

**ISSUE RESPONSE SUMMARY JUNE 11, 2008
OVERSIGHT COMMITTEE MEETING**

ISSUE	SPECIFIC QUESTIONS	RESPONSE
<p>Declining water supply as Lake Mead drops and climate change reduces rainfall.</p>	<ol style="list-style-type: none"> 1. Given the declining water supply via CAP, what barriers prevent us in Tucson from establishing mandatory water conservation measures? 2. What policies are being considered to assure that conservation measures are not used to justify continued growth? Such growth would eventually bring us to the same imbalance in supply-use we now face. 	<ol style="list-style-type: none"> 1. There are a number of mandatory water conservation and drought management measures already in place. The City of Tucson's Mayor & Council is charged with establishing/ authorizing such measures. 2. The City of Tucson's Mayor & Council serves as Tucson Water's governing body. As such, the Mayor & Council is the Utility's policy-making authority and therefore only they can address such issues.

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Water Banking	<ol style="list-style-type: none"> 1. How much water does Tucson have banked in Avra Valley? 2. “Tucson will utilize its full 144,000 AF”. What is meant by utilize? 3. Is the infrastructure in place to extract and deliver water from Arizona water bank? 	<ol style="list-style-type: none"> 1. Tucson Water currently has about 9,700 acre-feet of Colorado River water banked in long-term aquifer (subsurface) storage in its facilities in Avra Valley. In addition, the Arizona Water Banking Authority (a state agency) has banked approximately 75,000 acre-feet of excess Colorado River water at Tucson Water’s Central Avra Valley Storage and Recovery Project with plans to bank more in the coming years. Tucson Water’s facilities in Avra Valley are designed to both recharge and recover the City’s CAP supplies as well as Colorado River water stored by the Arizona Water Bank. Tucson Water is the only water provider in the Tucson Active Management Area which has constructed facilities that can recharge both its own CAP supplies and the Arizona Water Bank’s and recover these supplies so that they can be delivered to its customers. 2. The term “utilize” means to divert some or all of the City’s annual Central Arizona Project (CAP) allocation from the CAP Aqueduct and to recharge it locally. Tucson Water plans to utilize its entire CAP allocation in 2009 and every year thereafter. This will ensure that the Utility will have access to its full annual allocation after a shortage is declared on the Colorado River. 3. When fully utilized, all of the City’s CAP water will be recharged in facilities in Avra Valley as well as at the Pima Mine Road Recharge Project in the Tucson basin. At this time, most but not all is annually recovered to meet potable demand in Tucson Water’s service area. As additional facilities come on line, more of the City’s CAP allocation will be annually recovered and delivered to customers. The infrastructure will be fully in place to recover and deliver the City’s entire CAP allocation (and if necessary any Arizona Water Bank water stored at the City’s recharge/recovery facilities) by 2012. <p>The Arizona Water Bank is also storing CAP water at other (non-City) facilities within the Tucson Active Management Area; however, recovery infrastructure at these facilities are not yet in place. A portion of this water will also be used to help guarantee the City of Tucson’s CAP allocation in times of need. At these non-City facilities, the Central Arizona Project is the state entity responsible for developing recovery infrastructure and delivering the water to the City of Tucson as well as to other water providers via the CAP Aqueduct.</p>

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Water Banking Cont.	<p>4. Does Arizona law prohibit inter-basin transfers of water?</p> <p>5. What are the costs of constructing all these new canals needed to bring in “new” water?</p>	<p>4. ADWR can respond to both the overall legal issue as well as the exceptions that are already in place.</p> <p>5. The transferred water could be conveyed utilizing excess capacity in the existing Central Arizona Project aqueduct. The existing aqueduct can also be modified to provide additional conveyance capacity to serve its three-county service area (Maricopa, Pinal, and Pima counties). The system was currently designed to carry 3000 cfs. There proposed expansion would increase capacity to 3600 cfs from Bouse to Phoenix. Preliminary estimates are that this proposed expansion would cost \$300 million.</p>
Wells and Well pumping	<p>1. How many “exempt” wells exist in the TAMA?</p> <p>2. How many of these are in Tucson boundaries?</p> <p>3. Are any of Tucson’s wells deeper than 1,000 feet?</p> <p>4. How does this comply with the AWS designation?</p> <p>5. Are the UA and DM required to file water pumping stats with ADWR?</p>	<p>1. Exempt wells are those equipped to pump 35 gallons per minute (GPM) or less. They are generally exempted from the requirements of measuring and reporting annual water use, paying a withdrawal fee, and operation pursuant to a groundwater withdrawal authority. There are approximately 7,500 wells registered in the Tucson AMA as exempt wells.</p> <p>2. There are 1,824 exempt wells within the Tucson Water service area boundary</p> <p>3. Yes.</p> <p>4. The depth of any well has no bearing on the City’s AWS designation.</p> <p>5. The University of Arizona and Davis Monthan AFB each have service area rights and are required to file annual water withdrawal and use reports with ADWR.</p>

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Climate Change	Has global warming been factored into our drought calculations?	<p>Tucson Water’s drought planning and management activities take into account potential droughts of both short- and long-term duration. In the longer term, the water-supply impacts associated with droughts can be mitigated by increasing Tucson Water’s reliance on renewable water supplies; seeking to develop or acquire additional, more reliable sources of supply less subject to shortage; expanding conservation/demand management programming; and by designing supply infrastructure that is both highly reliable and operationally flexible in order to respond to a wide range of possibility. All of these things are currently being done.</p> <p>Climate change introduces an added longer-term uncertainty. The climate-change projections reported to date could potentially redefine what it means to be in drought. These projections strongly suggest that the magnitude and duration of past droughts may not capture the full range of future possibility. This directly relates to the potential for long-term shortage on the Colorado River.</p> <p>The probability of a shortage on the Colorado River in the longer term will increase in the coming decades. The climate modeling simulations generally agree that a gradual long-term warming trend is likely and that there will be a general decrease in annual precipitation in the Southwest overall. The drought-management plans and strategies already developed will be directly relevant when responding to potential resource and supply issues associated with climate change. As the future becomes less uncertain and more tangible, additional water-resources and water-supply measures will also be considered and implemented depending on the need.</p>

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Sewer	<p>Have we ever had to modify/repair our sewer line system because of subsidence issues? Where? When? Cost?</p>	<p>No. PCRWRD has not identified any sewer lines that have been repaired or modified as a consequence of ground subsidence.</p>
Mining Wastes	<p>Are mining companies being required to take CAP water instead of using groundwater? If not, why not? It seems criminal for them to turn perfectly good ground water into toxic tailing ponds, while the rest of us have to take expensive steps to make CAP water possible.</p>	<p>No. The State does not require it.</p>

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Colorado River	Given the explosive growth of cities that draw from the Colorado River, plus possibility of reduced flow due to climate change, what other "Plan B: source are being explored in case the Colorado becomes untenable?	<p>Larry Dozier, the Deputy Director of the Central Arizona Project, discussed future supply opportunities in his presentation to the Committee on June 11th. See Larry Dozier's presentation on line at the following address:</p> <p>http://www.tucsonpimawaterstudy.com/Meetings/Presentations/Presentations.html</p>
CAP	How much water is being lost each year to evaporation from the open CAP ditch?	According to the Central Arizona Project (the agency which operates the CAP infrastructure), just under 2% of the total volume of water diverted from the Colorado River is attributable to evaporation and canal seepage losses each year.

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Recharge	<p>As CAP water is recharged in the aquifer and withdrawn, is there the possibility that the aquifer will become “clogged”, saturated, or otherwise unable to filter out the undesirables in CAP water?</p> <p>If this possibility is high, what is the “Plan B”?</p>	<p>It is possible but not likely in practical terms. To provide context, recharge using spreading basins has been occurring in the Los Angeles area for over 50 years without this being a significant operational issue.</p> <p>Current research indicates that the treatment processes that occur during recharge (i.e. as the infiltrated water percolates down from land surface to the water table) are to a considerable degree “biologically mediated” which means that they are in a very real sense “renewable” and hence “sustainable.”</p>
Biosolids	<p>1. I heard that “they” have a program wherein Biosolids are being applied to the tailing plies in Green Valley and near other mining areas to try to make the discharged dirt able to support vegetation; Is Pima County Wastewater involved with the and if so, how is that project going?</p>	<p>Pima County has cooperated with the mines in Southern Arizona since 1996 to assess the viability of reclaiming the mine tailings utilizing biosolids. The University of Arizona studies during these reclamation efforts have declared the success and safety of the revegetation of the mine tailings based on the results from the continued monitoring of revegetation and plant growth; plant species; metal and nitrate concentrations, mobility and cycling in the tailings; and bioaerosol evaluation. Currently, their studies are addressing the soil microbial population dynamics by comparing the diversity of the microbial community in mine tailings, biosolids, mine tailings amended with biosolids and the natural desert in order to assure the biological sustainability of the media for plant growth. These reclamation activities had utilized biosolids from the Green Valley Wastewater Reclamation Facility which produces approximately 200 metric dry tons per year. Realizing that it takes 100 to 150 metric dry tons of biosolids to reclaim one acre of mine tailings, the substantial reclamation of these tailings requires utilizing biosolids from the metropolitan Wastewater Reclamation Facilities which produce about 9,000 metric dry tons per year. The latter would be feasible should the mines be willing to bear the cost of transporting the biosolids over a 40-mile trip, while the County bears the cost of preparing the biosolids to adequate quality and thickness. The County-University-Mines trio is also looking at the feasibility of augmenting the reclamation efforts by diverting greenwaste from the space-strained area landfills and producing appropriate synthetic soil. The soil reclamation efforts are essential to mitigate the anthropogenic impact on the area’s soils and to improve the air quality in the County.</p>

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Biosolids Cont.	<p>2. What specific contaminants are tested before release of biosolids for agricultural use?</p> <p>3. What customers and lands use the biosolids and how do they pay for them?</p> <p>4. What crops are biosolids used on?</p>	<p>2. Pima County performs testing on the biosolids for pathogens (enteric virus, helminth ova); pathogen indicators (fecal coliform), the priority pollutant organic compounds (Purgeable, semi-volatile, organochlorine pesticides, PCBs, Acrolein, Acrylonitrile and dioxin); toxicity characteristics leaching procedure for herbicides, pesticides, volatile and semi-volatile organics; priority pollutant heavy metals; biosolids use metals; nitrogen content; the total solids and the volatile solids. Additionally, physical properties and process parameters are tested such as alkalinity, temperature and residence times to ensure effective treatment of the biosolids prior to releasing them for beneficial use. Pima County certifies the biosolids as meeting or exceeding the regulatory and operational requirements as to their quality for physical, chemical and biological properties before being beneficially reused. Pima County implements a Pretreatment Program to control non-residential discharges. The program has maintained the quality of the biosolids in the “Exceptional Quality” category.</p> <p>3. The customers of Pima County for the biosolids are farmers and mine tailing owners. In 2007, Pima County produced a total of 10,821 dry tons of biosolids. The customers utilized 95 percent of the biosolids as crop fertilizer and soil amendment agent on 3,961 acres of agricultural land, and 5 percent for reclaiming 4.1 acres of mine tailings. The customers do not pay for the biosolids. Historically and currently, throughout the United States farmers and land remediators had benefitted from the biosolids as a fertilizer and soil amendment agent gratis. The benefit to the community is the diversion of these biosolids away from the landfills sparing the costly and scarce disposal space, and the fact that the practice of beneficial use of the biosolids is a sustainable one. The biosolids and sludge are increasingly viewed as a source of energy and carbon, in addition to their fertilizing and amending properties. Pima County has paid the cost of transporting the biosolids to their point of use.</p> <p>4. The crops produced utilizing the biosolids are either fiber crops such as cotton or feed crops such as corn, Milo and wheat.</p>

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Biosolids Cont.	5. What measures are used to prevent contamination of groundwater when biosolids are applied to agricultural lands?	<p>5. Pima County and its contractors utilize direct measures to prevent the contamination of groundwater and surface water when the biosolids are land-applied. These include field berm, buffer distance from water wells, depth to groundwater and stopping the land application operations on fields impacted by the rain or freeze. The potential for groundwater contamination due to land application of biosolids is dependent on the affinity of the phages and metals to adhere to the biosolids and on their transport through the soil and the vadose zone. These contaminants proved to be tightly sorbed to the biosolids; therefore, groundwater contamination from land application of biosolids is not likely.</p> <p>Pima County cooperated with the university of Arizona in a twenty-year study, 1985-2005 and in additional past and ongoing studies on the impact of biosolids on the soil and water at the land application sites. The results of the twenty-year study showed no negative long-term impact on either of the physical, chemical or microbial properties of either the soil or the groundwater. Additional studies concluded that biosolids were not a significant source of infectious agents, such as Staphylococcus; the risk of human infection from pathogenic aerosols emanating from biosolids land application is low; the field evaluation showed that on average more endotoxin is aerosolized during farm operations without biosolids, than with biosolids. In fact, the land application of the biosolids enhanced beneficial microbial activity and increased the soil micro-nutrients. These studies concluded that the long-term land application of biosolids is sustainable.</p>

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Rainwater Harvesting	What is being done to require those who put down more pavement (especially parking lots) to include ways for rain water to penetrate this surface and replenish the aquifer “in situ” instead of allowing it to roll off into the streets and, into storm drains, where it creates additional loads on wastewater treatment facilities?	City staff is working to develop an ordinance that would mandate water harvesting on all commercial developments built after June 2010. To date, a preferred method has not been specified and as such the ordinance may be open to a range of possible approaches including using earthworks, tanks, porous pavement, and/or other means.
Water CAP recharge	Tucson Water previous presentations have shown that with continued population growth by 2020 the water basin will again be tapped for over draft as the 144,000 CAP or will have been used up for/by the population. For sustainable living here, if the CAP continues to be available we need to slow/limit population growth to a sustainable level in order to have enough water for everything/everyone into the future. Also, need to have good conservation/water harvest system(s).	Comments are noted here for the record.

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MUM	Add a bit about MUM- late 1970's City/County cooperation regarding water and wastewater	<p>In the early 1970's the Clean Water Act and the Safe Drinking Water Act focused considerable attention and regulatory oversight on water quality. One local outcome of this focus was the 1974 designation of Pima Association of Governments (PAG) as the regional water quality planning agency for all of Pima County excluding tribal lands. With this designation PAG became responsible for administering the 208 Plan in Pima County, and Pima County was designated as the Wastewater Management Agency. The 208 planning process and interest in regionalization drove both city and county officials to combine their efforts. The result was the merger of the Tucson Water and Sewerage Department and the Pima County Wastewater Department to form an entity known as Metropolitan Utilities Management (MUM) for better basin-wide management of wastewater facilities in the metropolitan area. Tucson and Pima County continued to operate separate facilities but for the first time adopted basin-wide sewer connection fees and sewer user fees, charging the approximate cost of providing services. Jurisdictional management issues led to the dissolution of MUM in 1976.</p> <p><i>Note: Chris Avery, Acting Director, Tucson Water, also provided a verbal response to this question at the July 9, 2008 Oversight Committee meeting. Video and audio tapes of all presentations are posted online at www.tucsonpimawaterstudy.com</i></p>
Water disinfection	What year did the City first disinfect with chorine, the water supply?	The City of Tucson's Mayor and Council approved the installation of the first chlorination plant for disinfection in the water system on July 8, 1920.
Energy costs	If and when will lift charges be implemented?	There are currently no proposals to implement lift charges.

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Committee process / composition	<p>Why are there no private citizens on the panel, and how soon will this oversight be corrected?</p> <p>When will the City/County provide vouchers/reimburse for replacing non- 1.5-1.6 gal. p/flush toilets</p>	<p>All Oversight Committee members come from existing citizen committees or commissions. The majority of members are “private” citizens in that they do not work for a governmental agency. Specifically, the Committee is comprised of 12 members – four from the Citizens Water Advisory Committee and four from The Citizens Wastewater Management Advisory Committee, two from the Pima County Planning and Zoning Commission and two from the City of Tucson Planning Committee. For a full list of Committee members and their bios visit http://www.tucsonpimawaterstudy.com/ComMembers.html</p> <p>The City of Tucson will begin offering low flow toilet rebates starting in Fiscal Year 2008-09.</p>
Service area map	Provide a map showing the overlay of the two service areas	A map of the overlay of the two service areas was presented at the June 25, 2008 presentation. A copy of that presentation is available online at
Joint customer base	What percentage of customers overlap with water and wastewater?	Data on the Water and Wastewater customer bases was provided at the June 25, 2008 presentation. Copies of the Power Point presentations and Video and audio tapes of the presentations are posted online at www.tucsonpimawaterstudy.com
Future Phase Topic	With 40% living outside the City – should there be a change in governance?	This is a policy decision to be determined by the governing bodies.
1979 IGA	More historical background desired	More historical background on the 1979 Intergovernmental Agreement between the County and the City will be provided at the June 25, 2008 presentation.