

Anchor story III

Water, Water Everywhere...Or Not

By Mark Wheeler

Writing about groundwater in the west in his book, *Killing the Hidden Waters*, Charles Bowden made the observation that, “severely limiting the use of groundwater in arid lands means severely limiting the level of economic activity.”

His context was a discussion about the importance of a sensible balance between water use and resource supply, and in further comment on water’s influence over economic activity, he stated that whatever level of activity might prevail could “be good or bad — it depends upon what people want for themselves.”

Bowden didn’t expand on this qualification, but taking the words at face value, it’s safe to assume that he meant to at least somewhat imply that a limited economic activity might be acceptable to some who don’t necessarily want or require more of it for themselves, and not be acceptable to those who do want more such activity.

“What people want for themselves” is very often — some might say “always” — the motive force behind their interests, and in communities where interests compete, our democratic process supposedly recognizes the interest urged by the majority. However, this is not always the case.

Aside from situations where a clear majority fails to materialize or where graft and corruption work behind the scenes, some matters are so conditional that they, themselves, define the character of our interests in them. Take gold, for example.

Practically speaking, our various interests in gold are defined by its relative scarcity. No matter what any particular interest group might want, gold’s own

scarcity will determine that their interest in it is defined more strictly than an interest in, say, beach sand.

In some areas, water is considered by many to be another item that is similarly conditional. According to their reckoning, all human activities in an area of limited water will be accordingly limited. This was Bowden's rationale when he advised at the end of his remarks on the connection between water and economy that, "Only by accepting that the well has a bottom can humans hope to use the contents judiciously."

For some, such a statement makes immediate sense and is implicitly valid. They have cause, like Bowden appears to have cause, to think of water, at least in some places, as a fixed quantity that needs to be carefully conserved. Many people in the west and in this state, including many in the Morongo Basin, have this perspective.

Others, however, may read such a sentence and dismiss it out of hand, arguing that even though the well may have a bottom, it can always be refilled. This attitude is also well represented in the west, in California and in the Morongo Basin. Call these two perspectives the "limited supply" and the "unlimited supply" views, and they will currently be heard anywhere in the Morongo Basin where discussions about community growth are conducted.

TWO SIDES, TWO SUPPLY PERSPECTIVES

On the one side, limited-supply partisans challenge what they believe are irresponsible growth trends in the community based on the state's current diminished water supply problem and a strong body of research that warns of even greater declines in the near future.

Unlimited-supply loyalists, on the other hand, declare increased growth an economic boon to the community and dismiss warnings about water deficiencies as so much anti-growth pessimism. Even though this group does recognize some need for water-use efficiency, it is optimistic that supply will always be available for increased growth if only imported water can be

guaranteed through strong utility contracts and with enough money to buy the required amount.

Especially in the Basin's west end, in Yucca Valley where housing development reached record rates during the housing bubble years, these two views have had repeated opportunity to butt heads in public and private hearings. That they continue to do so despite the housing market's crash and the current, national slump in all economic activity is a consequence of the growth boosterism that is still so evidently the only governing paradigm in the local town council leadership.

Limited-supply activists worry that town council members are not able or willing to understand that much of the town's current economic deformation is a direct result of decisions they made to push the town beyond the reasonable limits of its resources. The activists fear that if and when market forces regain traction, local officials will simply resume overbuilding the town, thereby shackling it even more irremediably to growth demands that become increasingly impossible to satisfy.

Although satisfaction for many community demands — parks, street lights, paved roads, for instance — might be delayed or deferred, an unsatisfied community demand for drinking water is usually definitive. If the water isn't available, people will have to take their demand somewhere else where it is.

Avoiding this outcome is the motive behind the limited-supply argument. It drives members of this group to call for strict conservation of limited water resources, and this, in turn, means limiting urban growth activities that increase demand.

Countering them, unlimited-supply proponents believe that urban growth will generate enough community wealth to buy the water needed and the community will, therefore, have both the water and the wealth presumed to accompany urban growth.

Even if these two camps may appear to differ notably in terms of values — home and hearth, for instance, vs. wealth generation — the debate itself is

chiefly conducted in terms of water supply. Whereas unlimited-suppliers believe that with enough money Yucca Valley can pay to bring water from the source to refill the local well, limited-suppliers argue that excessive urban growth in the area will never be able to pay enough for its demand and, even more significantly, that the drought conditions in the west show the source well is, itself, running dangerously low on supply.

Until 1995, Yucca Valley's only source of water was its aquifer and the adventitious recharge to that aquifer from rainfall. Previous studies had shown that this volume of water was in overdraft since the growing population in Yucca Valley had increased over the years to the point that annual water demand was by far exceeding annual natural recharge.

The community approved a bond measure to pay for the construction of infrastructure and facilities to import water from the State Water Project pipeline. This pipeline brings water into southern California from the Sacramento-San Joaquin Delta, a location the State Department of Water Resources (DWR) calls, "the hub of the state's water supply and delivery system..."(1)

(1 *Managing an Uncertain Future*, DWR, 2008.)

Since 1995, Yucca Valley has been bringing in enough water to meet its demand and, whenever possible, to bank a reserve in the aquifer. In a way, this arrangement gives the town access to two well sources, one in the Sacramento-San Joaquin Delta, and in the aquifer under Yucca Valley.

Growth disagreements that focus on water supply argue over whether this is enough to supply increased urban growth demands or not. The Hi-Desert Water District (HDWD), the agency responsible for managing the town's supply, says "yes." Others, however, who include a former HDWD board of directors member, a current member of the Yucca Valley town council, and various district-watchers — all of the limited-supply persuasion — counter that the district's optimism is based on a highly selective interpretation of the facts and, perhaps in some cases, a negligent — at least — misinterpretation of the facts.

THE LOCAL WELL

According to a 2006 USGS study report, the Warren Subbasin — the aquifer below Yucca Valley — contained a total of 130,280 acre feet.(2)(3)

(2 USGS, *Available Ground-Water Storage, Warren Subbasin, 2006*)

(3 One acre foot is the amount of water necessary to cover an area of one acre at a depth of one foot. It amounts to 325,851 gallons and, according to DWR estimates, it is sufficient for one to two families per year. HDWD claims that in Yucca Valley, one acre foot serves two to three families per year.)

Whether this amount is actually recoverable or useable is highly questionable. High concentrations of sand and heavy metals at the bottom of aquifers make the water there more difficult and expensive to extract, and more in need of advanced purification. Joshua Basin Water District has made this point on many occasions when commenting in public on the actual, practicable volume of its own ground water supply.

Former HDWD board of directors member Wade White, while still serving, received that report in a district board briefing conducted by the USGS. Among other things, he wanted to know how much of the 130,280 acre feet in the aquifer was practicably recoverable and was told the study had not been extensive enough to make that estimate.

A stickler for complete and accurate data, White tried to convince his board colleagues that the district should have this information in order to avoid overestimating the amount of actually useful water it had. His request was ignored, and the 130,000-plus figure remains as the official total for the current supply, despite White's warnings that no one really knows how much of that water can be pumped or used.

Working with the USGS total and assuming no additional recharge, natural or otherwise, a rough estimate for the number of years this supply would last can be made by dividing it by the annual amount of water currently produced by Warren Subbasin wells for use in Yucca Valley.(4) Last year's production for the Warren Basin, as reported in HDWD records, amounted to 2,697 acre feet. Dividing this number into the 130,280 acre foot total finds for 48 years.

(4 District watchdog Bill Horne notes that a 2003 USGS report shows the natural, annual average recharge to the aquifer is about 83 acre feet per year, approximately equal to the basin's natural loss, or "outflow," each year, approximately 84 acre feet.)

Both White and district watchdog Bill Horne take severe issue with these numbers. Horne's own study of the USGS report and other records puts the total aquifer volume at nearer to 122,000 acre feet and, like White, he wonders how much of this water is actually available for pumping or use.

They both also question the production numbers and note there is some unaccounted for exchange between the district's production in the Warren Subbasin and the production in its wells on the mesa, which tap another aquifer. According to these two and others who have shown interest in district business, there are too many unexplained discrepancies and omissions of detail from district records to have confidence in any particular water supply estimate.

Whether further study of the area or more complete district records will reveal there is either more or less water available in the basin remains to be seen. However, using the official numbers, it appears that under current consumption rates, the town of Yucca Valley would drink its well dry in about 50 years. This is an exceedingly short lease on life for a town, and even at twice the number of years, the local supply can only be described as "vanishingly slim."

This is what motivated the town's move to tie into the SWP. According to HDWD, it has been meeting its demand requirements with imported water since 1996, with enough left over for banking in the aquifer.(5) Indeed, in the USGS report, the 130,280 acre foot total includes 10,500 acre feet recharged in the basin between 1995-2006.

(5 HDWD Yearly Summary Report, 2008.)

THE STATE WELL

In a very literal sense, the town's connection to the SWP is its only source of reliable recharge. Yet, how truly reliable is it? Limited-supply activists are

quick to argue that current climatic uncertainties make it very unreliable, indeed, and it turns out they are not alone in this outlook. The state's own DWR is also highly concerned about the water supply, and is cautioning all Californians to be prepared for potential water shortages due to climate change.

Last year, the department was forced to cut its delivery to SWP contractors by 75 percent. A number of factors are involved in the DWR's decision how much water to deliver, but there's nothing like a deficiency in supply to cause a reduction in delivery. Conditions did improve a bit last year, and the reduced allocation was increased by 10 percent, but this was still only 35 percent of the amount contractors had ordered.

This year is starting with another reduction. On October 30, the DWR announced that it would be reducing its water delivery by 85 percent. This is only its initial allocation pronouncement, and it could change if and when conditions change. Until such time, though, only 15 percent of the water requested by contractors this year will be delivered.

In its *Managing an Uncertain Future* report, the DWR states that even though concerns over water availability, quality and delivery are not new to Californians, "those concerns are growing." Focusing the report's discussion on climate change and what it could mean to California's water future, the department noted that the Sierra-Nevada snowpack, which is the primary source for SWP water, declined by 10 percent over the Twentieth Century. Converted to water storage, this amounts to an annual, average reduction of 1.5 million acre feet from the state's water bank, and the DWR fears this will decline another 15-30 percent by 2050, based on all the best evidence.

Going on, the report also observes that even as the Sierra snowpack dwindles, "Southern California cities have experienced their lowest recorded annual precipitation twice within the last decade." On both local and regional fronts, the undeniable fact is that rain and snowfall volumes in California have declined from levels observed not so long ago, and the most careful study of

the evidence recognizes an unmistakable trend leading the state into new and drier climate territory.

Citing the International Panel on Climate Change's findings that the western United States may be especially vulnerable to water shortages due to climate change, the DWR report lays out its evidence and concludes: "... the hydrology of the past is no longer a *reliable* [emphasis added] guide to the future."

Whether or not everyone agrees with the climate change theory, the fact is that California and most of the southwestern states have been recording less and less measurable rain and snowfall over the last many years.

(6)

(6 Like any theory, climate change simply posits an explanation for an observed phenomenon, and it's not necessary to believe in or understand the theory in order for the phenomenon to exist. No one has to believe, for instance, that the world is round instead of flat in order for the world to have the shape it does.)

The DWR may use a theory like climate change to help it manage resources more prudently. However, the reality is, the department serves more than 25 million residents and more than 750,000 acres of farmland with the water it collects, stores and delivers, and all of that water originates as rain and snowfall. This is the recharge that really counts, and if it dwindles too much, all the technology, engineering and money the DWR commands will not be able to deliver water it doesn't have.

(7)

(7 SWP contractors submitted requests this year for delivery of 4,166,376 acre feet of water, according to DWR's 10/30/08 Initial Allocation press release. The 15 percent initial allocation amounts to approximately 620,000 acre feet of this amount, putting somewhat in stark perspective not only how much less this year's initial allocation is relative to requests, but also just how enormous the demand on water resources is in this state.)

DROUGHT HISTORY

For many years, researchers and policy operatives have been hard at work trying to understand the nature of modern meteorological trends and learn from them what might be done to plan for water resource deficiencies. Recently summed up in a February 2008 article in *National Geographic* by Robert Kunzig, the progress of this work points unsettlingly at the very real possibility that the current drought in this region could be the worst in 500 years.

Tree ring studies conducted by numerous research groups, funded in part by water managers, including the DWR, and featured in Kunzig's article, have shown that long-term drought in the southwest is not infrequent. Two of the worst droughts in the study record spanned 350 years between them, and plentiful sign in the record otherwise shows drought episodes of a decade and much longer are common in the region.

Climate specialist Scott Stine of California State University told Kunzig that according to his research, the Twentieth Century's rainfall record in the west was exceptional. In further comment on that wet streak's duration, he cautioned: "We're kidding ourselves if we think that's going to continue, with or without global warming." (8)

(8 Stine's research involved studying ancient tree stumps exposed along the shoreline of Mono Lake after it had been partially drained by the Metropolitan Water District in that water agency's further pursuit of eastern Sierra water. The trees had taken root during episodes of extreme drought when the lake surface level had retreated for many years.)

Perhaps as Stine says, a global warming scenario won't be necessary for the southwest's drying trend to become prolonged and more severe. Nevertheless, temperatures are going up for whatever reason, and paleoclimate studies show that drought conditions in the southwest have typically occurred in some connection with hot spells.

The two mega-droughts uncovered by Stine's research, for instance, one lasting 200 years and the other 150 years, took place during a period of 600

years between about 750 A.D. and 1350 A.D. A temperature graph for the last 2,000 years can be found in many places, one of which is the National Oceanic and Atmospheric Administration's website.(9) Between 700-1350 A.D. it can be seen that global temperatures spiked higher than at any other time in the record, except for the last 30 years.

(9 www.ncdc.noaa.gov/paleo/globalwarming/paleolast.)

MAKING IT LAST MAKES SENSE

Reduced rain and snowfall limit supply. Earlier springs and warmer temperatures lead to earlier and more rapid snowmelt. During the last century, according to DWR's "Uncertain Future" report, coastal sea level has risen by seven inches. As a result, the Sacramento-San Joaquin Delta is currently at risk of serious damage. The Colorado River is far below historic flows, and Lakes Powell and Mead, both vital reservoirs for Colorado River water storage, are at half their capacity.

These are just a fraction of the direct water challenges facing this and other southwest states, and they don't even begin to represent the problem in its entirety. They don't, for example, address the energy issue.

In a day and age when California is scrambling to change its energy paradigm and develop new standards for meeting an astronomical energy demand, a full 20 percent of the state's electricity budget is consumed by water-related uses. Ditto for 30 percent of its non-power plant-related natural gas budget. Not only will this expenditure have to be reduced in the near future for energy efficiency's sake, but for cost containment reasons as well.

Considering the rank and standing of the multitude of scientific and resource management agencies that have committed to planning for water shortages in California and, indeed, all over the southwest, it appears as if the limited-supply partisans in Yucca Valley have some cause for their concern about increasing the water demands here.

At the very least, they call for local leadership decisions about the town's growth trend to fully account for resource use and supply, both with respect to water and the energy necessary to transport SWP supplies from the north.

What kind of sense, they wonder, does it make to continue taking more water and energy from limited supplies simply in order to build this town beyond the means it has or will ever have to support an oversized population in terms of either industry, gainful employment or natural resources.(10)

(10 See part I of the series.)

They call for, especially, a strict restraint in the approval of more housing developments, and this is, of course, the nerve center of the growth vs. limited growth conflict. Increased numbers of housing occupants are the bedrock, so to speak, of the urban growth model.

Municipal leaders claim that only in continued growth will the town gain the money it needs to pay for the burden of increased service demands. But, what kind of growth is the town getting, the limited-suppliers ask.

Is it growth that brings in new industry? Does it bring in long-term and gainful employment opportunities? Is it adding active membership to our local service clubs and making contribution to our community character? Or, is the growth a “population-only” affair, comprised chiefly of short-term housing and retail opportunists whose own profit depends on a “cost-effective” imperative requiring that their personal demands are achieved with as little personal investment as possible.

To limited-suppliers, it almost defies logic to expect to relieve a demand burden by increasing demand, and this, especially, when a resource such as water is at stake. Will Yucca Valley’s new growth, they ask, be able to bring more water to the SWP reservoirs, or will it simply take from an already depleted supply?

Town council member Lori Herbel understands the stakes involved. As the only voice on the council calling for moderation in urban growth decisions, her discussion has typically been ignored and her votes overruled by a far more growth-friendly majority of colleagues.

“Development interests have a strong grip on the community,” she regrets to say, and believes this has seriously compromised the level of information and evidence that is admitted into policy discussions about the town’s development. “As a community,” Herbel worries, “we are definitely not choosing to base our important decisions about water and the town’s future on either the best information available or on a discriminating grasp of the information we do have.”

She believes that the town General Plan’s establishment of Yucca Valley as a rural community should stand it in good stead in the event of resource deficiencies because of the smaller population and lower-level demand that is assumed by the word “rural.” Yet, as growth interests defy the document and the intent of its language, she sees the town running headlong into harm’s way as it grows beyond the limits of its own resources to weather outside supply deficiencies.

Whether there is any chance that the two sides in this matter will find common ground appears to be unlikely, since whichever argument people embrace perhaps depends too much upon, as Bowden suggested, “what people want for themselves.”

Hopefully it won’t take the desiccation of a whole community before people realize that, in some cases, what people want for themselves just can’t drive policy beyond the limits of good sense or resource supply. In the matter of Yucca Valley’s renewable water supply, the well is in the weather, and at present, that well is showing signs of depletion. Taking on more local demand for water in light of this fact suggests to limited-supply activists that something besides good judgment is making vital decisions in this community.