BOARD OF DIRECTORS METROPOLITAN DOMESTIC WATER IMPROVEMENT DISTRICT PIMA COUNTY, ARIZONA

June 23, 2003

** Board Room ** Metropolitan Domestic Water Improvement District 6265 N. La Cañada Drive Tucson, AZ 85704

MINUTES

Board Members Present:	Dennis Polley, Chair
	Dan M. Offret, Vice-Chair
	Suzanne Downing, Member
	Jim Doyle, Member
	James Tripp, Member
District Staff:	Mark Stratton, General Manager
	Chris Hill, Deputy Manager
	Steve Dean, Utility Superintendent
	Mike Block, District Hydrologist
	Gary Burchard, Hydrologist II
	Warren Tenney, Clerk of the Board

Study Session

I. Call to Order and Roll Call

Dennis Polley, Chair of the Board of Directors of the Metropolitan Domestic Water Improvement District (District), called the Board study session to order at 5:35 p.m. Dennis Polley, Dan M. Offret, Suzanne Downing, and James Tripp were present. Jim Doyle would arrive at 5:40 p.m.

II. General Comments from the Public

There were no comments from the public.

III. <u>Update of Southern Arizona Water Regional Management Study for Alternatives to</u> <u>Using CAP Water</u>

Mark Stratton, General Manager, explained that Metro Water District has pursued the use of CAP water through its involvement with the Avra Valley Recharge Project, the Lower Santa

Cruz River Recharge Project, and the study of the Cañada del Oro Recharge & Recovery Project. The study of the CDO recharge project has looked at different approaches and pipe alignments for bringing CAP water to the CDO Basin. Eric Holler, a District resident, works for the U.S. Bureau of Reclamation and is the project manager for the Southern Arizona Water Regional Management Study for alternatives to using CAP water.

Jim Doyle arrived to the meeting at 5:40 p.m.

Mr. Holler explained that the Southern Arizona Water Regional Management Study for alternatives to using CAP water was a federally authorized study that focused on the best means to bring CAP water into the CDO basin. The report was completed in August 2000. The partners for the study included Central Arizona Project, Towns of Oro Valley and Marana, and Metro Water District. The Bureau had previously been involved with a recharge study of the CDO Basin in 1998. The partners now wanted a study that looked at different alternatives that included the recharge & recovery alternative but also treatment & direct delivery alternative, using the Tucson Water deliver system alternative, and continued well usage alternative. In looking at cost comparisons of the alternatives for the delivery of 30,000 acre-feet annually, direct delivery and conventional treatment cost \$130.2 million. The study also looked at costs per acre-foot and per 1,000 gallons.

Mr. Holler explained that the partners in the study knew that water quality was a large concern due to Tucson's introduction of CAP water. Therefore, a pallet of different treatment options and the cost involved were examined. These included conventional treatment, slowsand filtration, and microfiltration/ultrafiltration. Slowsand is used in Europe as well as the United States but has not had a lot of operational usage within the Colorado River system. Microfiltration/ Ultrafiltration is a new treatment that appears promising. With each of the three primary treatments, the study would also look at adding reverse osmosis as a means for lowering the TDS level. In looking at the three treatment approaches, slowsand filtration was significantly lower in cost.

Mr. Holler reported that a recommendation from the report was to do a pilot study on slowsand filtration and reverse osmosis. The partners, who now included Flowing Wells Irrigation District, agreed with the recommendation. Dr. Chuck Moody with the Bureau ran the study, and the results were published in August 2002. Slowsand is a very simple treatment process that allows the water to filter through fine sand and does not present a difficult disposal problem. Slowsand treatment is often met with resistance by engineers because of the need to acquire large tracks of land and due to maintenance costs. However, the cost of land acquisition and maintenance were factored in the Bureau's study, which concluded that slowsand still was the least expensive option. Mr. Holler noted that the pilot study confirmed that CAP water can be treated through slowsand to meet drinking water standards and it could be used to as a pretreatment approach to reverse osmosis. Additionally, based on the pilot study, the cost projections to use slowsand separately or with reverse osmosis rose by two cents.

Mr. Doyle noted that the operation and maintenance costs of using conventional chemicals could not be guaranteed because it is unknown how expensive they might become.

Mr. Holler said that following research of the treatment options, the study also looked at the financing to build such a project. The pipe alignments were realigned after following the similar concept as the CDO Recharge project. A treatment plant would be erected near the CAP canal, just north of Tangerine Road, and then conveyed eastward along Tangerine Road. The respective partners could access the primary pipeline by connecting with their individual pipelines. A new strategy was included that involved direct delivery using slowsand treatment, at a capital cost of \$72.9 million. This project would include a reliability reservoir, the slowsand treatment, and the distribution system. This approach could be less than continued use of wells combined with recharge and recovery.

Mr. Holler explained that with the construction of the Central Arizona Project and bringing it to Tucson, the Tucson area was promised a reliability reservoir for when major shutdowns of the CAP canal occurred. This is an important component that the Tucson region needs to continue to put pressure on, particularly with the CAP Board of Directors. Local matching funds for such a reservoir would be approximately \$12 million.

Mr. Doyle questioned about the overall cost. Mr. Holler noted that the \$72.9 million could be broken down into different options. For example, the distribution pipeline could be argued that as a function of CAP, it should be built under CAP authority and include CAP's postage stamp rate for delivery. It will be a tough sale, but it is an option. Federal loans as well as WIFA could be looked at. Different financing options do exist.

Mark Myers, Consultant, said that the numbers were conservative on the expensive side. Mr. Holler agreed by noting that the study was looking out at 20 years.

Mr. Holler pointed out recent activities that have occurred to move this project forward. Representatives of the partners recently met with the Bureau's Commissioner. Funding for continued work on terminal storage in the amount of \$390,000 is included in the federal budget. Briefings with Central Arizona Project staff have occurred. Local support to match funding for 2005 and 2006 budgets appears to be available, which will be important for having the monies included in the federal budget. Local water entities as well as the Phoenix Bureau office have been briefed on the status of the project.

Mr. Stratton asked if CAP staff have commented on financing of the distribution system. Mr. Holler said they have not directly replied to the idea of CAP paying for it. They did comment that they were interested in seeing if the reservoir could be enlarged to meet all of the Tucson area's demands.

Mr. Stratton asked what the next step would be with the slowsand study. Chris Hill, Deputy Manager, explained that the pilot study has raised more questions. The University of Arizona has been willing to provide assistance to look at the concept of combining slowsand treatment and microfiltration, which could be the best approach. The challenge is to ensure all partners are willing to participate in the next step, which involves looking at aesthetics and technological capabilities. Mr. Holler noted that Tucson is looking at its options since its Clearwater Recharge & Recovery Project cannot meet all its needs. Also, Tucson has been involved with the Bureau's

salinity study due to salinity concerns of Tucson. Mr. Stratton noted that he has been participating in the dialogues on salinity. The big issue is what to with the brine waste. It is hoped that new technologies can remove more salt with less waste.

IV. Status of Groundwater Levels and Wells in the District

Steve Dean, Utility Superintendent, explained that the District's system capacity consists of well capacity, peak demand, and storage capacity. From 1996 to 2002, the potential well capacity has gone from 19 million gallons to almost 16 million gallons, while peak demands has steadily increased from just under 12 million gallons to 12.5 million gallons. During that time, eight wells have been taken out of service. The District has added more interconnections and has improved the overall redundancy of the system so it is able to meet peak demands. Increased storage capacity has also helped the overall system's reliability.

Mr. Dean reported that the goal of the District's well maintenance program is to have all wells rotated every five years as a preventative effort. Regular maintenance can cost between \$10,000 and \$20,000 less than an emergency maintenance. The cost for well maintenance has increased by 106% since 1994. Unfortunately, four wells have never received maintenance, some wells have only had one scheduled maintenance work, and two wells have had to be pulled five times. This is due to emergency repair needs and low funds. Mr. Stratton noted that three of the four wells that have not had maintenance previously are scheduled for maintenance during the upcoming fiscal year.

Mr. Doyle asked if the wells that were pulled five times were high production ones. Mr. Dean replied that the two wells are important in that they serve the same area and represent about one million gallon capacity together.

Ms. Downing asked if the District was on schedule with its well maintenance program. Mr. Dean noted that the District has not been able to meet its five-year rotation goal since 1994. Mr. Stratton said the well maintenance rotation of five years has not been met because of emergency well repairs or not enough funding to cover the well maintenance.

Mike Block, District Hydrologist, showed a map of the District's four well fields and the overall decline of water levels. Wells in the Upper CDO and Lower CDO well fields have had an annual decline of 3.5 feet and 3.4 feet annually, respectfully. In the Rillito well field, the decline has been 2.9 feet annually with the Catalina well field having a 1.1 foot decline. Mr. Block pointed out a table that lists the District's active wells and shows that current well depth and the original well depth are getting closer for a number of wells, making it difficult to lower the pump setting of the wells.

Gary Burchard, Hydrologist II, discussed the capacity of each well; or, in other words, how much water could be pumped if the well ran constantly. The District owns 47 wells. When the District was formed, 35 wells were active. Since then, eight have gone out of service due to sanding or water quality. The wells that were not active listed as inactive are because they are too small to use. The District is drilling two new wells, Mona Lisa and Lambert/LaCholla.

Under the Water System Management Plan, six to twelve new wells had been recommended. All existing wells were drilled with the cable-tool method, an old technology for drilling wells using pounding motion.

Mr. Burchard noted that the District's active wells have an average age of 34 years. Only one well is younger than 10 years. In the United States, 25 years is the normal life span for a well. In the Southwest, a well's life expectancy is usually 40 years. A third of the District's wells are 50 years old or older. Many of the older wells had casings installed that have large perforations, thus allowing for more sand to collect. Sanding can lead to premature failure to the well. Some wells are experiencing casing corrosion that lead to holes and sand or collapse.

Mr. Burchard said that with water levels dropping, perforations are exposed allowing cascading water to enter, which brings air into the water. This adds to maintenance cost due to cavitations, and can cause premature failure. Therefore, efforts are being made to add liners to control sanding in three of the wells. As water tables drop, production rates are reduced. If the District has to lower its pumps, it will eventually hit the bottom of the well. This requires increased horsepower and energy consumption to lift the water higher. Also, wells that decline more than 4 feet over a five year period are ineligible to be used as a CAP recovery well. Mr. Doyle noted that water quality problems potentially increase.

Mr. Burchard explained that most of the wells lost to date had been unpredicted and caused by excessive sand production, water quality issues, contractor error, or inadequate production to justify the finances to run the well. On average, the District has lost one well per year, which has equated to 3.1 million gallons in lost production per day since 1992. The District's total capcity has gone from 22.1 million gallons per day to 13.2 million gallons per day. For the production of the existing active wells in 2003, there has been an aggregate capacity loss of 5.8 mgd because of the fewer active wells and the drop in water levels. Mr. Stratton noted that these statistics do not include the production estimated from the new Mona Lisa and Lambert/LaCholla wells.

Mr. Tripp questioned if there was suppose to be three new wells under the Capital Improvement Program. Mr. Stratton said that three wells had been targeted but the unanticipated increased cost in well drilling made it possible for only two wells to be financed.

Mr. Burchard noted that in looking at the projections in water level declines and the depths of the wells, the District can anticipate loosing the Tucson National West and Alcott wells within the next two to five years. At least an additional five wells will need the pumps to be lowered. During the next couple of years, the District intends to do on-going, long-term tracking of well performance; developing and implementing a wellfield management program to lower energy costs and manage drawdowns; and evaluating the economic life of each well to assign in maintenance priorities.

Mr. Burchard said that potential capital solutions for the next few years include the installation of the Mona Lisa Well (\$640,000); use of Latamore South as a contingency well that would require in-line nitrate monitoring (\$50,000); either replacing (\$300,000) or rehabilitating (\$100,000+) the Tucson National West well; replacing Alcott well, which would require a new site since the

existing site does not have enough room (\$640,000), and considering the drilling of other new wells with a cost similar to the Mona Lisa well.

Mr. Doyle inquired why a drilling rig cannot be used at the Alcott site. Mr. Dean explained that with the expansion of Shannon Road as well as the storage tank that now exists there, it is physically impossible to put a drilling rig in at the site. Mr. Stratton noted that possible replacement sites have been looked at, including property that the District has in the Casas Adobes Terrace subdivision south of the Alcott site.

V. <u>Discussion of Short-Term and Long-Term Water Resource Management for the</u> <u>District</u>

Mr. Stratton noted that staff had reported earlier in the discussion the average annual decline at the wells; however, what has been of most concern has been the recent declines in the last year or two. Throughout the northwest area, there have been wells that declined by 10 feet during the last year. In the District, some wells are having significant declines. For example, Tucson National East declined by 12 feet in the last year, with wells in the Rillito declining by nine feet. The large declines are due to the drought not allowing for natural replenishment to occur as well as increased water usage north of the District due to growth. While the discussion has been on operational issues, Mr. Stratton said he wanted to focus on water resource issues.

Mr. Doyle asked what type of production wells is experiencing the decline. Mr. Stratton said they are high production wells.

Mr. Stratton said that if District wells continue to see double digit declines, productivity levels or even the loss of wells will occur. There is immediacy to the issue. One short-term issue is to drill a new well at Tucson National West for \$300,000.

Ms. Downing said she did not recall the new budget including a line item for a new well. Mr. Stratton said it did not.

Mr. Stratton explained that the District has an allocation of 8,858 acre feet of CAP water with another 4,600 acre feet designated for the District once the Indian Settlements are resolved. That allocation of more than 13,000 acre feet should be enough to meet the District's future needs. The challenge is to ensure that the District has "wet" water from its allocation to use, not just paper credits. The Board has already approved the design for the Linda Vista Transmission Main. This would allow the District to recover its CAP recharge credits near the I-10 and Linda Vista Road and pipe the water to the Herb Johnson Reservoir. An agreement with CMID and Marana would be required to be able to use their well. At present, the cost to build a 36 inch line for three miles would cost \$3.5 million. The obstacle is to find the money to accomplish this.

Mr. Stratton said that other options being pursued include inquiring if Tucson Water could deliver water to an existing northwest connection with the District. Mr. Doyle asked if such an approach would be politically unwise since the District had wanted to avoid taking CAP water from Tucson. Mr. Stratton noted that in the 1990s, the concern had been treated CAP water,

whereas Tucson is now providing blended water. Mr. Stratton said the District needs to look at all options. If taking water from Tucson means having water rather than none, it is an option to consider. Additionally, CMID and Marana are discussing a possible \$350 acre feet agreement for water, which may be more expensive than receiving from Tucson. A main issue is whether these large declines continue or if we are given some more time by having some rain. While discussions are occurring with CMID and Marana, the District still needs to be able to find \$3.5 million.

Mr. Doyle asked about the use of recharge effluent credits. Mr. Stratton said that with the managed recharge project agreement approved the District can obtain credits for its effluent; however, it is exploring possibilities with agricultural interests to use effluent so the District could obtain 100% credit.

Mr. Stratton explained that the Linda Vista Transmission approach would provide a use for five to ten years based on the well capacity from CMID and Marana. However, with growth in that area, we would need to look at another option eventually unless we oversize the line now to meet Marana's potential needs. Therefore, the District needs to also look at the possibility of some form of treatment of CAP water, as discussed earlier by Mr. Holler. This would need to be done either by the District or as a group effort. Pygmy owls may be a factor for constructing a transmission main as well as locating land for the treatment process. The District is not able to control the timeline of others. Oro Valley will have a large debt with their current effluent use project and Marana's growth may not occur fast enough. Also, neither have a large allocation of CAP water.

Mr. Tripp said that the District needs to concentrate on building the Linda Vista Transmission Main since it will be used for whatever alternative the District pursued. Mr. Stratton agreed and said that his main priority is to determine how to find funds to construct the Linda Vista Transmission Main. Also, the District needs to continue the treatment study.

Mr. Stratton said that another concept that needs to be considered is a privatization contract. This would allow for someone to pay for the capital project and operate it with the agreement to eventually turn it over to the District. It is a financial concept that needs to be explored since it would become an operational expense rather than a debt. Ms. Downing said that such a concept must have a benefit to the person who agrees to construct it. Mr. Stratton said it would but again it is another option. Mr. Stratton noted that he wanted the Board to be aware of the various options that are being explored and that more analysis is needed of all options before the Board decided what the best one is.

Ms. Downing said she is concerned that these issues are more urgent than when the Board discussed them earlier this year. Mr. Stratton agreed and noted that at the February study session, the information on last year's well declines was not available and has increased the urgency.

Mr. Myers explained that the good news is that Metro Water District has been working on these issues for the last ten years and has been doing studies and research. The drought and growth of

the last two years has accelerated the problem and pushed the time frame forward. However, it is positive that the District has a good idea of its options.

Mr. Tripp questioned if Oro Valley has similar problems. Mr. Stratton said it does and perhaps it is worse in some situations.

Mr. Doyle left the meeting at 7:30 p.m.

Mr. Holler pointed out that continuing to use groundwater and relying on the Central Arizona Groundwater Replenishment District is not cheap. For long term savings and reliability, the District needs to look at treatment and direct delivery. This includes pushing for terminal storage since the Central Arizona Project's infrastructure is also aging and will not always be completely dependable.

Ms. Downing asked how many customers Marana has. Mr. Myers said 1,500 but all new growth in Marana will be under its water system, which means in 10 years it could have 15,000 connections.

Mr. Stratton said that in summary, he was planning to pursue the replacement of the Tucson National West, since it was cheaper than drilling and equipping a new well; look at options to get increased capacity from the new Lambert/LaCholla well; and look at a new well to replace the Alcott well. More long-term objectives include construction of the Linda Vista Transmission Line. It cannot be built for one and half years due to the environmental requirements that the design is undergoing. In the meantime, alternatives to pay for that construction will be pursued along with an agreement with CMID and Marana. This includes working with CAP to pursue their agreement to deliver water at 2,800 feet elevation to receive postage cost so that the operating costs will be minimal.

Mr. Stratton said the District has challenges but they can be met. The District does need to move forward using renewable supplies, which will mean a significant public relations campaign with our customers.

Mr. Offret inquired if the District needs to campaign with the federal and state agencies to ensure support for these projects including the postage stamp rate. Mr. Stratton and Mr. Holler said that local support and matching of funds will need to continue in the federal area. Working with Central Arizona Project on the postage stamp rate will require a convincing argument of why that is the correct thing to do.

Michael McNulty, Legal Counsel, questioned if the District should look at increasing system development fees in order to fund these activities. Mr. Stratton said the fee could be looked at for the next rate adjustment; however, there are only a few remaining lands for development in the District.

Mr. Stratton said he would continue to provide updates and information to the Board regarding these water resource issues.

VI. General Manager's Report

Mr. Stratton reported that the response to Mayor Walkup has been finalized as well as a letter to Hub customers to explain the current status of the Metro-Hub annexation and the City's unwillingness to consider giving consent per the statutes.

Mr. Stratton said he had attended the national American Water Works Association conference and would be attending a Western Coalition of Arid States conference. A recent court ruling was in favor of the EPA's new arsenic standard.

Mr. Stratton said a response has been prepared to be given to Steve Nanini following the June 12, 2003 hearing with the designated officer.

VII. Adjournment

The meeting was adjourned at 7:40 p.m.

hair of the Board

Clerk of the Board