All's not well with 'exempt' wells

Water Dept. believes depth-to-water measurements are management tool needed to affect positive change

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Although it's not exactly much ado about nothing, the yearly, heated debate over the amount of groundwater pumping actually revolves around trying to limit only 22 percent of the water being pumped from Owens Valley aquifers.

Thanks to "exempt" wells and other wells that are not governed by any type of restrictions, there can be almost no debate, or even discussion, about 78 percent of the output from the Los Angeles Department of Water and Power's wells.

Because so many wells are exempt from any restrictions on their output, the yearly debate over groundwater pumping can "only affect a small amount of overall pumping," said Tom Brooks, director of the Inyo County Water Department.

"We cannot pretend managing 20-25 percent of pumping is really managing the resource," said Brooks during a recent workshop on the issues surrounding LADWP's exempt wells.

On the other hand, the Water Department has developed what it thinks can be an extremely effective way to manage both vegetation and groundwater. That technique would utilize the extremely precise "depth-to-water" measurements from monitoring wells, measurements which can reveal when plants and other vegetation are tapping into groundwater to survive and thrive, he noted.

Shifting to a groundwater management plan that relies more on the level of underground aquifers and less on soil moisture measurements could lead to a more effective, more precise and less expensive way to protect the valley's vegetation while allowing LADWP to create fewer adverse impacts from its groundwater pumping program, Brooks said.

But the matter of exempt wells should also be addressed when looking at potential changes in the "Green Book," the technical manual that governs groundwater pumping in the valley.

Brooks explained that the majority of LADWP's yearly pumping comes from exempt wells. Those are wells not governed by "on/off" protocols in the Green Book. Such wells include those that are the "sole source" of water for such necessary purposes as irrigation and supplying water to fish hatcheries and town water supplies. Other exempt wells don't impact groundwater-dependent vegetation, while others run seasonally, to provide stockwater, for example.

Besides those exempt wells, the wells on the Bishop Cone are not governed by on/off protocols, Brooks noted, although limits are set by the Hillside Decree, which governs Bishop Cone pumping and water use. Other "unlinked wells" include three wells in Laws that LADWP claim are exempt, and operate them as such, while the Water Department disagrees, he added.

Inyo County Water Department Director Tom Brooks explains to the Board of Supervisors the department's conclusions on the relationship between the depth of aquifers and vegetation growth. *Photo by Jon Klusmire*

Total up all the exempt and "unlinked" wells, and their output comes to about 78 percent of LADWP's annual pumping total.

Brooks noted some of those wells should be exempt, since they provide solid benefits to the valley, ranging from drinking water to keeping fish hatcheries running.

But there are problems with those wells. First, they are "pumped at LADWP's discretion," meaning there's "the potential for uninterrupted pumping" from the wells, regardless of any impacts that pumping could create.

While the idea behind creating exempt wells was to provide water for necessary or mandated "in-valley uses," it's still a bit unclear to the Water Department how much of the water from exempt wells actually stays in the valley, he noted. For example, the water for fish hatcheries runs through the hatcheries and then down the L.A. Aqueduct, said Brooks. So, the Water Department estimates that about 33,000 acre-feet of groundwater earmarked for "in-valley use" might accomplish that original goal, but end up as exported water.

Getting firm figures on such dual uses hasn't been easy. "There's never been a good accounting for in-valley

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uses," said Brooks. This year, LADWP reported it would provide 85,000 a.f. for "in-valley uses."

A more troubling development regarding exempt wells is that the Water Department has found instances where the pumping from an exempt well is impacting wells and aquifers governed by the on/off protocols, said Brooks. The on/off protocols have their own set of problems, and adding impacts from exempt wells "causes a management dilemma," Brooks said.

The county has to address the question of exempt wells "in some reasonable fashion," Brooks said, if it wants to truly "change the framework" governing groundwater pumping in the valley.

Another way to "change the framework" would be to put more emphasis on the actual depth of groundwater when considering pumping programs.

"The strongest data set we have is depth-to-water" readings from monitoring wells throughout the valley, he noted. That data is precise and can track when groundwater-dependent plants are tapping into groundwater, or when their roots are no longer drawing on groundwater to survive.

Brooks showed several charts that showed definite "signals" that the groundwater had risen to the point that it was accessible to plants. Those graphs showed the level of groundwater at a monitoring well. When not linked to plants, the rises and drops in the aquifer were generally straight lines. But when the plants started to soak up the groundwater, the charts showed slight but noticeable, daily fluctuations. Those "signals" were caused by the plants actually pumping water up during the day, then releasing water at night.

The graphs also showed "a direct correlation between depth-to-water and vegetation levels," said Brooks.

"We can use depth-to-water as a management tool," Brooks said. "It's more accurate, reliable and cheaper" than the current soil moisture calculations used to determine wells' on/off status.

The Inyo-L.A. Long Term Water Agreement states there should be no vegetation change created by pumping, Brooks noted. The data is showing that when a drop in the water table occurs, there will be vegetation change. Thus, one way to avoid impacts on vegetation from pumping is to "avoid changes in the water table," he noted.

However, getting changes in the "Green Book" and LTWA to allow groundwater-based management to become another "tool" managers can use to protect the valley's vegetation – while allowing LADWP to produce water for Los Angeles – will be a long process, Brooks noted.

"We've got a long way to go, but we have a lot we can start with."