

ADWR Enhanced Aquifer Management Proposal – Evaluation

Arizona Department of Water Resources (ADWR) recently released a proposed change to the “cut to the aquifer” program that currently mandates retaining 5% of recharged water in aquifers when that water is stored in either an underground storage facility or a groundwater savings facility. The proposal by ADWR involves establishing regulatory boundaries around recharge facilities, which would impose a cut to the aquifer that varies between 0% and 20% depending on how far from the recharge facility the recovery occurs. The purpose of the boundaries is to impose costs (in the form of requiring increased cut to the aquifer) on recovery of water credits outside the area of hydrologic influence of the storage facility, thereby encouraging more recovery to occur close to recharge facilities.

The specific objective of this proposal is not clearly stated, but the language in the proposal suggest it is intended to address concerns about the geographic disconnect between recharge and pumping occurring as a result of the current regulatory regime governing the recharge program and the assured water supply program. This issue is clearly connected to the sub-area management issues that have been noted in some AMAs, but the overlap between the two issues is not total. The issue also, by necessity, ties in closely to the Assured Water Supply regulations because the municipal sector is the only water use that currently incurs a replenishment obligation, requiring recharge to offset ongoing pumping.

The proposal by ADWR would directly affect all entities that are managing their renewable water supplies – CAP or effluent – by recharging in one location, then recovering in another location. Big impacts could be felt by CAGR and AWBA, as reflected in the comments they have already submitted. Even though both CAGR and AWBA have policies suggesting that they will attempt to recover credits as close to where the water is stored as possible it still seems likely that a significant portion of their recovery would occur outside the 1 mile boundary proposed by ADWR. A detailed analysis of where their water is stored relative to where the likely recovery wells are located would be needed for a close evaluation of those impacts.

Smaller water providers, who have little flexibility in managing their CAP allocations because of financial constraints, would have additional costs imposed on their water management. This is especially true in the Tucson AMA where storage and recovery is the preferred method for using CAP water by most water providers. Additionally, any entity that is recharging specifically to accrue marketable storage credits for future sale – i.e. the Tohono O’odham Nation and Gila River Indian Community – would also be impacted because the value of future credits would be directly tied to where they are located (and where the recovering entity is located in relation to that storage).

This would result in two classes of long-term storage credits: those accrued before the cut to the aquifer rules changed, which would typically have a value based on the cost of an equivalent volume of CAP excess water, and those accrued after the change, whose value would not be ascertainable until it was known where they would be recovered. It would add a necessary element of due diligence for

purchasers of those credits and magnify the impact of any mistakes made in tracking the storage location for individual credits.

This could further complicate the situation that may arise if certain strategies for recovery of stored water are employed in the future. Specifically, if stored water were recovered near the location where it was recharged then transported to where it is needed (via existing conveyance infrastructure) there would be additional delivery costs that would have to be recovered somehow, but the spatial disconnect between storage and pumping could be eliminated. While if stored water was simply recovered where it would be used (within the same AMA, obviously) the cost of recovery would be less, but the spatial disconnect would remain. Recovery planning is currently underway in the state, but potential changes to the cut to the aquifer provisions add an additional component of uncertainty to this planning. It is likely that the second method would be the primary means of recovering stored water because of the favorable economics, but a change to the cut to the aquifer regulations might cause a shift in the planning focus. In either case, additional costs would be incurred with future recovery of stored water.

The main problem with the ADWR proposal is that it addresses a single unfavorable result (pumping occurring distant from recharge) that is caused by interplay of several factors resulting from existing regulatory programs. When the causes of a recognized problem are complex trying to impose a single, simple solution can create new, unforeseen problems, without adequately addressing the problem that was initially recognized. In this case the problem is not really the fact that pumping is occurring distant from where the offsetting recharge is occurring. The recharge program was implemented specifically to permit that to happen, by recognizing that the assured water supply rules would prevent development of lands that lacked access to renewable supplies.

The reason that the spatial disconnect between recharge and pumping is a problem (and the basis for recognized sub-area management issues) is directly related to local water table impacts from the pumping that is occurring. Those water table impacts are more a result of the existing assured water supply rules, which permit use of groundwater that results in persistent drawdown of local aquifers as long as that pumping is offset by recharge. In addition, the rules governing recovery well permits allow an annual average of four feet of drawdown in aquifers adjacent to those wells. Impacts like this that are consistent over many years are going to cause water level issues where those wells are located. The ADWR proposal does nothing, directly at least, to address water level impacts from pumping.

In my opinion a better focus for policy changes would be to address the water level impacts that are occurring. This can be done by either ensuring that recharge occurs in the areas where declines are occurring or by limiting the amount of pumping that can occur in those areas. The ADWR proposal attempts to do the former but it is not clear that it will be very successful in that regard. From a regulatory standpoint the clearest way to address the problem is via the latter. It is likely to have fewer secondary effects, but most important, if done properly, it would be an economic tool to focus pumping activities where they should occur – where there is sufficient water to support that activity.

This issue was well addressed by the Governor's Water Management Commission and the original Safe Yield Task Force. The reports those groups produced have some good ideas for addressing this problem that were not implemented. The present ADWR proposal also likely came from those studies.

One option for mitigating pumping effects would be a variable pump tax – where the tax amount is based on the observed water level impacts. This could be based on target water levels or rates of water level decline. Another option would be to change the allowable pumping rules to limit the amount of water table drawdown that could occur. In reality, because the nature of water level impacts and its causes may vary from location to location it may not be possible to implement a single solution that will deal with the problem in all locations. The need to tailor solutions to the circumstances that are present in each basin or sub-basin, I believe, support the approach of convening an AMA-specific stakeholder processes to determine the best solution for each area that takes into account local pumping characteristics, water use, and hydrogeology.

None of these options will be easy to implement and that certainly includes the proposal from ADWR. They all likely require changes to legislation and/or regulations. If you start from the assumption that the solution will involve the difficult step of changing laws/regulations it seems like the best approach would be to pursue a solution that is most likely to address the problem identified.