Metropolitan Domestic Water Improvement District
Board of Directors Meeting

March 11, 2013

Water Resources Update

Synopsis

Metro-Main's 100-Year Designation of Assured Water Supply (DAWS) requires all pumped groundwater from within the service area be replenished within the Tucson basin. The District accomplishes this State requirement for Metro-Main 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 the Metro-Main service area. Metro-Hub and Metro Southwest-E&T are currently solely dependent upon groundwater. Staff has been developing a DAWS application for Metro Southwest-Diablo Village. District water conservation efforts continue to decrease the annual water demand in the four service areas. A meter replacement program was completed in 2012 for Metro Southwest-Diablo Village and underway for Metro-Hub 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 accomplish 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 Assured Water Supply designations. As a backup, Metro-Main is a member service area with the CAGRD. Table 1 shows Metro-Main met all of its Assured Water Supply requirements for 2012 through CAP water recharge and recovery (86%) and remediated water from the South Shannon Treatment

System (14%) resulting in a 0 acre-foot CAGRD replenishment obligation. All of Metro-Main's wells are now permitted as recovery wells and CAGRD obligations will be zero from 2012 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	2012 Volume (AF)	Cost
Metro-Main Water Use	7,786.86	-
CAP from Wells and Recharge Water ($133.79/AF)	7,119.15	$952,510.80
Effluent Recovery & O&M Fee ($2/AF)/Value	0.00	$0.00
Remediated Water from Wells and Tax ($3/AF)	667.71	$2,003.13
Mined Groundwater and Tax ($3/AF)	0.00	$0.00
AWS Total Costs	**7,786.86**	**$954,513.93**
CAGRD Cost for 7,119.15 AF x 47% @ $474/AF	$1,586,004.24	
2012 Recharge and Recovery Cost for AWS	$954,513.93	
Savings in Cost Avoidance	**$631,490.31**	

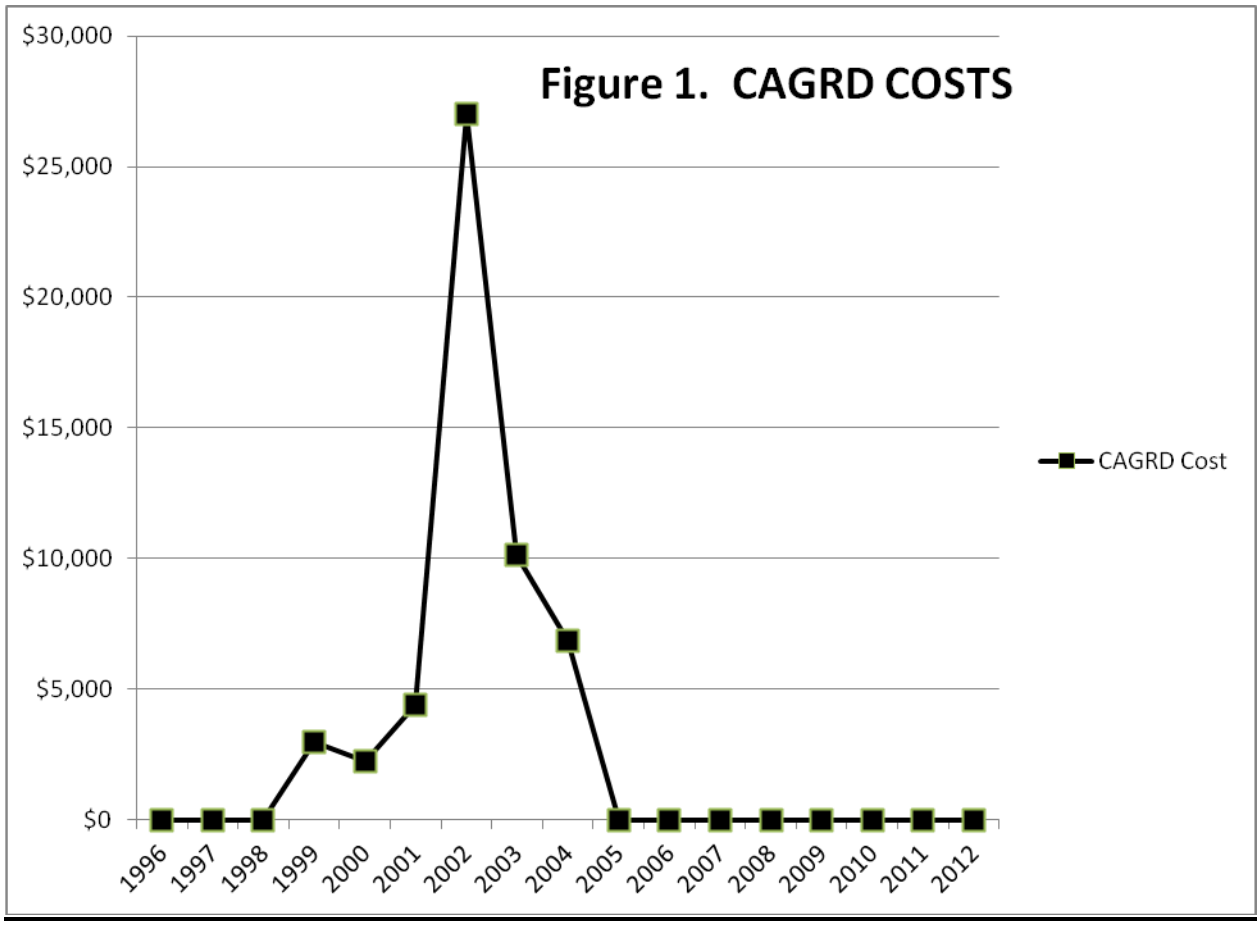
CAGRD Status

Table 1 also illustrates the avoided CAGRD costs compared to the District completing its own CAP recharge and recovery program. In 2012, $631,490.31 in CAGRD expenses were avoided and will be greater in subsequent years (Table 2).

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

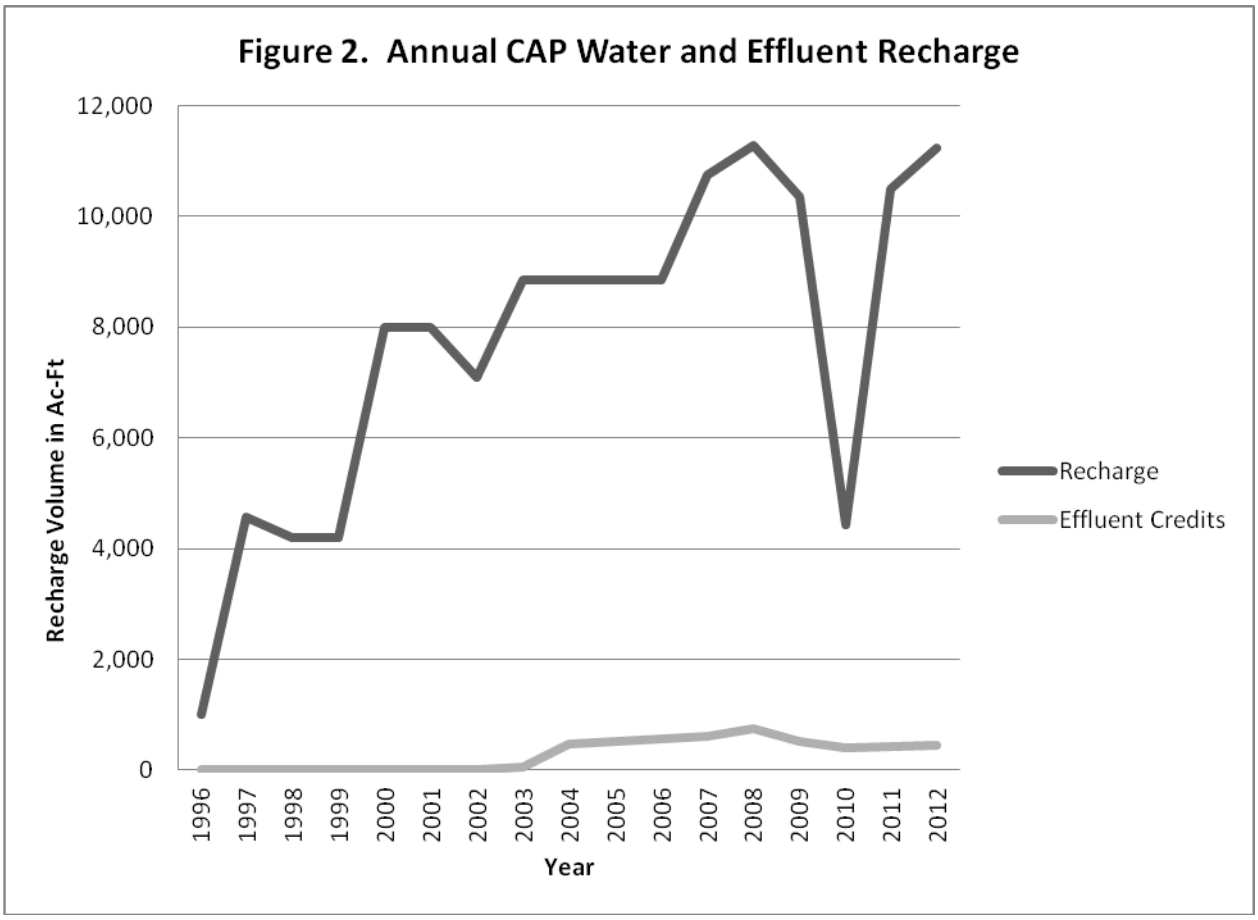
Year	Savings
2012	$631,490
2013	$1,019,356
2014	$1,380,370
2015	$1,700,422
2016	$2,147,316

The District's CAP/effluent recharge and recovery program and remediated water cost was $954,513.93 on 7,119.15 acre-feet or an average cost of $122.58 per acre-foot compared to using CAGRD services at an average cost of $222.78 per acre-foot. Production at South Shannon Treatment System was greater than last year, when Utility Division found a way to expand the service area. 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, 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 was achieved in 2011 and 11,236 acre-feet in 2012. However, both in 2011 and 2012, 1,636 acre-feet of the stored volume was for the Town of Marana. For 2013, the District will be storing its full allocation of 13,460 acre-feet.



After the Arizona Department of Water Resources deems the District's 2012 credits, the credit account volume will be 1.5 times more than Metro-Main's annual pumpage (Table 3). The District's credits have an estimated value of $1.9 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 2,200 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, 2012 effluent credits of 452.07 acre-feet would be valued at $904.14. The 452.07 in effluent credits was caused by larger stormflows, which improve the effluent infiltration in the Santa Cruz River.

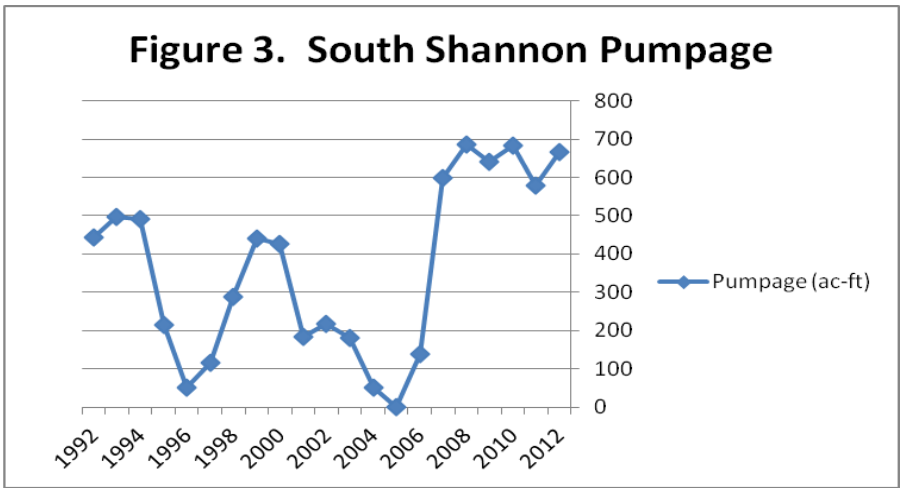
Table 3. CAP and Effluent Recharge Program

Long Term Recharge Credit Account	**Volume (AF) as of 12/31/11**	
Recharge Credits Balance	9,460.17	
2012 Recharge Account Value @ $142.50/AF	$1,348,074.22	
2012 Recharge and Recovery		
	Cost	
CAP Cost from GSFs by Annual Recovery in 2012 of 4,800 AF @ $125/AF	$600,000.00	
CAP Cost from USF by Annual Recovery in 2012 of 2,319.15 AF @ $152/AF	$352,510.80	
Total Cost for 2012 CAP Recovery	$952,510.80	
	Volume (AF)	Cost
Anticipated 2012 Effluent Recharge Credits ($2/AF)	452.07	$904.14
Projected CAP Credits from Excess 2012 Storage/Cost 4,116.85 AF @ $152/AF – 5% Cut and 1% ET (164.67 AF)	3,952.18	$625,761.20
PROJECTED TOTAL CREDITS	**13,864.42 AF**	
Contract Credits for Transfer to Marana	-1,537.84 AF	
Projected Recharge Credits Balance in AF by 9/29/13)	**12,326.58 AF**	
Recharge Account Value @ $152/AF	$1,873,640.16	

Remediated Water from South Shannon Treatment System

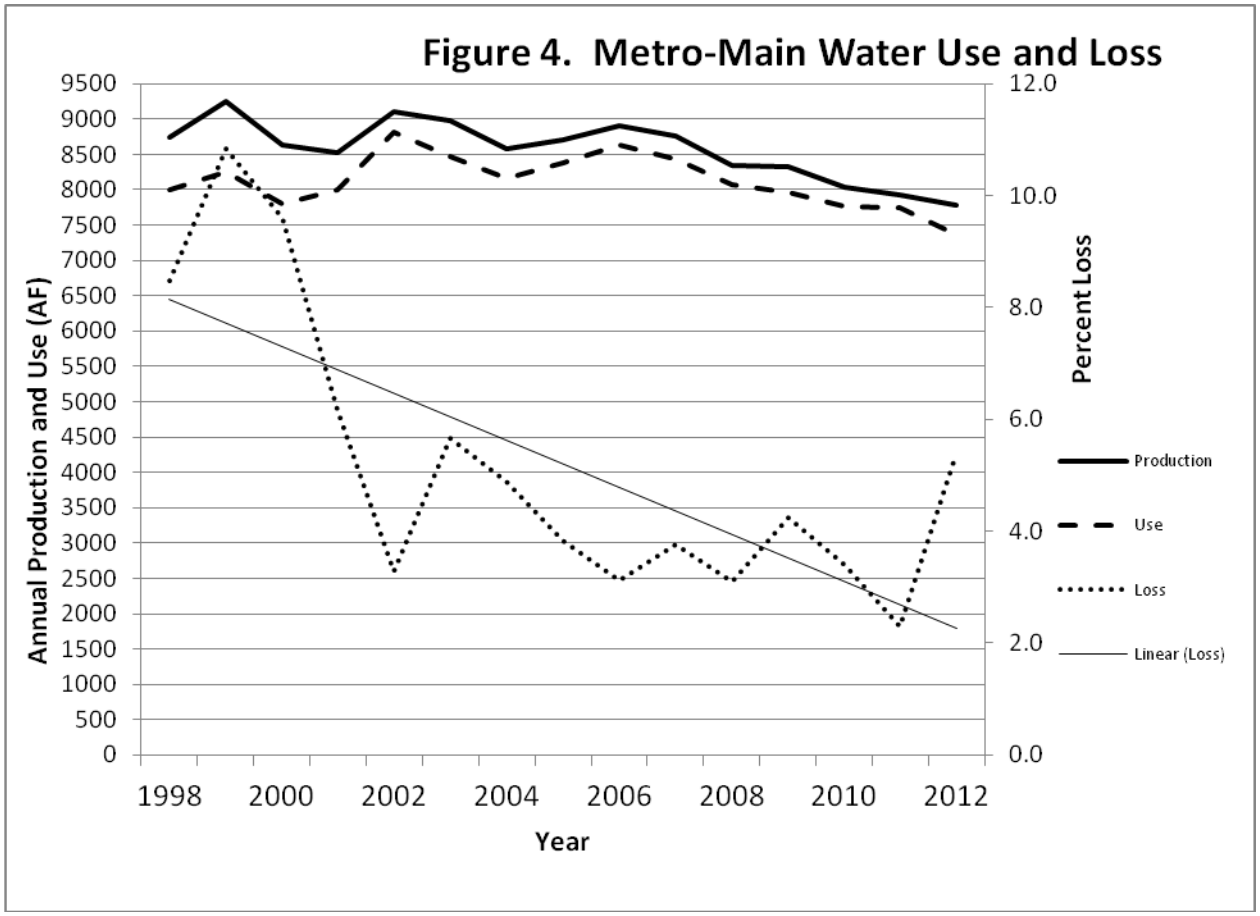
The District was issued an exemption by ADWR in 2006 for using up to 1,048 acre-feet of treated South Shannon water as remediated water instead of being classified as groundwater. ADWR records remediated water as renewable surface water not as mined groundwater. Therefore, the 667.71 acre-feet of remediated water exemption saved the District $148,752 at present CAGRD prices for 2012.

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 beginning in mid 2009 levels in groundwater rose 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 2012 were $793,604.97 or $137.21 per acre-foot of water treated or $0.42 per 1,000 gallons. All of these costs were reimbursed by the Arizona Department of Environmental Quality including $105,108 for 2012. In 2012, about 43.9 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 2012 was 5.4 percent.



Water Conservation

The service area population for 2012 in Metro-Main increased by 38 people to a total of 44,073. The average gallons per person per day used by each customer was 158 gallons per person per day. Historic gpcd rates can be found in Table 4.

Table 4. Metro-Main GPCD Rates

Year	Actual GPCD	Target GPCD
2012	158	TBD
2011	161	188
2010	163	190
2009	148	163

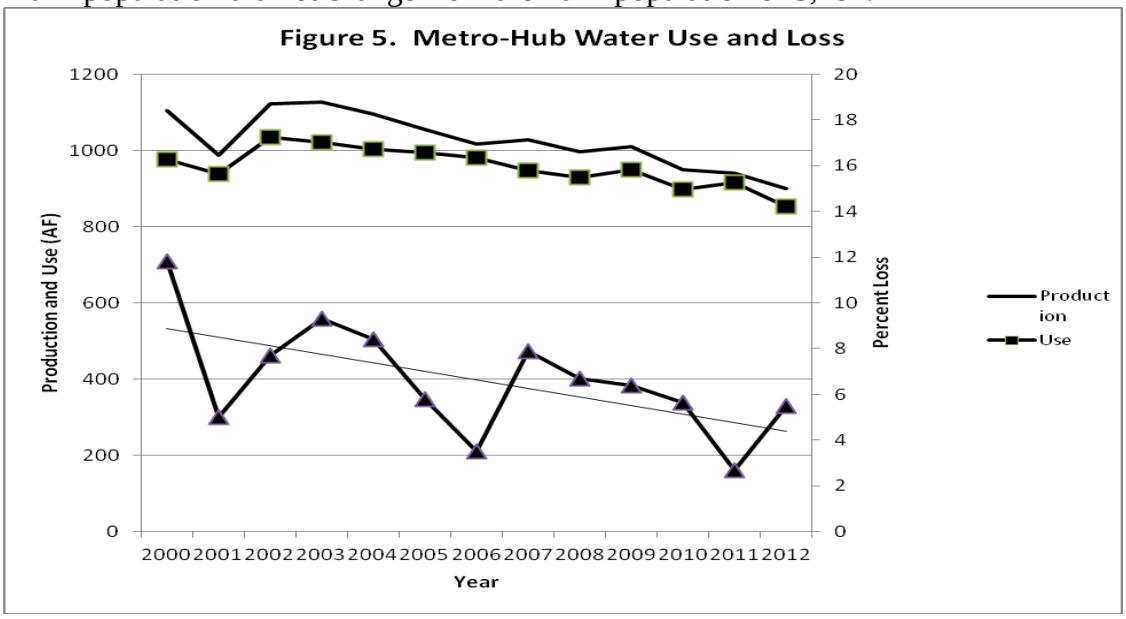
Well Production Capacity

Average well production capacity in 2004 was 12,386 gpm. For 2012, the average well production capacity was 10,120 gpm or a decline of 2.3 percent per year. Metro-Main well production has declined with time and will likely continue to decline because of retirement of 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 (Figure 5). The 2012 population did not change from the 2011 population of 3,481.



Water Loss

Figure 5 shows water loss for 2012 increased to 5.5 percent and corresponds to the overall historical trend of lower water loss each year. The District began in 2012 a water meter replacement program for the Metro-Hub service area. Such a program could be a means to further reductions in annual water loss by more accurate metering.

Water Conservation

As noted the service area population in Metro-Hub did not change, so the average water use was 231 gallons per person per day used by each customer. Historic gpcd rates for Metro-Hub can be found in Table 5. However, Metro-Hub is regulated under the Modified Non Per Capita Conservation Program (MNPCCP) which requires the utility to complete annually all assigned water conservation programs instead of benchmarking compliance to a Target GPCD rate.

Table 5. Metro-Hub GPCD Rates

Year	Actual GPCD	Target GPCD
2012	231	TBD
2011	241	228
2010	243	233
2009	235	212

Well Production Capacity

Metro-Hub is served by five production wells with pump capacities in 2012 ranging from 114 to 483 gallons per minute that have a total production capacity of 1,246 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 2012 was 236.01 acre-feet. A total of 248.30 acre-feet of groundwater was delivered from DV-1 and DV-2 Wells and about 0.21 acre-feet was supplied through an interconnect with Tucson Water.

A total of 115.92 acre-feet of groundwater was pumped from two wells in the E&T service area. Of that amount, 105.83 acre-feet was used by E&T customers.

Water Loss

Water loss in Diablo Village was 5.0 percent, while lost was 8.7 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. The District completed the installation of automated water meters this year for the Metro Southwest - Diablo Village and E&T service areas. Such a program could be a means to further reductions in annual water loss by more accurate metering.

The service area population for 2012 in Metro Southwest-Diablo Village increased by 3 people to a total of 2,418. The average gallons per person per day used by each customer was 92 gallons per person per day. Historic gpcd rates for Metro-Hub can be found in Table 6. However, Metro Southwest-Diablo Village is also regulated under the MNPCCP which requires the utility to annually complete all assigned water conservation programs instead of benchmarking compliance to a Target GPCD rate.

Table 6. Metro Southwest-Diablo Village GPCD Rates

Year	Actual GPCD	Target GPCD
2012	92	TBD
2011	94	106
2010	93	108
2009	253	87

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-Main, Metro-Hub and Metro-Diablo Village continue to show improvement and compliance with State conservation requirements. Further improvements may result in these two service areas from the water meter replacement program. No motion is required for this agenda item.

Respectfully submitted,

Warren Tenney
Assistant General Manager

I concur with staff's report.

Mark R. Stratton, P.E.
General Manager