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By Sharon Megdal

Payoffs From Water-Saving Practices May Have Down-the-Line Costs

Reduced wastewater flows due to graywater use is a concern



Practicing water conservation is generally acknowledged to be a good thing. Everyone recognizes that one way to lessen the need to find new water sources to supply growing populations is through demand side reductions or water conservation. As with most water management issues, however, complications invariably arise. One's perspective may depend on what kind of water is being

conserved and where.

Where legal, capture of rainwater or installation of graywater systems reduces demand for potable water. (It is worth noting that states have different statutes governing these practices.) Tucson, long a leader in water conservation, recently became the first city in the country to require rainwater harvesting for new commercial properties and graywater stub outs for new residential properties.

Admittedly, one can't assume that redirecting water use away from the potable system translates into less overall water use. It may just be a replacement of one type of water with another. However, electricity and treatment costs associated with the potable system will be reduced if household demand for potable quality water is reduced. Such water substitution would seem to be a good news for water supply and management agencies. But is it?

A recent newspaper article reported that the Southern Nevada Water Authority is opposed to installation of graywater systems in the Las Vegas area. More reuse of water at the household level means less water delivered to the wastewater treatment plant. For SNWA, this means lower discharges of treated wastewater into the Colorado River and, therefore, reduced return-flow credits. That is, reduced flows to and out of the wastewater treatment plant translate into a reduction in SNWA's overall withdrawal of water from the Colorado River system.

Discouraging graywater use seems to be a strange message to come from the agency that has received national attention for its efforts to replace turf with low water use landscaping. Yet SNWA is being consistent in its focus on reducing outdoor water use which does not result in reduced flows through wastewater treatment facilities.

But it seems a mixed message to say that at the same time outdoor water use should decrease, households must use potable quality water for other outdoor uses. While graywater use may reduce return flow water, it also reduces by a like amount the need to withdraw Colorado River Water for outdoor uses. The SNWA policy position reduces household choice and conveys the message that more use of potable water is better than less use.

Las Vegas is not the only community concerned about reduced wastewater flows associated with greater use of graywater systems. There are two general concerns. One relates to the operation of the wastewater collection system itself. Older systems have been engi-

neered so that dishwasher and washing machine output would flow through the sewer system to the treatment plant, providing relatively clean water to mix with the not-so-clean stuff that flows through the system. The graywater flows are needed to push the solids through the mostly gravity based, engineered systems. Reduced graywater flows could lead to some waste collection problems. For example, the City of Phoenix is experiencing increased wastewater treatment costs due to reduced flow in total water volume while having the same or increasing amounts of solid wastes.

The other concern relates to water quantity, although it works out differently in Arizona than in Las Vegas. In Arizona, outflows from wastewater treatment plants have value as a component of a community's water supply portfolio. Whether through recharge and recovery or through enhanced treatment and delivery to turf or industrial users, water reuse is growing in importance to Arizona communities.

There are other concerns regarding water conservation or increasingly efficient water use. Reduced return flows from agricultural water use, for example, may have adverse impacts on riparian or other systems that rely on those flows. Another concern relates to "hardening" of water demand. If people become so efficient in their water use, fewer less painful opportunities exist for water conservation in situations of natural drought or water cutbacks, such as those being experienced in California due to the cutbacks in water flowing to Southern California through the State Water Project.

In Arizona, we've seen a move to best management practices for all water using sectors in the Active Management Areas; the Groundwater Management Act requires regulatory conservation programs in AMAs. Whereas the industrial conservation programs have long been based on best practices according to industry standards, we've seen a move to BMPs in the agricultural and, more recently, the municipal sectors.

It is important that the effect of moving away from a quantified water conservation target be monitored. After all, we do not want to see per capita consumptive use rates going up as a result of these changes to the regulatory programs! It is important that homeowners remain vigilant regarding their water use as they install rainwater or graywater systems.

I am now nearing the end of another spring semester when graduate students in my water policy class make presentations on their research. It is gratifying that they are connecting the collection of information with its use to consider policy options. Not that I necessarily need such a reminder, but working with them on their papers reminds me how complex evaluating alternatives and implementing water policies can be. Water conservation is no exception. Since water conservation policies are complex and can have unintended consequences, they must be monitored and evaluated, with the public informed to better understand their cost and effectiveness. ■■■