition and response.
- Post model drought plans on the CWCB web site.
- Develop definition of terms, data collection, units of measurement, and uniformity for water conservation, drought planning, and water system planning.
- Hold seminars to discuss how the State of Colorado can improve in its' drought response and mitigation efforts.
- Encourage providers to move more aggressively on water conservation implementation as part of their long range drought plans.
- Continue the drought assessment project and repeat this survey on a regular basis.
- Make the survey results and other information collected as part of this effort readily available to citizens and water providers.

APPENDIX A: SURVEY INSTRUMENT

Demographics

First I would like to ask a few questions about you and your organization.

1. What is your name?(First & Last)_____

2. What is your position or title_____

2a. Do you manage multiple water systems (more than one municipality or system)?

1 Yes (if yes, they will be asked the survey separately for each system if willing to take for more than one they are in charge of. You can always setup a callback for the others)
2 No
3 Don't know/ refused

2b. Please confirm the name of the Water District or Water Municipality that you answering questions for :

1-Specify
2-Don't know/ refused (ask if there is someone else to speak with-else at least confirm water district/municipality from list)

3. How many customers **and/or** connections does your organization serve?____
(Interviewer note if customers or connections)
*1 Customers (Specify) * number of residents in the district or municipality served*
*2 Connections (Specify) * number of physical connections or meters within the district or municipality served.*
3 Don't know/ refused (ask if there is somebody available who does know, else continue the survey)

4. What were your approximate total water deliveries in 2006? (ie. Volume)_____
(note: total is those billed plus any losses, i.e. total production)

[Skip if Q4 = 0 or Don't know/ refused]
Q4a. What unit of measure was that? (Read list as needed-Else note if Respondent Mentions)
1 Acre feet
2 Millions of gallons
3 mgd (Millions of gallons per day)
4 cubic feet
5 other _____)(Do Not Read)

5. What was your approximate total billed water deliveries in 2006? [Range $0.00 - $9,999,999,998 : $9,999,999,999 = DK]

[Skip if Q5 = 0 or Don't know/ refused]
Q5a. What unit of measure was that? (Read list as needed-Else note if Respondent Mentions)

1 Acre feet
2 Millions of gallons
3 mgd (Millions of gallons per day)
4 cubic feet
5 other _____)

6. What was your approximate total billed water deliveries in 2002 (ie. Volume)? ___

[Skip if Q6 = 0 or Don't know/ refused]
6a. What unit of measure was that? (Read list as needed-Else note if Respondent Mentions)

1 Acre feet
2 Millions of gallons
3 mgd (Millions of gallons per day)
4 cubic feet
5. other (Specify)(Do Not Read)

7. What do you expect your total billed water deliveries in 2012 (ie. Volume)?
   _____

[Skip if Q7 = 0 or Don't know/ refused]
7a. What unit of measure will that be in? (Read list as needed-Else note if Respondent Mentions)

1 Acre feet
2 Millions of gallons
3 mgd (Millions of gallons per day)
4 cubic feet
5. other (Specify)(Do Not Read)

8. What do you expect your total billed water deliveries to be in 2017? (ie.volume)

[Auto Punch from 7a-else skip if Q8 = 0 or Don't know/ refused]
8a. What unit of measure will that be in? (Read list as needed-Else note if Respondent Mentions)

1 Acre feet
2 Millions of gallons
3 mgd (Millions of gallons per day)
4 cubic feet
5. other (Specify)(Do Not Read)

9. Is there someone in your organization who does water conservation planning or programming? Is that person you?
   1 Yes
   2 No *(Go to Q12)*

3 *Don't know/ refused (Go to Q13)*

10. What is/are their name?

1-Specify Name:_____
2- Respondent (check if person & respondent are the same)
3- Don't know/ refused

10a. What is title of their/your position?

1- Specify Position:_____
2- Same (check if same title given at beginning of the survey)
2- None/Don't know/ refused

11. Is this a full time position, part time position or just part of someone's job description?

1 Full time
2 part time
3 just part of someone's job description
4 Other(SPECIFY)
5 Don't know/ refused

12. Does your organization have any water conservation programs? *[Do not read responses]*

1 Yes
2 No*(Go to Q14)*
3 Don't know *(Go to Q14)*

13. How many staff or Full Time Equivalents (FTE's) are assigned to water conservation programs? [OE]

_____*Full time staff*
_____*Part time/ seasonal staff*
_____*FTEs (full time equivalents)*
Don't know/ refused

14. Is there someone in charge of drought planning for your organization? *[Do not read responses]*

1 Yes
2 No *(Go to Q16)*
3 Don't Know*(Go to Q16)*

15. What is their name and position? *(interviewer may enter "respondent", if it is respondent)*

Name:_____
Position:_____
Don't know/ refused

16. Do you have a water supply master plan for raw and/or treated water? *[Do not read responses]*

1 Yes, raw only
2 Yes, treated only
3 Yes, raw and treated

4 No *(Go to Q19)*
5 Don't Know*(Go to Q19)*

17. What year was your most recent water supply master plan written (or updated)? [Range :1990 - 2007] (Ask only for what was mentioned in Q16)

Year for raw water, (if Q16 = 1 or 3)
Year for treated water (If Q16 = 2 or 3)

18. Has this master plan been published and/or been made publicly available? *[Choose all that apply]*

1 Published
2 Publicly available
3 Neither
4 Don't know/ refused

Drought Status

Next I would like to ask you a few questions about the effects of the recent drought (from about 1999 to 2003).

19. To what extent, if at all, have your water supplies recovered from the recent drought (from about 1999 to 2003)?

Would you say you are...

1 Still in severe drought
2 About half way to recovery
3 Fully recovered, reservoirs are full
4 Don't know*[Do Not Read]*

20. Is your organization currently implementing any drought response measures that are distinct from any regular water conservation programs, or does it plan to at any time in 2007?

1 Yes *(Go to Q21) [Do Not Read]*
2 No *(Go to Q22) [Do Not Read]*
3 Not sure/depends *(Go to Q21) [Do Not Read]*
4 Don't know *(Go to Q21) [Do Not Read]*

21. I am going to read a list of drought response measures. For each one, please tell me whether or not you are currently implementing this measure or plan to sometime in 2007. [ROTATE] Caller Note: Yes = Currently and/or Planning

	Yes	No	DK
a. Declaring a drought emergency	1	2	3
b. Putting controls on new construction or restricting or prohibiting new taps	1	2	3
c. Implementing Landscape watering restrictions	1	2	3
d. Landscape restrictions	1	2	3
e. Voluntary indoor water use reductions	1	2	3
f. Enacting ordinances or fines for wasting water	1	2	3
g. Public education or involvement programs	1	2	3
h. Cloud seeding	1	2	3
i. Drought pricing	1	2	3
j. Other drought ordinances	1	2	3
k. Temporary increase in water conservation program intensity	1	2	3
l. Dry year leasing of water rights	1	2	3
m. Emergency water supply agreements	1	2	3
n. Aquifer storage and recovery or conjunctive use	1	2	3
o. Interruptible water supply agreements	1	2	3
p. Entering into or continuing cooperative agreements	1	2	3
q. Substitute supply plans	1	2	3
r. Pump ground water	1	2	3
s. Stop deliveries	1	2	3
t. Shut down wells	1	2	3

[Ask if Q21 j = 1]
Q21.a You mentioned other drought ordinances, can you specify what those are?

1-Yes (Specify)
2-no/ Don't know/ refused

Q21b. Any other drought measures that I've missed ?
1-Yes (*Specify)
2-None/Don't know/ refused

22. Has your organization set aside any money for drought response measures in 2007? *[Do not read responses]*

1 Yes
2 No *(Go to Q24)*
3 Don't know *(Go to Q24)*

23. How much money have you set aside?[]
1-Specify
2-Don't know/ refused

24. Have you quantified the impacts of the recent drought *(from about 1999-2003)* on your utility?
[Do not read responses]

1 Yes
2 No *(Go to Q27)*
3 Don't Know*(Go to Q27)*

25. Do you have an economic or monetary estimate regarding the impact of the drought on your utility?
[Do not read responses]

1 Yes
2 No *(Go to Q27)*
3 Don't Know*(Go to Q27)*

26. What was the impact on your utility? _____
RECORD WHATEVER IMPACTS THEY MENTION, MONETARY OR OTHERWISE
1-SPECIFY
2-DON'T KNOW/ REFUSED

27. Have you quantified the impacts of the 1999-2003 drought on your customers?
[Do not read responses]

1 Yes
2 No *(Go to Q31)*
3 Don't Know*(Go to Q31)*

28. Do you have an economic or monetary estimate of the impact on your customers?
[Do not read responses]

1 Yes
2 No *(Go to Q31)*
3 Don't Know*(Go to Q31)*

29. What was the impact on your customers? _____
[RECORD WHATEVER IMPACTS THEY MENTION, MONETARY OR OTHERWISE]
1-SPECIFY
2-NONE/DON'T KNOW/ REFUSED

30. I am going to read a list of drought response measures. For each one, please tell me whether or not you implemented this measure during the 1999-2003 drought.

	Yes	No	DK
a. Declaring a drought emergency	1	2	3
b. Putting controls on new construction or restricting or prohibiting new taps	1	2	3
c. Implementing Landscape watering restrictions	1	2	3
d. Landscape restrictions	1	2	3
e. Voluntary indoor water use reductions	1	2	3
f. Enacting ordinances or fines for wasting water	1	2	3
g. Public education or involvement programs	1	2	3
h. Cloud seeding	1	2	3
i. Drought pricing	1	2	3
j. Other drought ordinances	1	2	3
k. Temporary increase in water conservation program intensity	1	2	3
l. Dry year leasing of water rights	1	2	3
m. Emergency water supply agreements	1	2	3
n. Aquifer storage and recovery or conjunctive use	1	2	3
o. Interruptible water supply agreements	1	2	3
p. Entering into or continuing cooperative agreements	1	2	3
q. Substitute supply plans	1	2	3
r. Pump ground water	1	2	3
s. Stop deliveries	1	2	3
t. Shut down wells	1	2	3

[Ask if Q30 j = 1]
Q30.u You mentioned other drought ordinances; can you specify what those are?

1-Yes (Specify)
2-no/ Don't know/ refused

Q30v. Any other drought measures that I've missed ?
1-Yes (*Specify)
2-None/Don't know/ refused

Drought Planning

Now I would like to ask you some questions about how your organization plans for future droughts.

31. Does your organization have a drought response plan? *[Do not read responses]*

1 Yes *(*
2 No*(Go to Q37)*
3 Don't know *(Go to Q37)*

32. Has this drought response plan been published and/or been made publicly available? *[Choose all that apply]*

1 Published
2 Publicly available
3 Neither
4 Don't know/ refused

33. What is the date of the most recent update?
1-Specify_____ *YEAR*
2-Don't know/ refused

34. How does your organization determine if you are in a drought?
(*Do not read responses, check all that are mentioned)*

	Yes	No	Don't know
a. Reservoir levels	1	2	3
b. Snow pack	1	2	3
c. Other climate conditions	1	2	3

34d. Are there any other methods you utilize when determining if you are in a drought?

1-Specify
2-NO/Don't know/ refused

34e. [Ask only if Q34 a = 1]

You mentioned Reservoir levels as a determining factor for a drought. What level including unit of measure do you use? (ie. Percentage of Fullness or Emptiness)

1-Specify
2-Don't know/ refused

34f. [Ask only if Q34b = 1]
You mentioned Snow Pack as a determining factor for a drought. What level including unit of measure do you use? (ie. Percentage of average)

1-Specify
2-Don't know/ refused

35. In developing the drought response plan which of the following planning steps were part of the process? Did the organization… *[READ LIST]*

	Yes	No	DK
a. Appoint a drought task force	1	2	3
b. State the purpose and objectives of drought plan	1	2	3
c. Seek stakeholder participation	1	2	3
d. Inventory resources and identify groups at risk	1	2	3
e. Establish and write drought plan	1	2	3
f. Identify research needs and fill institutional gaps	1	2	3
g. Integrate science and policy	1	2	3
h. Publicize drought plan, build public awareness	1	2	3
i. Develop education programs	1	2	3
j. Evaluate and revise drought plan	1	2	3

Q35k. Are there any other steps used in the planning process that I did not mention?
1-Specify
2-NO/Don't know/ refused

36. Which of the following drought response measures are in the plan? *[READ LIST]*

	Yes	No	DK
a. Declaring a drought emergency	1	2	3
b. Controls on new construction/ restrict or prohibit new taps	1	2	3
c. Landscape water restrictions	1	2	3
d. Public education/ involvement programs	1	2	3
e. Cloud seeding	1	2	3
f. Landscape restrictions	1	2	3
g. Voluntary indoor water use reductions	1	2	3
h. Fines/ordinances for wasting water	1	2	3
i. Drought pricing	1	2	3
j. Other drought ordinances	1	2	3
k. Water conservation programs	1	2	3
l. Dry year leasing of water rights	1	2	3
m. Emergency water supply agreements	1	2	3
n. Aquifer storage and recovery/ conjunctive use	1	2	3
o. Interruptible water supply agreements	1	2	3
p. Operations/cooperative agreements	1	2	3
q. Substitute supply plans	1	2	3
r. Pump ground water	1	2	3

[Ask if Q36 j = 1]
Q36-1 You mentioned other drought ordinances, can you specify what those are?

1-Yes (Specify)
2-no/ Don't know/ refused

Q36s. Are there any other drought response measures in the plan that I haven't mentioned?
1-Specify
2-No/Don't know/ refused

Water Conservation Planning and Programs

My next set of questions are about water conservation planning and programs.

37. Does your organization have a water conservation plan? *[Do not read responses]*

1 Yes
2 In progress
3 No *(Go to Q39)*
4 Don't know *(Go to Q39)*

38.
What is (what will be) the date of the most recent update? [Don't know/ refused]
[YEAR]

39. Does your organization have a budget for water conservation programs? *[Do not read responses]*

1 Yes
2 No*(Go to Q41)*
3 Don't know *(Go to Q41)*

40. What is the approximate budget for 2007? [Don't know/ refused]_*dollars*

41. *(IF YES TO Q37 OR Q39)*
Why does your organization have a water conservation plan or program? Is it to . . . *[READ LIST]*

	Yes	No	DK
a. Offset increased demand of future growth	1	2	3
b. Reduce peak expansion cost	1	2	3
c. For drought preparedness	1	2	3
d. Because citizens demand it	1	2	3
e. Because it is the right thing to do	1	2	3
f. Environmental benefits (i.e. increased stream flow, habitat preservation)	1	2	3
g. Because it is required as a condition for a loan or permit	1	2	3

41h. Are there any other reasons that I didn't mention?
1-Specify
2-No/Don't know/ refused

42. In the long term, how would you rate your ability to offset increased demand of future growth through water conservation programs? Please use a scale where 1=poor and 5=excellent. 6 = Don't know/ refused

1 Poor
2
3
4
5 Excellent

43. How important is it to offset increased demand of future growth through water conservation programs? Please use a scale from 1 to 5, where 1 indicates not at all important and 5 indicates extremely important. 6 = Don't know/ refused

1 Not at all important
2
3
4
5 Extremely important

44. I am going to read a list of tools and programs that can be used to conserve water. Please tell me if your organization uses each tool or program.

	Yes	No	DK
First here are some educational tools and programs. Does your organization use any of the following for water conservation? What about . . .			
a. Conservation public information campaigns	1	2	3
b. School education programs	1	2	3
c. Water conservation awards programs	1	2	3

44d. Any other educational tools or programs that I didn't mention?
1-Specify
2-No/Don't know/ refused

44-2. Next are some rate and informational tools and programs. Does your organization offer . . .			
d. Increasing block rate structure	1	2	3
e. Online access to water history	1	2	3
f. On-line water use calculator	1	2	3
g. Informational water budgets	1	2	3
h. Water budget rate structure	1	2	3
i. Seasonal rates for commercial customers	1	2	3
j. In-home water use tracking device (i.e. meter inside home)	1	2	3

44l. Any other informational tools or programs that I didn't mention?
1-Specify
2-No/Don't know/ refused

44-3. Now some indoor residential use tools and programs. Does your organization use . . .			
k. Efficient toilet incentives	1	2	3
l. Residential clothes washer incentives	1	2	3
m. Dishwasher incentives	1	2	3
n. Hot water recirculation system incentives	1	2	3
o. Showerhead incentive/distribution	1	2	3
p. Faucet aerator (<1.5 gpm) distribution	1	2	3
q. Residential indoor audit and leak detection	1	2	3
r. Low income retrofit program (toilets, faucets, showerheads)	1	2	3

44u. Any other indoor residential tools or programs that I didn't mention?
1-Specify
2-No/Don't know/ refused

	Yes	No	DK
44-4. Next are some outdoor use tools and programs. Does your organization use . . .			
s. Water-wise landscape incentives	1	2	3
t. Water-wise landscape design assistance	1	2	3
u. Irrigation system audits	1	2	3
v. Irrigation technology incentives (smart controllers, soil sensors, etc.)	1	2	3

44z. Any other outdoor use tools or programs that I didn't mention?
1-Specify
2-No/Don't know/ refused

	Yes	No	DK
44-5. And some commercial tools and programs. Does your organization use . . .			
w. Commercial clothes washer incentives	1	2	3
x. Distribute pre-rinse spray heads to restaurants	1	2	3
y. Financial incentives for commercial water-saving upgrades	1	2	3
z. Commercial Industrial Institutional audits and efficiency planning	1	2	3
aa. Commercial toilet and urinal incentives	1	2	3

44ff. Any other commercial tools or programs that I didn't mention?
1-Specify
2-No/Don't know/ refused

	Yes	No	DK
44-6.And finally some regulatory tools and programs. Does your organization . . .			
bb. Limit turf areas & or narrow strips	1	2	3
cc. Require rain shut-off devices	1	2	3
dd. Require dedicated tap for irrigation for large properties	1	2	3
ee. Establish landscaping guidelines for public facilities	1	2	3
ff. Require new car washes to recycle	1	2	3
gg. Retrofit on resale ordinance	1	2	3
hh. Prohibit new single-pass cooling systems	1	2	3
ii. Time-of-day irrigation restrictions	1	2	3
jj. Water efficiency plumbing codes for new buildings	1	2	3
kk. Ordinance against water waste	1	2	3
ll. Landscape & irrigation standards for new development	1	2	3
mm. Restrictive covenants ordinance - no prohibition of xeriscape or mandate for turf	1	2	3
nn. Soil amendment ordinance (new construction)	1	2	3

44tt. **Any other regulatory or programs that I didn't mention?**
1-Specify
2-No/Don't know/ refused

45. To what extent, if at all, would your organization be interested in participating in a statewide water efficiency public information and education campaign? Would you say . . .

1 Not at all interested
2 Slightly interested *(Go to Q46a)*
3 Somewhat interested *(Go to Q47)*
4 Very interested *(Go to Q47)*
5 Don't know/depends *[Do Not Read]*

46. Why wouldn't your organization be interested,?
1-Specify
2-Don't know/ refused

46a. [ask if Q45 = 2] What is your interest dependent upon?
1-Specify
2-Don't know/ refused

Climate Change and Long Term Planning

Now I would like to ask about some issues around long term water supply planning.

47. Which of the following are considerations in your organization's long term water supply and conservation planning? Has your organization considered…?

	Yes	No	DK
a. Climate variability	1	2	3
b. Snow pack	1	2	3
c. El Niño/La Nina conditions	1	2	3
d. Ground water levels	1	2	3
e. Drought recurrence	1	2	3
f. Population change	1	2	3
g. Availability of new water supply	1	2	3
h. Changes in water use/demand patterns	1	2	3
i. Peak demand	1	2	3

47j. Are there any other considerations that I haven't mentioned?
1-Specify
2-No/Don't know/ refused

48. Has you organization considered the impact of climate change on long term planning? *[Do not read responses]*

1 Yes
2 No*(Go to Q50)*
3 Don't Know*(Go to Q50)*

49. How has your organization integrated potential impacts into long term planning? Have you...? [ROTATE]

	YES	NO	DK
a. started informal discussions	1	2	3
b. started formal discussions	1	2	3
c. implemented formal research/study	1	2	3
d. actively started seeking new supplies	1	2	3
e. increased the expected drought severity scenarios	1	2	3
f. full integrated them into your long term plan	1	2	3
g. increased water conservation program efforts	1	2	3

49h. Are there any other potential impacts to long term planning that I haven't mentioned?
1-Specify
2-NO/Don't know/ refused

Needs Assessment

Now I'd like to ask you about what assistance your organization might benefit from when doing conservation and drought planning.

50. I am going to read a list of areas for assistance; for each, please tell me how much your organization needs assistance on a scale of 1 to 5, where 1= no need at all and 5= an extreme or great need. 6 = Don't know/ refused What about assistance to . . .

	No need at all				**Extreme need**
a. Improve public education and awareness	1	2	3	4	5
b. Improve or enhanced water conservation methods	1	2	3	4	5
c. Improve or enhance water conservation measurement methods	1	2	3	4	5
d. Create or improve master plans for future water supply and demand	1	2	3	4	5
e. Create or improve drought planning	1	2	3	4	5
f. Create or improve conservation planning	1	2	3	4	5
g. Conduct hydrologic studies	1	2	3	4	5
h. Conduct water rights studies	1	2	3	4	5
i. Pre-fabricated conservation programs and materials (e.g., "fixture rebate program in a box", educational materials, bill stuffers)	1	2	3	4	5
j. Technical information on climate and forecasting	1	2	3	4	5
k. Create cooperative agreements	1	2	3	4	5
l. Communicating the value of water	1	2	3	4	5
m. Loans for project evaluations/feasibility studies	1	2	3	4	5
n. Loans for planning activities	1	2	3	4	5
o. Loans for capital projects	1	2	3	4	5
p. Grant funding for project evaluations/feasibility studies	1	2	3	4	5
q. Grant funding for planning activities	1	2	3	4	5
r. Grant funding to implement planning	1	2	3	4	5
s. Grant funding for infrastructure management	1	2	3	4	5

51. Now I am going to read a list of specific types of cooperative agreements, please indicate much your organization needs assistance for each type on a scale of 1 to 5, where 1= no need at all and 5= an extreme or great need. 6 = Don't know/ refused

	No need at all				**Extreme need**
a. Exchanges	1	2	3	4	5
b. Transfers	1	2	3	4	5
c. Substitute water supply plans	1	2	3	4	5
d. Interruptible supplies	1	2	3	4	5
e. Dry year leases	1	2	3	4	5
f. Operating agreements	1	2	3	4	5
g. Water banking	1	2	3	4	5
h. Water conservation easements	1	2	3	4	5

52. For these same areas for assistance; for each, please tell me how strongly you agree or disagree that the state should provide the service. Where 1 = strongly disagree and 5 = strongly agree. 6 = Don't know/ refused

	Strongly disagree				**Strongly agree**
a. Improve public education and awareness	1	2	3	4	5
b. Improve or enhanced water conservation methods	1	2	3	4	5
c. Improve or enhance water conservation measurement methods	1	2	3	4	5
d. Create or improve master plans for future water supply and demand	1	2	3	4	5
e. Create or improve drought planning	1	2	3	4	5
f. Create or improve conservation planning	1	2	3	4	5
g. Conduct hydrologic studies	1	2	3	4	5
h. Conduct water rights studies	1	2	3	4	5
i. Pre-fabricated conservation programs and materials (e.g., "fixture rebate program in a box", educational materials, bill stuffers)	1	2	3	4	5
j. Technical information on climate and forecasting	1	2	3	4	5
k. Create cooperative agreements	1	2	3	4	5
l. Communicating the value of water	1	2	3	4	5
m. Loans for project evaluations/feasibility studies	1	2	3	4	5
n. Loans for planning activities	1	2	3	4	5
o. Loans for capital projects	1	2	3	4	5
p. Grant funding for project evaluations/feasibility studies	1	2	3	4	5
q. Grant funding for planning activities	1	2	3	4	5
r. Grant funding to implement planning	1	2	3	4	5
s. Grant funding for infrastructure management	1	2	3	4	5

53. Do you think the state should implement drought assessment surveys, such as this, in the future? *[Do not read responses]*

1 Yes
2 No
3 Don't know/ refused

Data Collection and Reporting

54. Does your organization currently collect any data to support water conservation planning? *[Do not read responses]*

1 Yes
2 No*(Go to Q58)*
3 Don't Know*(Go to Q58)*

55. For which of the following metrics does your organization collect data? *[Read list, Check all that apply]*

1 Total consumption/demand
2 Gallons per capita per day (GPCD)
3 Water loss (unaccounted for water)
4 Water saved by conservation
5 Other (specify_____)
6 Don't know/ refused

56. To whom, if anyone, does your organization report the data? *[Read list, Check all that apply]*

1 County
2 State
3 Federal government
4 EPA
5 Other (specify_____)
6 Don't know/ refused
7 None

57. To what extent would your organization currently be able to provide the following types of data…as I read the types please tell me if it would be No Data, Partial Data or Complete Data? (repeat as needed) 4=Don't know/ refused

	No data	**Partial data**	**Complete data**
a. Total consumption/demand.....	1	2	3
b. Gallons per capita per day (GPCD).....	1	2	3
c. Water loss (unaccounted for water)	1	2	3
d. Water saved by conservation	1	2	3

58. Now I am going to read a list of specific types of data that could be made available statewide. For each, please indicate how useful such information would be to your organization using a scale of 1 to 5, where 1= not at all useful and 5= very useful. How useful would your organization find data about…? 6= Don't know/ refused

	No at all useful				**Very useful**
a. Per capita use at other COLORADO agencies…	1	2	3	4	5
b. Water rates at other COLORADO agencies ……	1	2	3	4	5
c. Water rate structures at other CO agencies…..	1	2	3	4	5
d. Tap/connection fees at other CO agencies ……	1	2	3	4	5
e. Water quality and treatment data……..	1	2	3	4	5
f. Total billed water ……..	1	2	3	4	5
g. Percentage of raw water from different sources (ground, surface, etc.) ……..	1	2	3	4	5
h. Drought planning at other CO agencies ……	1	2	3	4	5
i. Conservation programs at other CO agencies ..	1	2	3	4	5
j.					

58j. Any other types of data that I haven't mentioned?
1-Specify
2-NO/Don't know/ refused

59. To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project? Would you say . . .
    1 Not at all interested
    2 Slightly interested
    3 Somewhat interested *(Go to Q61)*
    4 Very interested *(Go to Q61)*
    5 Don't know/depends *[Do Not Read]*

60. What are some of your concerns about the State collecting this data?
    1-Specify
    2-None/Don't know/ refused

61. Would this data be useful to you for your planning and/or comparison with other entities?*[Do not read responses]*
    1 Yes
    2 No
    3 Don't know

62. Do you think the state should conduct statewide water availability studies? *[Do not read responses]*
    1 Yes
    2 No
    3 Don't know

63. Do you think the state should conduct statewide basin water availability studies? *[Do not read responses]*

1 Yes
2 No
3 Don't know

64. Do you think the state should conduct statewide waste water availability studies? *[Do not read responses]*

1 Yes
2 No
3 Don't know

65. Do you think the state should conduct statewide drinking water availability studies? *[Do not read responses]*

1 Yes
2 No
3 Don't know

Communication

66. Finally I would like to ask you which methods of communication you prefer for getting information from the state about water and drought issues. For each method, please indicate whether this is one of the worst methods of communication for you, or one of the best. Please use a scale of 1 to 5 where 1 is the worst method and 5 is the best method. What about . . . (6 = Don't know/ refused)

	The worst				**The best**
a. E-mail	1	2	3	4	5
b. Internet	1	2	3	4	5
c. Mail	1	2	3	4	5
d. Regional Workshops/seminars	1	2	3	4	5
e. Attending CWCB Board Meetings	1	2	3	4	5
f. Phone consultations	1	2	3	4	5
g. Face-to-face	1	2	3	4	5
h. Through the media	1	2	3	4	5
i. Organizational meetings	1	2	3	4	5

67. Please tell me any other methods of communication that you would prefer for getting information from the state about water and drought issues.

1-Specify
2-None/Don't know/ Refused

68. And finally, you had said earlier that you manage more than one water system or municipality. May we conduct this survey again with you for the other systems or municipalities that you manage?

1- Yes
2- No/Don't know/ refused

Thank you for taking your time to complete this survey. Your answers will be of great help to the Colorado Water Conservation Board.

APPENDIX B: COMPLETE SURVEY RESPONSES

Demographic Section

Q2A Do you manage multiple water systems?	Number	Percent
Yes	23	12%
No	177	89%
Don't know/ refused	0	0%
Total	200	100%

Q3A How many customers does your organization serve?	Number	Percent
1 to 1,000	72	36%
1,001 to 5,000	48	24%
5,001 to 10,000	23	12%
10,001 to 30,000	21	11%
30,001 to 50,000	10	5%
50,001 to 100,000	8	4%
100,001 to 1,100,000	9	5%
Don't know/ refused	9	5%
Total	200	100%

Q3A How many customers does your organization serve?	Number reporting	Minimum	Maximum	Mean	Median	Sum
	191	35	1,100,000	22,096	2,000	4,220,320

Q3B How many connections does your organization serve?	Number	Percent
1 to 250	33	17%
251 to 500	37	19%
501 to 1000	29	15%
1001 to 3000	31	16%
3001 to 5000	22	11%
5001 to 10,000	20	10%
10,001 to 225,000	20	10%
Don't know/ refused	8	4%
Total	200	100%

Q3B How many connections does your organization serve?	Number reporting	Minimum	Maximum	Mean	Median	Sum
	192	34	225000	6745	930	1295052

Q4 to Q8 Water deliveries (millions of gallons)	Number reporting	Minimum	Maximum	Mean	Median	Sum
Total water deliveries in 2006	118	0.000025	146,000.00	1,523.28	2.93	179,747.45
Total billed water deliveries in 2006	61	1.000	10,311.00	172.04	2.07	10,494.61
Total billed water deliveries in 2002	35	0.011	9.45	1.34	3.95	46.90
Total projected billed water deliveries in 2012	46	1.000	550,000.00	11,957.79	3.06	550,058.28
Total projected billed water deliveries in 2017	37	1.000	600,000.00	19,677.09	3.26	728,052.14

Q9 Is there someone in your organization who does water conservation planning or programming?	Number	Percent
Yes	105	53%
No	93	47%
Don't know/ refused	2	1%
Total	200	100%

Q11 Is this a full time position, part time position or just part of someone's job description?*	Number	Percent
Full time	23	22%
Part time	3	3%
Just part of someone's job description	79	75%
Total	105	100%

**asked if Q9=yes*

Q12 Does your organization have any water conservation programs?	Number	Percent
Yes	56	28%
No	141	71%
Don't know/ refused	3	2%
Total	200	100%

Q13*		Number	Percent
How many full time staff are assigned to water conservation programming?	0	37	66%
	1	12	21%
	3	4	7%
	5	1	2%
	7	1	2%
	10	1	2%
	Total	56	100%
How many part time staff are assigned to water conservation programming?	0	42	75%
	1	9	16%
	2	2	4%
	3	1	2%
	6	1	2%
	10	1	2%
	Total	56	100%
How many Full Time Equivalents (FTE's) are assigned to water conservation programming?	0	40	71%
	1	12	21%
	2	1	2%
	3	2	4%
	8	1	2%
	Total	56	100%

**asked if Q12=yes*

Q14 Is there someone in charge of drought planning for your organization?	Number	Percent
Yes	74	37%
No	125	63%
Don't know/ refused	1	1%
Total	200	100%

Q16 Do you have a water supply master plan for raw and/or treated water?	Number	Percent
Yes, raw only	5	3%
Yes, treated only	9	5%
Yes, raw and treated	106	53%
No	70	35%
Don't know/ refused	10	5%
Total	200	100%

Q17 What year was your most recent RAW water supply master plan written (or updated)?*	Number	Percent
1988	2	2%
1995	1	1%
1996	2	2%
1997	1	1%
1998	1	1%
1999	1	1%
2000	4	4%
2001	1	1%
2002	10	10%
2003	9	9%
2004	10	10%
2005	14	14%
2006	15	15%
2007	31	30%
Total	102	100%

**asked if Q16=yes*

Q17 What year was your most recent TREATED water supply master plan written (or updated)?*	Number	Percent
1988	1	1%
1995	1	1%
1996	2	2%
1997	1	1%
1998	1	1%
1999	1	1%
2000	5	5%
2001	1	1%
2002	9	8%
2003	10	9%
2004	10	9%
2005	13	12%
2006	19	18%
2007	32	30%
Total	106	100%

**asked if Q16=yes*

Q18 Has this master plan been published and/or been made publicly available? [Choose all that apply]?*	Number of respondents	Percent of respondents
Published	37	30.8%
Publicly available	80	66.7%
Neither	29	24.2%
Don't know/ refused	8	6.7%
Total	120	100.0%

**asked if Q16=yes, percents do not sum to 100% as respondents could choose more than one category.*

Drought Status

Q19 To what extent, if at all, have your water supplies recovered from the recent drought (from about 1999 to 2003)?	Number	Percent
Still in severe drought	7	4%
About half way to recovery	47	24%
Fully recovered, reservoirs are full	127	64%
Don't know/ refused	19	10%
Total	200	100%

Q20 Is your organization currently implementing any drought response measures that are distinct from any regular water conservation programs, or does it plan to at any time in 2007?	Number	Percent
Yes	10	5%
No	188	94%
Not sure/depends	2	1%
Total	200	100%

Q21 I am going to read a list of drought response measures, please tell me whether or not you are currently implementing this measure or plan to sometime in 2007.*		Yes	No	Don't know/ refused	Total
Declaring a drought emergency	Number	3	9	0	12
	Percent	25%	75%	0%	100%
Putting controls on new construction or restricting or prohibiting new taps	Number	3	9	0	12
	Percent	25%	75%	0%	100%
Implementing Landscape watering restrictions	Number	8	4	0	12
	Percent	67%	33%	0%	100%
Landscape restrictions	Number	5	7	0	12
	Percent	42%	58%	0%	100%
Voluntary indoor water use reductions	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Enacting ordinances or fines for wasting water	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Public education or involvement programs	Number	8	4	0	12
	Percent	67%	33%	0%	100%
Cloud seeding	Number	1	11	0	12
	Percent	8%	92%	0%	100%
Drought pricing	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Other drought ordinances	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Temporary increase in water conservation program intensity	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Dry year leasing of water rights	Number	5	7	0	12
	Percent	42%	58%	0%	100%
Emergency water supply agreements	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Aquifer storage and recovery or conjunctive use	Number	3	8	1	12
	Percent	25%	67%	8%	100%
Interruptible water supply agreements	Number	3	8	1	12
	Percent	25%	67%	8%	100%
Entering into or continuing cooperative agreements	Number	7	5	0	12
	Percent	58%	42%	0%	100%
Substitute supply plans	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Pump ground water	Number	6	6	0	12
	Percent	50%	50%	0%	100%
Stop deliveries	Number	2	9	1	12
	Percent	17%	75%	8%	100%
Shut down wells	Number	4	8	0	12
	Percent	33%	67%	0%	100%

**asked if Q20=yes or not sure/depends*

Q21a. You mentioned other drought ordinances, can you specify what those are? . .

- Wasting water ordinance. Adding organic material to soil. Increasing block rate structure.
- Working with developers on low use appliances. Xeriscaping. Non-potable water use projects.
- Our biggest focus is on new development- we will triple in size in the next 10 years. We will see they get breaks for responsible development. We shut off one of our wells. We have a new water storage system with a million gallon tank.
- Irrigation curtailment
- Allow for use of ground water resources when we're in any level of restrictions. Voluntary irrigation restrictions.
- We have proposed a soils remediation ordinance for new construction.

Q21b. Any other drought measures that I've missed? . .

- Irrigation water only, not drinking water for washing cars.

Q22 Has your organization set aside any money for drought response measures in 2007?	Number	Percent
Yes	19	10%
No	176	88%
Don't know/ refused	5	3%
Total	200	100%

Q23 How much money have you set aside?*	Number	Percent
$5,000	2	11%
$10,000	2	11%
$15,000	1	6%
$18,000	1	6%
$25,000	1	6%
$30,000	1	6%
$40,000	1	6%
$50,000	1	6%
$100,000	1	6%
$350,000	1	6%
$500,000	2	11%
$750,000	1	6%
$1,000,000	1	6%
$2,000,000	1	6%
$3,000,000	1	6%
Total	18	100%

**asked if Q22=yes*

Q23 How much money have you set aside?*	Number reporting	Minimum	Maximum	Mean	Median	Sum
	18	$5,000	$3,000,000	$467,111	$45,000	$8,408,000

*asked if Q22=yes

Q24 Have you quantified the impacts of the recent drought (from about 1999-2003) on your utility?	Number	Percent
Yes	45	23%
No	143	72%
Don't know/ refused	12	6%
Total	200	100%

Q25 Do you have an economic or monetary estimate of the drought impact on your utility?*	Number	Percent
Yes	16	36%
No	23	51%
Don't know/ refused	6	13%
Total	45	100%

*asked if Q24=yes

Q26. What was the impact on your utility? . [RECORD WHATEVER IMPACTS THEY MENTION, MONETARY OR OTHERWISE]

- $25000 in pump repairs
- $40,000
- $60,000 per year
- $4,000,000
- $4,000,000
- 2 million dollars per year in aftermath - not selling as much water for the drought- $200,000 for water police and info and monitoring. Ongoing revenue downtrend from decreased water use - to meet that we have put off or delayed capital improvements.
- About 2 million dollars
- It cost us about 1 million dollars in sales over the 4 years. It forced us to defer capital improvements.
- 20% impact
- 43% lost in water sales
- Raised water fees by 35%
- Sales went down about 50%
- 10-15% reduction
- It was difficult to meet budgetary numbers as the use was down. We rented a lot of water to make sure would could serve people. We got through alright but it was at a monetary cost.

Q27 Have you quantified the impacts of the 1999-2003 drought on your customers?	Number	Percent
Yes	11	6%
No	177	89%
Don't know/ refused	12	6%
Total	200	100%

Q28 Do you have an economic or monetary estimate of the impact on your customers?*	Number	Percent
Yes	1	9%
No	10	91%
Total	11	100%

**asked if Q27=yes*

Q29. What was the impact on your customers? [RECORD WHATEVER IMPACTS THEY MENTION, MONETARY OR OTHERWISE]

- Average bills have doubled

Q30 I am going to read a list of drought response measures. For each one, please tell me whether or not you implemented this measure during the 1999-2003 drought.		Yes	No	Don't know/ refused	Total
Declaring a drought emergency	Number	57	122	21	200
	Percent	29%	61%	11%	100%
Putting controls on new construction or restricting or prohibiting new taps	Number	29	152	19	200
	Percent	15%	76%	10%	100%
Implementing Landscape watering restrictions	Number	113	69	18	200
	Percent	57%	35%	9%	100%
Landscape restrictions	Number	50	132	18	200
	Percent	25%	66%	9%	100%
Voluntary indoor water use reductions	Number	97	85	18	200
	Percent	49%	43%	9%	100%
Enacting ordinances or fines for wasting water	Number	92	88	20	200
	Percent	46%	44%	10%	100%
Public education or involvement programs	Number	126	56	18	200
	Percent	63%	28%	9%	100%
Cloud seeding	Number	17	164	19	200
	Percent	9%	82%	10%	100%
Drought pricing	Number	47	131	22	200
	Percent	24%	66%	11%	100%
Other drought ordinances	Number	26	156	18	200
	Percent	13%	78%	9%	100%
Temporary increase in water conservation program intensity	Number	78	104	18	200
	Percent	39%	52%	9%	100%
Dry year leasing of water rights	Number	34	146	20	200
	Percent	17%	73%	10%	100%
Emergency water supply agreements	Number	38	142	20	200
	Percent	19%	71%	10%	100%
Aquifer storage and recovery or conjunctive use	Number	14	164	22	200
	Percent	7%	82%	11%	100%
Interruptible water supply agreements	Number	22	156	22	200
	Percent	11%	78%	11%	100%
Entering into or continuing cooperative agreements	Number	61	118	21	200
	Percent	31%	59%	11%	100%
Substitute supply plans	Number	50	131	19	200
	Percent	25%	66%	10%	100%
Pump ground water	Number	53	129	18	200
	Percent	27%	65%	9%	100%
Stop deliveries	Number	8	174	18	200
	Percent	4%	87%	9%	100%
Shut down wells	Number	12	170	18	200
	Percent	6%	85%	9%	100%

Q30a You mentioned other drought ordinances, can you specify what those are?

- Landscaping restrictions, non potable raw water uses
- During 2002, we implemented a mandatory outdoor watering restriction
- No outdoor watering except livestock for about 13 months
- Landscape ordinances
- Irrigation restrictions
- Voluntary irrigation restrictions
- Voluntary outdoor water use reductions
- How many times a week you can water outdoors
- Related to implementing a surcharge or drought structure for landscape and was to occur when the city declared a drought emergency
- Mandatory restrictions on irrigation
- Changed our rate structure to reflect the drought
- Increasing block rates. Restrict new lawns to 125 square feet. Institutes water conservation chapter.
- The rate structure on tiers, no new lawns
- We implemented surge in the rate structure
- Some commercial indoor water use restrictions
- Temporary surcharge on excess usage. Rebate program if customers complied.
- Surcharge
- Restricting use of treated water for dust control
- No car washing, no refilling of swimming pools or hot tubs
- Water wasting fines in newspaper announcement
- Times to water, before 9am and after 6pm, alternate days
- Severely limited in house use. Read meters once a week. Shut off after 600 gallons a month for 1/2 people.

Q30b. Any other drought measures that I've missed? . .

- Properties that were not in the district have not have been able to come into the district
- Institute irrigation restrictions
- Voluntary outdoor irrigation restrictions
- Acquisition of additional water supply by exchange
- Educational and voluntary programs
- Media effort
- Send out info packet
- Reading meters every five days, mandatory indoor water use reductions
- Began metering
- Mandatory indoor water use reductions
- Parks water reductions. Action on intensive water users-nurseries and car washes. To reduce swimming pool, reductions of fillings, not filling one. Public pools / private pool restrictions. General water use restrictions-no home car washing or patio washing for restaurants or sidewalk washing. In-stream flow program interruption. Delay of landscape install for parks and medians and new construction.
- Enlarged water storage pond
- Redrilled wells
- Purchase of three new wells
- Purchased raw water storage
- Pre plans
- 2 other wells we shut down for high nitrate- we could use in an extreme emergency- we tell consumers of a nitrate problem.
- No hauling for irrigation
- Replacing water resources/purchase replacement water
- Reallocating water resources

Q31 Does your organization have a drought response plan?	Number	Percent
Yes	54	27%
No	138	69%
Don't know/ refused	8	4%
Total	200	100%

Q32 Has this drought response plan been published and/or been made publicly available? [Choose all that apply]?*	Number of respondents	Percent of respondents
Published	24	44.4%
Publicly available	42	77.8%
Neither	8	14.8%
Don't know/ refused	2	3.7%
Total	54	100.0%

**asked if Q31=yes, percents do not sum to 100% as respondents could choose more than one category.*

Q33 What is the date of the most recent update?*	Number	Percent
2001	3	6%
2002	8	16%
2003	5	10%
2004	7	14%
2005	6	12%
2006	9	18%
2007	13	25%
Total	51	100%

**asked if Q31=yes*

Q34 How does your organization determine if you are in a drought?*		Yes	No	Don't know/ refused	Total
Reservoir levels	Number	27	24	3	54
	Percent	50%	44%	6%	100%
Snow pack	Number	30	22	2	54
	Percent	56%	41%	4%	100%
Other climate conditions	Number	30	20	4	54
	Percent	56%	37%	7%	100%

**asked if Q31=yes*

Q34d. Are there any other methods you utilize when determining if you are in a drought?

- 4 districts meet and compare, drought can be declared by one district, puts all districts into drought. River supply. Availability.
- A drought response index based on storage levels. Evaluation by professional water mgrs- not a number- it is not easily captured in just one index. Example - knowing how boulder creek flows and seeing the snow pack go down but the creek not coming up. With numbers it could be quantified, but it can be just observed. While it could be quantified, we just have a lot of inherent knowledge and info to help assess the situation from years of experience and huge familiarity of a huge amount of data, bringing it into the assessment. Stream flows not coming up as the should, from previous years data we compared the snow pack level decrease to stream flow response.
- A survey of our 2 wells to monitor usage- see what is left, if a spike in use we find out why
- Amount of water in storage
- Aquifer levels
- Call on native water rights
- Central well
- Demand
- Division of water resources
- Expected demand. Expected growth. Stream flow. Potential water supply options.
- If our wells have trouble - did they dry up or not produce as much

- Long term weather forecast
- Newspapers/common knowledge
- Precipitation yield on shares
- Production
- Projected runoff protected demand projected carry over
- Projected water supply
- Proposed development
- Rainfall
- Renewable source
- Runoff
- Spring water
- Direct flow in the river
- Stream (river) flow
- Stream flow
- Stream flow
- Water level in creek
- Streams water. Water rights overage
- Terms of our water lease agreement
- The local Rio Grande basin engineer
- Time of year
- Trying to access static water/draw down of the well. If surface water deliveries are less than normal.
- Water supply levels
- We go off of Denver water board

Q34e. You mentioned Reservoir levels as a determining factor for a drought. What level including unit of measure do you use? (i.e. Percentage of Fullness or Emptiness)

- % acre feet of water stored
- % fullness below 30%
- % of fullness, 50%= drought
- 60% acre feet
- 65% acre feet
- 70% fullness acre feet
- 75-90% level 1 drought, 60-75% level 2, less than 60% level 3
- 85% acre feet
- Percentage
- Percentage of capacity of the level
- Percentage of fullness- don't know what number
- Percentage of fullness- drought at 70 percent
- Predicted level percent 50%= drought
- Production capability, reservoir levels, percentage, 60% down
- Acre feet available on may 1st plus projected inflow until peak runoff compared to prior year use, as a ratio. The simple water supply compared to expected demand. We look at the ratio- it turns into a decimal or percentage-relating to drought stage. We are in not just percentage of reservoir storage it is percent of years our system equaled

that yield or less- it is tied to our water system model, looks at water system currently and compares to model performance of historic hydrology and compares it to current demand-which is increasing this is then compared the current conditions in the stored water plus the current water demand to historic modeled system performance to assure we are prepared for an extended drought.
- If it doesn't fill
- Look at total water available, measure in acre feet
- Supply vs. Demand
- Water from Denver water dept percentage of reservoir fullness

Q34f. You mentioned Snow Pack as a determining factor for a drought. What level including unit of measure do you use? (ie. Percentage or average)

- % of average (60% or lower)
- 25% of the total
- 65% or less is considered a dry year
- 70% of normal
- 80% snowpack percentile
- Percent of average
- Percentage of average
- Below 60%
- Below 70% of normal=drought
- Bureau of reclamation informs us on yield
- Check level online
- Comparison from year to year. Percentage year from the previous year, no set percentage indicating drought.
- Inches of water coming in from the snow course reading or pillows we look at what range we are in and what actions we should take we think our reservoirs will fill with up to 85 percent of normal snow pack-in that range we look at runoff coming off and turning into stream flow we need water rights when the stream flow comes we need decent water pack from snow-not evaporate or go to ground.
- We don't have a specific number we use of percentage of snow pack
- When snow pack is gone

Q35 In developing the drought response plan which of the following planning steps were parts of the process? Did the organization…*		Yes	No	Don't know/ refused	Total
Appoint a drought task force	Number	17	33	4	54
	Percent	31%	61%	7%	100%
State the purpose and objectives of drought plan	Number	43	9	2	54
	Percent	80%	17%	4%	100%
Seek stakeholder participation	Number	30	19	5	54
	Percent	56%	35%	9%	100%
Inventory resources and identify groups at risk	Number	41	10	3	54
	Percent	76%	19%	6%	100%
Establish and write drought plan	Number	43	9	2	54
	Percent	80%	17%	4%	100%
Identify research needs and fill institutional gaps	Number	20	29	5	54
	Percent	37%	54%	9%	100%
Integrate science and policy	Number	33	15	6	54
	Percent	61%	28%	11%	100%
Publicize drought plan, build public awareness	Number	41	11	2	54
	Percent	76%	20%	4%	100%
Develop education programs	Number	38	13	3	54
	Percent	70%	24%	6%	100%
Evaluate and revise drought plan	Number	38	13	3	54
	Percent	70%	24%	6%	100%

**asked if Q31=yes*

Q35k. Are there any other steps used in the planning process that I did not mention?

- Tiered rate structure to promote conservation
- Researched what other agencies have done
- Evaluate the drought response methods that are effective for our particular community- some methods may not fit a community- such as reuse of our effluent- we don't have a lot of reusable effluent- some cities can perhaps recycle water for soccer field watering. Our community gets stronger response for voluntary response than other communities. Might get too strong a response - it can drop like a rock, such as announcing a broken water line.
- Updated plan is not a document, it's an internal process
- Hired engineering company to inventory our water rights portfolio and assess yields

Q36 Which of the following drought response measures are in the plan?*		Yes	No	Don't know/ refused	Total
Declaring a drought emergency	Number	45	7	2	54
	Percent	83%	13%	4%	100%
Controls on new construction/ restrict or prohibit new taps	Number	21	29	4	54
	Percent	39%	54%	7%	100%
Landscape water restrictions	Number	51	1	2	54
	Percent	94%	2%	4%	100%
Public education/ involvement programs	Number	46	6	2	54
	Percent	85%	11%	4%	100%
Cloud seeding	Number	3	49	2	54
	Percent	6%	91%	4%	100%
Landscape restrictions	Number	38	14	2	54
	Percent	70%	26%	4%	100%
Voluntary indoor water use reductions	Number	46	7	1	54
	Percent	85%	13%	2%	100%
Fines/ordinances for wasting water	Number	44	8	2	54
	Percent	81%	15%	4%	100%
Drought pricing	Number	32	20	2	54
	Percent	59%	37%	4%	100%
Other drought ordinances	Number	9	42	3	54
	Percent	17%	78%	6%	100%
Water conservation programs	Number	41	11	2	54
	Percent	76%	20%	4%	100%
Dry year leasing of water rights	Number	16	33	5	54
	Percent	30%	61%	9%	100%
Emergency water supply agreements	Number	17	34	3	54
	Percent	31%	63%	6%	100%
Aquifer storage and recovery/ conjunctive use	Number	11	40	3	54
	Percent	20%	74%	6%	100%
Interruptible water supply agreements	Number	23	29	2	54
	Percent	43%	54%	4%	100%
Operations/cooperative agreements	Number	31	21	2	54
	Percent	57%	39%	4%	100%
Substitute supply plans	Number	22	29	3	54
	Percent	41%	54%	6%	100%
Pump ground water	Number	15	36	3	54
	Percent	28%	67%	6%	100%

**asked if Q31=yes*

Q36-1. You mentioned other drought ordinances; can you specify what those are?

- Depending on the level of drought, we set increasing restrictions on outdoor watering. Reduce or eliminate the use of water we have for non potable
- Surcharge
- Construction practices, landscaping
- Prohibit certain uses of water (i.e. fountains, drinking water in restaurants)
- Implementing no outdoor water use
- No car washing, no filling swim pools
- Voluntary irrigation restrictions
- The ordinance for soil remediation for new development-not passed yet

Q36s. Are there any other drought response measures in the plan that I haven't mentioned?

- Restrictions on wholesale customers. Reduction of water in all city facilities. Additional staffing.
- Setting usage limits
- Fourth stage drought- the most severe- having flow restrictors at meters and water shutoff for flagrant violators
- Tiered water rates
- Irrigation restrictions/or banned irrigation

Water Conservation Planning and Programs

Q37 Does your organization have a water conservation plan?	Number	Percent
Yes	87	44%
In progress	8	4%
No	96	48%
Don't know/ refused	9	5%
Total	200	100%

Q38 What is (what will be) the date of the most recent update?*	Number	Percent
1985	1	1%
1996	1	1%
1997	2	2%
1998	1	1%
1999	3	4%
2000	3	4%
2001	2	2%
2002	6	7%
2003	1	1%
2004	4	5%
2005	4	5%
2006	8	10%
2007	39	48%
2008	7	9%
Total	82	100%

**asked if Q37=yes*

Q39 Does your organization have a budget for water conservation programs?	Number	Percent
Yes	59	30%
No	137	69%
Don't know/ refused	4	2%
Total	200	100%

Q40 What is the approximate budget for 2007?*	Number	Percent
$500	2	5%
$1,000	3	7%
$2,500	1	2%
$5,000	2	5%
$7,000	1	2%
$10,000	4	10%
$12,000	1	2%
$15,000	4	10%
$22,000	1	2%
$25,000	4	10%
$30,000	3	7%
$40,000	2	5%
$60,000	1	2%
$67,000	1	2%
$100,000	2	5%
$150,000	2	5%
$200,000	1	2%
$275,000	1	2%
$300,000	1	2%
$400,000	1	2%
$495,000	1	2%
$500,000	1	2%
$8,000,000	1	2%
Total	41	100%

**asked if Q39=yes*

Q40 What is the approximate budget for 2007?*	Number reporting	Minimum	Maximum	Mean	Median	Sum
	41	$500	$8,000,000	$273,768	$25,000	$11,224,500

**asked if Q39=yes*

Q41 Why does your organization have a water conservation plan or program? Is it to...*		Yes	No	Don't know/ refused	Total
Offset increased demand of future growth	Number	63	33	5	101
	Percent	62%	33%	5%	100%
Reduce peak expansion cost	Number	66	31	4	101
	Percent	65%	31%	4%	100%
For drought preparedness	Number	82	15	4	101
	Percent	81%	15%	4%	100%
Because citizens demand it	Number	32	63	6	101
	Percent	32%	62%	6%	100%
Because it is the right thing to do	Number	92	5	4	101
	Percent	91%	5%	4%	100%
Environmental benefits (i.e. increased stream flow, habitat preservation)	Number	73	23	5	101
	Percent	72%	23%	5%	100%
Because it is required as a condition for a loan or permit	Number	38	58	5	101
	Percent	38%	57%	5%	100%

**asked if Q37=yes or Q39=yes*

Q41h. Are there any other reasons that I didn't mention?

- It's a proactive approach
- Mandated by the city of Westminster we purchase water from them
- There is a state statute that has an effect on it
- Safeguard our supplies/good stewardship
- State requirement
- Protection of the watershed
- For demand preparedness
- Cost of water
- To entice industry to come to Flagler
- Delayed infrastructure
- Contract with the Denver water board
- To keep people from wasting water we have a limited supply

Q42 In the long term, how would you rate your ability to offset increased demand of future growth through water conservation programs?*	Number	Percent
1 Poor	12	6%
2	34	17%
3	64	32%
4	47	24%
5 Excellent	27	14%
Don't know/ refused	16	8%
Total	200	100%

**asked if Q39=yes*

Q42 In the long term, how would you rate your ability to offset increased demand of future growth through water conservation programs?*	Number reporting	Mean	Standard Error
	184	3.2	.08

**where 1=poor and 5=excellent*

Q43 How important is it to offset increased demand of future growth through water conservation programs?*	Number	Percent
1 Not at all important	19	10%
2	22	11%
3	55	28%
4	52	26%
5 Extremely important	47	24%
Don't know/ refused	5	3%
Total	200	100%

**asked if Q39=yes*

Q43 How important is it to offset increased demand of future growth through water conservation programs?*	Number reporting	Mean	Standard Error
	195	3.4	.09

**where 1=not at all important and 5=extremely important*

Q44. I am going to read a list of tools and programs that can be used to conserve water. Please tell me if your organization uses each tool or program.

Q44 a-c Does your organization use any of the following educational tools and programs for water conservation?		Yes	No	Don't know/ refused	Total
Conservation public information campaigns	Number	123	76	1	200
	Percent	62%	38%	1%	100%
School education programs	Number	76	120	4	200
	Percent	38%	60%	2%	100%
Water conservation awards programs	Number	14	184	2	200
	Percent	7%	92%	1%	100%

Q44d. Any other educational tools or programs that I didn't mention?

- Bill stuffers, newspapers
- Quarterly newsletter
- Monthly newsletter
- Town bulletins/newsletters
- Newsletter-for the town- it has info on water conservation and drought to keep it on citizens minds
- Utility days with handouts, free barbecue rain gauges
- Children's water festival
- Children's water festival. Annually put on xeriscape seminars. Conservation outreach through citizen's festival. Disperse conservation literature. Free irrigation audit program/teach how to best operate home sprinkler systems.
- We have done educational programs for large users park/commercial customers
- Gardening classes demo garden
- Public classes
- Master gardener program
- Inform customers of drought cycle/voluntary conservation
- Outdoor water audits
- Talks to HOA's
- Toilet leak detection, free of charge
- Tours for students and adults
- We are the test developer of new conservation material the educational programs- the H2O Joe figure on signs
- Website
- Xeriscape contest
- Xeriscape demo garden, xeriscape classes
- Xeriscape program
- Education for xeriscaping

Q44_2 e-k Does your organization offer rate and informational tools and programs?		Yes	No	Don't know/ refused	Total
Increasing block rate structure	Number	112	83	5	200
	Percent	56%	42%	3%	100%
Online access to water history	Number	32	162	6	200
	Percent	16%	81%	3%	100%
On-line water use calculator	Number	24	171	5	200
	Percent	12%	86%	3%	100%
Informational water budgets	Number	58	132	10	200
	Percent	29%	66%	5%	100%
Water budget rate structure	Number	91	96	13	200
	Percent	46%	48%	7%	100%
Seasonal rates for commercial customers	Number	26	171	3	200
	Percent	13%	86%	2%	100%
In-home water use tracking device (i.e. meter inside home)	Number	62	136	2	200
	Percent	31%	68%	1%	100%

Q44l. Any other informational tools or programs that I didn't mention?

- Incentive billing
- Decreasing block rate structure
- Rates
- Currently installing meters
- Meters on wells
- Devices - like show timers and faucet restrictors. A landscape consulting program. Best way to irrigate lawn. Sprinkler system evaluation program. A water audit for commercial businesses. The water seminar for fifth graders- water expo or something, a speakers bureau for schools.
- Website
- Website community newsletter
- Watering guidelines; brochures, pamphlets
- We distribute free water saver kits

Q44_3 m-t Does your organization use indoor residential use tools and programs?		Yes	No	Don't know/ refused	Total
Efficient toilet incentives	Number	43	154	3	200
	Percent	22%	77%	2%	100%
Residential clothes washer incentives	Number	30	168	2	200
	Percent	15%	84%	1%	100%
Dishwasher incentives	Number	13	183	4	200
	Percent	7%	92%	2%	100%
Hot water recirculation system incentives	Number	5	192	3	200
	Percent	3%	96%	2%	100%
Showerhead incentive/distribution	Number	33	164	3	200
	Percent	17%	82%	2%	100%
Faucet aerator (<1.5 gpm) distribution	Number	30	166	4	200
	Percent	15%	83%	2%	100%
Residential indoor audit and leak detection	Number	70	128	2	200
	Percent	35%	64%	1%	100%
Low income retrofit program (toilets, faucets, showerheads)	Number	7	190	3	200
	Percent	4%	95%	2%	100%

Q44u. Any other indoor residential tools or programs that I didn't mention?

- A conservation kit during the drought-with showerheads and aerators
- Limited to 6000 gallons
- ET controller rebate

Q44_4 v-y Does your organization use outdoor use tools and programs?		Yes	No	Don't know/ refused	Total
Water-wise landscape incentives	Number	37	160	3	200
	Percent	19%	80%	2%	100%
Water-wise landscape design assistance	Number	39	157	4	200
	Percent	20%	79%	2%	100%
Irrigation system audits	Number	60	138	2	200
	Percent	30%	69%	1%	100%
Irrigation technology incentives (smart controllers, soil sensors, etc.)	Number	24	175	1	200
	Percent	12%	88%	1%	100%

Q44z. Any other outdoor use tools or programs that I didn't mention?

- No outdoor watering
- Restriction on livestock watering landscape irrigation
- Want to promote maximum irrigated turf
- Ordinance requires soil amendment. Pre-planned xeriscape, all plantings.
- Incentives for new construction.
- Some incentive based contracts
- Separate raw water irrigation pipeline system
- Raw water irrigation
- Leak detection on our distribution system. Lawn watering restrictions.
- Tap fee
- Voluntary watering restrictions
- Encourage rain shut-off devices
- We run an open irrigation system. Provide free irrigation to residents from river
- Planning review
- Rate structure
- Free landscape seminars

Q44_5 aa-ee **Does your organization use commercial tools and programs?**		**Yes**	**No**	**Don't know/ refused**	**Total**
Commercial clothes washer incentives	Number	3	196	1	200
	Percent	2%	98%	1%	100%
Distribute pre-rinse spray heads to restaurants	Number	4	195	1	200
	Percent	2%	98%	1%	100%
Financial incentives for commercial water-saving upgrades	Number	7	189	4	200
	Percent	4%	95%	2%	100%
Commercial Industrial Institutional audits and efficiency planning	Number	9	188	3	200
	Percent	5%	94%	2%	100%
Commercial toilet and urinal incentives	Number	6	192	2	200
	Percent	3%	96%	1%	100%

Q44ff. Any other commercial tools or programs that I didn't mention?

- Commercial audits
- Commercial workshops
- New construction tap fees
- Expanded list of rebates
- The pace program- partners for clean environment- conserve water and other things- recognition for participation
- Distribute pamphlets in hotels about water conservation

Q44_6 gg-ss Does your organization use regulatory tools and programs.		Yes	No	Don't know/ refused	Total
Limit turf areas & or narrow strips	Number	42	154	4	200
	Percent	21%	77%	2%	100%
Require rain shut-off devices	Number	9	189	2	200
	Percent	5%	95%	1%	100%
Require dedicated tap for irrigation for large properties	Number	62	133	5	200
	Percent	31%	67%	3%	100%
Establish landscaping guidelines for public facilities	Number	58	137	5	200
	Percent	29%	69%	3%	100%
Require new car washes to recycle	Number	33	154	13	200
	Percent	17%	77%	7%	100%
Retrofit on resale ordinance	Number	6	182	12	200
	Percent	3%	91%	6%	100%
Prohibit new single-pass cooling systems	Number	7	183	10	200
	Percent	4%	92%	5%	100%
Time-of-day irrigation restrictions	Number	98	101	1	200
	Percent	49%	51%	1%	100%
Water efficiency plumbing codes for new buildings	Number	72	118	10	200
	Percent	36%	59%	5%	100%
Ordinance against water waste	Number	109	89	2	200
	Percent	55%	45%	1%	100%
Landscape & irrigation standards for new development	Number	75	124	1	200
	Percent	38%	62%	1%	100%
Restrictive covenants ordinance - no prohibition of xeriscape or mandate for turf	Number	29	165	6	200
	Percent	15%	83%	3%	100%
Soil amendment ordinance (new construction)	Number	23	173	4	200
	Percent	12%	87%	2%	100%

Q44tt. Any other regulatory or programs that I didn't mention?

- Water rates
- Have started to look at requiring not treated water for irrigation
- Treated waste water for irrigation
- Restriction on outdoor irrigation
- No outdoor water use
- No outdoor irrigation
- Limited taps. Limited lawn space. Max outdoor water use restrictions.
- No irrigation

Q45 To what extent, if at all, would your organization be interested in participating in a statewide water efficiency public information and education campaign?	Number	Percent
Not at all interested	15	8%
Slightly interested	33	17%
Somewhat interested	106	53%
Very interested	44	22%
DK/depends	2	1%
Total	200	100%

Q45 To what extent, if at all, would your organization be interested in participating in a statewide water efficiency public information and education campaign?*	Number reporting	Mean	Standard Error
	198	2.9	.06

**where 1=not at all interested, 2=slightly interested, 3=somewhat interested and 4=very interested*

Q46. Why wouldn't your organization be interested?

- We mainly just work with distribution
- It's not an issue now or in the foreseeable future
- We're such a limited organization
- Conservation isn't our goal at this time. Small community.
- We're too small as an origination to participate at any funding level
- We're very small district and we don't have the irrigation that you find in other districts because we're in the forest.
- We are not a municipality
- Management
- Too small, no time or funding
- We would not have control over what was done
- We got lots of water rights lot of capacity
- We follow Denver's lead so we don't need it
- State already has too much power
- We are just not that big of a water system here. Our customers are well educated and conservative water users. Only 3 customers use any considerable water to speak of.
- I think the district manager is high on only divulging info that is required
- Not a priority

Q46a. What is your interest dependent upon?

- Amount of time someone would have to spend working with this
- Community participation
- Board of directors; need to review, cost and benefit
- Budget and staffing
- Cost
- Cost and time
- Labor, cost, what exactly would be included in the info or value of info
- The program, what it did/who it reached, and the cost
- Depends on what they do
- Different incentives
- Educational
- Future droughts
- How applicable it is to our system
- Information
- Just to learn what others are doing to keep ahead of things
- Manpower
- My time schedule
- Need
- Our current water usage and the well status
- Population changes
- Small community
- The campaign
- The results
- Time
- Understaffed
- We have no impending need. It hurts us to conserve in regards to the utility.
- We're a distributor of Denver water, so if they're involved we would be
- We're busy
- What is available from the state at no cost
- When this will be/financial

Climate Change and Long Term Planning

Q47 Which of the following are considerations in your organization's long term water supply and conservation planning? Has your organization considered…?		Yes	No	Don't know/ refused	Total
Climate variability	Number	75	122	3	200
	Percent	38%	61%	2%	100%
Snow pack	Number	126	72	2	200
	Percent	63%	36%	1%	100%
El Niño/La Nina conditions	Number	59	139	2	200
	Percent	30%	70%	1%	100%
Ground water levels	Number	116	84	0	200
	Percent	58%	42%	0%	100%
Drought recurrence	Number	140	60	0	200
	Percent	70%	30%	0%	100%
Population change	Number	153	47	0	200
	Percent	77%	24%	0%	100%
Availability of new water supply	Number	157	43	0	200
	Percent	79%	22%	0%	100%
Changes in water use/demand patterns	Number	145	55	0	200
	Percent	73%	28%	0%	100%
Peak demand	Number	156	44	0	200
	Percent	78%	22%	0%	100%

Q47j. Are there any other considerations that I haven't mentioned?

- Trying to track the regulatory climate, also tracking endangered species climate. Monitoring demographics.
- Cost of treatment
- Surface water sources
- Acquisition of new water supplies. Aquifer storage and recovery program
- Water quality
- Availability of additional water shares
- Availability of water rights
- Well regulations
- Permitting requirements. Availability of reservoir sites. Constructions of facilities. Cost of water service vs. Water rates.
- In stream flow needs, agricultural leasing program
- Front range diversions from the western slope to front range
- Water rights purchase
- Minimum stream flow
- Developing new water storage
- Built a reservoir
- Leasing water

- We are doing a water project cross connection and new meters and pits and the like. We have a grant and are borrowing money to help. We have just quarter inch lines to fight fires- a real problem. We have problems getting water here and distributing it around town.
- Water quality issues

Q48 Has your organization considered the impact of climate change on long term planning?	Number	Percent
Yes	54	27%
No	144	72%
Don't know/ refused	2	1%
Total	200	100%

Q49 How has your organization integrated potential impacts into long term planning? Have you…?*		Yes	No	Don't know/ refused	Total
started informal discussions	Number	51	2	1	54
	Percent	94%	4%	2%	100%
Started formal discussions	Number	23	30	1	54
	Percent	43%	56%	2%	100%
implemented formal research/study	Number	15	37	2	54
	Percent	28%	69%	4%	100%
actively started seeking new supplies	Number	36	18	0	54
	Percent	67%	33%	0%	100%
increased the expected drought severity scenarios	Number	27	25	2	54
	Percent	50%	46%	4%	100%
full integrated them into your long term plan	Number	20	32	2	54
	Percent	37%	59%	4%	100%
increased water conservation program efforts	Number	27	26	1	54
	Percent	50%	48%	2%	100%

**asked if Q48=yes*

Q49h. Are there any other potential impacts to long term planning that I haven't mentioned?

- Reserve pool policy
- Climbing of runoff
- Ongoing monitoring of the science of climate change and what it means for us at some point it might affect what we put in our capital program-additional pipelines and possible dam enlargements. With runoff coming earlier we are more conservative in how we implement our river exchange monitoring the river call more closely- the call for water rights on the river.
- Diversion of water to the front range
- Physical quantity of water in streams
- Potentially modification of landscaping for future drought response

Needs Assessment

Q50 I am going to read a list of areas for assistance; for each, please tell me how much your organization needs assistance.		1 No need at all	2	3	4	5 Extreme need	Don't know/ refused
Improve public education and awareness	N	33	39	79	36	12	1
	%	17%	20%	40%	18%	6%	1%
Improve or enhanced water conservation methods	N	28	34	81	42	14	1
	%	14%	17%	41%	21%	7%	1%
Improve or enhance water conservation measurement methods	N	35	36	81	31	16	1
	%	18%	18%	41%	16%	8%	1%
Create or improve master plans for future water supply and demand	N	44	31	54	44	26	1
	%	22%	16%	27%	22%	13%	1%
Create or improve drought planning	N	31	45	64	42	17	1
	%	16%	23%	32%	21%	9%	1%
Create or improve conservation planning	N	24	35	79	42	19	1
	%	12%	18%	40%	21%	10%	1%
Conduct hydrologic studies	N	66	34	49	27	20	4
	%	33%	17%	25%	14%	10%	2%
Conduct water rights studies	N	69	38	33	33	25	2
	%	35%	19%	17%	17%	13%	1%
Pre-fabricated conservation programs and materials	N	40	43	72	31	13	1
	%	20%	22%	36%	16%	7%	1%
Technical information on climate and forecasting	N	43	47	57	36	16	1
	%	22%	24%	29%	18%	8%	1%
Create cooperative agreements	N	56	52	54	20	16	2
	%	28%	26%	27%	10%	8%	1%
Communicating the value of water	N	28	25	59	51	36	1
	%	14%	13%	30%	26%	18%	1%
Loans for project evaluations/feasibility studies	N	43	29	39	51	35	3
	%	22%	15%	20%	26%	18%	2%
Loans for planning activities	N	45	31	43	46	33	2
	%	23%	16%	22%	23%	17%	1%
Loans for capital projects	N	33	16	35	49	65	2
	%	17%	8%	18%	25%	33%	1%
Grant funding for project evaluations/feasibility studies	N	27	15	34	48	74	2
	%	14%	8%	17%	24%	37%	1%
Grant funding for planning activities	N	29	20	42	44	63	2
	%	15%	10%	21%	22%	32%	1%
Grant funding to implement planning	N	31	18	38	44	67	2
	%	16%	9%	19%	22%	34%	1%
Grant funding for infrastructure management	N	29	19	47	38	65	2
	%	15%	10%	24%	19%	33%	1%

Q50 I am going to read a list of areas for assistance; for each, please tell me how much your organization needs assistance.*	Number reporting	Mean	Standard Error
Improve public education and awareness	199	2.8	.08
Improve or enhanced water conservation methods	199	2.9	.08
Improve or enhance water conservation measurement methods	199	2.8	.08
Create or improve master plans for future water supply and demand	199	2.9	.09
Create or improve drought planning	199	2.8	.08
Create or improve conservation planning	199	3.0	.08
Conduct hydrologic studies	196	2.5	.10
Conduct water rights studies	198	2.5	.10
Pre-fabricated conservation programs and materials (e.g., "fixture rebate program in a box", educational materials, bill stuffers)	199	2.7	.08
Technical information on climate and forecasting	199	2.7	.09
Create cooperative agreements	198	2.4	.09
Communicating the value of water	199	3.2	.09
Loans for project evaluations/feasibility studies	197	3.0	.10
Loans for planning activities	198	3.0	.10
Loans for capital projects	198	3.5	.10
Grant funding for project evaluations/feasibility studies	198	3.6	.10
Grant funding for planning activities	198	3.5	.10
Grant funding to implement planning	198	3.5	.10
Grant funding for infrastructure management	198	3.5	.10

**where 1=no need at all and 5=extreme need*

Q51 Now I am going to read a list of specific types of cooperative agreements, please indicate much your organization needs assistance for each type.		1 No need at all	2	3	4	5 Extreme need	Don't know/ refused	Total
Exchanges	Number	78	34	37	16	19	16	200
	Percent	39%	17%	19%	8%	10%	8%	100%
Transfers	Number	79	36	40	17	16	12	200
	Percent	40%	18%	20%	9%	8%	6%	100%
Substitute water supply plans	Number	62	32	51	22	19	14	200
	Percent	31%	16%	26%	11%	10%	7%	100%
Interruptible supplies	Number	67	36	47	16	18	16	200
	Percent	34%	18%	24%	8%	9%	8%	100%
Dry year leases	Number	74	41	47	12	13	13	200
	Percent	37%	21%	24%	6%	7%	7%	100%
Operating agreements	Number	69	37	42	25	15	12	200
	Percent	35%	19%	21%	13%	8%	6%	100%
Water banking	Number	72	34	37	25	18	14	200
	Percent	36%	17%	19%	13%	9%	7%	100%
Water conservation easements	Number	66	37	41	24	14	18	200
	Percent	33%	19%	21%	12%	7%	9%	100%

Q51 Now I am going to read a list of specific types of cooperative agreements, please indicate much your organization needs assistance for each type.*	Number reporting	Mean	Standard Error
Exchanges	184	2.3	.10
Transfers	188	2.2	.10
Substitute water supply plans	186	2.5	.10
Interruptible supplies	184	2.4	.10
Dry year leases	187	2.2	.09
Operating agreements	188	2.4	.10
Water banking	186	2.4	.10
Water conservation easements	182	2.4	.10

**where 1=no need at all and 5=extreme need*

Q52 For these same areas for assistance; for each, please tell me how strongly you agree or disagree that the state should provide the service.		1 Strongly disagree	2	3	4	5 Strongly agree	Don't know/ refused
Improve public education and awareness	N	9	16	67	50	57	1
	%	5%	8%	34%	25%	29%	1%
Improve or enhanced water conservation methods	N	12	22	76	51	38	1
	%	6%	11%	38%	26%	19%	1%
Improve or enhance water conservation measurement methods	N	13	22	74	53	37	1
	%	7%	11%	37%	27%	19%	1%
Create or improve master plans for future water supply and demand	N	25	36	51	47	41	0
	%	13%	18%	26%	24%	21%	0%
Create or improve drought planning	N	14	26	61	52	47	0
	%	7%	13%	31%	26%	24%	0%
Create or improve conservation planning	N	15	23	69	53	40	0
	%	8%	12%	35%	27%	20%	0%
Conduct hydrologic studies	N	19	23	54	53	49	2
	%	10%	12%	27%	27%	25%	1%
Conduct water rights studies	N	24	32	58	40	45	1
	%	12%	16%	29%	20%	23%	1%
Pre-fabricated conservation programs and materials	N	16	28	76	55	24	1
	%	8%	14%	38%	28%	12%	1%
Technical information on climate and forecasting	N	15	24	59	61	39	2
	%	8%	12%	30%	31%	20%	1%
Create cooperative agreements	N	30	34	80	31	22	3
	%	15%	17%	40%	16%	11%	2%
Communicating the value of water	N	9	11	54	52	74	0
	%	5%	6%	27%	26%	37%	0%
Loans for project evaluations/feasibility studies	N	12	15	56	61	56	0
	%	6%	8%	28%	31%	28%	0%
Loans for planning activities	N	13	16	53	67	51	0
	%	7%	8%	27%	34%	26%	0%
Loans for capital projects	N	8	12	43	64	73	0
	%	4%	6%	22%	32%	37%	0%
Grant funding for project evaluations/feasibility studies	N	10	19	41	59	71	0
	%	5%	10%	21%	30%	36%	0%
Grant funding for planning activities	N	10	17	43	64	66	0
	%	5%	9%	22%	32%	33%	0%
Grant funding to implement planning	N	10	15	43	63	69	0
	%	5%	8%	22%	32%	35%	0%
Grant funding for infrastructure management	N	13	20	49	53	65	0
	%	7%	10%	25%	27%	33%	0%

Q52 For these same areas for assistance; for each, please tell me how strongly you agree or disagree that the state should provide the service.*	Number reporting	Mean	Standard Error
Improve public education and awareness	199	3.7	.08
Improve or enhanced water conservation methods	199	3.4	.08
Improve or enhance water conservation measurement methods	199	3.4	.08
Create or improve master plans for future water supply and demand	200	3.2	.09
Create or improve drought planning	200	3.5	.08
Create or improve conservation planning	200	3.4	.08
Conduct hydrologic studies	198	3.5	.09
Conduct water rights studies	199	3.3	.09
Pre-fabricated conservation programs and materials (e.g., "fixture rebate program in a box", educational materials, bill stuffers)	199	3.2	.08
Technical information on climate and forecasting	198	3.4	.08
Create cooperative agreements	197	2.9	.08
Communicating the value of water	200	3.9	.08
Loans for project evaluations/feasibility studies	200	3.7	.08
Loans for planning activities	200	3.6	.08
Loans for capital projects	200	3.9	.08
Grant funding for project evaluations/feasibility studies	200	3.8	.08
Grant funding for planning activities	200	3.8	.08
Grant funding to implement planning	200	3.8	.08
Grant funding for infrastructure management	200	3.7	.09

**where 1=strongly disagree and 5=strongly agree*

Q53 Do you think the state should implement drought assessment surveys, such as this, in the future?	Number	Percent
Yes	169	85%
No	19	10%
Don't know/ refused	12	6%
Total	200	100%

Data Collection and Reporting

Q54 Does your organization currently collect any data to support water conservation planning?	Number	Percent
Yes	85	43%
No	110	55%
Don't know/ refused	5	3%
Total	200	100%

Q55 For which of the following metrics does your organization collect data? [Read list, Check all that apply]*	Number of respondents	Percent of respondents
Total consumption/demand	84	98.8%
Gallons per capita per day (GPCD)	75	88.2%
Water loss (unaccounted for water)	73	85.9%
Water saved by conservation	36	42.4%
Other	0	.0%
Don't know/ refused	0	.0%
Total	85	100.0%

**asked if Q54=yes, percents do not sum to 100% as respondents could choose more than one category.*

Q56 To whom, if anyone, does your organization report the data? [Read list, Check all that apply]*	Number of respondents	Percent of respondents
County	2	2.4%
State	16	18.8%
Federal government	0	.0%
EPA	1	1.2%
Other	27	31.8%
Don't know/ refused	3	3.5%
None	39	45.9%
Total	85	100.0%

**asked if Q54=yes, percents do not sum to 100% as respondents could choose more than one category.*

Q56. To whom, if anyone, does your organization report the data?

- Board of directors
- Board of directors
- Board of directors
- Board of trustees for the town for citizens
- Board/council
- Our governing board

- Town board
- Upper management and the water board
- Utility board, city council
- City council
- City council
- City council
- City council
- City council and citizens
- City council/city management
- City
- City of Broomfield
- City of Longmont
- CWCB, for a loan
- District 23 division 1
- Division of water resources
- Division of Water Resources. To the customers.
- Health Dept. Water Commissioner.
- Our consultant maybe water quality authorities
- Reports for grants and things like that
- The public
- Within the organization, sometimes to the public

Q57 To what extent would your organization currently be able to provide the following types of data.*		**No data**	**Partial data**	**Complete data**	**Don't know/ refused**	**Total**
Total consumption/demand	Number	0	3	81	1	85
	Percent	0%	4%	95%	1%	100%
Gallons per capita per day (GPCD)	Number	6	16	61	2	85
	Percent	7%	19%	72%	2%	100%
Water loss (unaccounted for water)	Number	6	28	50	1	85
	Percent	7%	33%	59%	1%	100%
Water saved by conservation	Number	36	37	9	3	85
	Percent	42%	44%	11%	4%	100%

**asked if Q54=yes*

Q58. Now I am going to read a list of specific types of data that could be made available statewide. For each, please indicate how useful such information would be to your organization.		1 Not at all useful	2	3	4	5 Very useful	Don't know/ refused
Per capita use at other COLORADO agencies	Number	22	27	61	41	48	1
	Percent	11%	14%	31%	21%	24%	1%
Water rates at other COLORADO agencies	Number	5	13	43	65	73	1
	Percent	3%	7%	22%	33%	37%	1%
Water rate structures at other CO agencies	Number	4	12	45	64	74	1
	Percent	2%	6%	23%	32%	37%	1%
Tap/connection fees at other CO agencies	Number	5	12	44	63	75	1
	Percent	3%	6%	22%	32%	38%	1%
Water quality and treatment data	Number	14	12	57	70	44	3
	Percent	7%	6%	29%	35%	22%	2%
Total billed water	Number	18	25	71	43	37	6
	Percent	9%	13%	36%	22%	19%	3%
Percentage of raw water from different sources (ground, surface, etc.)	Number	29	31	78	35	26	1
	Percent	15%	16%	39%	18%	13%	1%
Drought planning at other CO agencies	Number	16	18	66	48	51	1
	Percent	8%	9%	33%	24%	26%	1%

Q58. Now I am going to read a list of specific types of data that could be made available statewide. For each, please indicate how useful such information would be to your organization.*	Number reporting	Mean	Standard Error
Per capita use at other Colorado agencies	199	3.3	.09
Water rates at other Colorado agencies	199	3.9	.07
Water rate structures at other Colorado agencies	199	4.0	.07
Tap/connection fees at other Colorado agencies	199	4.0	.07
Water quality and treatment data	197	3.6	.08
Total billed water	194	3.3	.09
Percentage of raw water from different sources (ground, surface, etc.)	199	3.0	.09
Drought planning at other Colorado agencies	199	3.5	.08

**where 1=the worst and 5=the best*

Q58j. Any other types of data that I haven't mentioned?

- Water reuse
- Percentage of ground water to surface water
- Raw water acquisition plans
- Long term water supply planning
- Revenue per tap collected by an entity
- Comparing different agencies with similar populations
- Percent of indoor vs. Outdoor use of water percent of residential vs commercial use of water. Largest water users in the community. Seasonal pattern of use monthly pattern of use.
- Capital cost info for mountain communities
- Drought shadow data
- Measurements on backwash

Q59 To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project?	Number	Percent
Not at all interested	19	10%
Slightly interested	52	26%
Somewhat interested	95	48%
Very interested	29	15%
DK/depends	5	3%
Total	200	100%

Q59 To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project?*	Number reporting	Mean	Standard Error
	195	2.7	.06

**where 1=not at all interested, 2=slightly interested, 3=somewhat interested and 4=very interested*

Q60. What are some of your concerns about the State collecting this data?

- Control, knowing where all of our water is going water rights thing
- Depends on info
- Depends on what data is going to be stored, and what public access will be allowed
- Don't want the state to be involved
- How much effort would be required of us to provide the data
- How that data would be used/applied and to whom it would be distributed
- How the data would be used and distributed
- It is all well and good. Bigger water systems would be quite interested in the data collected. We like to do our own thing and don't get crossword with the state.
- Just depends on how much info they're looking for. When you have a smaller district it's harder with lack of manpower

- Lack of manpower
- Lack of staff
- We're understaffed
- More workload
- One concern is that using the data to mandate certain practices-each system is different and it might not show up in the database- such as some systems -types of water-some have more storage - whereas ours is direct flow- for us it is best to use it when available- for some others they can store water and mandate certain use -they have controls as they can keep water in storage- same for wells- they can control it- affecting us more is climate variability- we depend on snow levels.
- Personally none/management would say privacy issues
- The data can get used in inappropriate ways
- The data we receive is already useful/costs money
- The state should collect all the data that they can. We are running out of water, too many people have water rights
- They need to stay out of the water rights area
- Time
- Time involved for a small staff
- Time money
- Typically the state collects data and uses it for their own agenda
- We would need to know what specifically they're looking for
- You cannot compare entities

Q61 Would this data be useful to you for your planning and/or comparison with other entities?	**Number**	**Percent**
Yes	179	90%
No	11	6%
Don't know/ refused	10	5%
Total	200	100%

Q62 Do you think the state should conduct statewide water availability studies?	**Number**	**Percent**
Yes	163	82%
No	20	10%
Don't know/ refused	17	9%
Total	200	100%

Q63 Do you think the state should conduct statewide basin water availability studies?	**Number**	**Percent**
Yes	173	87%
No	15	8%
Don't know/ refused	12	6%
Total	200	100%

Q64 Do you think the state should conduct statewide waste water availability studies?	Number	Percent
Yes	140	70%
No	38	19%
Don't know/ refused	22	11%
Total	200	100%

Q65 Do you think the state should conduct statewide drinking water availability studies?	Number	Percent
Yes	173	87%
No	15	8%
Don't know/ refused	12	6%
Total	200	100%

Q66. Finally I would like to ask you which methods of communication you prefer for getting information from the state about water and drought issues. For each method, please indicate whether this is one of the worst methods of communication for you, or one of the best.		1 The worst	2	3	4	5 The best	Don't know/ refused
E-mail	Number	20	10	20	44	105	1
	Percent	10%	5%	10%	22%	53%	1%
Internet	Number	20	9	33	49	88	1
	Percent	10%	5%	17%	25%	44%	1%
Mail	Number	12	34	68	44	41	1
	Percent	6%	17%	34%	22%	21%	1%
Regional Workshops/seminars	Number	12	29	72	51	34	2
	Percent	6%	15%	36%	26%	17%	1%
Attending CWCB Board Meetings	Number	73	54	51	17	2	3
	Percent	37%	27%	26%	9%	1%	2%
Phone consultations	Number	58	63	46	18	14	1
	Percent	29%	32%	23%	9%	7%	1%
Face-to-face	Number	24	28	49	44	54	1
	Percent	12%	14%	25%	22%	27%	1%
Through the media	Number	65	66	38	20	10	1
	Percent	33%	33%	19%	10%	5%	1%
Organizational meetings	Number	12	44	89	36	17	2
	Percent	6%	22%	45%	18%	9%	1%

Q66. Finally I would like to ask you which methods of communication you prefer for getting information from the state about water and drought issues. For each method, please indicate whether this is one of the worst methods of communication for you, or one of the best.*	Number reporting	Mean	Standard Error
E-mail	199	4.0	.09
Internet	199	3.9	.09
Mail	199	3.3	.08
Regional Workshops/seminars	198	3.3	.08
Attending CWCB Board Meetings	197	2.1	.07
Phone consultations	199	2.3	.08
Face-to-face	199	3.4	.09
Through the media	199	2.2	.08
Organizational meetings	198	3.0	.07

**where 1=the worst and 5=the best*

Q67. Please tell me any other methods of communication that you would prefer for getting information from the state about water and drought issues.

- Conferences
- Publications/pamphlets
- Lunch-in/brown bag type seminars
- Fax
- Annual reports or subject report
- Newsletter
- DRCOG people present info, and that info is useful especially their drought projections.
- Internet database

APPENDIX C: SURVEY RESPONSES BY COLORADO WATER DIVISION

Demographic Section

Q3A How many customers does your organization serve?	1 South Platte		2 Arkansas		3 Rio Grande		4 Gunnison		5 Colorado		6 Yampa		7 San Juan/ Dolores	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Under 200	6	7%	3	7%	0	0%	0	0%	0	0%	1	10%	1	6%
200-499	6	7%	4	9%	2	22%	1	10%	2	7%	3	30%	3	18%
500-999	10	12%	10	23%	3	33%	2	20%	6	22%	2	20%	3	18%
1,000-2,999	11	13%	3	7%	2	22%	2	20%	7	26%	2	20%	7	41%
3,000-9,999	15	18%	13	30%	1	11%	3	30%	4	15%	0	0%	2	12%
10,000-100,000	24	29%	7	16%	1	11%	2	20%	6	22%	0	0%	1	6%
Over 100,000	7	9%	2	5%	0	0%	0	0%	0	0%	0	0%	0	0%
Not applicable	3	4%	2	5%	0	0%	0	0%	2	7%	2	20%	0	0%
Don't know	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Total	82	100%	44	100%	9	100%	10	100%	27	100%	10	100%	17	100%

Q3A How many customers does your organization serve?	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Number	79	42	9	10	25	8	17
Minimum	112	54	350	240	250	35	68
Maximum	1100000	420000	10000	24000	83000	2300	10000
Mean	37499	18277	2342	6369	11987	890	1982
Median	4800	3140	800	2750	2000	568	1000
Sum	2962446	767615	21079	63690	299668	7122	33700

Q3B How many connections does your organization serve?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
1 to 250	15%	20%	0%	20%	15%	30%	18%
251 to 500	16%	16%	56%	10%	11%	20%	35%
501 to 1000	12%	11%	22%	10%	19%	10%	29%
1001 to 3000	10%	20%	11%	30%	22%	30%	6%
3001 to 5000	11%	11%	11%	10%	15%	10%	6%
5001 to 10,000	15%	11%	0%	20%	4%	0%	0%
10,001 to 225,000	16%	9%	0%	0%	7%	0%	0%
Don't know/refused	6%	0%	0%	0%	7%	0%	6%
Total	100%	100%	100%	100%	100%	100%	100%

Q3B How many connections does your organization serve?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	77	44	9	10	25	10	16
Minimum	50	60	300	200	150	100	34
Maximum	225000	160000	3200	7100	30000	3200	3300
Mean	9306	9566	952	2355	3293	941	674
Median	1700	1126	356	1175	1100	460	493
Sum	716543	420896	8564	23545	82315	9407	10782

Q4 Total water deliveries 2006 (millions of gallons)							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Number	50	22	5	6	16	8	10
Minimum	4	4	94	55	12	~0	1
Maximum	146	4,000	832	1,261	3,259	33,494,000	1,040
Mean	2,924,349	617	324	489	627	4,186,893	203
Median	684	375	217	342	166	205	50
Sum	146,217,468	13,563	1,618	2,936	10,031	33,495,144	2,031

Q5 Total billed water deliveries 2006 (millions of gallons)							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Number reporting	26	13	0	3	9	3	7
Minimum	3	1.5	.	192	59	21	1
Maximum	118,340	1,010	.	1,199	10,311,000	225	161
Mean	6,649	370	.	709	1,146,001	144	53
Median	984	207	.	735	92	187	31
Sum	172,869	4,805	.	2,126	10,314,010	433	368

Q6 Total billed water deliveries 2002 (millions of gallons)							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Number reporting	15	7	0	2	4	2	5
Minimum	41	2	.	0.011	50	395	1
Maximum	9,450	983	.	132	2,770	530	184
Mean	2,595	434	.	66	896	463	59
Median	917	272	.	66	382	463	25
Sum	38,923	3,036	.	132	3,585	925	297

Q7 Total billed water deliveries 2012 (millions of gallons)							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number reporting	19	12	0	1	5	3	6
Minimum	45	4	.	175	64,	35	1
Maximum	9,776	550,000,000	.	175	3,747	300	189
Mean	2,310	45,833,928	.	175	1,214	198	70
Median	800	517	.	175	800	260	53
Sum	43,893	550,007,133	.	175	6,068	595	420

Q8 Total billed water deliveries 2017 (millions of gallons)							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number reporting	14	11	0	1	4	2	5
Minimum	50	4	.	225	75	40	1
Maximum	128,000,000	600,000,000	.	225	4,236	330	200
Mean	9,145,702	54,545,991	.	225	1,375	185	62
Median	1,433	337	.	225	595	185	29
Sum	128,039,834	600,005,906	.	225	5,501	370	309

Q9 Is there someone in your organization who does water conservation planning or programming?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	62%	50%	33%	40%	56%	30%	35%
No	37%	48%	67%	60%	44%	70%	65%
Don’t know/refused	1%	2%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q11 Is this a full time position, part time position or just part of someone's job description?*							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Full time	25%	27%	0%	25%	7%	0%	33%
Part time	4%	0%	0%	0%	7%	0%	0%
Just part of someone's job description	71%	73%	100%	75%	87%	100%	67%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q9=yes							

Q12 Does your organization have any water conservation programs?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	32%	32%	11%	10%	33%	10%	18%
No	68%	64%	89%	90%	63%	90%	82%
Don't know/refused	0%	5%	0%	0%	4%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

		Q13*						
		1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
How many full time staff are assigned to water conservation programming?	0	65%	64%	0%	100%	78%	0%	67%
	1	19%	21%	0%	0%	22%	100%	33%
	3	8%	7%	100%	0%	0%	0%	0%
	5	4%	0%	0%	0%	0%	0%	0%
	7	0%	7%	0%	0%	0%	0%	0%
	10	4%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
How many part time staff are assigned to water conservation programming?	0	69%	79%	100%	100%	78%	100%	100%
	1	15%	14%	0%	0%	22%	0%	0%
	2	4%	7%	0%	0%	0%	0%	0%
	3	4%	0%	0%	0%	0%	0%	0%
	6	4%	0%	0%	0%	0%	0%	0%
	10	4%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
How many Full Time Equivalents (FTE's) are assigned to water conservation programming?	0	81%	64%	100%	0%	78%	0%	33%
	1	12%	21%	0%	100%	22%	100%	67%
	2	0%	7%	0%	0%	0%	0%	0%
	3	4%	7%	0%	0%	0%	0%	0%
	8	4%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%

*asked if Q12=yes

Q14 Is there someone in charge of drought planning for your organization?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	45%	34%	22%	20%	37%	20%	29%
No	54%	66%	78%	80%	63%	80%	71%
Don't know/refused	1%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q16 Do you have a water supply master plan for raw and/or treated water?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes, raw only	2%	2%	0%	0%	0%	10%	6%
Yes, treated only	4%	7%	11%	0%	0%	10%	6%
Yes, raw and treated	54%	55%	22%	50%	63%	40%	53%
No	37%	32%	67%	40%	30%	40%	24%
Don't know/refused	4%	5%	0%	10%	7%	0%	12%
Total	100%	100%	100%	100%	100%	100%	100%

Q17 What year was your most recent RAW water supply master plan written (or updated)?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
1988	5%	0%	0%	0%	0%	0%	0%
1995	0%	4%	0%	0%	0%	0%	0%
1996	0%	9%	0%	0%	0%	0%	0%
1997	0%	0%	0%	0%	0%	0%	10%
1998	2%	0%	0%	0%	0%	0%	0%
1999	0%	0%	0%	0%	0%	33%	0%
2000	2%	4%	0%	20%	0%	33%	0%
2001	2%	0%	0%	0%	0%	0%	0%
2002	7%	0%	0%	20%	19%	0%	30%
2003	12%	13%	0%	0%	6%	0%	0%
2004	14%	0%	0%	0%	13%	0%	20%
2005	7%	26%	0%	0%	13%	33%	10%
2006	19%	13%	0%	20%	6%	0%	20%
2007	30%	30%	100%	40%	44%	0%	10%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q16=yes							

Q17 What year was your most recent TREATED water supply master plan written (or updated)?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
1988	2%	0%	0%	0%	0%	0%	0%
1995	0%	4%	0%	0%	0%	0%	0%
1996	0%	8%	0%	0%	0%	0%	0%
1997	0%	0%	0%	0%	0%	0%	10%
1998	2%	0%	0%	0%	0%	0%	0%
1999	0%	0%	0%	0%	0%	25%	0%
2000	5%	4%	0%	20%	0%	25%	0%
2001	2%	0%	0%	0%	0%	0%	0%
2002	7%	0%	0%	20%	19%	0%	20%
2003	14%	12%	50%	0%	0%	0%	0%
2004	11%	4%	0%	0%	13%	0%	20%
2005	7%	24%	0%	0%	13%	25%	10%
2006	20%	16%	0%	20%	13%	0%	30%
2007	30%	28%	50%	40%	44%	25%	10%
Total	100%	100%	100%	100%	100%	100%	100%

Q18 Has this master plan been published and/or been made publicly available? [Choose all that apply]?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Published	39%	21%	0%	20%	29%	17%	36%
Publicly available	71%	57%	33%	80%	65%	50%	82%
Neither	20%	32%	33%	20%	24%	50%	9%
Don’t know/refused	4%	7%	33%	0%	12%	0%	9%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q16=yes, percents do not sum to 100% as respondents could choose more than one category.							

Drought Status

Q19 To what extent, if at all, have your water supplies recovered from the recent drought (from about 1999 to 2003)?	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Still in severe drought	4%	0%	11%	0%	7%	0%	6%
About half way to recovery	18%	32%	44%	30%	19%	10%	29%
Fully recovered, reservoirs are full	67%	59%	33%	60%	67%	90%	53%
Don't know/refused	11%	9%	11%	10%	7%	0%	12%
Total	100%	100%	100%	100%	100%	100%	100%

Q20 Is your organization currently implementing any drought response measures that are distinct from any regular water conservation programs, or does it plan to at any time in 2007?	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	5%	5%	0%	0%	4%	0%	18%
No	95%	95%	100%	90%	96%	90%	82%
Not sure/depends	0%	0%	0%	10%	0%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q21 I am going to read a list of drought response measures. For each one, please tell me whether or not you are currently implementing this measure or plan to sometime in 2007.*	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Declaring a drought emergency	50%	0%	.	0%	0%	100%	0%
Putting controls on new construction or restricting or prohibiting new taps	25%	50%	.	0%	0%	0%	33%
Implementing Landscape watering restrictions	75%	50%	.	100%	100%	100%	33%
Landscape restrictions	75%	50%	.	0%	100%	0%	0%
Voluntary indoor water use reductions	100%	100%	.	0%	0%	0%	0%
Enacting ordinances or fines for wasting water	100%	50%	.	0%	0%	0%	33%
Public education or involvement programs	100%	100%	.	0%	0%	100%	33%
Cloud seeding	0%	0%	.	0%	0%	0%	33%
Drought pricing	75%	100%	.	0%	100%	0%	0%
Other drought ordinances	75%	100%	.	0%	100%	0%	0%
Temporary increase in water conservation program intensity	75%	100%	.	0%	100%	0%	0%
Dry year leasing of water rights	50%	100%	.	0%	100%	0%	0%
Emergency water supply agreements	75%	100%	.	0%	100%	0%	0%
Aquifer storage and recovery or conjunctive use	25%	100%	.	0%	0%	0%	0%
Interruptible water supply agreements	50%	50%	.	0%	0%	0%	0%
Entering into or continuing cooperative agreements	75%	100%	.	0%	100%	0%	33%
Substitute supply plans	50%	100%	.	0%	100%	0%	33%
Pump ground water	25%	100%	.	0%	100%	100%	33%
Stop deliveries	25%	50%	.	0%	0%	0%	0%
Shut down wells	50%	100%	.	0%	0%	0%	0%

*asked if Q20=yes or not sure/depends

Q22 Has your organization set aside any money for drought response measures in 2007?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	12%	9%	0%	0%	15%	0%	6%
No	84%	89%	100%	100%	81%	100%	94%
Don't know/refused	4%	2%	0%	0%	4%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q23 How much money have you set aside?*							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
5000	0%	0%	0%	0%	25%	0%	100%
10000	11%	0%	0%	0%	25%	0%	0%
15000	0%	0%	0%	0%	25%	0%	0%
18000	0%	25%	0%	0%	0%	0%	0%
25000	11%	0%	0%	0%	0%	0%	0%
30000	0%	25%	0%	0%	0%	0%	0%
40000	0%	0%	0%	0%	25%	0%	0%
50000	11%	0%	0%	0%	0%	0%	0%
100000	0%	25%	0%	0%	0%	0%	0%
350000	11%	0%	0%	0%	0%	0%	0%
500000	22%	0%	0%	0%	0%	0%	0%
750000	11%	0%	0%	0%	0%	0%	0%
1000000	11%	0%	0%	0%	0%	0%	0%
2000000	0%	25%	0%	0%	0%	0%	0%
3000000	11%	0%	0%	0%	0%	0%	0%
Total	100%	100%	0%	0%	100%	0%	100%
*asked if Q22=yes							

Q23 How much money have you set aside?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	9	4	0	0	4	0	1
Minimum	10,000	18,000	.	.	5,000	.	5,000
Maximum	3,000,000	2,000,000	.	.	40,000	.	5,000
Mean	687,222	537,000	.	.	17,500	.	5,000
Median	500,000	65,000	.	.	12,500	.	5,000
Sum	6,185,000	2,148,000	.	.	70,000	.	5,000
*asked if Q22=yes							

Q24 Have you quantified the impacts of the recent drought (from about 1999-2003) on your utility?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	26%	18%	0%	50%	30%	0%	12%
No	63%	77%	100%	50%	70%	90%	88%
Don't know/refused	11%	5%	0%	0%	0%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q25 Do you have an economic or monetary estimate of the drought impact on your utility?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	52%	38%	0%	40%	0%	0%	0%
No	29%	50%	0%	60%	100%	0%	50%
Don't know/refused	19%	13%	0%	0%	0%	0%	50%
Total	100%	100%	0%	100%	100%	0%	100%
*asked if Q24=yes							

Q27 Have you quantified the impacts of the 1999-2003 drought on your customers?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	6%	5%	0%	20%	7%	0%	0%
No	84%	89%	100%	80%	93%	90%	100%
Don't know/refused	10%	7%	0%	0%	0%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q28 Do you have an economic or monetary estimate of the impact on your customers?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	20%	0%	0%	0%	0%	0%	0%
No	80%	100%	0%	100%	100%	0%	0%
Total	100%	100%	0%	100%	100%	0%	0%
*asked if Q27=yes							

Q30 I am going to read a list of drought response measures. For each one, please tell me whether or not you implemented this measure during the 1999-2003 drought.							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Declaring a drought emergency	40%	23%	0%	20%	7%	20%	41%
Putting controls on new construction or restricting or prohibiting new taps	12%	23%	0%	10%	11%	0%	29%
Implementing Landscape watering restrictions	74%	41%	44%	40%	33%	30%	76%
Landscape restrictions	29%	30%	22%	20%	19%	0%	24%
Voluntary indoor water use reductions	63%	43%	33%	10%	41%	20%	47%
Enacting ordinances or fines for wasting water	62%	39%	33%	20%	33%	20%	41%
Public education or involvement programs	78%	50%	56%	30%	56%	50%	65%
Cloud seeding	7%	5%	0%	30%	4%	0%	29%
Drought pricing	32%	27%	0%	10%	15%	0%	18%
Other drought ordinances	15%	18%	11%	10%	7%	0%	6%
Temporary increase in water conservation program intensity	48%	34%	22%	10%	44%	20%	35%
Dry year leasing of water rights	26%	20%	0%	0%	4%	10%	6%
Emergency water supply agreements	18%	18%	0%	10%	30%	0%	29%
Aquifer storage and recovery or conjunctive use	6%	9%	0%	10%	11%	0%	6%
Interruptible water supply agreements	11%	11%	0%	10%	11%	0%	24%
Entering into or continuing cooperative agreements	29%	32%	22%	40%	41%	10%	29%
Substitute supply plans	24%	30%	11%	20%	22%	10%	35%
Pump ground water	26%	43%	11%	10%	22%	20%	18%
Stop deliveries	5%	5%	0%	0%	0%	10%	6%
Shut down wells	9%	7%	0%	0%	0%	0%	12%

Drought Planning

Q31 Does your organization have a drought response plan?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	33%	27%	11%	30%	26%	0%	24%
No	66%	64%	78%	70%	67%	100%	76%
Don't know/refused	1%	9%	11%	0%	7%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q32 Has this drought response plan been published and/or been made publicly available? [Choose all that apply]?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Published	48%	42%	0%	0%	29%	0%	100%
Publicly available	78%	67%	100%	100%	86%	0%	75%
Neither	15%	25%	0%	0%	14%	0%	0%
Don't know/refused	7%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	0%	100%

*asked if Q31=yes, percents do not sum to 100% as respondents could choose more than one category.

Q33 What is the date of the most recent update?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
2001	0%	17%	100%	0%	0%	0%	0%
2002	16%	8%	0%	67%	0%	0%	25%
2003	16%	0%	0%	0%	0%	0%	25%
2004	8%	17%	0%	0%	33%	0%	25%
2005	12%	8%	0%	0%	33%	0%	0%
2006	20%	17%	0%	33%	17%	0%	0%
2007	28%	33%	0%	0%	17%	0%	25%
Total	100%	100%	100%	100%	100%	0%	100%

*asked if Q31=yes

Q34 How does your organization determine if you are in a drought?*							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Reservoir levels	63%	42%	0%	67%	14%	.	50%
Snow pack	56%	58%	0%	67%	43%	.	75%
Other climate conditions	52%	67%	0%	67%	43%	.	75%
*asked if Q31=yes							

Q35 In developing the drought response plan which of the following planning steps were part of the process? Did the organization…							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Appoint a drought task force	37%	25%	0%	0%	43%	.	25%
State the purpose and objectives of drought plan	74%	83%	100%	33%	100%	.	100%
Seek stakeholder participation	56%	67%	0%	33%	43%	.	75%
Inventory resources and identify groups at risk	78%	75%	0%	67%	86%	.	75%
Establish and write drought plan	78%	83%	100%	33%	86%	.	100%
Identify research needs and fill institutional gaps	33%	42%	0%	0%	71%	.	25%
Integrate science and policy	56%	67%	0%	33%	71%	.	100%
Publicize drought plan, build public awareness	81%	75%	100%	33%	57%	.	100%
Develop education programs	70%	83%	0%	33%	57%	.	100%
Evaluate and revise drought plan	74%	67%	0%	33%	86%	.	75%
*asked if Q31=yes							

Q36 Which of the following drought response measures are in the plan?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Declaring a drought emergency	85%	83%	100%	33%	100%	.	75%
Controls on new construction/ restrict or prohibit new taps	41%	42%	100%	33%	29%	.	25%
Landscape water restrictions	93%	100%	100%	100%	86%	.	100%
Public education/ involvement programs	85%	92%	100%	33%	86%	.	100%
Cloud seeding	11%	0%	0%	0%	0%	.	0%
Landscape restrictions	67%	83%	100%	33%	71%	.	75%
Voluntary indoor water use reductions	93%	83%	100%	33%	86%	.	75%
Fines/ordinances for wasting water	85%	83%	100%	33%	86%	.	75%
Drought pricing	67%	58%	0%	33%	71%	.	25%
Other drought ordinances	22%	17%	0%	0%	0%	.	25%
Water conservation programs	74%	92%	100%	33%	71%	.	75%
Dry year leasing of water rights	33%	42%	0%	0%	29%	.	0%
Emergency water supply agreements	30%	25%	0%	33%	57%	.	25%
Aquifer storage and recovery/ conjunctive use	15%	50%	0%	0%	14%	.	0%
Interruptible water supply agreements	48%	58%	0%	33%	14%	.	25%
Operations/cooperative agreements	59%	67%	0%	33%	71%	.	25%
Substitute supply plans	48%	42%	0%	0%	43%	.	25%
Pump ground water	26%	50%	0%	0%	14%	.	25%
*asked if Q31=yes							

Water Conservation Planning and Programs

Q37 Does your organization have a water conservation plan?

	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	46%	48%	22%	50%	33%	20%	53%
In progress	5%	5%	0%	0%	7%	0%	0%
No	46%	41%	56%	50%	52%	80%	47%
Don't know/refused	2%	7%	22%	0%	7%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q38 What is (what will be) the date of the most recent update? *

	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
1985	3%	0%	0%	0%	0%	0%	0%
1996	0%	0%	0%	0%	10%	0%	0%
1997	5%	0%	0%	0%	0%	0%	0%
1998	0%	0%	0%	0%	10%	0%	0%
1999	3%	10%	0%	0%	0%	0%	0%
2000	3%	0%	0%	0%	10%	50%	0%
2001	3%	5%	0%	0%	0%	0%	0%
2002	5%	5%	0%	0%	0%	0%	43%
2003	3%	0%	0%	0%	0%	0%	0%
2004	3%	10%	0%	0%	10%	0%	0%
2005	5%	10%	0%	0%	0%	0%	0%
2006	5%	10%	0%	33%	20%	0%	14%
2007	55%	43%	100%	67%	40%	50%	14%
2008	8%	10%	0%	0%	0%	0%	29%
Total	100%	100%	100%	100%	100%	100%	100%

*asked if Q37=yes

Q39 Does your organization have a budget for water conservation programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	43%	23%	33%	0%	30%	10%	6%
No	57%	75%	56%	100%	63%	90%	94%
Don't know/refused	0%	2%	11%	0%	7%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q40 What is the approximate budget for 2007?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
500	4%	17%	0%	0%	0%	0%	0%
1000	8%	0%	0%	0%	17%	0%	0%
2500	4%	0%	0%	0%	0%	0%	0%
5000	4%	17%	0%	0%	0%	0%	0%
7000	4%	0%	0%	0%	0%	0%	0%
10000	8%	0%	0%	0%	17%	100%	0%
12000	4%	0%	0%	0%	0%	0%	0%
15000	0%	33%	0%	0%	33%	0%	0%
22000	0%	0%	100%	0%	0%	0%	0%
25000	12%	0%	0%	0%	0%	0%	100%
30000	4%	17%	0%	0%	17%	0%	0%
40000	8%	0%	0%	0%	0%	0%	0%
60000	4%	0%	0%	0%	0%	0%	0%
67000	4%	0%	0%	0%	0%	0%	0%
100000	8%	0%	0%	0%	0%	0%	0%
150000	4%	0%	0%	0%	17%	0%	0%
200000	4%	0%	0%	0%	0%	0%	0%
275000	4%	0%	0%	0%	0%	0%	0%
300000	4%	0%	0%	0%	0%	0%	0%
400000	0%	17%	0%	0%	0%	0%	0%
495000	4%	0%	0%	0%	0%	0%	0%
500000	4%	0%	0%	0%	0%	0%	0%
8000000	4%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	0%	100%	100%	100%
*asked if Q39=yes							

Q40 What is the approximate budget for 2007?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	26	6	1	0	6	1	1
Minimum	500	500	22,000	.	1,000	10,000	25,000
Maximum	8,000,000	400,000	22,000	.	150,000	10,000	25,000
Mean	403,115	77,583	22,000	.	36,833	10,000	25,000
Median	35,000	15,000	22,000	.	15,000	10,000	25,000
Sum	10,481,000	465,500	22,000	.	221,000	10,000	25,000
*asked if Q39=yes							

Q41 Why does your organization have a water conservation plan or program? Is it to...							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Offset increased demand of future growth	66%	61%	100%	80%	45%	100%	33%
Reduce peak expansion cost	62%	65%	100%	100%	55%	50%	67%
For drought preparedness	72%	87%	100%	80%	91%	50%	100%
Because citizens demand it	36%	30%	0%	20%	9%	50%	44%
Because it is the right thing to do	89%	91%	67%	100%	91%	100%	100%
Environmental benefits (i.e. increased stream flow, habitat preservation)	70%	78%	100%	80%	73%	50%	67%
Because it is required as a condition for a loan or permit	36%	48%	100%	20%	36%	0%	22%
*asked if Q37=yes or Q39=yes							

Q42 In the long term, how would you rate your ability to offset increased demand of future growth through water conservation programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
	Percent	**Percent**	**Percent**	**Percent**	**Percent**	**Percent**	**Percent**
1 Poor	5%	7%	0%	30%	0%	10%	6%
2	11%	16%	11%	20%	41%	20%	12%
3	35%	27%	44%	30%	22%	50%	24%
4	23%	18%	33%	10%	26%	0%	53%
5 Excellent	16%	23%	0%	0%	7%	10%	6%
Don't know/refused	10%	9%	11%	10%	4%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q39=yes							

Q42 In the long term, how would you rate your ability to offset increased demand of future growth through water conservation programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	74	40	8	9	26	9	17
Mean	3.4	3.4	3.3	2.2	3.0	2.8	3.4
Standard Error of Mean	.13	.20	.25	.36	.20	.36	.24
*where 1=poor and 5=excellent							

Q43 How important is it to offset increased demand of future growth through water conservation programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
1 Not at all important	6%	14%	0%	20%	11%	10%	6%
2	10%	23%	22%	0%	4%	10%	0%
3	24%	18%	33%	30%	41%	50%	29%
4	29%	23%	22%	20%	19%	30%	35%
5 Extremely important	28%	18%	11%	30%	26%	0%	29%
Don't know/refused	2%	5%	11%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q39=yes							

Q43 How important is it to offset increased demand of future growth through water conservation programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	80	42	8	10	27	10	17
Mean	3.7	3.1	3.3	3.4	3.4	3.0	3.8
Standard Error of Mean	.13	.21	.37	.48	.24	.30	.26
*where 1=not at all important and 5=extremely important							

Q44 Does your organization use any of the following educational tools and programs for water conservation?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Conservation public information campaigns	70%	57%	56%	50%	56%	50%	59%
School education programs	41%	34%	11%	50%	44%	10%	41%
Water conservation awards programs	5%	9%	22%	0%	7%	20%	0%

Q44_2 Does your organization offer rate and informational tools and programs?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Increasing block rate structure	68%	48%	22%	60%	63%	30%	41%
Online access to water history	21%	16%	11%	10%	11%	10%	6%
On-line water use calculator	15%	9%	0%	10%	11%	10%	12%
Informational water budgets	33%	30%	22%	10%	30%	50%	12%
Water budget rate structure	40%	48%	44%	80%	44%	50%	47%
Seasonal rates for commercial customers	10%	14%	33%	10%	19%	20%	6%
In-home water use tracking device (i.e. meter inside home)	30%	27%	33%	50%	37%	30%	24%

Q44_3 Does your organization use indoor residential use tools and programs?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Efficient toilet incentives	30%	14%	11%	10%	11%	40%	18%
Residential clothes washer incentives	26%	11%	11%	0%	4%	0%	12%
Dishwasher incentives	11%	2%	11%	0%	4%	0%	6%
Hot water recirculation system incentives	2%	0%	11%	10%	0%	0%	6%
Showerhead incentive/distribution	26%	5%	22%	10%	7%	30%	12%
Faucet aerator (<1.5 gpm) distribution	20%	5%	22%	10%	19%	20%	12%
Residential indoor audit and leak detection	35%	27%	22%	20%	48%	50%	35%
Low income retrofit program (toilets, faucets, showerheads)	4%	5%	0%	0%	0%	0%	12%

Q44_4 Does your organization use outdoor use tools and programs?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Water-wise landscape incentives	24%	16%	33%	0%	15%	0%	18%
Water-wise landscape design assistance	28%	16%	11%	0%	11%	0%	24%
Irrigation system audits	33%	18%	22%	20%	56%	20%	24%
Irrigation technology incentives (smart controllers, soil sensors, etc.)	17%	14%	11%	0%	0%	10%	12%

Q44_5 Does your organization use commercial tools and programs?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Commercial clothes washer incentives	1%	2%	0%	0%	4%	0%	0%
Distribute pre-rinse spray heads to restaurants	5%	0%	0%	0%	0%	0%	0%
Financial incentives for commercial water-saving upgrades	6%	0%	11%	0%	0%	0%	6%
Commercial Industrial Institutional audits and efficiency planning	9%	0%	11%	0%	4%	0%	0%
Commercial toilet and urinal incentives	5%	0%	11%	0%	0%	0%	6%

Q44_6 Does your organization use regulatory tools and programs.							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Limit turf areas & or narrow strips	23%	16%	0%	10%	37%	20%	18%
Require rain shut-off devices	9%	5%	0%	0%	0%	0%	0%
Require dedicated tap for irrigation for large properties	35%	30%	11%	20%	44%	20%	18%
Establish landscaping guidelines for public facilities	38%	25%	22%	20%	33%	0%	12%
Require new car washes to recycle	24%	9%	0%	10%	15%	20%	6%
Retrofit on resale ordinance	5%	0%	0%	0%	0%	10%	6%
Prohibit new single-pass cooling systems	6%	0%	0%	0%	4%	0%	6%
Time-of-day irrigation restrictions	60%	36%	67%	50%	41%	20%	53%
Water efficiency plumbing codes for new buildings	43%	23%	56%	50%	33%	40%	24%
Ordinance against water waste	67%	43%	67%	30%	41%	50%	53%
Landscape & irrigation standards for new development	44%	23%	33%	40%	56%	20%	24%
Restrictive covenants ordinance - no prohibition of xeriscape or mandate for turf	20%	14%	0%	0%	11%	10%	18%
Soil amendment ordinance (new construction)	20%	7%	0%	0%	11%	0%	0%

Q45 To what extent, if at all, would your organization be interested in participating in a statewide water efficiency public information and education campaign?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Not at all interested	5%	14%	0%	20%	7%	0%	6%
Slightly interested	17%	18%	11%	10%	19%	20%	12%
Somewhat interested	54%	50%	89%	40%	52%	60%	47%
Very interested	24%	14%	0%	30%	22%	20%	35%
Don't know /depends	0%	5%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q45 To what extent, if at all, would your organization be interested in participating in a statewide water efficiency public information and education campaign?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	82	42	9	10	27	10	17
Mean	3.0	2.7	2.9	2.8	2.9	3.0	3.1
Standard Error of Mean	.09	.14	.11	.36	.16	.21	.21
*where 1=not at all interested, 2=slightly interested, 3=somewhat interested and 4=very interested							

Climate Change and Long Term Planning

Q47 Which of the following are considerations in your organization's long term water supply and conservation planning? Has your organization considered…?

	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Climate variability	35%	34%	44%	30%	59%	0%	47%
Snow pack	55%	59%	44%	90%	78%	60%	82%
El Niño/La Nina conditions	28%	32%	33%	30%	33%	10%	35%
Ground water levels	55%	75%	89%	40%	44%	70%	41%
Drought recurrence	72%	70%	56%	40%	74%	60%	82%
Population change	74%	66%	56%	90%	93%	90%	82%
Availability of new water supply	83%	75%	44%	60%	89%	70%	82%
Changes in water use/demand patterns	74%	64%	56%	70%	81%	70%	82%
Peak demand	80%	73%	56%	70%	89%	80%	76%

Q48 Has you organization considered the impact of climate change on long term planning?

	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	29%	30%	22%	0%	33%	0%	35%
No	70%	68%	78%	100%	67%	100%	65%
Don't know/refused	1%	2%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q49 How has your organization integrated potential impacts into long term planning? Have you…?*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
started informal discussions	100%	100%	100%	.	78%	.	83%
Started formal discussions	58%	31%	50%	.	33%	.	17%
implemented formal research/study	29%	31%	0%	.	22%	.	33%
actively started seeking new supplies	71%	77%	0%	.	56%	.	67%
increased the expected drought severity scenarios	58%	62%	0%	.	56%	.	0%
full integrated them into your long term plan	46%	31%	0%	.	33%	.	33%
increased water conservation program efforts	63%	38%	0%	.	44%	.	50%
*asked if Q48=yes							

Needs Assessment

Q50 I am going to read a list of areas for assistance; for each, please tell me how much your organization needs assistance.*	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Improve public education and awareness	2.7	2.8	3.2	2.8	2.9	2.9	2.8
Improve or enhanced water conservation methods	2.8	3.0	2.9	3.2	3.0	2.9	2.6
Improve or enhance water conservation measurement methods	2.8	2.8	3.0	3.0	2.7	2.9	2.5
Create or improve master plans for future water supply and demand	2.7	3.0	3.1	2.9	2.9	3.2	3.2
Create or improve drought planning	2.8	2.7	3.2	2.9	2.8	3.1	3.0
Create or improve conservation planning	3.0	2.8	3.1	3.0	3.0	2.9	3.3
Conduct hydrologic studies	2.4	2.7	2.9	3.0	2.5	2.1	2.1
Conduct water rights studies	2.4	2.6	3.2	2.7	2.5	2.4	2.5
Pre-fabricated conservation programs and materials (e.g., “fixture rebate program in a box”, educational materials, bill stuffers)	2.6	2.7	3.1	2.4	2.7	3.1	2.6
Technical information on climate and forecasting	2.8	2.6	2.6	2.2	2.6	2.7	2.8
Create cooperative agreements	2.5	2.4	2.4	2.1	2.4	1.9	2.9
Communicating the value of water	3.1	3.2	3.8	3.5	3.4	3.1	2.9
Loans for project evaluations/feasibility studies	3.0	3.0	3.9	3.1	3.0	2.5	3.3
Loans for planning activities	3.0	2.8	3.3	2.8	3.2	2.6	3.2
Loans for capital projects	3.5	3.5	3.9	3.5	3.3	3.0	3.9
Grant funding for project evaluations/feasibility studies	3.7	3.8	4.1	3.3	3.5	3.0	4.0
Grant funding for planning activities	3.5	3.5	4.0	3.1	3.2	2.7	3.9
Grant funding to implement planning	3.6	3.5	4.0	3.2	3.3	2.8	4.0
Grant funding for infrastructure management	3.5	3.5	4.0	2.9	3.3	2.8	4.1
*where 1=no need at all and 5=extreme need							

Q51 Now I am going to read a list of specific types of cooperative agreements, please indicate much your organization needs assistance for each type.*							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Exchanges	2.3	2.3	2.4	2.0	2.4	1.8	1.8
Transfers	2.4	2.3	2.3	2.0	2.2	1.7	2.1
Substitute water supply plans	2.5	2.4	3.3	2.2	2.4	2.1	2.7
Interruptible supplies	2.4	2.3	3.1	2.3	2.2	1.7	2.8
Dry year leases	2.2	2.3	2.3	2.0	2.1	1.8	2.4
Operating agreements	2.4	2.4	2.4	2.2	2.5	1.8	2.2
Water banking	2.4	2.4	2.8	1.9	2.5	1.9	2.1
Water conservation easements	2.4	2.3	2.8	2.2	2.6	2.2	2.2
*where 1=no need at all and 5=extreme need							

Q52 For these same areas for assistance; for each, please tell me how strongly you agree or disagree that the state should provide the service.*	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Improve public education and awareness	3.7	3.5	3.7	3.7	3.8	3.4	3.9
Improve or enhanced water conservation methods	3.5	3.3	3.6	3.1	3.4	3.2	3.6
Improve or enhance water conservation measurement methods	3.5	3.3	3.7	2.8	3.3	3.1	3.6
Create or improve master plans for future water supply and demand	3.2	3.4	3.8	2.3	2.9	3.0	3.9
Create or improve drought planning	3.5	3.5	3.9	2.8	3.2	3.4	4.1
Create or improve conservation planning	3.4	3.4	3.7	2.8	3.4	3.3	3.8
Conduct hydrologic studies	3.4	3.6	4.1	2.9	3.3	2.9	3.9
Conduct water rights studies	3.3	3.2	4.2	2.8	3.0	2.8	3.6
Pre-fabricated conservation programs and materials (e.g., “fixture rebate program in a box”, educational materials, bill stuffers)	3.2	3.2	3.7	2.3	3.4	3.1	3.4
Technical information on climate and forecasting	3.5	3.5	4.1	2.2	3.0	3.3	3.8
Create cooperative agreements	3.0	3.0	3.1	2.7	2.8	2.2	3.2
Communicating the value of water	3.8	4.0	3.8	3.6	3.9	3.7	3.8
Loans for project evaluations/feasibility studies	3.7	3.7	4.0	2.6	3.7	3.1	4.1
Loans for planning activities	3.7	3.7	4.0	2.7	3.8	3.1	3.9
Loans for capital projects	4.0	3.8	4.1	3.7	4.0	3.2	4.2
Grant funding for project evaluations/feasibility studies	3.8	3.9	4.3	3.0	3.7	3.1	4.3
Grant funding for planning activities	3.8	3.9	4.2	2.8	3.8	3.1	4.2
Grant funding to implement planning	3.9	3.8	4.3	3.4	3.7	3.2	4.2
Grant funding for infrastructure management	3.7	3.7	4.0	2.9	3.7	3.1	4.1
*where 1=strongly disagree and 5=strongly agree							

Q53 Do you think the state should implement drought assessment surveys, such as this, in the future?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	85%	82%	78%	80%	85%	90%	88%
No	9%	14%	11%	20%	4%	10%	6%
Don't know/refused	6%	5%	11%	0%	11%	0%	6%
Total	100%	100%	100%	100%	100%	100%	100%

Data Collection and Reporting

Q54 Does your organization currently collect any data to support water conservation planning?							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Yes	48%	30%	33%	40%	56%	40%	41%
No	51%	66%	56%	60%	41%	60%	59%
Don't know/refused	1%	5%	11%	0%	4%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q55 For which of the following metrics does your organization collect data? [Read list, Check all that apply]*							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Total consumption/demand	97%	100%	100%	100%	100%	100%	100%
Gallons per capita per day (GPCD)	87%	92%	100%	75%	87%	100%	86%
Water loss (unaccounted for water)	87%	100%	0%	100%	87%	75%	86%
Water saved by conservation	46%	62%	100%	0%	27%	0%	43%
Other	0%	0%	0%	0%	0%	0%	0%
Don't know/refused	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q54=yes, percents do not sum to 100% as respondents could choose more than one category.							

Q56 To whom, if anyone, does your organization report the data? [Read list, Check all that apply]*							
	1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
County	3%	0%	33%	0%	0%	0%	0%
State	21%	23%	0%	0%	27%	0%	14%
Federal government	0%	0%	0%	0%	0%	0%	0%
EPA	3%	0%	0%	0%	0%	0%	0%
Other	36%	15%	67%	25%	27%	25%	43%
Don't know/refused	5%	0%	0%	0%	7%	0%	0%
None	41%	62%	0%	75%	40%	75%	43%
Total	100%	100%	100%	100%	100%	100%	100%

*asked if Q54=yes, percents do not sum to 100% as respondents could choose more than one category.

Q57 To what extent would your organization currently be able to provide the following types of data.*								
		1 South Platte	2 Arkansas	3 Rio Grande	4 Gunnison	5 Colorado	6 Yampa	7 San Juan/ Dolores
Total consumption/ demand	No data	0%	0%	0%	0%	0%	0%	0%
	Partial data	3%	0%	33%	25%	0%	0%	0%
	Complete data	95%	100%	67%	75%	100%	100%	100%
	Don't know/refused	3%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
Gallons per capita per day (GPCD)	No data	5%	8%	0%	25%	13%	0%	0%
	Partial data	18%	8%	33%	25%	13%	50%	29%
	Complete data	74%	85%	67%	50%	67%	50%	71%
	Don't know/refused	3%	0%	0%	0%	7%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
Water loss (unaccounted for water)	No data	8%	0%	33%	0%	7%	25%	0%
	Partial data	28%	23%	67%	50%	27%	75%	43%
	Complete data	62%	77%	0%	50%	67%	0%	57%
	Don't know/refused	3%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
Water saved by conservation	No data	36%	23%	0%	100%	67%	50%	43%
	Partial data	46%	69%	100%	0%	13%	25%	57%
	Complete data	13%	8%	0%	0%	13%	25%	0%
	Don't know/refused	5%	0%	0%	0%	7%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%
*asked if Q54=yes								

Q58. Now I am going to read a list of specific types of data that could be made available statewide. For each, please indicate how useful such information would be to your organization.							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Per capita use at other COLORADO agencies	3.5	3.1	3.9	2.6	3.1	3.4	3.8
Water rates at other COLORADO agencies	3.9	3.9	3.9	3.5	4.1	4.1	4.3
Water rate structures at other CO agencies	4.0	3.9	3.7	3.4	4.1	4.1	4.3
Tap/connection fees at other CO agencies	4.0	3.8	4.3	3.6	3.9	3.9	4.3
Water quality and treatment data	3.7	3.5	4.0	2.9	3.5	3.5	3.9
Total billed water	3.2	3.2	3.7	2.6	3.5	3.3	3.8
Percentage of raw water from different sources (ground, surface, etc.)	3.0	3.0	3.2	2.5	3.0	2.9	3.3
Drought planning at other CO agencies	3.6	3.4	3.4	2.7	3.5	3.5	3.9
where 1=the worst and 5=the best							

Q59 To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Not at all interested	10%	7%	0%	0%	15%	20%	12%
Slightly interested	20%	23%	56%	40%	30%	20%	35%
Somewhat interested	55%	55%	44%	50%	30%	40%	29%
Very interested	15%	14%	0%	10%	19%	20%	18%
DK/depends	1%	2%	0%	0%	7%	0%	6%
Total	100%	100%	100%	100%	100%	100%	100%

Q59 To what extent, if at all, would your organization be interested in contributing to a statewide water data repository project?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Number	81	43	9	10	25	10	16
Mean	2.8	2.8	2.4	2.7	2.6	2.6	2.6
Standard Error of Mean	.09	.12	.18	.21	.20	.34	.24
*where 1=not at all interested, 2=slightly interested, 3=somewhat interested and 4=very interested							

Q61 Would this data be useful to you for your planning and/or comparison with other entities?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	91%	86%	100%	90%	93%	80%	82%
No	5%	7%	0%	0%	4%	10%	12%
Don’t know/refused	4%	7%	0%	10%	4%	10%	6%
Total	100%	100%	100%	100%	100%	100%	100%

Q62 Do you think the state should conduct statewide water availability studies?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	83%	84%	89%	80%	70%	70%	88%
No	9%	7%	0%	10%	19%	20%	12%
Don't know/refused	9%	9%	11%	10%	11%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q63 Do you think the state should conduct statewide basin water availability studies?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	85%	91%	100%	90%	78%	80%	88%
No	6%	7%	0%	10%	11%	10%	12%
Don't know/refused	9%	2%	0%	0%	11%	10%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q64 Do you think the state should conduct statewide waste water availability studies?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	66%	70%	89%	70%	59%	100%	76%
No	20%	23%	0%	30%	22%	0%	18%
Don't know/refused	15%	7%	11%	0%	19%	0%	6%
Total	100%	100%	100%	100%	100%	100%	100%

Q65 Do you think the state should conduct statewide drinking water availability studies?							
	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
Yes	85%	91%	100%	80%	85%	90%	82%
No	6%	2%	0%	10%	11%	10%	18%
Don't know/refused	9%	7%	0%	10%	4%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%

Q66. Finally I would like to ask you which methods of communication you prefer for getting information from the state about water and drought issues. For each method, please indicate whether this is one of the worst methods of communication for you, or one of the best.

	1 South Platte	**2 Arkansas**	**3 Rio Grande**	**4 Gunnison**	**5 Colorado**	**6 Yampa**	**7 San Juan/ Dolores**
E-mail	4.2	4.0	3.6	3.6	4.1	3.7	3.6
Internet	4.2	3.8	3.4	3.0	3.9	3.7	3.6
Mail	3.1	3.5	3.4	3.4	3.3	3.5	4.3
Regional Workshops/seminars	3.2	3.1	3.7	3.2	3.4	3.7	4.1
Attending CWCB Board Meetings	2.1	2.4	2.1	1.9	1.8	1.7	2.0
Phone consultations	2.3	2.5	3.0	2.2	2.0	2.2	2.4
Face-to-face	3.1	3.6	3.2	3.6	3.5	3.6	3.9
Through the media	2.1	2.4	2.7	1.8	2.3	2.1	2.4
Organizational meetings	3.0	2.9	2.7	2.8	3.0	3.1	3.3
where 1=the worst and 5=the best							

APPENDIX D: ENTITIES RESPONSDING TO SURVEY

ENTITY	PROVIDER	CITY
ACADEMY WATER & SANITATION DIS		COLORADO SPRINGS
ARVADA	DEPARTMENT OF PUBLIC WORKS, UTILITIES DIVISION	ARVADA
AULT	NORTH WELD COUNTY WATER DISTRICT	LUCERNE
BASALT	WATER DEPARTMENT	BASALT
BATTLEMENT MESA METROPOLITAN D		BATTLEMENT MESA
BLACK HAWK	TOWN OF BLACK HAWK	BLACK HAWK
BLUE VALLEY METRO DISTRICT		SILVERTHORNE
BOARD OF WATER WORKS OF PUEBLO		PUEBLO
BOW MAR	PLATTE CANYON WATER & SANITATION	LITTLETON
CANON CITY	WATER TREATMENT PLANT	CA ON CITY
CASTLE ROCK	DEPARMENT OF UTILITIES	CASTLE ROCK
CHEROKEE METROPOLITAN DISTRICT		COLORADO SPRINGS
CHEYENNE WELLS		CHEYENNE WELLS
CITY AND COUNTY OF BROOMFIELD		BROOMFIELD
CITY OF ALAMOSA		ALAMOSA
CITY OF ASPEN		ASPEN
CITY OF AURORA		AURORA
CITY OF BOULDER		BOULDER
CITY OF BRIGHTON		BRIGHTON
CITY OF BRUSH		BRUSH
CITY OF CORTEZ		CORTEZ
CITY OF CRAIG PUBLIC WORKS DEP		CRAIG
CITY OF DACONO		DACONO
CITY OF ENGELWOOD		ENGLEWOOD
CITY OF FEDERAL HEIGHTS		FEDERAL HEIGHTS
CITY OF FLORENCE		FLORENCE
CITY OF FORT COLLINS		FORT COLLINS
CITY OF FORT MORGAN	WATER DISTRIBUTION/WASTEWATER COLLECTION	FORT MORGAN
CITY OF GLENDALE		GLENDALE
CITY OF GLENWOOD SPRINGS		GLENWOOD SPRINGS,
CITY OF GOLDEN, PUBLIC WORKS		GOLDEN
CITY OF GRAND JUNCTION		GRAND JUNCTION
CITY OF GREELEY		GREELEY
CITY OF HOLYOKE		HOLYOKE
CITY OF IDAHO SPRINGS, PUBWRKS		IDAHO SPRINGS
CITY OF LA JUNTA		LA JUNTA
CITY OF LAFAYETTE		LAFAYETTE
CITY OF LONGMONT		LONGMONT
CITY OF LOUISVILLE		LOUISVILLE
CITY OF MONTE VISTA		MONTE VISTA

ENTITY	PROVIDER	CITY
CITY OF MONTROSE		MONTROSE
CITY OF NORTHGLENN		NORTHGLENN
CITY OF RIFLE		RIFLE
CITY OF SALIDA		SALIDA
CITY OF STEAMBOAT SPRINGS		STEAMBOAT SPRINGS
CITY OF THORNTON WATER RESOURC		THORNTON
CITY OF WESTMINSTER		WESTMINSTER
CITY OF YUMA		YUMA
CLIFTON WD	CLIFTON WATER DISTRICT	CLIFTON
COKEDALE	TOWN OF COKEDALE	COKEDALE
COLLBRAN	TOWN OF COLLBRAN	COLLBRAN
COLORADO SPRINGS UTILITIES		COLO SPRINGS
CONSOLIDATED MUTUAL WATER COMPANY		LAKEWOOD
COPPER MTN. CONSOL. METRO DIST		COPPER MOUNTAIN
CRESTVIEW WSD	CRESTVIEW WATER AND SANITATION DISTRICT	DENVER
DE BEQUE	PUBLIC WORKS DEPARTMENT	DEBEQUE
DEER TRAIL		DEER TRAIL
DENVER WATER		DENVER
DOLORES	PUBLIC WORKS DEPARTMENT	DOLORES
DOVE CREEK		
DURANGO WEST METRO DIST #1		DURANGO
DURANGO WEST METRO DISTRICT #2		DURANGO
EAST ALAMOSA WATER & SANITATIO		ALAMOSA
EAST CHERRY CREEK VALLEY WD	EAST CHERRY CREEK VALLEY WATER & SANITATION DISTRI	AURORA
EAST DILLON WATER DISTRICT		FRISCO
EAST LARIMER COUNTY WATER DIST		FORT COLLINS
EDGEMONT RANCH METRO DISTRICT		DURANGO
EVANS	PUBLIC WORKS DEPARTMENT	EVANS
EVERGREEN METROPOLITAN DIST.		EVERGREEN
FIRESTONE	TOWN OF FIRESTONE	FIRESTONE
FOREST LAKES METROPOLITAN DIST		BAYFIELD
FOUNTAIN UTILITY		FOUNTAIN
FOUNTAIN VALLEY AUTHORITY	FOUNTAIN VALLEY AUTHORITY	COLORADO SPRINGS
GEORGETOWN		GEORGETOWN
GILCREST		
GRANBY		GRANBY
GRAND LAKE		
GREEN MOUNTAIN WSD	GREEN MOUNTAIN WATER AND SANITATION DISTRICT	LAKEWOOD
GUNNISON		GUNNISON
HEATHER GARDENS DISTRICT		AURORA
HILLROSE		HILLROSE
HINSDALE CITY PLANNING COMMISI		PAGOSA SPRINGS
HOT SULPHUR SPRINGS	PUBLIC WORKS DEPARTMENT	HOT SULPHUR SPRINGS

ENTITY	PROVIDER	CITY
HOTCHKISS	PUBLIC WORKS DEPARTMENT	HOTCHKISS
JULESBURG	TOWN OF JULESBURG	JULESBERG
KEN CARYL RANCH WSD	KEN-CARYL RANCH WATER AND SANITATION DISTRICT	LITTLETON
KIM	TOWN OF KIM	KIM
LAKE CATAMOUNT # 1 METRO DIST.		STEAMBOAT SPRINGS
LAMAR	WATER DEPARTMENT	LAMAR
LARKSPUR	TOWN OF LARKSPUR	LARKSPUR
LAS ANIMAS	PUBLIC WORKS DEPARTMENT	
LEADVILLE	PARKVILLE WATER DISTRICT	LEADVILLE
LEFT HAND WATER DISTRICT		NIWOT
MENOKEN WATER DISTRICT		MONTROSE
MERINO	TOWN OF MERINO	MERINO
MID VALLEY METROPOLITAN DISTRI		BASALT
MILLIKEN		
MONTEZUMA COUNTY WATER DISTRIC		CORTEZ
MORRISON CREEK WATER&SAN DIST		OAK CREEK
MOUNT WERNER WATER & SAN DISTR		STEAMBOAT SPRGS
MOUNTAIN VIEW	WHEAT RIDGE WATER DISTRICT	WHEAT RIDGE
MT. CRESTED BUTTE WATER & SANI		MT. CRESTED BUTTE
NAVAJO WESTERN WATER DISTRICT		WALSENBURG
PARACHUTE	PUBLIC WORKS DEPARTMENT	PARACHUTE
PARK CENTER WATER DISTRICT		CANON CITY
PARK FOREST WATER DISTRICT		COLORADO SPRINGS
PARKER WATER AND SANITATION DI		PARKER
PENROSE WATER DISTRICT		PENROSE
PIEDRA PARK METRO. IMPROVEMENT		ARBOLES
PINE BROOK WATER DISTRICT		BOULDER
PINE DRIVE WATER DISTRICT		BEULAH
PINERY WWD	PINERY WATER & WASTEWATER DISTRICT	PARKER
PINEWOOD SPRINGS WATER DISTRICT		LYONS
PLATTEVILLE		
PUEBLO WEST METROPOLITAN DISTR		PUEBLO WEST
PURGATORY METROPOLITAN DISTRIC		DURANGO
RAMPART RANGE METRO. DISTRICTS		GREENWOOD VILLAGE
RED CLIFF	ROUND MOUNTAIN WATER & SAN. DISTRICT	WESTCLIFFE
ROXBOROUGH PARK METROPOLITAN DISTRICT		LITTLETON
SAND CREEK METROPOLITAN DISTRI		AURORA
SECURITY WATER DISTRICT		COLORADO SPRINGS
SEVERANCE	TOWN OF SEVERANCE	SEVERANCE
SILVER HEIGHTS WATER & SAN. DI		CASTLE ROCK
SILVER PLUME	PUBLIC WORKS DEPARTMENT	SILVER PLUME
SILVERTHORNE	UTILITIES DEPARMENT	SILVERTHORNE

ENTITY	PROVIDER	CITY
SILVERTON	PUBLIC WORKS DEPARTMENT	
SIMLA	PUBLIC WORKS DEPARTMENT	SIMLA
SOUTH ADAMS COUNTY WATER & SAN		COMMERCE CITY
SOUTHGATE WATER DISTRICT		CENTENNIAL
ST. CHARLES MESA WATER DISTRIC		PUEBLO
STRATMOOR HILLS WATER DISTRICT		COLORADO SPRINGS
SUGAR CITY		SUGAR CITY
SUPERIOR/MCCASLIN INTERCHANGE		SUPERIOR
TELLER COUNTY WATER & SAN. DIS		WOODLAND PARK
THUNDERBIRD WSD	THUNDERBIRD WATER & SANITATION DISTRICT	SEDALIA
TOWN OF AGUILAR		AGUILAR
TOWN OF AKRON		AKRON
TOWN OF ALMA		ALMA
TOWN OF ARRIBA		ARRIBA
TOWN OF BENNETT		BENNETT
TOWN OF BERTHOUD		BERTHOUD
TOWN OF BRECKENRIDGE		BRECKENRIDGE
TOWN OF CAMPO		CAMPO
TOWN OF CEDAREDGE		CEDAREDGE
TOWN OF CENTER		CENTER
TOWN OF COLLBRAN		COLLBRAN
TOWN OF CRAWFORD		CRAWFORD
TOWN OF CREEDE		CREEDE
TOWN OF CRESTED BUTTE		CRESTED BUTTE
TOWN OF DEL NORTE		DEL NORTE
TOWN OF DINOSAUR		DINASOUR
TOWN OF EATON		EATON
TOWN OF ECKLEY		ECKLEY
TOWN OF FAIRPLAY		FAIRPLAY
TOWN OF FLAGLER		FLAGLER
TOWN OF FOWLER		FOWLER
TOWN OF HUDSON		HUDSON
TOWN OF HUGO		HUGO
TOWN OF IGNACIO		IGNACIO
TOWN OF JAMESTOWN		JAMESTOWN
TOWN OF KERSEY		KERSEY
TOWN OF KIOWA		KIOWA
TOWN OF KREMMLING		KREMMLING
TOWN OF LIMON		LIMON
TOWN OF LYONS		LYONS
TOWN OF MANCOS		MANCOS
TOWN OF MANZANOLA		MANZANOLA
TOWN OF MEEKER		MEEKER
TOWN OF MONUMENT, WATER DEPT		MONUMENT
TOWN OF NEW CASTLE		NEW CASTLE
TOWN OF NORWOOD		NORWOOD

ENTITY	PROVIDER	CITY
TOWN OF OAK CREEK PUBLIC WORKS		OAK CREEK
TOWN OF OTIS		OTIS
TOWN OF OVID		OVID
TOWN OF PAGOSA SPRINGS		PAGOSA SPRINGS
TOWN OF PHIPPSBURG		STEAMBOAT SPRINGS
TOWN OF PONCHA SPRINGS		PONCHA SPRINGS
TOWN OF RANGELY		RANGELY
TOWN OF RICO		RICO
TOWN OF RIDGWAY		RIDGWAY
TOWN OF SAGUACHE		SAGUACHE
TOWN OF SANFORD		SANFORD
TOWN OF SPRINGFIELD		SPRINGFIELD
TOWN OF TELLURIDE		TELLURIDE
TOWN OF WELLINGTON PUBLIC WORK		WELLINGTON
TOWN OF YAMPA		YAMPA
TRI-COUNTY WCD	TRI-COUNTY WATER CONSERVANCY DISTRICT	MONTROSE
TRINIDAD	DEPARTMENT OF WATER, GAS & SEWER	TRINIDAD
TRIVIEW METROPOLITAN DISTRICT		MONUMENT
UTE WCD	UTE WATER CONSERVANCY DISTRICT	GRAND JUNCTION
VAIL	EAGLE RIVER WATER & SANITATION DISTRICT	
VICTOR	TOWN OF VICTOR (CONTRACTOR)	VICTOR
WALSENBURG		
WEST FORT COLLINS WATER DISTRI		LAPORTE
WESTCREEK LAKES WATER DISTRICT		SEDALIA
WIGGINS	TOWN OF WIGGINS	WIGGINS
WILEY	PUBLIC WORKS DEPARTMENT	WILEY
WINTER PARK	WINTER PARK WATER & SAN. DIST.	WINTER PARK
WOODLAND PARK	UTILITIES DEPARMENT	WOODLAND PARK