Metropolitan Domestic Water Improvement District
Board of Directors Meeting

April 11, 2011

Water Resources Update

Synopsis

Metro-Main's 100-Year Designation of Assured Water Supply requires all pumped groundwater from within the service area be replenished within the Tucson basin. The District accomplishes this requirement by recovering CAP water and effluent credits recharged outside of its service area, and directly using remediated water. The District's long-term water resources management goal is to use its CAP water directly within its service area. Metro-Hub is currently solely dependent upon groundwater. District water conservation efforts have benefited both service areas in reducing customer water use as well as a Metro-Main meter replacement program to minimize water losses.

Metro-Main

Assured Water Supply Status

Metro-Main received a 100-Year Designation of Assured Water Supply (AWS) in 1996. The Designation of AWS under the State of Arizona Groundwater Management Act requires a municipal water provider to replenish all pumped groundwater used within the service area. A water provider can accomplished this task in many ways. The State's preferred groundwater management option is for the water provider to directly use its CAP allocation and/or other renewable supplies. The last resort is the water provider can join the Central Arizona Groundwater Replenishment District (CAGRD). Then either CAGRD purchases excess CAP water supplies and recharges the CAP water to replenish the pumped groundwater within the Tucson basin or the water provider can recharge its own CAP water supply anywhere within the Tucson AMA and recover the CAP recharge credits from recovery wells to zero out its CAGRD obligation for groundwater replenishment services. Additionally, the water provider can offset groundwater mining by directly using effluent at golf courses/parks. Lastly, the District can clean up groundwater classified by the Arizona Department of Water Resources (ADWR) as poor quality for potable use, such as from the South Shannon Treatment System.

The District has a 13,460 acre-foot CAP allocation for meeting its Assured Water Supply designation. As a backup, the District is also a member service area with the CAGRD. Table 1 shows Metro-Main met all of its Assured Water Supply requirements for 2010 through CAP water recharge and recovery (91%) and remediated water (8.5%) resulting in a 25.20 acre-foot CAGRD replenishment obligation. For 2010, 25.20 acre-feet of recharge credits will be deducted from the District's advance replenishment account by CAGRD. A total of 586 acre-

feet of advance replenishment was purchased from CAGRD in 2005. For 2011 and beyond, 551.73 acre-feet of advance replenishment credits remain for Metro-Main. CAGRD obligations in 2009 and 2010 resulted from groundwater pumpage at Latamore South Well. Staff was successful in getting Latamore South permitted as a recovery well on January 4, 2011. Thus, all of Metro-Main's wells are now permitted as recovery wells and CAGRD obligations will be zero in 2011 and beyond, unless groundwater levels decline more than 4 feet per year in a wellfield over a five year period.

Table 1. Metro-Main Assured Water Supply Program and CAGRD Obligation

Assured Water Supply Program	**2010 Volume (AF)**	**Cost**
Metro-Main Water Use	8,038.93	-
CAP from Wells and Recovery Tax ($115/AF)	7,292.02	$838,582.23
Effluent Recovery from Wells & O&M Fee ($2/AF)	0.00	$0.00
Remediated Water from Wells and Tax ($3/AF)	683.92	$2,051.76
Mined Groundwater and Tax ($3/AF)	70.50	$211.50
AWS Total Costs		**$840,845.49**
CAGRD Cost for 8,038.93 AF x 40% @ $377/AF	$1,212,270.64	
2010 Recharge and Recovery Cost for AWS	$840,845.49	
Savings in Cost Avoidance	**$371,425.15**	

CAGRD Status

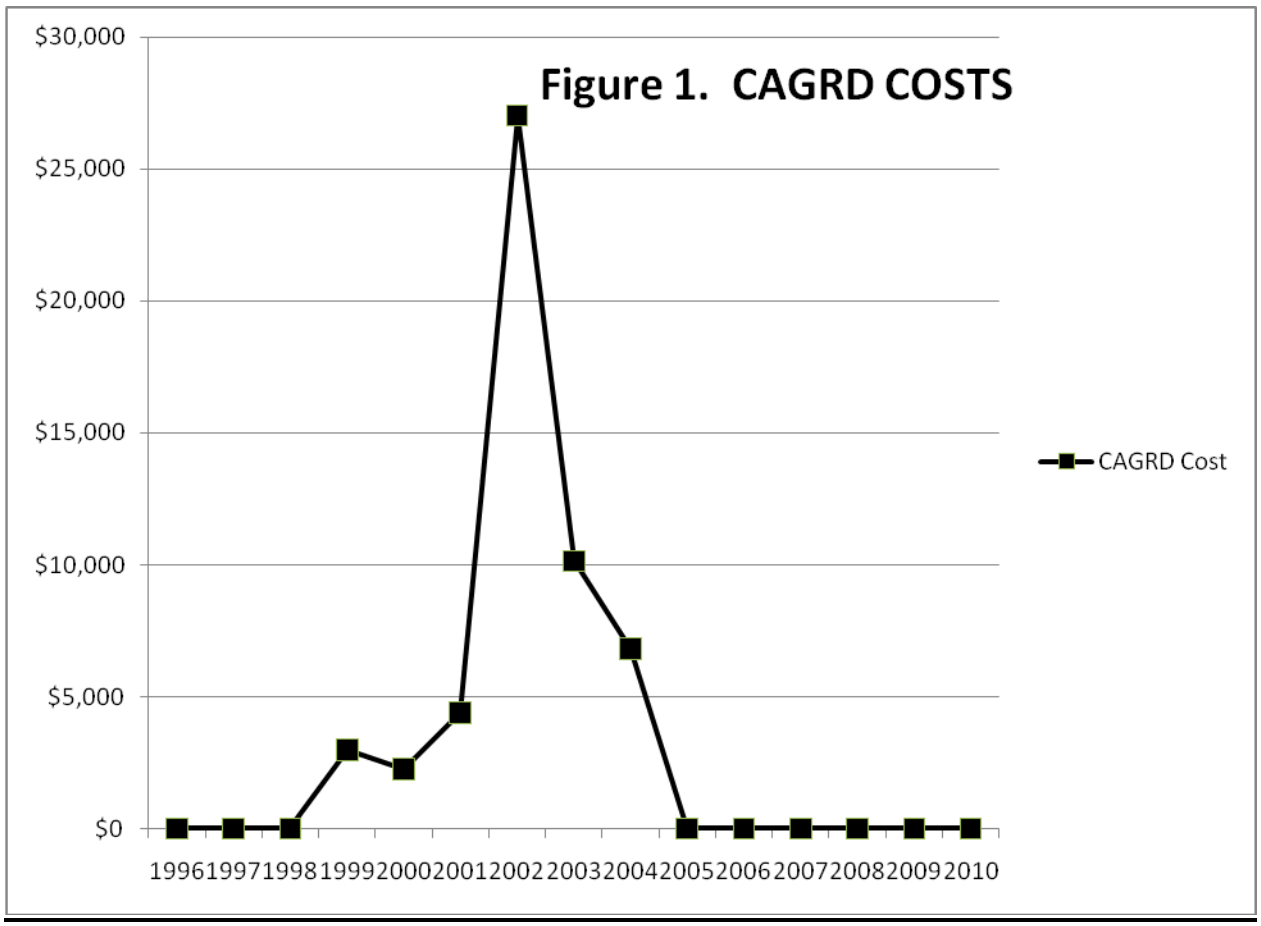
Table 1 also illustrates the avoided CAGRD costs compared to the District completing its own CAP recharge and recovery program. In 2010, $371,425 in CAGRD expenses were avoided, which will only increase in subsequent years (Table 2).

Table 2. Projected Future CAGRD Costs Avoided by District Recharge & Recovery Program

Year	**Savings**
2010	$371,425
2011	$477,134
2012	$762,198
2013	$1,019,356
2014	$1,380,370
2015	$1,700,422
2016	$2,147,316

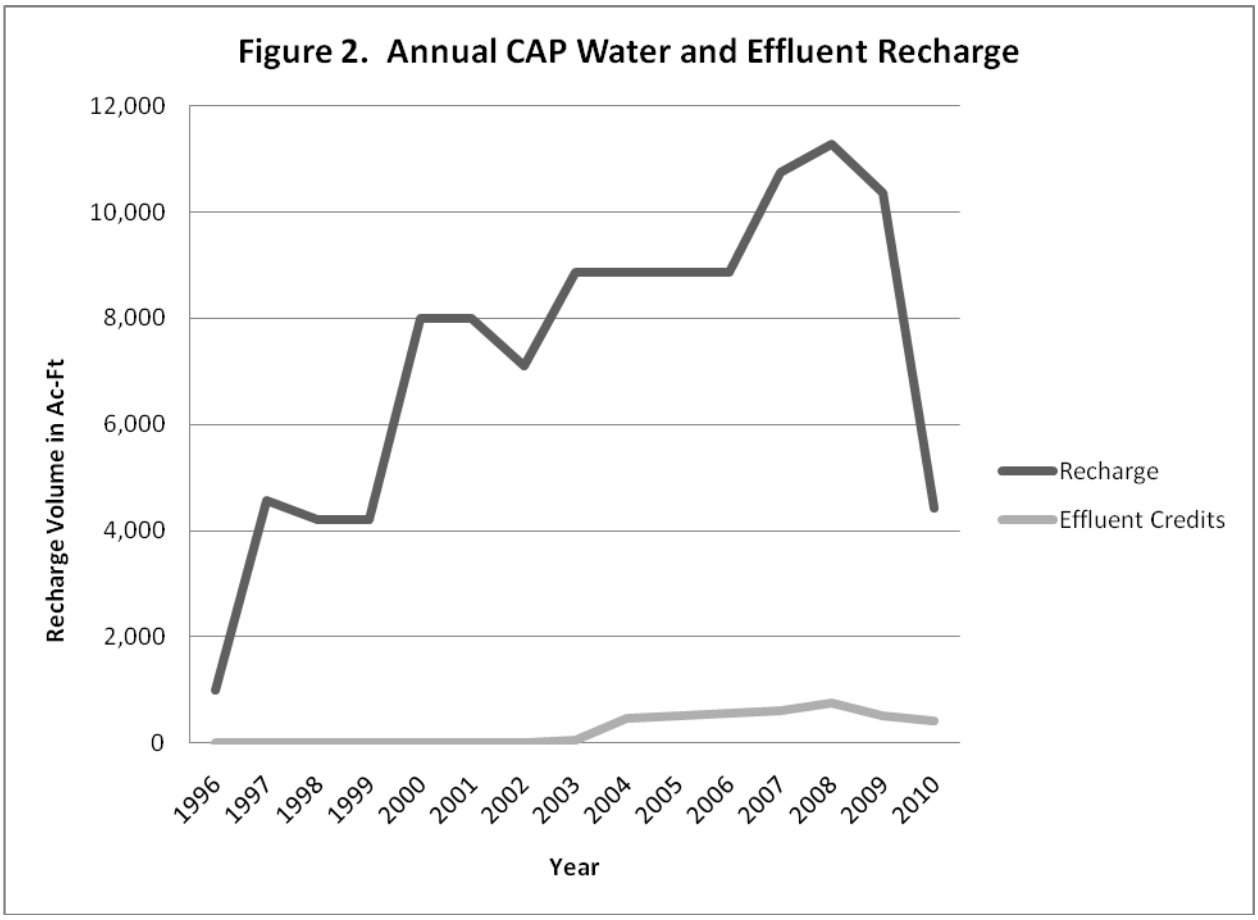
The District's CAP/effluent recharge and recovery program and remediated water cost was $840,845 or an average cost of $105 per acre-foot compared to using CAGRD services at an average cost of $151 per acre-foot. Production at South Shannon Treatment System was slightly

less than the highest production year, but the volume was insufficient to entirely offset groundwater pumpage from Latamore South Well. Figure 1 depicts the annual CAGRD costs paid by the District as a result of the District completing its own recharge and recovery and having an advance replenishment contract with CAGRD.



CAP and Effluent Recharge Program

The District began its CAP water recharge program in 1996. In 1999, the District began annual recharge and recovery with its own CAP water allocation and as mentioned above has used the CAGRD in a very limited way to offset any mined groundwater not covered from the District's recharge and recovery efforts and thereby minimize CAGRD expenses. Figure 2 below shows how the District has annually increased its CAP recharge to greater than its initial 8,858 acre-foot allocation. From 2007 through 2009, the District was able to purchase Incentive Recharge Water (CAP) at a discounted price. Unfortunately, CAWCD terminated the program for 2010 and beyond. In 2010 due to budgetary challenges, the District's CAP water budget was constrained to 4,429 acre-feet of recharge but a total of 10,493.5 acre-feet of recharge is scheduled for 2011. 1,636 acre-feet of the volume is recharge for the Town of Marana.



After the Arizona Department of Water Resources deems the District's 2010 credits, the credit account volume will be 2,500 acre-feet more than one year of pumpage (Table 3). The District's credits have a value of $1.31 million dollars.

In November 2003, the District was issued by ADWR an effluent recharge facility permit and water storage permit at the Lower Santa Cruz River Managed Recharge Project (LSCRMRP) to earn recharge credits from its effluent supply. The District's effluent recharge and recovery program has the lowest unit operational and maintenance cost at $2 per acre-foot, but the District only earns half credit for any store water because ADWR limits the recharge credits to 50 percent for managed recharge projects when the recharge occurs in natural stream channels. The District's annual effluent supply is about 3,000 acre-feet. Annual effluent recharge credits earned can be found in Figure 2. The District views these credits equivalent to value as CAP credits. Therefore, 2010 effluent credits of 409.5 acre-feet would be valued at $54,464. The 2010 decrease was caused by few large stormflows to improve the effluent infiltration in the Santa Cruz River.

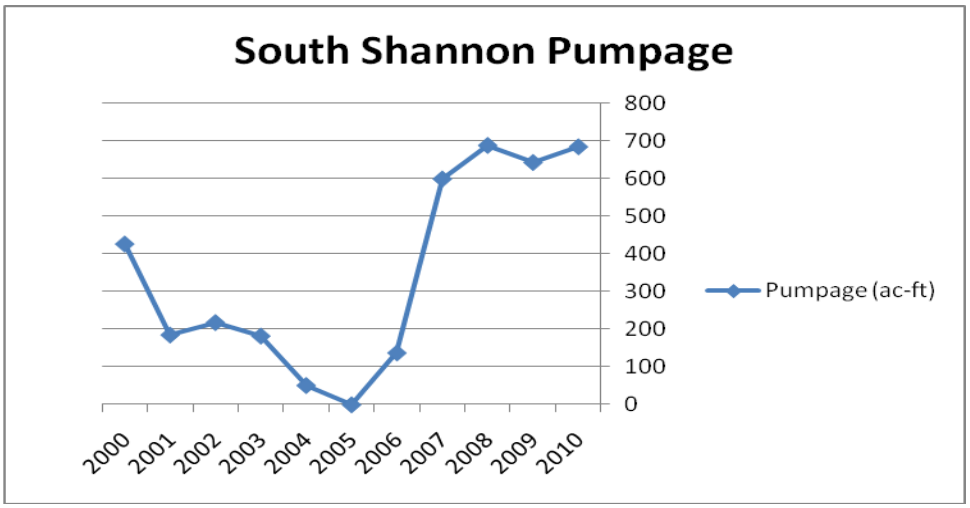
Table 3. CAP and Effluent Recharge Program

Long Term Recharge Credit Account	**Volume (AF) as of 12/31/09**	
Recharge Credits Balance	25,323.94	
2010 Recharge Account Value @ $133/AF	$3,368,084.02	
2010 Recharge vs 2010 Recovery		
	Volume (AF)	Cost
CAP Recharge by GSFs – 5% Cut to the Aquifer (4,429 AF x $113/AF)	4,207.55	$535,909.00
Metro-Main CAP Recovery ($1/AF)	-7,292.02	$7,292.02
Difference/Total Cost	-3,084.47.59	$543,201.02
	Volume (AF)	Cost
Anticipated 2010 Effluent Recharge Credits ($2/AF)	409.50	$819.00
PROJECTED TOTAL CREDITS	**22,648.97**	
Credits for AVRP Purchase	-12,815.00	
Projected Recharge Credits Balance in AF by 9/29/11)	**9,833.97**	
2010 Recharge Account Value @ $133/AF	$1,307,918.01	

Remediated Water from South Shannon Treatment System

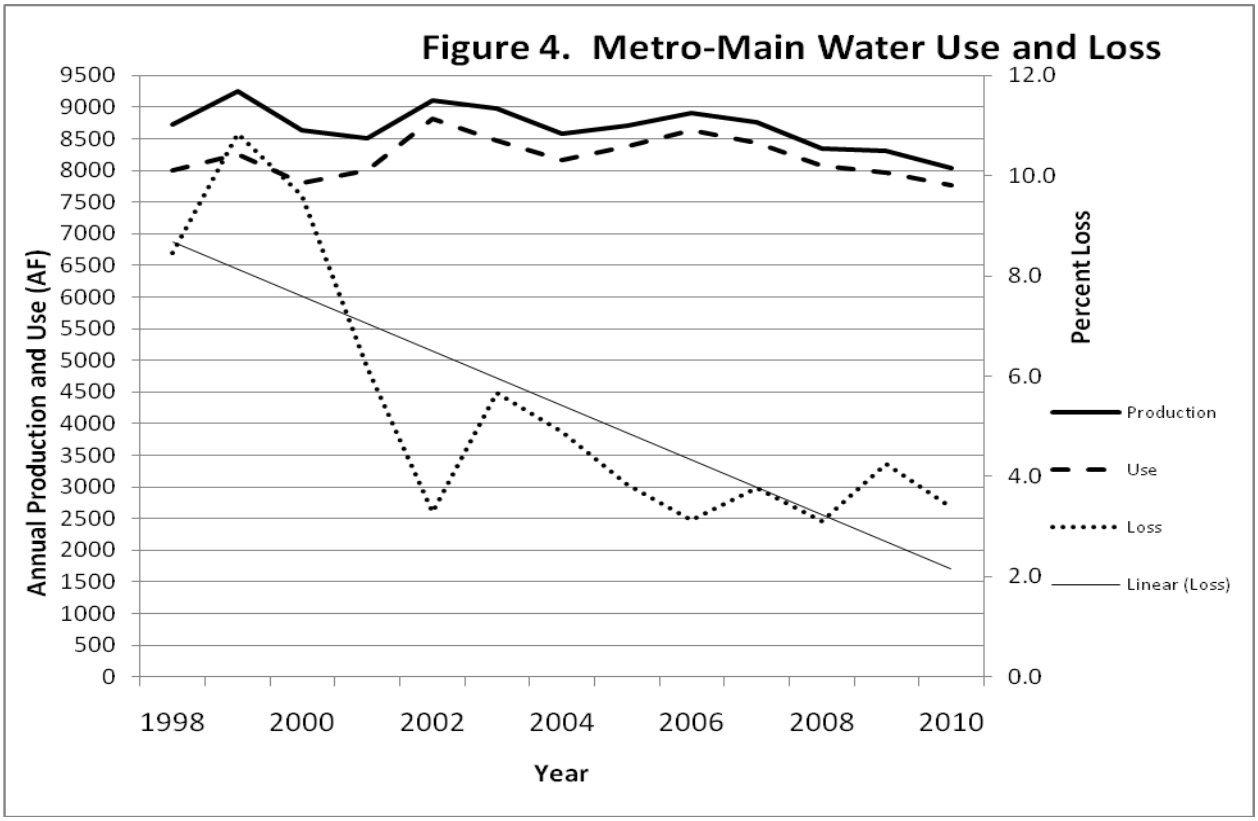
The District was issued an exemption by ADWR in 2006 for using up to 1,048 acre-feet of treated South Shannon water as remediated water instead of being classified as groundwater. ADWR records remediated water as renewable surface water not as mined groundwater. Therefore, the 683.92 acre-feet of remediated water exemption saved the District $90,961 based on current 2010 CAGRD prices.

Figure 3 shows the annual amount of remediated water from the South Shannon Treatment System reached its highest in 2008 and supplied 8 percent of Metro-Main's total water demand. PCE levels have declined in half from the highest levels of 25 ppb in 2005, but 2010 levels in groundwater are just above the drinking water standard of 10 ppb. The increased pumpage has helped prevent the plume from migrating towards Deconcini Well. Total operation and maintenance expenses at South Shannon Treatment System from 2000 to 2010 were $580,540 or $152.32 per acre-foot of water treated. All of these costs were reimbursed by the Arizona Department of Environmental Quality including $112,525 for 2010. In 2010, about 40 pounds of volatile organic carbons were absorbed by the activated carbon.



Water Loss

Figure 4 shows the overall annual water use trend in Metro-Main as slightly decreasing while annual well production decreased. Water loss for 2010 was 3.4 percent. The District's annual water meter replacement program may be the main cause of this major improvement in reducing annual water loss.

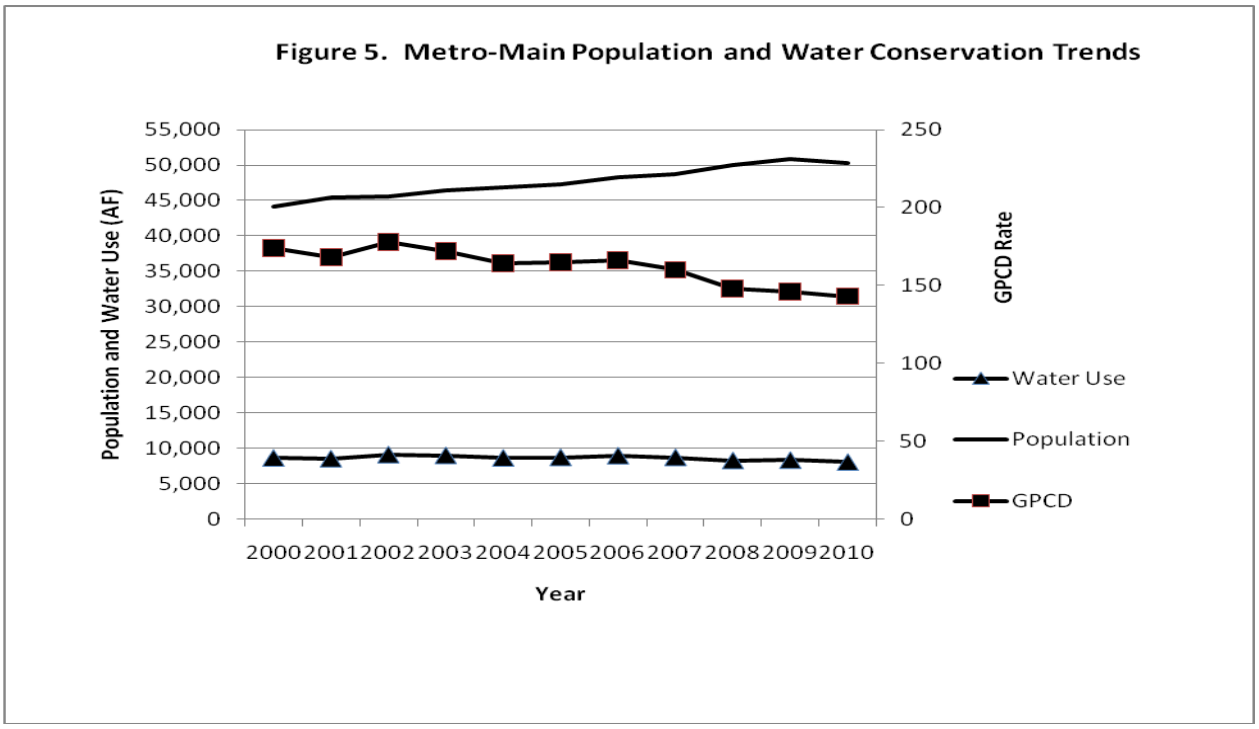


Water Conservation

Figure 5 depicts as the service area population in Metro-Main has increased the overall water usage remain essentially constant, while the gallons per person per day used by each customer has declined to 147 gallons per person per day.

Well Production Capacity

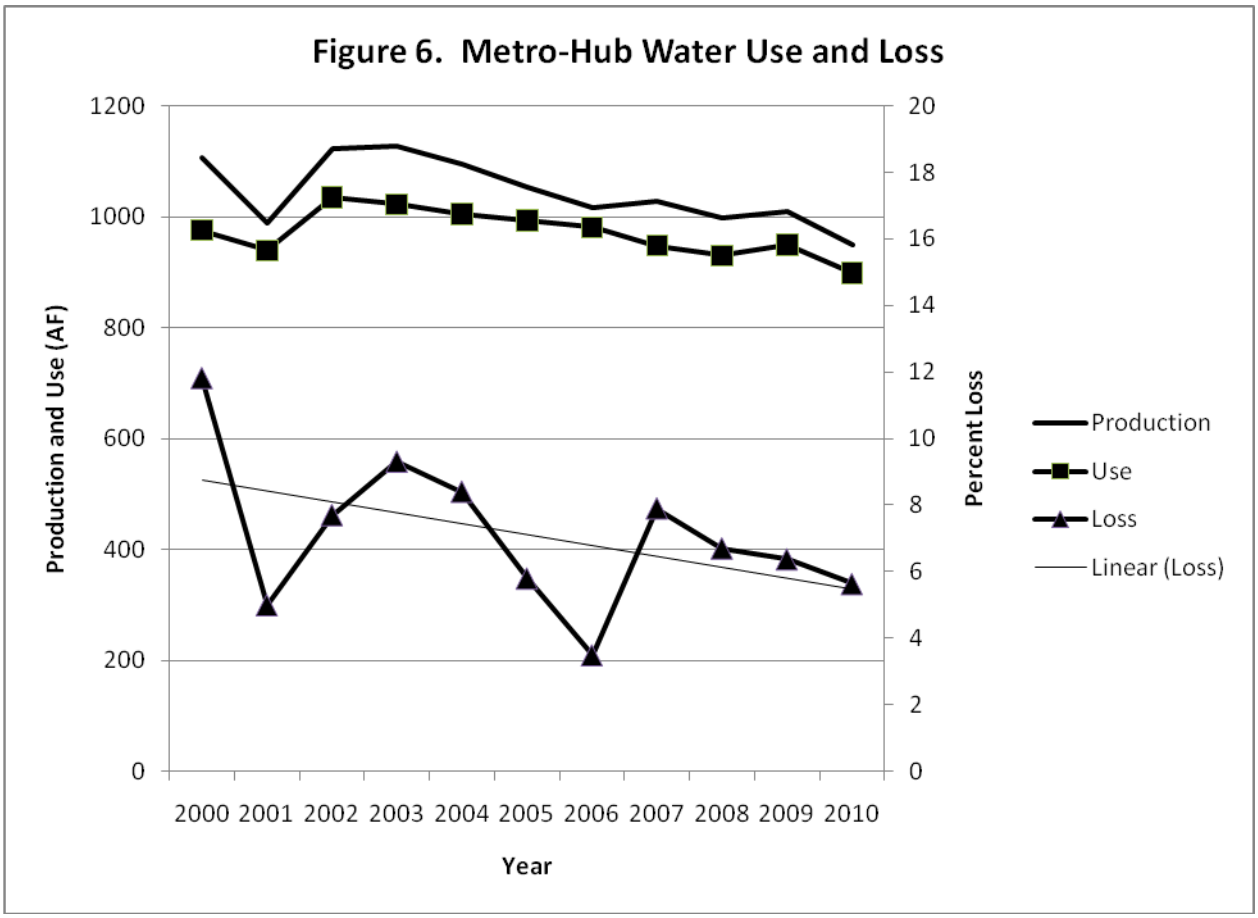
Average well production capacity in 2004 was 12,386 gpm. For 2010, the average well production capacity was 10,745 gpm.or a decline of 2.2 percent per year. Metro-Main well production has declined with time and will likely continue to decline because of retirement of two poor performing wells and falling water tables in wells with shallow depths or wells that have reached the end of their economic and physical useful life.



Metro-Hub

Water Use and Population

Metro-Hub is currently solely dependent upon groundwater from wells to meet customer demands. Annual well production in the Hub service area has decreased with time as population has increased (Figures 6 and 7).



Water Loss

Figure 6 shows water loss for 2010 reached 5.6 percent and corresponds to the overall historical trend of less water loss each year. The District's has not instituted and funded a water meter replacement program for the Metro-Hub service area. Such a program could be a means to improve reducing annual water loss.

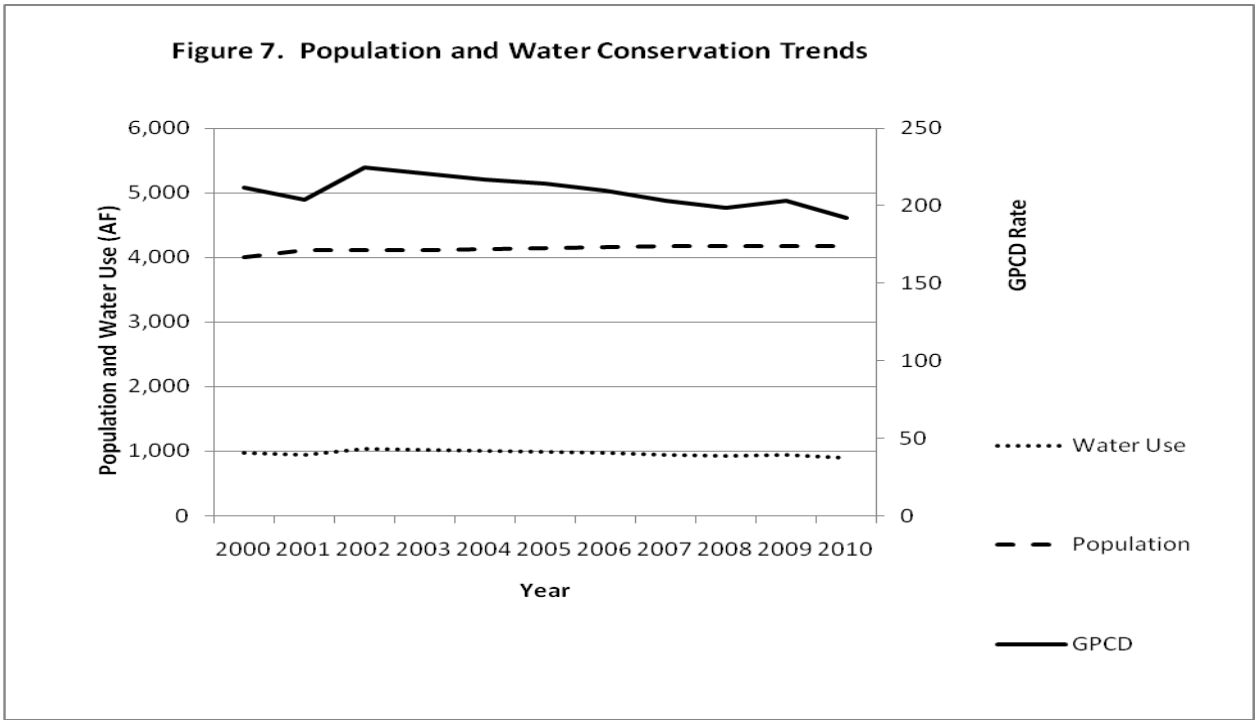
Water Conservation

Figure 7 depicts as service area population in Metro-Hub has increased overall water use has remained constant and the gallons per person per day used by each customer has decreased. Water conservation efforts are assumed to be the cause of this reduction in water use. In 2010, the gallon per capita per day (gpcd) rate in Metro-Hub was estimated as 192 gpcd. This rate is much higher than for the same period in Metro-Main of 147 gpcd.

Well Production Capacity

Metro-Hub is served by five production wells with pump capacities in 2010 ranging from 110 to 497 gallons per minute that have a total production capacity of 1,299 gpm. In 2004, the

production capacity was 1,612 gpm. These decreases are related to operational changes. The arsenic treatment system causes a 80 gpm lower flow rate at Hub Well No. 1. Flow at Hub Well No. 4 is reduced by 200 gpm, so not to cause pressure problems in the distribution system. There is a 60 gpm flow decrease at Hub Well No. 5A, so the pumping water level does not go below the pump setting.



Metro-Southwest

Water Use

Metro-Southwest has two separate service areas. Customer water use at Diablo Village for 2010 was 212.79 acre-feet. About 192.94 acre-feet of that use was supplied through an interconnect with Tucson Water until DV-2 Well could be brought on-line. A total of 250.28 acre-feet of groundwater was delivered from Tucson Water and DV-2 Well.

A total of 111.94 acre-feet of groundwater was pumped from two wells in the E&T service area. Of that amount, 99.03 acre-feet was used by E&T customers.

Water Loss

Water loss in Diablo Village was 15.0 percent, while loss was 11.5 percent in the E&T service area.

Water Conservation

Water loss above 10 percent is a compliance trigger by ADWR for increased water conservation efforts or water use metering.

Summary

The Board of Directors is requested to discuss with staff any aspect of this update. Overall, the District has done well in managing costs for Metro-Main's assured water supply program as well as effectively managing its water resources (groundwater, CAP water, effluent and remediated water). Water conservation efforts at Metro-Hub continue to show improvement but may be needed for Metro-Southwest. No motion is required for this agenda item.

Respectfully submitted,

Mark R. Stratton, P.E.
General Manager