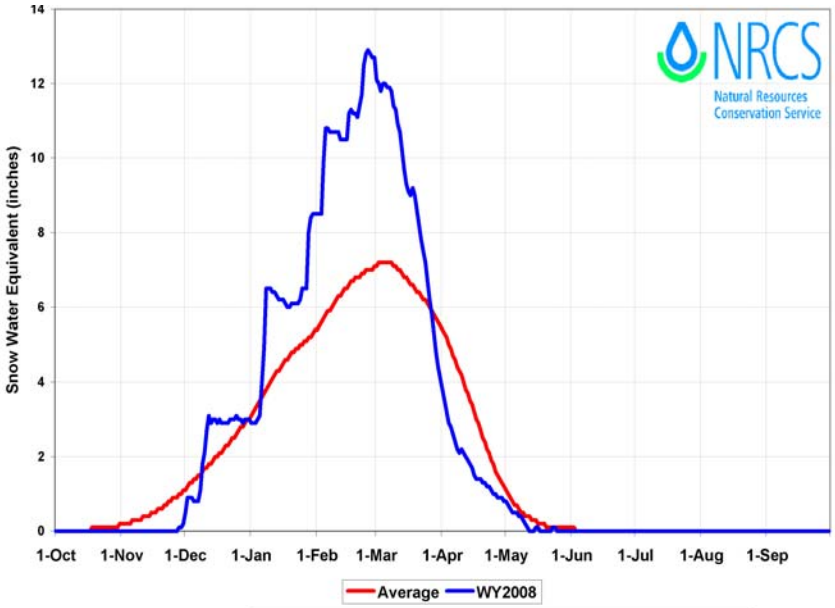
2008 ARIZONA DROUGHT PREPAREDNESS ANNUAL REPORT

Drought Status Summary

Winter Precipitation

Winter of 2007-2008 was wetter than average everywhere except in the southeast watersheds, from the end of November through January and February, increasing Arizona reservoir storage for the first time since 2005. December was exceptionally wet statewide. Arizona's southwest deserts began to green up through the early spring, followed by the forested highlands into the drier late spring. Overall temperatures were cooler than average in the northeast, due to the pattern of winter storms, and warmer than average in the southern counties which were by-passed by the storm systems.

Figure 1. Snow water equivalent at high-elevation gages compared to long-term average.



At nearly all USDA-Natural Resources Conservation Service (NRCS) automated snow telemetry (SNOTEL) sites, precipitation catch was well above normal during the "peak" snow season from December 1 through March 1 (Figure 1). However, mountain precipitation during March and April proved to be well below average, with only marginal snow accumulations in the basins. Warm temperatures caused the snowpack to melt out by the end of April.

Statewide at the end of April, short-term drought status had improved to "no drought" for ten watersheds, as calculated by Arizona's State Drought Monitoring Technical Committee, leaving only four southeastern watersheds in the lowest two categories of drought: abnormally dry and moderate.

Summer Precipitation

Whereas winter precipitation largely missed southeastern Arizona, the 2008 monsoon season produced nearly a mirror image of winter, with wetter than average conditions in southern Arizona, and drier than average conditions in northeastern Arizona. The thunderstorm activity improved rangeland conditions and vegetation health in the southeast. The Little Colorado River watershed in the northeast is still very dry for the water year. Temperatures during the summer were warmer than average everywhere except the southeast, where continual thunderstorm activity kept temperatures

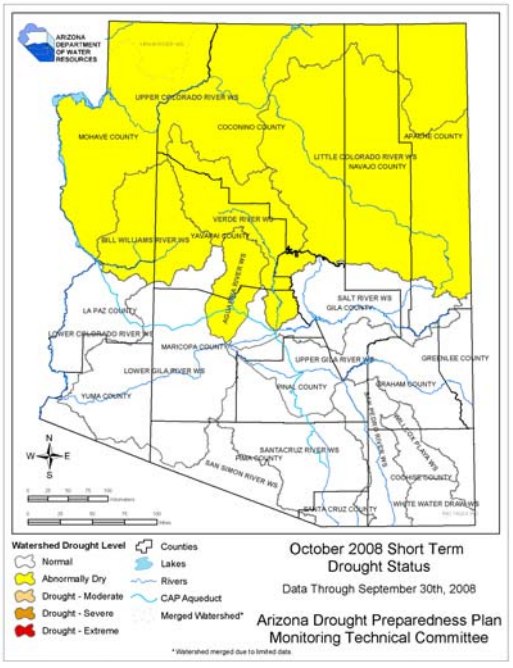


Figure 2. Short-term drought status as of September 30, 2008 shows the southern half of the state at "normal" based on precipitation gage data.

relatively low. Precipitation dropped off significantly in September, and Phoenix tied the record for the driest September since 1895.

Short-term drought status improved significantly in the southern half of the state due to the summer monsoon (Figure 2). The northern half of the state remains abnormally dry, as of the end of September 2008.

Water Year Summary

At SNOTEL and other mountain gauges, cumulative precipitation for the water year ending September 30 was at or above average in all basins (Table 1).

River Basin	Percent of 30-yr. average Precipitation at NRCS high elevation gauges
Salt River Basin	121%
Verde River Basin	109%
Little Colorado River Basin	124%
San Francisco-Upper Gila River Basin	104%

Table 1. Mountain precipitation for water year 2008.

Considering drought status as indicated by streamflow, average drought values based on USGS streamflow measurements for the 2008 water year show minimal improvement from 2007 (Figure 3). Eleven sites show no change from last year and eleven show improving drought conditions. Drought severity worsened at four sites in the southeast portion of the state, with the largest degradation in the watershed measured at Leslie Creek near McNeal ("no drought" to "severe drought"). The other three sites worsened by only one drought level.

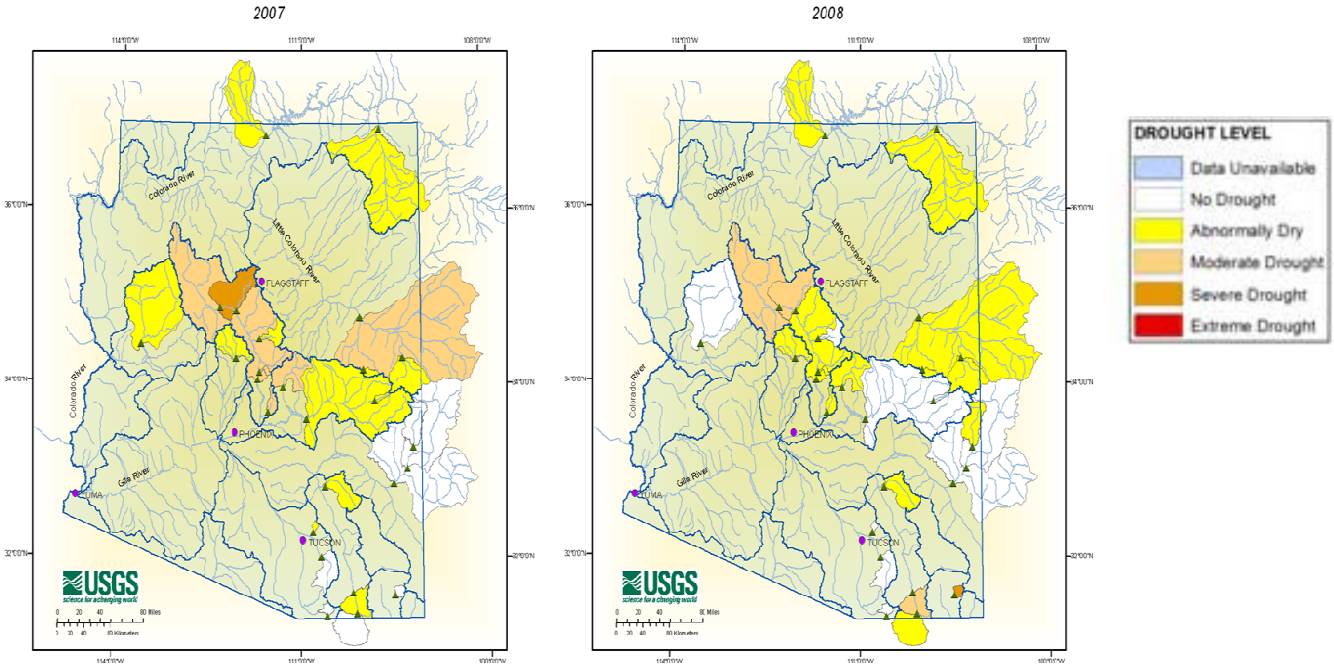


Figure 3. Drought conditions as determined by USGS stream gages show moderate improvement from 2007 to 2008.

The above-average precipitation in the White Mountains, Salt River, Phoenix area, and the south central deserts filled the state's reservoirs this year. Since October 2007, total storage in the large in-state reservoirs in the Salt, Verde, and Gila River basins increased by almost 74 percent. Total storage in lakes Mead and Powell, which provide more than 90 percent of the storage on the Colorado River, increased by 2.2 million acre-feet during water year 2008.

Long-term drought conditions, on the other hand, remain a concern (Figure 4). It is important to note that precipitation was near or below average over a large portion of the state (Figure 5) in 2008, and it will take at least a couple of above-average years statewide to bring long-term improvements to wildlife habitat, forest health, groundwater recharge, and agriculture.

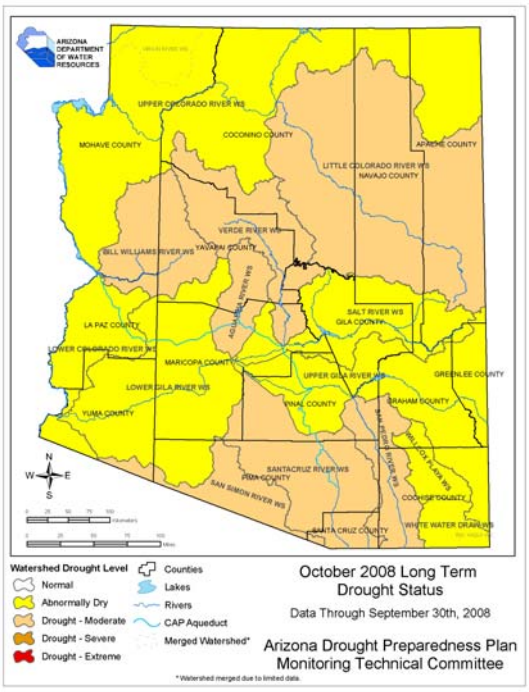


Figure 4. Long-term drought status as of September 30, 2008, as determined by Arizona's State Drought Monitoring Technical Committee.

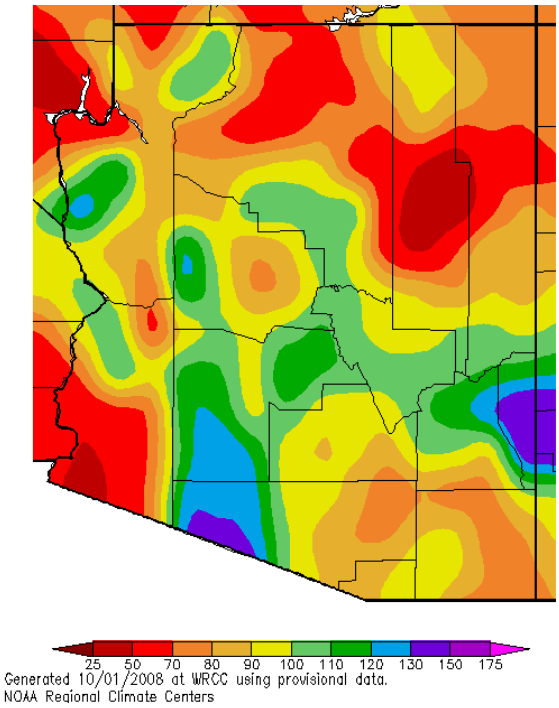


Figure 5. Percent of average precipitation for water year 2008.

Outlook for 2009

The National Weather Service's Climate Prediction Center (CPC) projections for this winter's weather across the Southwest indicate some confidence ***precipitation will be below average*** during the wetter winter months. The CPC models do not show a strong signal with respect to winter temperatures, hence there is an equal chance for above average, average, or below average temperatures. However, CPC has a moderately high confidence ***temperatures will be above average*** next spring. It seems reasonable to assume those areas already experiencing drought conditions will see these conditions worsen somewhat during the winter of 2008-09.

Drought Preparedness Plan Implementation Highlights

Drought Planning for Community Water Systems

The Community Water Planning – Drought and Water Conservation Programs worked this year to implement drought planning and water use reporting regulations established by the state legislature in 2005 and to provide assistance to water providers in meeting these requirements.

System Water Plans - ADWR completed its reviews of approximately 400 system water plans. Of those small systems that submitted plans, approximately 68% met the statutory requirements. Providers that did not meet requirements must submit a revised plan by the end of November 2008.

In general, many small water providers lack the training and/or resources necessary to develop a good water planning document. ADWR will continue to seek out sources of assistance for these providers. It is also clear from ADWR's review that smaller water providers need assistance in securing emergency supplies and preparing for potential water shortage conditions, and this will be a primary focus for ADWR in 2009.

Annual Water Use Reports - Staff focused their efforts this year on improving the online water use reporting tool as well as the paper report forms with the goal of gathering more accurate data and improving the compliance rate. ADWR continues to encourage water providers to use the online reporting option to reduce department costs and increase program efficiency. From reporting year 2006 to 2007, the number of online reporters increased by 18%. ADWR anticipates this number will continue to increase.

The biggest challenge to overcome with regard to water use reporting is the lack of water meters among the state's small water providers. These providers are still required to report their water use, but must indicate that it is estimated. Many did not have any good method of estimating, and were forced to use a very general, and potentially inaccurate, average per capita use. Of those water providers that reported, approximately 27% were not metered. However, approximately 120 providers did not file a report, so the total number of un-metered systems is unknown. (Note: annual reporting information is limited to water providers *outside* the state's active management areas.)

ADWR will send a notice at the end of the year to local governing bodies of those providers that have still not submitted a system water plan (33% currently) and/or annual water use report (32% currently). ADWR will continue making efforts to assist these systems.

Local Drought Impact Group Efforts

To date, Community Water Planning – Drought Program staff, in cooperation with county extension agents, county emergency managers, and other local coordinators, have established or begun planning efforts for ten local drought impact groups in Arizona. These local stakeholder groups were created to address drought preparedness and response at the regional level.

The *Arizona Drought Preparedness Plan* established three objectives for local drought impact groups:

- Drought impact monitoring
- Drought education and outreach
- Drought mitigation and response

After two challenging years, county coordinators and ADWR staff agreed that drought impact monitoring, or the collection of information on drought impacts, should be the main focus for local

drought impact groups. Once impacts are better understood, it will be clearer where county vulnerabilities lie, how they may be addressed, and who needs to be involved in a regional drought planning process. Therefore, drought outreach activities and the development of county drought preparedness and response measures will be longer-term goals for the groups.

To facilitate the collection of drought impact information, Arizona Cooperative Extension, in partnership with the Department of Water Resources and the Natural Resources Conservation Service, has developed AZ DroughtWatch (http://azdroughtwatch.org/), an interactive web reporting tool, designed to collect and display qualitative reports of drought impacts across Arizona. The web tool includes a mapping interface for specifying impact locations, common drought impact descriptions for users to choose from, as well as fields to enter unique impact reports, comments, and upload supporting photos. The system will ultimately reside within the Arizona Hydrologic Information System, which will enable data sharing and access across other hydro-climate and drought related decision support tools.

During water year 2008, the University of Arizona Climate Extension specialist, with ADWR in attendance, has conducted DroughtWatch training workshops in Yavapai and Pima Counties. Workshops for Mohave and Cochise Counties are scheduled in October and November 2008.

Once the web reporting tool is finalized and a good network of reporters is established, ADWR will assist county groups by compiling monthly summaries of impacts in their region. Impact information will be used in conjunction with meteorological and hydrological data to characterize drought conditions, and perhaps more importantly, to help determine the environmental, social and economic impacts of drought on our state. This information will also go to the Monitoring Technical Committee to consider when updating the monthly drought status maps. On an annual basis, ADWR will provide impact summaries in future annual reports to the Interagency Coordinating Group and the Governor, as well as local coordinators and county boards of supervisors to aid in planning education, mitigation and response.

Five counties provided 2008 highlights, which are included in Appendix A. As the reports indicate, the counties are still suffering from long-term precipitation deficits that affect vegetation health, wildlife and livestock, as well as local springs, surface water flows and well production. It is clear that drought remains a concern and that the coordinators are ready to focus on drought impact monitoring and the upcoming AZ DroughtWatch training workshops.

State Drought Monitoring Technical Committee Efforts

The Monitoring Technical Committee is responsible for gathering drought, climate, and weather data and disseminating that information to land managers, policy-makers, and the public. This past year, Nancy Selover, State Climatologist, was named as new co-chair of the Committee. Tony Haffer of the National Weather Service continues to serve as the group's other co-chair.

Throughout 2008, the Monitoring Technical Committee met monthly to monitor and assess drought conditions. Each month, drought status is calculated for each watershed in the state using precipitation and streamflow data. Drought status maps are developed to display statewide drought status – both short term and long term. To provide a "reality check" for the calculated drought status, the Committee also consults vegetation indices, snowpack, temperature, reservoir levels, and drought impacts information before approving the final drought status map. The Community Water Planning – Drought Program compiles this information and a weather outlook to produce a monthly Drought Monitor Report. These reports serve as an information resource for the public and as a planning tool for resource managers developing mitigation and response strategies.

Thanks to a grant from the Arizona Water Institute, the Monitoring Technical Committee is currently working on a sensitivity analysis of the current methodology for determining drought status and creating the monthly drought status maps. After the project is finished, the Committee anticipates moving to a higher resolution precipitation dataset with a longer period of record to compare current with historic conditions.

The Committee has identified the following two funding and resource needs, as stated in last year's annual report:

1. *Strategic plan to identify data gaps and monitoring needs*
   Arizona's current network of meteorological and hydrological observations for drought monitoring lacks sufficient spatial resolution to accurately characterize drought status at the local level requested by stakeholders throughout the state. Improving the spatial, temporal and altitudinal resolution of Arizona's drought monitoring network will improve the Committee's ability to serve the needs of Arizona stakeholders, including the local drought impact groups. In particular, Arizona faces the following conspicuous data gaps:
   - complete lack of soil moisture monitoring
   - few high elevation meteorological monitoring stations
   - a constantly decreasing network of streamflow gauges

   Although the Committee has identified these data gaps in general terms, it is imperative to conduct a systematic evaluation in order to characterize and prioritize these numerous data and observation gaps. A strategic plan, with carefully considered criteria for prioritization, is essential for making state funding requests and for taking advantage of federal funding opportunities. The Committee recommends funding to develop a strategic plan, conduct data and observation gap analyses, and document priority locations using geographic information system technology.
   Total cost: $9,000

2. *Incorporation of groundwater data for drought status determination*
   ADWR staff has evaluated groundwater level changes around the state. However, further analysis is needed to determine what role drought plays in these observed changes. Incorporating groundwater level trend data will be critical in determining drought conditions and impacts on water supply. When the state budget allows, the Committee recommends funding for ADWR staff salaries to conduct groundwater analyses.
   Total cost: $38,000 per year

Interagency Coordinating Group Efforts
The Interagency Coordinating Group met two times during the past year to review and consider statewide monitoring efforts and drought status, water supply updates, rangeland conditions, forest health and wildlife. As a result, the group recommended to the Governor that both the state's Drought Emergency Declaration (PCA 99006) and the Drought Declaration for the State of Arizona issued May 2007 (Executive Order 2007-10) be continued.

Conservation Program Highlights

ADWR Conservation Program 2008-09 Plan

Using water more efficiently is a critical element in Arizona's long-range plan for securing a sufficient water supply. This year, ADWR Conservation Program staff developed the *ADWR Conservation Program 2008-09 Plan*, which identifies the following goals:

- Work with communities to provide them with the tools and resources necessary to implement strong, effective conservation programs;
- Develop a water conservation toolkit for communities, including resources to reduce exterior water use in landscaped areas;
- Develop a best management practices matrix for water providers based on service area characteristics.

The completion of the plan represents two major accomplishments for ADWR and the state:

1. It is the first comprehensive plan that includes voluntary programs of the Community Water Planning – Water Conservation staff (Statewide Water Conservation Office) and the regulatory programs administered by the five active management areas of the state.
2. It sets agency-wide conservation priorities that will enable the Department to create a culture of conservation and respond proactively to conservation needs around the state.

Work With Communities

Throughout the year, ADWR Conservation Program staff designed a base program or components required for each community (see Appendix B). ADWR worked to provide information on each of the following components to help communities in Arizona build strong, effective conservation programs:

- Community Assessment
- EPA WaterSense Partnership
- Conservation Measures
- Conservation Incentives
- Water Rate Structures
- Water-use Audits
- Metering and Sub-metering
- Conservation Plan

This year, staff worked with the communities of Show Low, Cottonwood, Nogales and Kingman to assist them in the development of their conservation programs. In 2009, staff plans to work with Eloy, Ehrenberg, Safford, Clarkdale and Pinetop/Lakeside.

Water Conservation Toolkit

In 2008, an assembly of tools was developed to assist communities and water providers in the design and implementation of comprehensive, customized and proven conservation strategies. These tools provide residents, businesses and the agricultural community with information on sector-specific water-efficient measures.

To date, a lot of work has been accomplished on the toolkit, including: establishing the major categories; prioritizing existing tools; developing additional tools; and identifying tools to be created in the next phase.

The following are the major categories of the toolkit:

- Water Planners & Providers
- Residential
- Commercial, Industrial & Institutional
- Agriculture
- Education & Outreach
- Landscape Professionals
- Water-efficient Technologies & New Studies

In addition, the ADWR Conservation Program web site was reorganized to reflect the toolkit categories (see Appendix C) and each section was expanded to include sector-specific tools. Tools have been created and/or information has been posted to the web site for the following:

- Fact Sheets on available programs and technologies to improve water use efficiency
- Information on creating conservation plans and system profiles
- Guidelines for developing ordinances to prohibit fugitive irrigation water
- BMPs for the agriculture community
- Information on conservation-based rate structures
- Publications and information on water-efficient landscaping
- Descriptions of workshops, classes and certification programs
- Information on water metering
- Links to conservation offices throughout Arizona
- Links to major water conservation publications and organizations

Lastly, the Conservation Program identified the need to develop additional tools. The following tools are currently being created to expand the reach of the toolkit and support outreach to targeted communities:

- Audit booklets for business and industry
- Xeriscape principles
- Guidelines for establishing regional low-water use plant lists
- Descriptions and locations of Xeriscape gardens throughout Arizona
- Water wise landscape design CD

Best Management Practices Matrix

A matrix of recommended best management practices based on service area characteristics was developed (see Appendix D). The matrix was developed to support water providers participating in the Active Management Area Modified Non-Per Capita Conservation Program; however, the information contained in the matrix is beneficial to all water providers and its use will be encouraged statewide. The matrix links specific service area characteristics with relevant best management practices. In addition, it will assist providers in their planning and decision making processes and help ADWR Active Management Area staff reduce time spent on review and approval. The matrix will serve as a tool to help water providers across the state evaluate the specific water uses in their water service areas and design their water conservation programs to be comprehensive in scope and to achieve maximum effectiveness. Conservation Program staff anticipate that the collection and display of this information will encourage implementation of best management practices statewide and will help ADWR to publicize the growing number of water providers with successful water conservation programs.

Water Awareness Month

The Conservation Program developed an Executive Order designating April as water awareness month. Executive Order 2008-19 was issued by the Governor in April 2008 and reminds all

Arizonans of the fragile nature of our arid environment and the importance of creating a culture of conservation. The order directs the Arizona Department of Water Resources to work directly with cities and towns to provide assistance in developing programs, develop a water conservation “toolkit” for citizens and communities, and create a new “water wise” community certification program to celebrate good water conservation and promote awareness. It also calls upon Arizonans, businesses and all levels of government to become more aware of water use habits and increase water conservation awareness programs.

APPENDIX A – LOCAL DROUGHT IMPACT GROUP UPDATES

(as submitted by group coordinators with minor edits)

Cochise County

The increased precipitation this last summer appears to have lessened the urgency for action for many. However, it is just as critical now as it was two years ago to continue drought preparedness efforts. Key personnel from Cochise County met with others from around the state to discuss priorities. The major priority most people agreed on was drought monitoring and reporting. The monitoring group continues to develop strategies for recruiting reporters across the county, especially in rural areas. An AZ DroughtWatch workshop will be held November 17th to train reporters on use of the site. We anticipate increased reporting once participants are familiar with the reporting tool. minor

Mohave County

Establishment of the LDIG. The Mohave County LDIG was established by action of the county Board of Supervisors on April 7, 2008. The LDIG is open to the all interested parties for membership and has a Board appointed Steering Committee to provide direction and approve recommendations to the Board. In July, 2008, seven members were appointed to the Steering Committee by the Board, one member from each Supervisor's District (3) and incorporated city (4). The first two quarterly meetings of the LDIG and Steering Committee were held in July and October. Presentations by the University of Arizona and Arizona Department of Water Resources on drought monitoring, drought conservation, and the state drought monitoring system were made at the two meetings, which were well attended by representatives from government agencies, water providers, and citizens' groups.

Status of Drought. Drought conditions continue throughout the county. In the monsoon season, precipitation was above average in July and August for the north and east areas of the county with the south and west below average. Below average precipitation was reported in September throughout the county. While some local areas received significant precipitation amounts during the monsoon, the typical irregular and spotty pattern of rainfall has left many areas throughout the county very dry.

Drought Impacts. The LDIG has not had the time since its establishment to develop an extensive drought impact monitoring system. The first priority for the LDIG will be the development and implementation of such a system. A number of LDIG members have signed up to participate in the LDIG's Drought Monitoring Working Group and the AZ DroughtWatch reporting system. Current reporting from ranchers and others has indicated adverse impacts on vegetation in areas that did not receive significant rainfall during the monsoon. Although water tanks currently have substantial levels of water, this will rapidly change in the coming dry months with consequent impacts on wildlife and livestock. Some local springs and surface water flows in Colorado River tributaries have been drying up, but Lake Mead's elevation has remained largely unchanged throughout 2008.

Drought Related Actions. In the coming months, the LDIG will be communicating with water suppliers in the county to determine the status of their drought response plans and any response or remedial actions being undertaken. The three cities have drought response plans with designated drought stages; currently, none of the cities have implemented any of their drought plan stages. The cities, NRCS and BLM offices, State Forestry, Game and Fish, and other agencies will be contacted regularly for drought impact reports, drought stage implementation, and actual or proposed mitigation measures. This information will be utilized in the work of the Public Education and Outreach Working Group and the Mitigation Working Group when they are formed, including

the development of a countywide drought stage level template. Currently all work is being focused on establishing the Drought Monitoring Working Group and its reporting procedures, as well as the recruitment of more volunteer monitors.

Pima

Introduction. This report summarizes the Local Drought Impact Group Activities conducted in Pima County during 2008. Pima County's LDIG includes representatives from the major water providers and local, state and federal agencies. During the year, the Pima County LDIG met regularly to monitor local drought conditions, conduct regional coordination on drought declaration and to begin establishing a drought impact reporting system.

Status of Drought. Drought conditions in Pima County persist. Although winter rains were generous, there was no indication the drought has subsided. Summer rains were also plentiful; however, intensity varied throughout Pima County. The long term drought status ranges from abnormally dry to severe drought. For most of Eastern Pima County the long term drought status is moderate.

Drought Impacts. The impacts of the sustained drought can be seen in several sectors. One irrigation company observed that groundwater wells had to be turned on earlier in the season. Low valley areas did not receive as much precipitation as higher elevations. Stream gauges near the Sabino/Pantano area indicated drought conditions. This year's storms tended to be fast-moving, resulting in shorter duration rainfall events with smaller stream flows.

Drought-Related Actions. Water providers in Pima County have drought response plans in place and have declared drought stage levels. As of September 2008 the following is the status of regional drought declarations:

Entity	Drought Declaration
Pima County	Stage One Alert
City of Tucson	Stage One
Town of Oro Valley	Stage One
Town of Marana	Stage One Alert
Metropolitan DWID	Stage One Alert
Community Water of Green Valley	Stage One Alert

The response action for these declarations is voluntary water reductions. Increased public awareness was promoted through summer conservation programs, education materials and community activities. Pima County LDIG is also implementing a drought reporting system using AZ DroughtWatch to report on observed drought impacts on various sectors. This information will be used to supplement data used by the Statewide Monitoring Technical Committee and to assess the regional drought status. Participation from the Tohono O'odham Nation has been most welcome and valuable. The Pima County LDIG could benefit from increased communication with and participation from stakeholders in Western Pima County and rural interests.

Pinal

- During the year, the Pinal County LDIG coordinators met regularly to discuss direction and mission, conduct regional coordination on drought concerns and to begin establishing a drought impact reporting system.

Current Status

- The baseline measurements are inconclusive to compare and deliberate.

- The steering committee determined that more affective measurement tools are necessary to establish baselines, track trends and develop analysis.
- Water providers in Pinal County are participating in the LDIG process.
- Legal issues will require research in determining extent and limitations regarding more specific local actions.

Projected Direction:

- Plans are currently underway to solicit drought and weather spotters to add valid information into the database throughout Pinal County (http://www.zwire.com/site/news.cfm?newsid=20154243&BRD=1817&PAG=461&dept_id=68561&rfi=8). Pinal County LDIG desires to implement a drought reporting system using AZ DroughtWatch to report on observed drought impacts on various sectors. This information will be used to supplement data used by the Statewide Monitoring Technical Committee and to assess the regional drought status. Weather spotter information will enhance validation between AZ DroughtWatch and Weather Service data.
- It is hopeful that the data collection will assist in the development of drought response plans and establishing drought stage levels.
- Increased public awareness continues to require promotion through summer conservation programs, education materials and community activities.

Yavapai

The structure of the Yavapai County LDIG is a steering committee that provides leadership and direction for the working groups. The steering committee works under the oversight of the Yavapai County Water Advisory Committee (a large group with representation from Yavapai County government, ADWR, all cities, towns, and tribes). The Yavapai County LDIG has been meeting since September 2006.

The LDIG steering committee consists of the following individuals:

Nick Angiolillo, Co-chair, Yavapai County Emergency Management
Jeff Schalau, Co-chair, University of Arizona Cooperative Extension, Yavapai County
Tom Thurman, Yavapai County Supervisor, District 2
Crystal Frost, Arizona Department of Water Resources, Prescott Active Management Area
John Rasmussen, Yavapai County Water Advisory Committee Coordinator
Bob Adams, Natural Resources Conservation Service
Kresta Faaborg, Natural Resources Conservation Service
Bob Arambula, Cocopai Resource Conservation and Development

Mitigation and Response Participant Group Activities

Draft Drought Mitigation and Preparedness Guidelines have been drafted and are being reviewed by members of this participant group. Nick Angiolillo is chairing this effort and 19 people are collaborating to create the draft guidelines.

Monitoring Participant Group

Monitoring efforts have been underway for almost two years and additional reporters are being recruited on an on-going basis. Rainlog.org has been a focal point but other drought impacts are being reported by some members. Approximately 300 rain gauges have been distributed as part of these efforts. The Yavapai County LDIG has provided comments to Dr. Michael Crimmins on the development of DroughtWatch.org. Two meetings were held in 2008, one on March 19 in Prescott and the other on May 14 in Cottonwood (co-chaired by Bob Adams and Jeff Schalau). To date, 42 people have become members of this participant group.

It is anticipated that within a couple of months, the Steering Committee will receive hands-on training on DroughtWatch.org, identifying drought impacts and drought messaging so that Committee members will be qualified to train others in the region. Yavapai County intends to focus the initial formal round of training on regional natural resources staff.

Outreach/Education Participant Group
Two meetings were held in 2008, one on March 19 in Prescott and the other on May 14 in Cottonwood (chaired by Jeff Schalau). To date, 22 people have become members of this participant group.

Challenges
It has been difficult to maintain momentum due to staff changes within ADWR, lack of financial support, other ongoing commitments of LDIG members, and the lack of drought impacts to report.

APPENDIX B – CONSERVATION BASE PROGRAM COMPONENTS

Steps ADWR is taking to assist communities in developing strong, effective conservation programs:

1. **Community Assessment**
   Complete an assessment form that includes information on community contacts, water providers, schools, demographics, general characteristics, energy and water supplies, septic, sewer, effluent and current conservation measures.

2. **EPA WaterSense Partnership**
   Provide information to the community and encourage participation in the program. WaterSense (http://www.epa.gov/watersense/) represents a label for quality, water-efficient products that make it easy for consumers to save water and protect the environment.

3. **Conservation Measures**
   Assist with both technological and behavioral conservation measures for:
   A. Residences
   B. Landscapes
   C. Commercial, Industrial & Institutional (note that Rinse Smart is mandatory)
   D. Agriculture
   E. Water Utilities (note that the Patch the Pipe program meets the technological requirement)

4. **Conservation Incentives**
   Provide information and encourage implementation of the following types of conservation incentives:
   A. Educational (note that Project WET is Mandatory)
   B. Financial
   C. Regulatory

5. **Water Rate Structures**
   Identify rate structures currently in place and educate the community and/or provider on types and benefits of conservation rate structures. Recommend appropriate water rate structures.

6. **Water-use Audits**
   Identify need for water-use audits and educate the community and/or provider on types and benefits of water-use audits. Recommend needed audits.

7. **Metering and Sub-metering**
   Identify the metering practices in place; educate the community and/or provider on types and benefits of meters for various applications and recommend suitable metering options.

8. **Conservation Plan**
   Recommend changes or enhancements to the community's conservation plan. Note that most community water systems are required to submit a conservation plan to ADWR's Community Water Planning – Drought Program.

APPENDIX C – ADWR CONSERVATION PROGRAM WEB SITE

The ADWR Conservation Program web site (www.azwater.gov/conservation) is the predominant method used to distribute tools created for the Water Conservation Toolkit. Each category of the toolkit has its own section of the web site that includes information on sector-specific water-efficient practices and, when applicable, technologies. The major categories are reflected by individual buttons on the homepage and top-menu tabs across every page.

The major categories of the toolkit and examples of information included in each are listed below:

Water Planners & Providers: Planning Guidelines, System Profiles, Ordinance Templates, System Improvements, Customer Education

Residential: Conservation Tips, Xeriscape Principles, Plant Lists, Rainwater Harvesting, Audits

Commercial, Industrial & Institutional: Industry-specific Information, Technologies, Audits

Agriculture: Planning, System Design, Technologies, BMPs

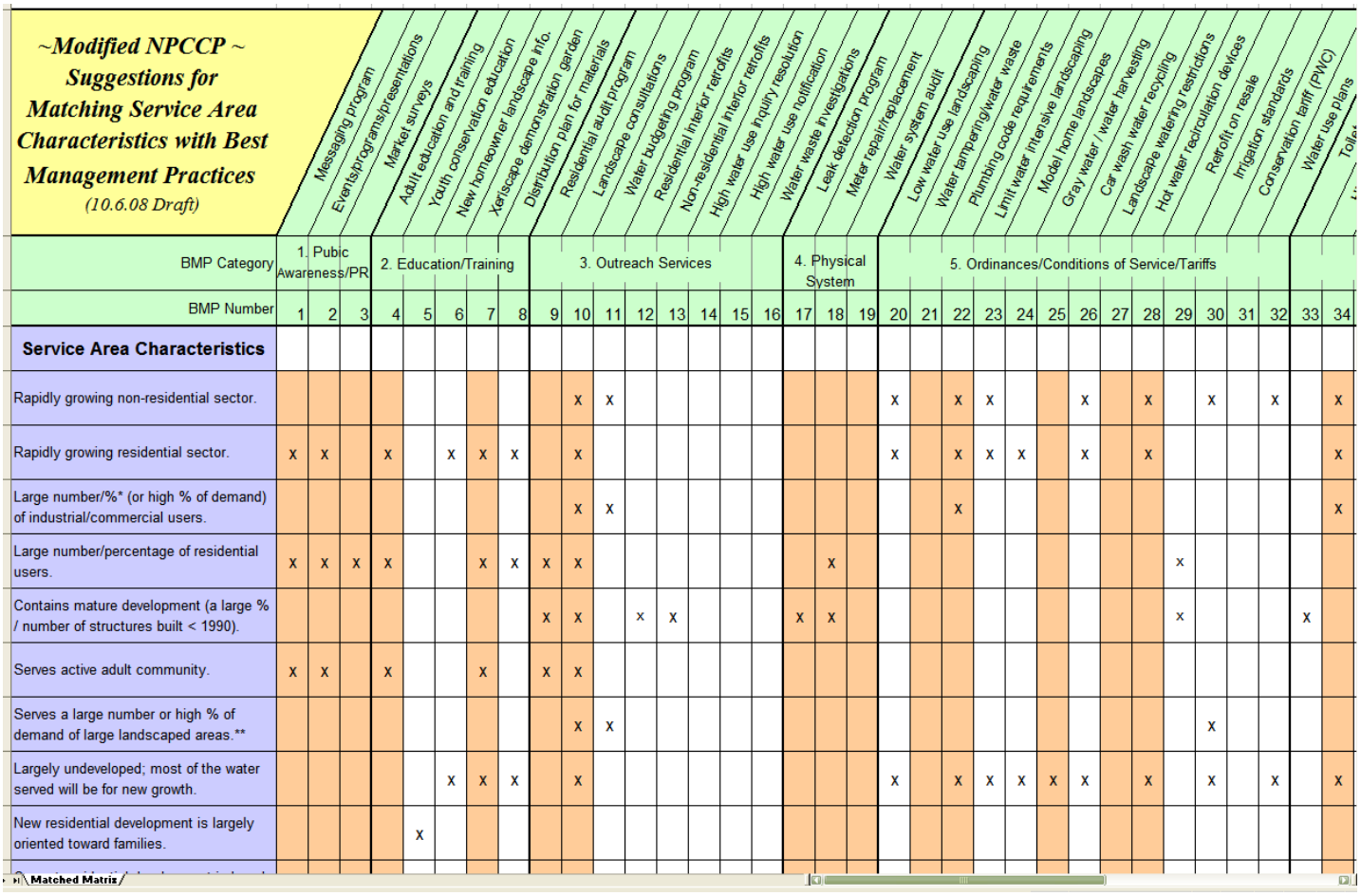
Education & Outreach: Project WET, Scout Patch Program, Cooperative Extension Programs

Landscape Professionals: System Design, Efficient Watering Techniques, Maintenance, Plant Lists, Training Opportunities, Technologies

Technology & Research: New Studies, Testing, Products, Reports, Water-Energy Nexus

APPENDIX D – BEST MANAGEMENT PRACTICES MATRIX

(EXAMPLE - matrix not shown in its entirety)



~Modified NPCCP ~ Suggestions for Matching Service Area Characteristics with Best Management Practices (10.6.08 Draft)	Messaging program	Events/programs/presentations	Market surveys	Adult education and training	Youth conservation education	New homeowner landscape info.	Xeriscape demonstration garden	Distribution plan for materials	Residential audit program	Landscape consultations	Water budgeting program	Residential interior retrofits	Non-residential interior retrofits	High water use inquiry resolution	High water use notification	Water waste investigations	Leak detection program	Meter repair/replacement	Water system audit	Low water use landscaping	Water tampering/water waste	Plumbing code requirements	Limit water intensive landscaping	Model home landscapes	Gray water / water harvesting	Car wash water recycling	Landscape watering restrictions	Hot water recirculation devices	Retrofit on resale	Irrigation standards	Conservation tariff (PWC)	Water use plans	Toile
BMP Category	1. Pubic Awareness/PR			2. Education/Training					3. Outreach Services									4. Physical System			5. Ordinances/Conditions of Service/Tariffs													
BMP Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Service Area Characteristics																																		
Rapidly growing non-residential sector.										x	x									x		x	x			x		x		x		x		x
Rapidly growing residential sector.	x	x		x		x	x	x		x										x		x	x	x		x		x						x
Large number/%* (or high % of demand) of industrial/commercial users.										x	x											x												x
Large number/percentage of residential users.	x	x	x	x			x	x	x	x								x											x					
Contains mature development (a large % / number of structures built < 1990).									x	x		x	x				x	x											x				x	
Serves active adult community.	x	x		x			x		x	x																								
Serves a large number or high % of demand of large landscaped areas.**										x	x																			x				
Largely undeveloped; most of the water served will be for new growth.						x	x	x		x										x		x	x	x	x	x		x		x		x		x
New residential development is largely oriented toward families.					x																													