

TOWN OF PAYSON WATER RESOURCES MANAGEMENT

2010 Status Report



Cragin Pipeline Repairs 2009 –Courtesy PCL Contractors and SRP

APRIL 5TH, 2010

Prepared By:
Town of Payson Water Department

2010 PAYSON WATER RESOURCES STATUS SUMMARY

The Town of Payson desires to maintain water usage below what is replaced on a long-term average basis by rain and snowfall within the watersheds that recharge or re-fill the aquifer upon which it relies. Maintaining groundwater usage below this amount is considered “Safe Yield”. The amount of groundwater available to the Town of Payson within a Safe Yield state is estimated at up to 2,681ac-ft/y.

It is the policy of the Town of Payson local government that the Town will make attempts to manage its water supply and take efforts relating to water development and water conservation to achieve and/or maintain a “Safe Yield” condition of its groundwater supplies each year. Currently, Payson’s water consumption remains below the long-term state of “Safe Yield”. In 2009, Payson residents consumed local groundwater resources in an amount equal to 62% of “Safe Yield”. The net per person usage of water for 2009 was only 81gpcd. This value is below the Payson Water Department’s target of 89gpcd.

Because per person water use remains far below 89gpcd and due to El Niño related precipitation in winter 09-10, groundwater resource levels have risen dramatically. Therefore, the **Town of Payson will implement Water Conservation Level I** water wise use levels for the period of April 2010 to May 2011. This level of conservation includes a ban on washing paved areas such as sidewalks or drives and limiting outside water use to certain days of the week. Complete details are available at the Payson Water Department. These efforts in combination with increased water conservation education, including the Town’s annual participation in “Arizona Project WET” are meaningful attempts by Town government to achieve the Town’s water resources demand goals. The Level I water use limits are commensurate with the reality of our environment and the potential for recurring drought conditions. Water conservation and demand management success has positively influenced both the short and long-term water supply status of the Town of Payson.

C.C. Cragin surface water related projects have been accelerated with the Town’s success in obtaining a \$10.585M award for 2009 Federal Stimulus funds via the American Recovery and Reinvestment Act “ARRA”. The Payson Cragin Project qualified as environmentally friendly or “Green and Sustainable” due to clean power and long-term water resources sustainability benefits. Thus, a \$4M forgivable principal amount was awarded along with \$6.585M low interest federally backed loan. Preliminary engineering design, existing pipeline repair, and environmental related components of the Payson C.C. Cragin project may be (or are now) funded by a combination of ARRA funds and funds of the Water Infrastructure Finance Authority “WIFA” of Arizona.

2010 WATER RESOURCES STATUS GROUNDWATER LEVELS

Groundwater levels in the Payson area are ever changing, not only from year to year but also from day to day. It is important to note that changes in groundwater levels either up or down are normal, within the context of a particular area's history. Because the Town of Payson currently obtains all of its potable water supplies from a fractured aquifer groundwater source, highly variable groundwater levels are indeed expected.

Groundwater level changes are related to many factors. Recharge or re-filling of the aquifer occurs in times of precipitation (rainfall and snowmelt). This results in groundwater level rise. In an opposite way, groundwater levels will drop in response to periods of no recharge or drought. Groundwater levels will also drop and rise in response to well(s) pumping or not pumping. The topic becomes more complicated by the type of aquifer of which the Town and communities in the region depend on. The Payson regional aquifer is in fact a complex system of interconnected cracks and sections of porous (sponge like) earth that yield water to wells. Nearly all of the earthen material beneath Payson and its surrounding area consist of the "Payson Granite". Some areas in the granite have more cracks and porous earth (decomposed granite) than others and some of the cracks or "fractures" are more interconnected than others. Therefore, interpreting changes in depth to groundwater is complex.

Groundwater levels are measured quarterly from all wells in the Town of Payson's observation network. This network consists of nearly 100 wells in the Payson area. Monthly measurements are collected at all active production wells and also at key observation wells. The water level data is maintained in a database by Water Department staff.

In 2009, groundwater levels have been observed to increase nearly everywhere. Most groundwater levels are actually higher than last year's levels due to an unprecedented (in recent times) wet winter season. Therefore, the Town's groundwater resources are observed to be in improved condition from previous years.

2010 WATER RESOURCES STATUS CONSERVATION

Conservation Programs

The Level I conservation regulations have proven once again to be beneficial to the water efficiency practices of our community members. During 2009 the usage per person was 81 gpcd (gallons per capita (person) per day).

The rebate programs approved by the Town Council during 2009 included a residential toilet rebate, a commercial assistance rebate to retro-fit plumbing fixtures that are not compliant with the current conservation code, and two low income assistance programs. In addition, we assisted two local community service organizations this year by providing new toilets to the Time Out Shelter transition homes and the town homes constructed by the Payson Area Habitat for Humanity. The following is a breakdown showing the number of rebates/toilets provided:

Residential Toilet Rebates	12
Commercial Rebates	62
Community Service Groups	14

Our 3rd “Project Wet” Water Festival was held in September, 2009. Project Wet is a multi agency sponsored education program designed for interaction with and the education of 4th grade students. Through this festival we are able to educate our future water users about the water cycle, the watershed, groundwater and aquifers and, of course, water conservation. 183 students, 11 teachers and 56 volunteers participated.

For the Second year in a row the Water Department participated in the High Country Xeriscape Council Waterswise Seminar. In this public outreach effort, staff provided informational brochures and promotional items to seminar attendees.

In an effort to provide more current information to our customers, the Department continually updates our web pages on the Town of Payson website, www.ci.payson.az.us. There, most of the brochures that are offered can be found in a PDF format, as well as tips for improving water efficiency practices and conducting residential water audits. These and other materials help residents determine more areas where they could become even more “water wise” as a consumer. In addition, the Town of Payson Native and Low-Water Use Plant List is also available.

2010 WATER RESOURCES STATUS
CONSERVATION Continued...

Payson Project WET 2009



Conservation Level

Water conservation requirements pursuant to Resolution No. 1742 anticipate that Water Conservation Level requirements be enacted according to the deficit or surplus of precipitation that occurred in the twelve month period immediately preceding the annual water report. Additional, resource factors are also considered when setting the Water Conservation Level requirements for any given year. Precipitation for Payson's water year of 2009-10 (April 09-March 10) was almost 22 inches (official values from the NWS were not available at printing time). This amount is essentially the long-term average of 22 inches per year as referenced in conservation ordinances. It is notable that winter 09-10 was positively influenced by El Niño conditions while Summer 09 was abnormally dry.

In light of Payson's already low per-person (per capita) water use it is determined that Water Conservation Level I remains as the appropriate measure to implement upon Council acceptance of this report in April, 2010 for the following year. It is anticipated that implementation of Level I water use limitations will continue to promote responsible water use and maintain annual water use below the target 89gpcd (per-person) level.

2010 WATER RESOURCES STATUS WATER DEMAND

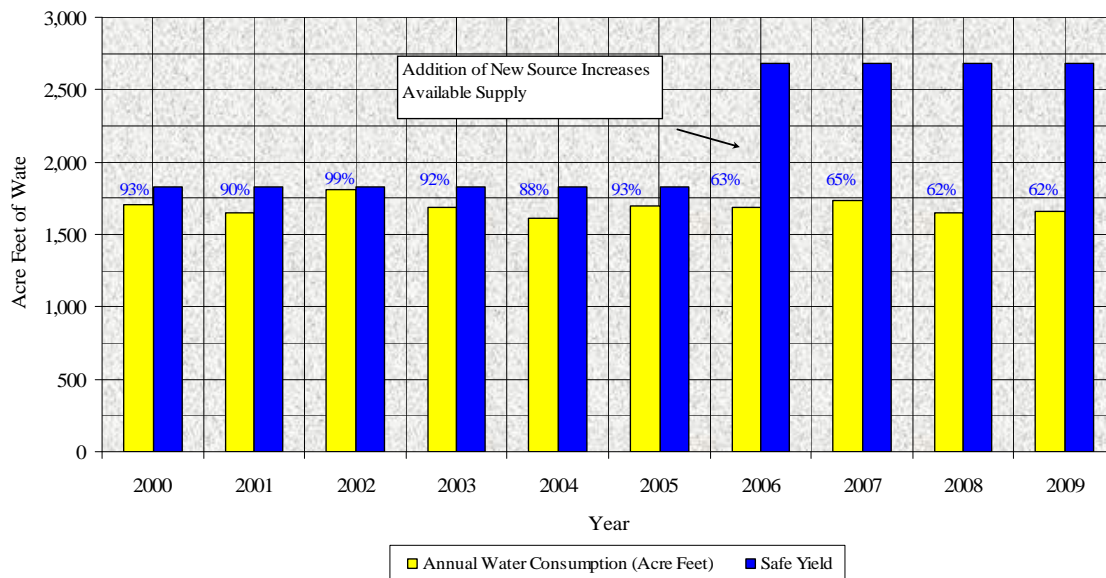
Water demand for the 2009 year increased only slightly over 2008, going from 1,649 acre-ft. to 1,656 acre-ft. (less than 1% change). It is believed that the recent economic down-turn is partially responsible for the last few years of relatively “flat” water consumption trends. This can be explained by fewer visitors and part-time residents coming to Payson in 2009 than in previous years along with an obvious increase in unoccupied homes (foreclosures and the like). Additionally, Payson residents continue to maintaining a responsible awareness and willingness to accept conservation as a way of life in the high desert environment of Payson.

SAFE YIELD

Safe Yield Status

Safe Yield is a term commonly used to define the amount of groundwater that is naturally and artificially replenished via deep percolation of precipitation into the subject aquifer. In Payson, this value has been estimated to be 2,681ac-ft/yr for its well fields. The value does not include artificial recharge or the now confirmed presence of a deep regional groundwater source. The 2,681ac-ft/yr “Safe Yield” is considered quite conservative and by maintaining water use significantly below this value it serves as a tool for maintaining sustainability of groundwater supplies. In the year 2009, groundwater consumption only slightly increased (less than 1%) to 1,656ac-ft and still represents essentially 62% of the available groundwater supply.

**Town of Payson Annual Groundwater Consumption
Since 2000 Relative to % of Safe Yield**



2010 WATER RESOURCES STATUS
C.C. CRAGIN STATUS

C. C. Cragin Reservoir Pipeline and Related Projects

In February of 2009, the Water Department, in collaboration with SRP, successfully filed a “Severance and Transfer of Water Right” application with the Arizona Department of Water Resources. The severance and transfer request is currently pending final approval by ADWR in formalizing the Town’s water right to up to 3,500 acre-ft/yr from Cragin Reservoir (Blue Ridge).

The Water Department is also working in parallel to secure Federal permits for the right of way for construction of the Cragin pipeline infrastructure. The completion of an environmental assessment “EA” is contractually required by December 2010.

Funding for the initial phase of the vitally important “Payson Cragin Water Pipeline Project – Phase I” was secured through the Town’s application for Federal stimulus dollars of the American Recovery and Reinvestment Act “ARRA” of 2009. The Town of Payson was officially awarded a total of \$10.585M in support of the Cragin project’s key phase I elements. With ARRA funding now secured, many project elements, which would otherwise not have begun, are now underway. Primary Phase I project elements and their status are outlined below:

**Payson Cragin Water Pipeline Project
Phase I Primary Project Elements and Status
April 2010**

- Repair and rehabilitation of existing pipeline conveyance: under contract (SRP with PCL)
- Raw water delivery preliminary design engineering and hydro-power study: under contract (Sunrise Engineering)
- Water filtration plant preliminary design engineering: pending raw/finish water pipeline engineering and additional water quality data.
- Finish water delivery preliminary design engineering: under contract (Tetra Tech Engineering)
- Water system master plan revision and system modeling: under contract (Tetra Tech Engineering)
- SCADA control systems design and implementation: under contract (Automation Electric)
- Environmental studies: under contract (SWCA Environmental Consultants)
- Advance purchase of pipeline materials (for Phase II construction): pending design engineering.
- Aquifer storage and recovery wells: under contract (Tetra Tech Engineering with HydroSystems Inc.)

**2010 WATER RESOURCES STATUS
C.C. CRAGIN STATUS Continued....**

Of the \$10.585M funding, \$4M qualified as “forgivable principal” (essentially a grant). This \$4M portion of the funding qualified as “green - sustainable” due to the project’s clean power components (existing and potential future hydro-power), water conservation, and water resources sustainability benefits. The Cragin Phase I (pre-construction) project tasks are now, or will soon be, funded by the ARRA monies which are managed by the State of Arizona Water Infrastructure Finance Authority “WIFA”.

**Payson Pipeline Project Phase I – ARRA Signage
Located at the Pipeline Repair Job Site
Atop the Mogollon Rim ~16 Miles North of Payson**

