



PIMA COUNTY

REGIONAL WASTEWATER RECLAMATION DEPARTMENT

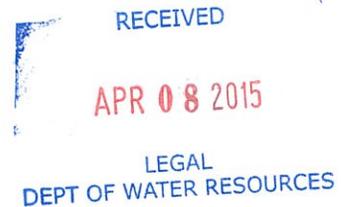
201 NORTH STONE AVENUE
TUCSON, ARIZONA 85701-1207

JACKSON JENKINS
DIRECTOR

PH: (520) 724-6500
FAX: (520) 724-9635

April 3, 2015

Sharon Scantlebury, Docket Supervisor
Arizona Department of Water Resources
3550 North Central Avenue
Phoenix, AZ 85012



RE: Central Arizona Groundwater Replenishment District
2015 Draft Plan of Operation

Dear Ms. Scantlebury:

Pima County hereby submits comments on the Central Arizona Groundwater Replenishment District 2015 Draft Plan of Operation. The Groundwater Replenishment District (GRD) replenishes groundwater pumped in the Tucson Active Management Area from Member Lands and Member Service Areas in many areas within Pima County. Many of the Member Lands enrolled in the GRD are in subdivisions in the Green Valley area, Spanish Trail area and throughout unincorporated Pima County. The major water providers serving County residents are also enrolled in the GRD. GRD replenishment costs for Member Lands are collected through property tax assessments collected by Pima County and transferred to the GRD.

Pima County has reviewed the 2015 Draft Plan of Operation (The Plan) and offers the following comments:

Enrollments Are Not Capped: Enrollment in the GRD parallels housing industry trends. Enrollment peaked 2003 and declined coincident with the housing market. But the obligation to replenish water from these lands will continue and new subdivisions joining the GRD will add to the GRD's future replenishment obligation. Legislation that permits de-enrollment, such as HB 2325, is one mechanism that permits voluntary termination of member land status. De-enrollment of subdivisions decreases the GRD's replenishment obligation for these lands.

Replenishment Deficits: GRD currently has sufficient supplies to replenish the member demands in all the AMAs, but the unmet replenishment obligation is projected to be 50,370 acre-feet in 2034 and 26,100 acre-feet in 2114. GRD has established a replenishment reserve to use during water supply shortages. The target reserve for the TAMA is 112,600 acre-feet but GRD has only 34,818 acre-feet in reserve leaving a deficit of 77,782 acre-feet or 70% of its target reserve unfulfilled.

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Reliance on Long Term Storage Credits: The GRD plans to meet much of its replenishment obligation by acquiring long term storage credits for renewable water already stored in the TAMA. Doing so does not bring new renewable water into the TAMA, nor does it ensure the long term storage credits will be recovered near the areas where the groundwater is pumped. The Plan also proposes short term or intermediate leases with effluent owners to generate long term storage credits. However, the location of the stored effluent is unlikely to be in close proximity to where groundwater is pumped. Using locally produced effluent to offset Member Land replenishment also brings no new water resources to the TAMA.

CAP Water Availability: The GRD can recharge excess CAP water. However, with CAP entities increasingly using their full CAP entitlement, less excess CAP water will be available. Furthermore, under a CAP shortage declaration, excess CAP water, along with non-Indian agricultural pool water will be the first CAP water supplies to be reduced. The probability of a CAP shortage is estimated to be 20 percent in 2016, increasing to 50 percent in 2017. Consequently, the availability of excess CAP to meet future replenishment obligations is uncertain.

Hydrologic Disconnect: GRD seeks to replenish in the same sub-basin in which the obligation is incurred; however, GRD's two underground storage facilities, Lower Santa Cruz Recharge Project and Pima Mine Road Recharge Project, have no physical or hydrologic connection to the Member Land subdivisions in Green Valley, Saddlebrooke or the Spanish Trail water service area, where groundwater is being pumped. These are the areas that rely most on the GRD. The GRD is also relying on purchase of long term storage credits most of which have been accrued in areas far from where the obligation is incurred. ADWR should require that the GRD replenish within the hydrologic area impacted by Member Lands' groundwater pumping or deliver renewable water directly using water delivery infrastructure or wheeling agreements.

Your consideration of these comments is greatly appreciated. Please feel free to contact me if you have any questions or require additional information.

Sincerely,



Jackson Jenkins, Director
Pima County Regional Wastewater Reclamation Department

Attached

c: C.H. Huckelberry, County Administrator
John M. Bernal, P.E., Deputy County Administrator - Public Works

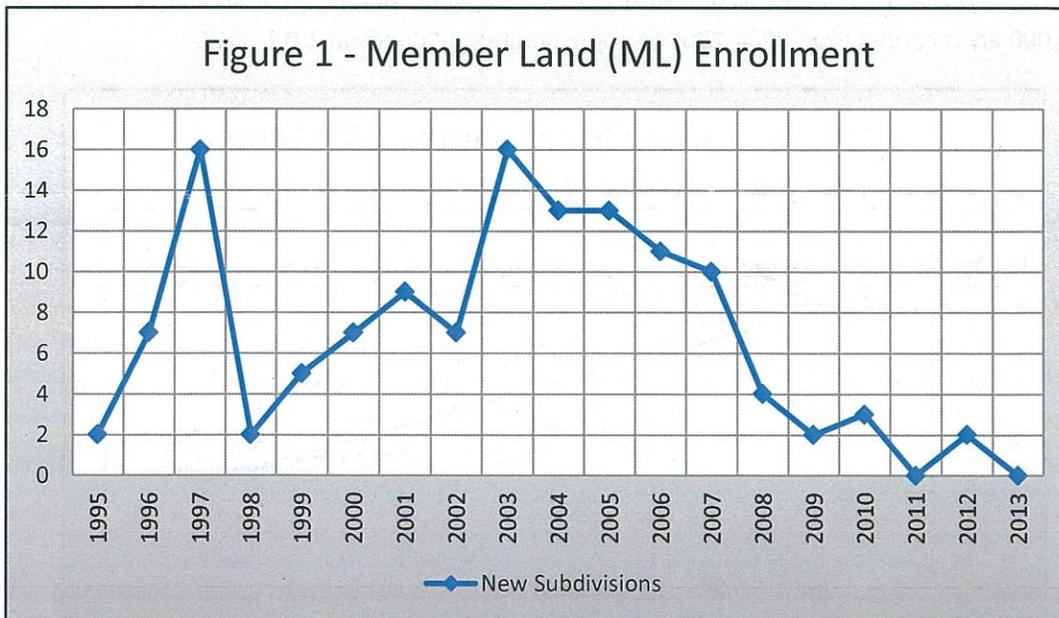
**Central Arizona Groundwater Replenishment District (GRD)
2015 Plan of Operation (Plan)
Tucson Active Management Area (TAMA) Implications**

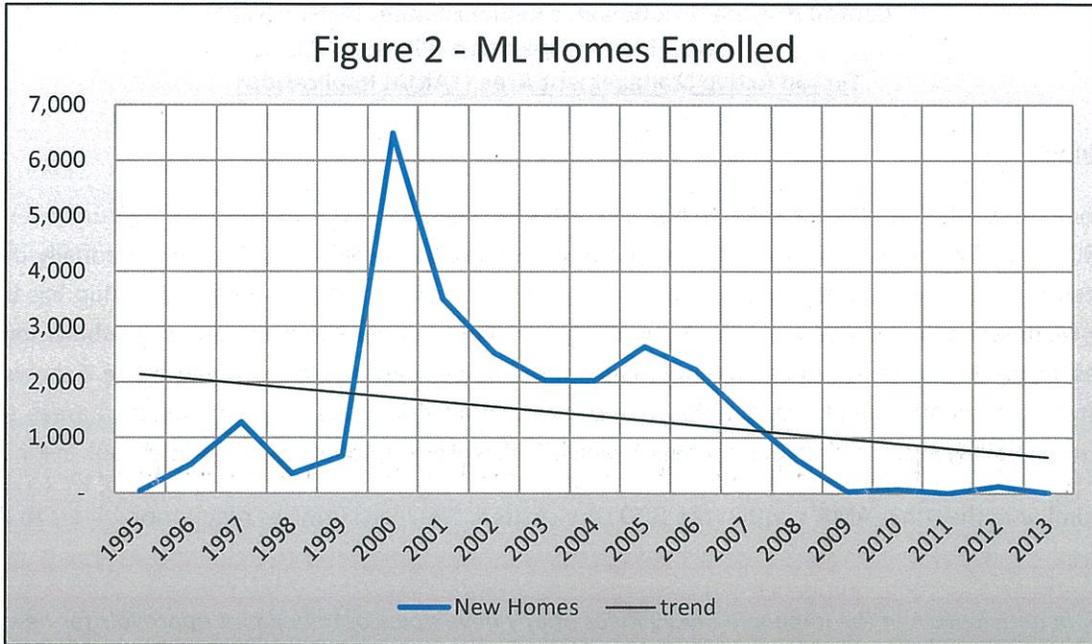
TAMA Enrollment

TAMA Member Land (ML) enrollment reflects housing industry trends and the economic downturn over the past 15 years; in 2000, homes enrolled annually in Member Lands increased ten-fold to 6,485 while gradually declining each year until a ten-fold decrease in 2008 from the record high. Since then, in comparison, membership has been minimal with no new Member Lands in 2011 or 2013. As of 2013, enrolled Member Lands totaled 129 subdivisions containing 26,529 homes. Figure 1 depicts the annual member land enrollment of new subdivisions and figure 2 shows the number of homes enrolled as member lands since 1995. Member land subdivisions are in unincorporated areas of the TAMA. Most are in Green Valley, eastern Pima County near Spanish Trail water service area and Saddlebrook in Pinal County.

The trend is similar in the other AMA's within the GRD service area. The Plan surmises regulatory drivers to development timing;

Prior to 1995, in anticipation of the impending AWS Rules, many developers obtained plat approvals for new subdivisions years before construction was scheduled to begin, as reflected by slow CAGR activity in the early years. In 2000 and 2001, increased enrollment likely was a result of developers anticipating stricter regulations associated with the state's Growing Smarter legislation and proposed growth initiatives. In the years following, residential construction was increasing rapidly along with the state's population growth. Home prices continued to escalate together with this high pace of home construction, resulting in a real estate bubble that peaked in 2006. Importantly, although enrollment was on the rise, the number of unconstructed subdivisions also continued to grow. Following the burst of the Arizona real estate bubble in late 2006 and the widespread financial crisis of 2007-2008, housing prices plummeted resulting in unprecedented numbers of evictions, foreclosures, and high rates of unemployment, all of which contributed to several years of virtually no new home construction in the state. (2-8)



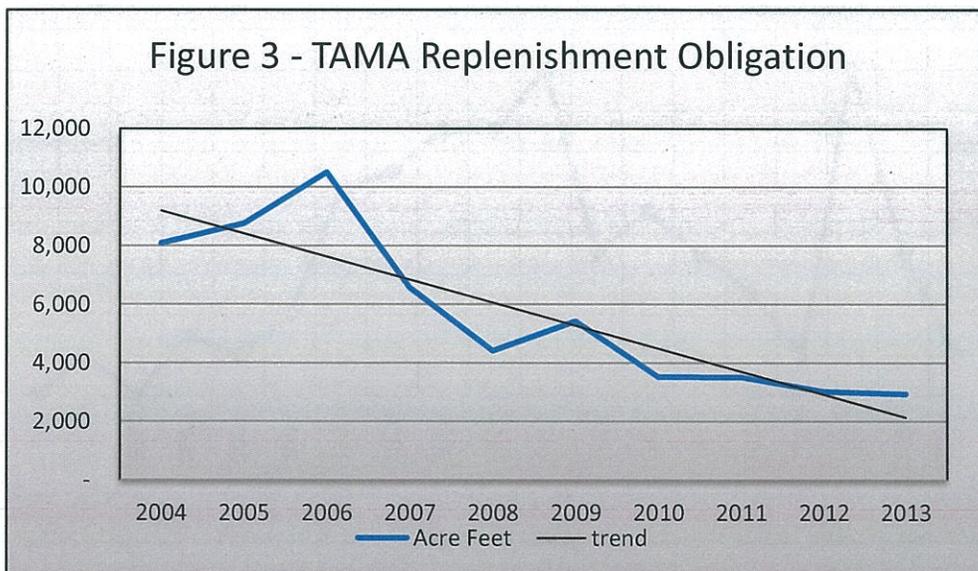


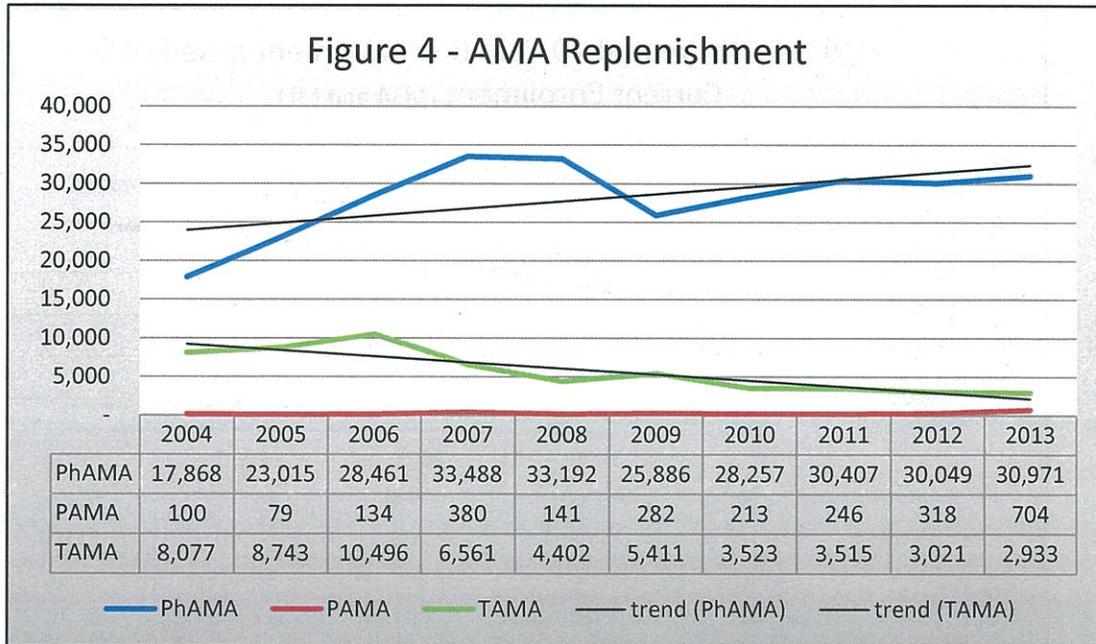
TAMA contains the majority of Member Service Areas (MSA) with 10 enrolled water providers (Table 1) or 43% of the total 23 MSA's in the GRD.

| Table 1 - CAGR D TAMA Enrollment (2013) | | |
|---|--------|-----|
| | ML | MSA |
| Subdivisions | 129 | 10 |
| Homes | 26,474 | |

TAMA Replenishment Obligation

TAMA replenishment obligations from 1995-2013 totaled 78,820 af; 5,219 af remained to be replenished at the end of 2013. Unique to the TAMA service area, reported Excess Groundwater pumping has steadily declined over the decade, from 8,000-10,000 afy recorded from 2004-2006 to approximately 3,000 afy in 2011-2013.





During the same 1995-2013 period, the Phoenix AMA (PhAMA) incurred replenishment obligations of 314,766 af; Pinal AMA (PAMA) incurred 2,805 af. Most obligations have been successfully replenished as required by Arizona Revised Statute. Outstanding is 60,326 af of replenishment across the AMA's.

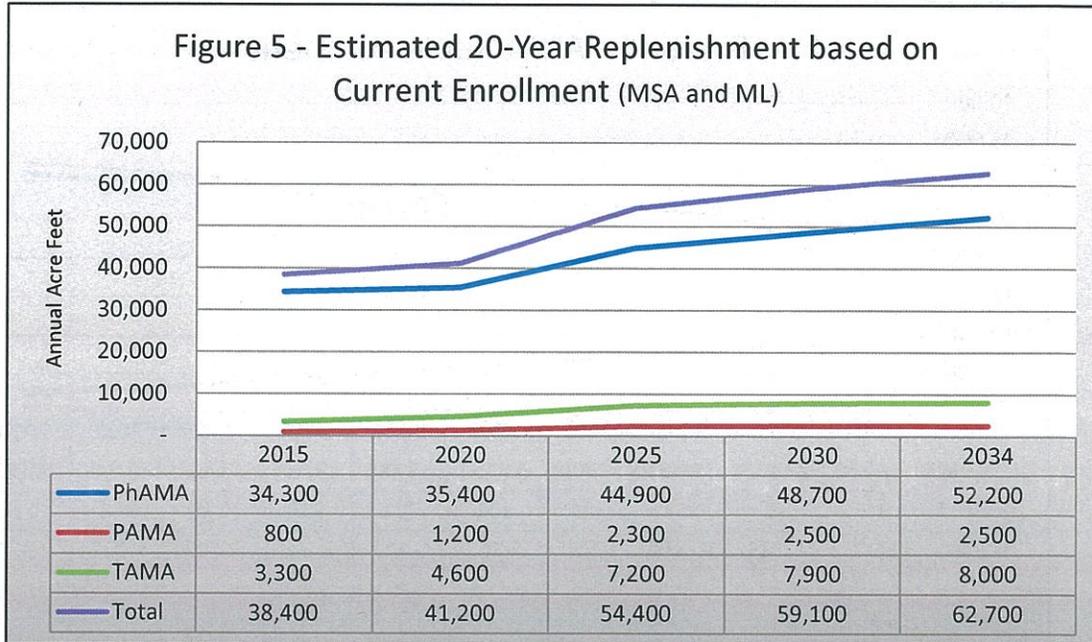
TAMA Projected Replenishment Obligations

In meeting the water demand of enrolled MSA water providers and ML subdivisions, any volume of groundwater pumped beyond allowable groundwater will need to be replenished; hence an obligation will be incurred. GRD has estimated total water demand of MSA and ML sectors and corresponding obligations over the next 20 years based upon population growth, housing and water demand models (Table 2).

| | MSA | ML | Total |
|-------------|---------|--------|---------|
| 2015 | 143,200 | 15,100 | 158,300 |
| 2020 | 148,300 | 17,100 | 165,400 |
| 2025 | 154,200 | 19,600 | 173,800 |
| 2030 | 159,100 | 22,000 | 181,100 |
| 2034 | 162,800 | 23,800 | 186,600 |

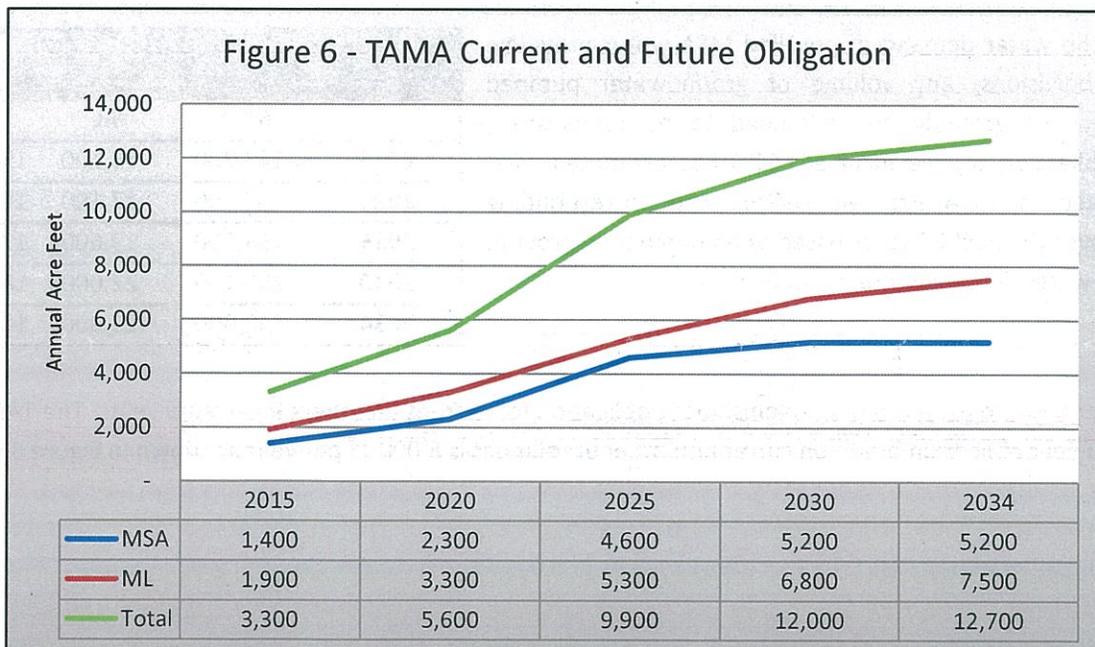
The GRD is required to estimate the replenishment obligation for current members for twenty years. The TAMA estimated 20-year obligation based on current member enrollment is 8,000 af per year as shown in Figure 5.

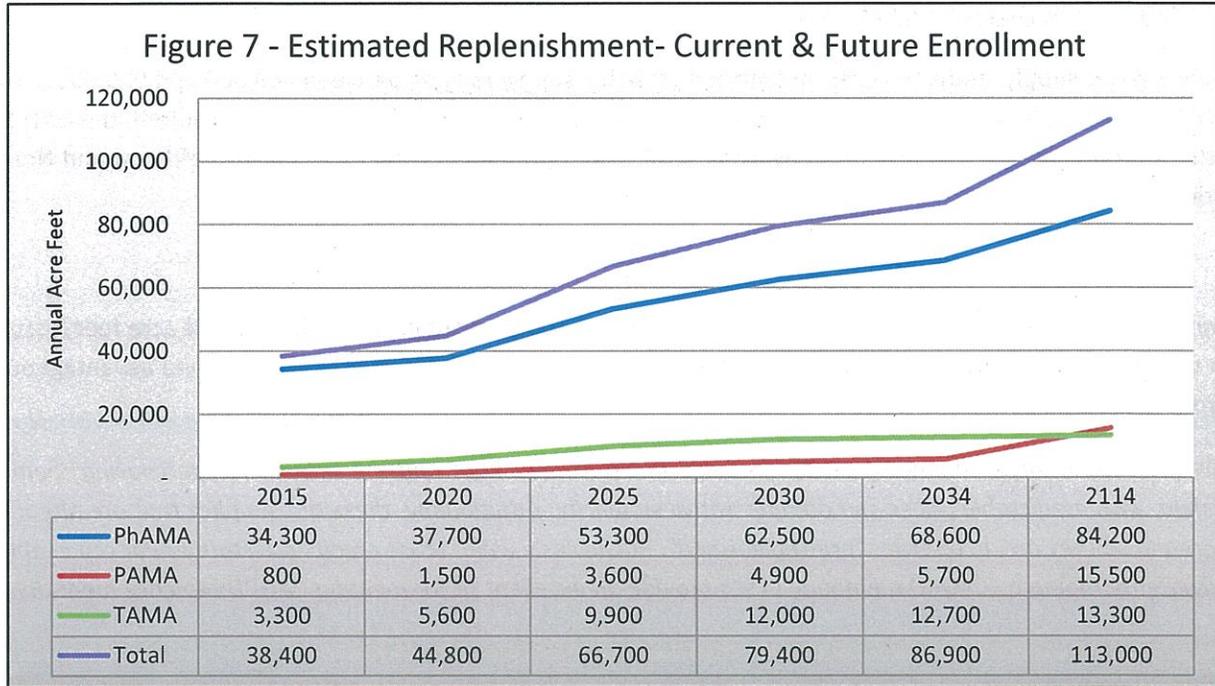
Figure 5 - Estimated 20-Year Replenishment based on Current Enrollment (MSA and ML)



GRD is also required to estimate the replenishment obligation for current and future members expected to enroll during the Plan’s ten-year horizon. The GRD’s TAMA obligation for current and future enrollees is expected to increase with a total projected obligation exceeding 12,000 of annually by 2034 as shown in Figure 6. The estimated current and future replenishment obligation for all AMAs over a 100-year period is shown in Figure 7.

Figure 6 - TAMA Current and Future Obligation





Member service areas tend to avoid reliance on the GRD to replenish excess groundwater pumped because the GRD’s replenishment costs are passed on to member service area water providers and, in turn, assessed to water rate payers. Member lands, however, have less incentive to reduce reliance on the GRD because replenishments costs are collected through a property tax assessed to the individual homeowner’s parcel.

GRD Water Supply

In short, GRD currently has 36,533 af each year (Table 3) to meet an annual demand of 35,000 af. To meet increasing demand, GRD must acquire an annualized supply of 50,370 af within the next 20 years and then another 26,100 af in the subsequent 80 years (Table 4).

| Table 3 - Current GRD Water Supply (af) | |
|--|---------------|
| CAP M&I Subcontract | 7,996 |
| NIA Reallocation Recommendation | 18,185 |
| Tribal NIA Lease, 100 year | 2,500 |
| Effluent Lease, 100 year | 2,400 |
| Annualized LTSC Rights (Reserved) | 5,452 |
| Annual GRD Supply | 36,533 |

| Table 4 - GRD Water Supply and Demand 2015, 2034, 2114 (af) | | |
|--|--------------------------|--------------------------|
| Current Demand | Demand 2034 | Demand 2114 |
| 35,000 | 86,900 | 113,000 |
| Current Supply | Additional Supply Needed | Additional Supply Needed |
| 36,533 | 50,370 | 26,100 |

CAGRD Water Supply Acquisition Program

Following a water supply study, GRD has inventoried probable supply ranging between 460,000 and 920,000 af from 500 individual water supply sources. Focusing on the next 20 years, in which 50,370 af must be acquired, the GRD Program will scrutinize purchase and acquisition of available LTSC, CAP entitlements and Excess water, effluent and Non-Project Colorado supplies.

LTSC

GRD will continue to purchase LTSC, calculating an annualized 100 year supply of 11,000-22,000 acre feet (assumes 1-2 million uncommitted credits present within the AMA's and Harquahala). LTSC purchase is deemed advantageous to the GRD Program;

There is currently a large volume of LTSCs available in the three AMAs and the market for purchasing them is well-established, with predictable prices and administrative simplicity. Additionally, these are supplies that are already stored in the ground so they are, in a sense, "pre-replenished". Particularly when those credits are stored near reportable Excess Groundwater pumping by CAGRD members, LTSCs provide an excellent fit for meeting CAGRD replenishment obligations. (4-9)

CAP Water

GRD planning includes purchase of CAP entitlements, specifically unused M&I entitlements, future NIA allocation and tribal water rights lease. GRD believes CAP subcontractors not ordering water delivery and water being used for short-term use and lease, to include USF and GSF delivery, will become available in the future. GRD estimates exclude AWS dedicated water and other long term uses.

Effluent

GRD seeks short term or intermediate leases with effluent owners in order to generate LTSC. While identifying 59,600-119,200 af of supply, GRD recognizes most of this supply will be utilized by local jurisdictions and providers to help meet potable demand. Opportunity exists for a partnership in recharging effluent; *"where those supplies would eventually be used to generate LTSCs, the CAGRD could partner with the effluent owner to construct infrastructure that might accelerate the utilization of the resource in exchange for LTSCs or a share of the effluent."*(4-11)

Colorado River Supply

Non-Project Colorado River water may become available to GRD through transfer, lease or fallow agreement provided a wheeling agreement is reached with the Bureau of Reclamation allowing use of the CAP canal for such supply. The primary source of water would come from on-river irrigation districts.

Excess CAP Water

Determined by CAWCD's Access to Excess Policy, GRD is allotted up to 35,000 af annually of Excess CAP water, deemed a "secondary alternative for CAGRD replenishment obligations"; GRD uses its primary portfolio, except LTSC, to fulfill obligations before Excess water is used to "fill gaps" between entitlements and obligations. Continued access to Excess CAP water is planned during the acquisition program, which is thought will phase out Excess water reliance;

Projections by CAP staff indicate that in normal water supply years Excess CAP water will continue to be available for at least the next 20 years. However, the availability of excess water for CAGR D use will continue to depend on other demands for that water and future adjustments made by the CAWCD Board to the Access to Excess policy...CAGR D will continue to acquire additional water supplies to meet its replenishment obligations, which will ultimately eliminate CAGR D's reliance on Excess CAP water.(4-3)

TAMA

Within the Tucson AMA, GRD's acquisition strategy is reliant upon the purchase of LTSC and effluent to generate LTSC; GRD is assuming an increasing supply of both. To date GRD reports purchases and purchase agreements totaling 144,357 af translating to an annualized volume of 1,444 af within the TAMA (includes the Tucson Water agreement of 100,000 af acquired over 20 years). It should be noted the Plan does not limit TAMA replenishment exclusively to these "paper" water credits.

2035-2114

In meeting 100 year obligations, GRD forecasts 120,000-239,000 af could be imported from allowable groundwater basins as well as the development of in-state desalination providing 14,000-40,000 af annually. Desalination of groundwater in two areas, Yuma and the Gila River near Buckeye, are cited. Treatment costs and lack of a wheeling agreement with the Bureau of Reclamation to deliver desalinized groundwater in the CAP infrastructure are cited as obstacles for the near term.

Replenishment Reserve

GRD has established a Replenishment Reserve subaccount for each AMA to accrue LTSC's that can be applied to replenishment obligations; a "savings account" GRD will use during water supply shortage or infrastructure failure to offset obligations rather than buying "spot-market water". A full Reserve Target volume must be maintained over time, any Replenishment Reserve credits used are to be replaced. The Reserve Target is unique to each AMA based upon projected obligations and available supplies. Table 5 shows the TAMA replenishment reserve falls 77,782 af below the reserve target.

| Table 5 - GRD TAMA Replenishment Reserve (af) | | |
|--|-----------------------|----------------|
| Reserve Target | Available LTSC | Deficit |
| 112,600 | 34,818 | 77,782 |

In 2005, CAWCD adopted Board policy- "dedicating all unencumbered LTSCs currently held by CAWCD to CAGR D for purposes of establishing the Replenishment Reserve. In addition to advancing the goals of ensuring the CAGR D's ability to meet its replenishment obligations and avoiding rate shock, the CAWCD Board policy specifically is intended to help reduce competition for water supplies among CAGR D and other water users within CAWCD's service area. These dedicated LTSCs are located in all three AMAs served by CAGR D and CAWCD. They include those accrued by CAWCD in the early to mid-1990s using its own reserve funds, as well as those accrued by CAWCD in the mid-1990s using money from the State Water Storage Fund (also known as State Demonstration funds)."(5-4)

The majority of dedicated (purchased) LTSC applied to Phoenix and Pinal AMA's, more than 300,000 af available for each. TAMA's Replenishment Reserve account has been built through accrued LTSC, water storage in USF/GSF. With Reserve Target deficits in TAMA and Phoenix AMA and a significant surplus in Pinal AMA, GRD discusses "re-positioning the excess LTSC";

It is apparent that sufficient water supplies are available to CAGR D to meet the total Replenishment Reserve Target through a combination of its existing Replenishment Reserve subaccount balance and the dedicated CAWCD LTSCs. It also is apparent that a significant volume of dedicated CAWCD LTSCs in the Pinal AMA are available, if needed and appropriate, to be re-positioned to help meet the targets for the Phoenix and Tucson AMAs...

Moving LTSCs from the Pinal AMA to the Tucson or Phoenix AMAs could be more expensive than other options available to the CAGR D. If deemed appropriate to move some of these LTSCs in the future, however, re-positioning may be accomplished either by direct or indirect recovery of the LTSCs from Pinal AMA and replenishment in the other AMAs or by implementation of one or more exchange agreements. CAWCD and AWBA have developed a conceptual joint recovery plan that includes recovery of AWBA LTSCs in the Pinal AMA. CAGR D will work cooperatively with CAWCD and AWBA to evaluate opportunities to participate in future recovery plans in the Pinal AMA and elsewhere, if appropriate.

Exchange agreements could involve other Pinal AMA entities that have entitlements to CAP water. Under such agreements, existing LTSCs in Pinal AMA could be recovered and delivered to the CAP entitlement holder and the "exchanged" CAP water could be stored in the Phoenix or Tucson AMAs to accrue LTSCs in the Replenishment Reserve. Another possibility is that CAGR D could enter into an "exchange" with itself. Under this scenario, CAGR D could use existing Pinal AMA LTSCs to offset its Pinal AMA replenishment obligation in a given year, and the surface water that CAGR D would have otherwise transported to and replenished in the Pinal AMA could be replenished in the Phoenix or Tucson AMAs to accrue LTSCs in the Replenishment Reserve. However, both of these exchange mechanisms implicate certain policy issues that will need to be fully addressed with the CAWCD Board prior to being implemented. CAGR D will further evaluate these opportunities and, if appropriate, will address these policy issues with the CAWCD Board. (5-5,5-6)

Despite the imbalance and complexity of leveling Reserve Targets, given the volume of credits, GRD is confident in its ability to fully meet Replenishment Reserve goals "regardless of future water supply conditions within the service area."

Use of Excess CAP Water

Excess CAP water may be unavailable to the CAGR D during shortage periods declared on the Colorado River. The Bureau of Reclamation estimates a 20 percent probability of a shortage declaration in 2016 and a 50 percent probability in 2017. However, CAGR D anticipates having intermittent access to excess CAP water in future years and will make use of it when available to maintain the replenishment reserve subaccounts in all three AMAs.

TAMA Recharge Capacity

GRD has determined there is ample recharge capacity available through the Plan period; 50,222 af of capacity will be maintained to meet a maximum obligation of 12,700 af in 2034. Excess recharge capacity will range between 37,522 af and 46,922 af. The majority of storage capacity occurs at the Lower Santa Cruz Recharge Project and the Pima Mine Road Recharge Project; GRD has a minimal share of one GSF in TAMA.

The total annual operational storage capacity of the two Tucson AMA USFs owned and operated by CAWCD is 72,000 AF. However, approximately 2,300 AF of annual storage capacity at the Lower Santa Cruz Recharge Project is reserved as system reliability for the Northwest Providers. Further, the City of Tucson owns 50% of the annual storage capacity at the Pima Mine Road Recharge Project, and 6,000 AF of the remaining annual storage capacity at Pima Mine Road is reserved for system reliability for Tucson. Subtracting these third party rights, CAWCD has exclusive access to a total of 48,700 AF of annual underground storage capacity in the Tucson AMA. Additionally, CAWCD may have access to a modest portion

of the annual storage capacity at the Avra Valley Recharge Project, owned by Metropolitan Domestic Water Improvement District (MDWID). (6-2)

Important to note is the CAWCD adopted USF Capacity Priority Policy, established guidelines to set priority for storage should there be competing demand during capacity shortage;

Specifically, if insufficient storage capacity exists, CAWCD will contact requesters to determine their willingness to reduce or relocate their storage. If voluntary reductions/relocations are insufficient, a meeting will be held to provide a forum for all requesters to come to agreement on sharing storage capacity. If an agreement cannot be reached, CAWCD will use the following priorities to establish the final storage schedules:

Entities with contractual rights to CAP storage facilities; CAGRDR replenishment obligations; Entities with statutory firming obligations, co-equal priority for AWBA, CAGRDR, and U.S. (Indian Firming); Individual CAP long-term contract entitlements; Individuals storing water under a CAP excess contract

The Policy allocates the highest priority for USF capacity to CAGRDR after contractual commitments are met, and therefore preserves significant storage capacity within CAWCD's USFs for use by CAGRDR for replenishment purposes.

Hydrologic Disconnect

GRD seeks to recharge in the same sub-basin in which obligation is incurred, whenever feasible per CAWCD policy; CAGRDR's Replenishment Rate Setting Policy 5 states that CAGRDR replenishment "will be accomplished at reasonably priced facilities in consideration of water resource management goals". This means that CAGRDR will, to the best of its ability, replenish as close to member pumping as possible, provided that such replenishment is hydrologically sound. (2-11)