SMALL PUMPER CLASS STIPULATION OF SETTLEMENT: EXHIBIT A.7 – part 6 of 11

(Proposed Judgment and Physical Solution: Exhibit 5)

SUPERIOR COURT OF CALIFORNIA

COUNTY OF LOS ANGELES

ANTELOPE VALLEY GROUNDWATER CASES

Included Consolidated Actions:

Los Angeles County Waterworks District No. 40 v. Diamond Farming Co.
Superior Court of California
County of Los Angeles, Case No. BC 325 201

Los Angeles County Waterworks District No. 40 v. Diamond Farming Co.
Superior Court of California, County of Kern,
Case No. S-1500-CV-254-348

Wm. Bolthouse Farms, Inc. v. City of Lancaster
Diamond Farming Co. v. City of Lancaster
Diamond Farming Co. v. Palmdale Water Dist.
Superior Court of California, County of Riverside, consolidated actions, Case Nos. RIC 353 840, RIC 344 436, RIC 344 668

Rebecca Lee Willis v. Los Angeles County Waterworks District No. 40
Superior Court of California, County of Los Angeles, Case No. BC 364 553

Richard A. Wood v. Los Angeles County Waterworks District No. 40
Superior Court of California, County of Los

Judicial Council Coordination Proceeding No. 4408

Lead Case No. BC 325 201

STATEMENT OF DECISION PHASE THREE TRIAL

Judge: Honorable Jack Komar

Angeles, Case No. BC 391 869

The standard for a statement of decision as set forth in Code of Civil Procedure section 632 requires a court to explain ". . . the legal and factual basis for its decision as to each of the principal controverted issues at trial...." Case law is clear that a court must provide the factual and legal basis for the decision on those issues only closely related to the ultimate issues on the case. (See *People v. Casa Blanca Convalescent Homes* (1984) 159 Cal. App. 3d 509, 523-524.) It is also clear that a court need not respond to requests that are in the nature of "interrogatories." (See *id.* at pp. 525-526.)

The only issues at this phase of the trial were simply to determine whether the adjudication area aquifer is in a current state of overdraft and as part of that adjudication to determine the safe yield. This Statement of Decision focuses solely on those issues.

Cross-complainants Los Angeles County Waterworks District No. 40, City of Palmdale, Palmdale Water District, Littlerock Creek Irrigation District, Palm Ranch Irrigation District, Quartz Hill Water District, California Water Service Company, Rosamond Community Service District, Phelan Piñon Hills Community Services District, Desert Lake Community Services District, North Edwards Water District (collectively, the "Public Water Producers")[1] brought an action for, *inter alia*, declaratory relief, alleging that the Antelope Valley adjudication area groundwater aquifer was in a state of overdraft and required judicial intervention to provide for management of the water resources within the aquifer to prevent depletion of the aquifer and damage to the Antelope Valley basin.

Several of the cross-defendant parties (collectively, the "Land Owner Group") also sought declaratory relief in their various independent (now coordinated and consolidated) actions.

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[1] The United States and the City of Los Angeles, though not water suppliers in the Antelope Valley adjudication area, joined with the Public Water Producers. Rosamond Community Services District joined with the Land Owner Group.

The first issues to be decided in the declaratory relief cause of action are the issues of overdraft and safe yield. The remaining causes of action and issues are to be tried in a subsequent phase or phases.

This Phase Three trial commenced on January 4, 2011 and continued thereafter on various days based upon the needs of the various parties and the Court's availability. Appearances of counsel are noted in the minutes of the Court.

At the conclusion of the evidence, the Court offered counsel the opportunity to provide written final arguments and the invitation was declined by all counsel. On April 13, 2011, the Court heard oral argument and the matter was ordered submitted.

The Public Water Producers (and others) have alleged that the basin is in a condition of overdraft and have requested that the Court determine a safe yield and consider imposition of a physical solution or other remedy to prevent further depletion of the water resource and degradation of the condition of the aquifer.

Several parties in opposition to the request of the Public Water Producers have contended that while there may have been overdraft in the past, currently the aquifer has recovered and is not in overdraft. These same parties contend that it is not possible to establish a single value for safe yield; instead they have requested that the Court determine a range of values for safe yield.

The Court concludes that the Public Water Producers have the burden of proof and that the burden must be satisfied for this phase and purpose by a preponderance of the evidence. This burden of proof may or may not be appropriate to other phases of this trial. And since the findings here have no application to other phases, such as prescription or rights of appropriators, and the parties have not briefed those or other issues, the Court makes no conclusions as to what standard of proof might be applicable to such other issues or phases of trial.

The law defines overdraft as extractions in excess of the "safe yield" of water from an aquifer, which over time will lead to a depletion of the water supply within a groundwater basin as well as other detrimental effects, if the imbalance between pumping and extraction continues. (*City of Los Angeles v. City of San Fernando* (1975) 14 Cal. 3d 199; *City of*

Pasadena v. City of Alhambra (1949) 33 Cal. 2d 908, 929; *Orange County Water District v. City of Riverside* (1959) 173 Cal. App. 2d 137.) "Safe yield" is the amount of annual extractions of water from the aquifer over time equal to the amount of water needed to recharge the groundwater aquifer and maintain it in equilibrium, plus any temporary surplus. Temporary surplus is defined as that amount of water that may be pumped from an aquifer to make room to store future water that would otherwise be wasted and unavailable for use.

Determination of safe yield and overdraft requires the expert opinions of hydrologists and geologists.[2] Experts in the field of hydrogeology routinely base their opinions and conclusions concerning groundwater basin overdraft on evidence of long-term lowering of groundwater levels, loss of groundwater storage, declining water quality, seawater intrusion (not an issue in this case), land subsidence, and the like. Experts also conduct a sophisticated analysis of precipitation and its runoff, stream flow, and infiltration into the aquifer, including such things as evapotranspiration, water from other sources introduced into the aquifer (artificial recharge), as well as the nature and quantity of extractions from the aquifer and return flows therefrom.

Generally, neither overdraft nor safe yield can be determined by looking at a groundwater basin in a single year but must be determined by evaluating the basin conditions over a sufficient period of time to determine whether pumping rates have or will lead to eventual permanent lowering of the water level in the aquifer and ultimately depletion of the water supply or other harm. Recharge must equal discharge over the long term. (*City of Los Angeles v. City of San Fernando, supra*, 14 Cal. 3rd at pp. 278-279.) But having heard evidence about the aquifer as a whole, the Court is not making historical findings that would be applicable to specific areas of the aquifer or that could be used in a specific way to determine water rights in particular areas of the aquifer.

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[2] All the experts offer estimates. The American Heritage College Dictionary, Third Edition, defines an "estimate" as, *inter alia*, "[a] rough calculation, as of size" or "[a] judgment based on one's impressions; an opinion."

The location of the Antelope Valley adjudication area boundaries was the subject of the Phase One and Two trials in this matter. The Court defined the boundaries of the valley aquifer based upon evidence of hydro-connection within the aquifer. If there was no hydro-connectivity with the aquifer, an area was excluded from the adjudication. The degree of hydro-connectivity within the Antelope Valley adjudication area varies from area to area. Some areas seemingly have fairly small or nominal hydro-connectivity but must be included in this phase of the adjudication unless the connection is *de minimis*.[3] Pumping in those parts of the aquifer may be shown to have *de minimis* effect on other parts of the aquifer while pumping in other areas within the basin appear to have material impacts on adjacent parts of the basin. All areas were included within the adjudication area because they all have some level of hydro-connection, some more and some less. How to deal with those differences is ultimately a basin management decision that is well beyond the scope of this phase of trial.

Overdraft

The preponderance of the evidence presented establishes that the adjudication area aquifer is in a state of overdraft. Reliable estimates of the long-term extractions from the basin have exceeded reliable estimates of the basin's recharge by significant margins, and empirical evidence of overdraft in the basin corroborates that conclusion. Portions of the aquifer have sustained a significant loss of groundwater storage since 1951. While pumping in recent years has reduced and moderated, the margin between pumping and recharge as cultural conditions have changed and precipitation has increased (with the appearance of wetter parts of the historical cycle), pumping in some areas of the aquifer is continuing to cause harm to the basin. The evidence is persuasive that current extractions exceed recharge and therefore that the basin is

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[3] The court may exclude truly de minimis connectivity areas based upon evidence in later phases of the trial if shown to have virtually no impact on the aquifer.

in a state of overdraft. Since 1951[4] there is evidence of periods of substantial pumping (principally agricultural in the early years of the period) coinciding with periods of drought, with almost continuous lowering of water levels and severe subsidence in some areas extending to the present time, with intervals of slight rises in water levels in some areas.

Areas of increased pumping, with concomitant lowering of water levels, can have a serious effect on water rights in other areas, caused by cones of depression, which alter natural water flow gradients, causing the lowering of water levels in adjacent areas, with resulting subsidence and loss of aquifer storage capacity. Given population growth, and agricultural and industrial changes, the valley is at risk of being in an even more serious continuing overdraft in the future unless pumping is controlled.

While the lowering of current water levels has slowed, and some levels in wells in some areas have risen in recent years, significant areas within the aquifer continue to show declining levels, some slightly so, but many with material lowering of water levels.

Thus, the Antelope Valley adjudication area is in a state of overdraft based on estimates of extraction and recharge, corroborated by physical evidence of conditions in the basin, and while the annual amount of overdraft has lessened in recent years with increased precipitation and recharge, the effects of overdraft remain and are in danger of being exacerbated with increased pumping and the prospective cyclical precipitation fluctuations shown by the historical record. The physical evidence establishes that there was significant subsidence occurring in parts of the adjudication area ranging from two to six feet or more in certain areas of the valley caused by such pumping and that measurable water levels fell in a substantial part of the valley. While some of the ongoing subsidence may be attributable to residual subsidence (from earlier periods of shortfall) that would not seem to be an explanation for the extent of continued subsidence. The evidence establishes that ground water extractions in excess of recharge are a cause as well.

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[4] Precipitation and well records prior to that year are too sketchy to be relied upon.

Safe Yield

A calculation of safe yield is necessary to manage the basin or create a physical solution to a potential or actual continuing overdraft. A determination of safe yield requires an initial determination of average annual natural or native recharge to the aquifer from all sources. The only source of natural or native recharge for the Antelope Valley is precipitation that recharges the aquifer and it is therefore necessary to ascertain average annual precipitation. The calculation of annual average precipitation can only be determined by using a baseline study period that covers precipitation in periods of drought and periods of abundant precipitation over a sufficient period of time that a reliable estimate of average future recharge based on precipitation can be made.

It has been suggested that safe yield could be based on using shorter base periods or more than one base period, (the total time span of which was considerably less than the 50 year period the Court believes is more credible). If the purpose of selecting a base period is to determine average recharge over time based on precipitation, choosing two consecutive periods of time with two different average numbers would not serve that purpose and would preclude estimating a single safe yield. Likewise, selecting a base period that does not have completely representative precipitation cycles over time would not provide an accurate evaluation of conditions in the valley. A base period that calculates average precipitation over a representative period of time permits reliable predictions about future natural recharge based on regular recurring precipitation cycles. A period of precipitation fluctuations from 1951 to 2005 satisfies that standard. Shorter periods do not.

The Court finds that current extraction of water from the aquifer by all pumping ranges from 130,000 to 150,000 acre feet a year, but in any event, is in excess of average annual recharge. The major area of dispute between the parties is the average amount of natural recharge, which also involves disputes concerning return flows, the amount of native vegetation water needs, evapotranspiration, stream flow, runoff, groundwater infiltration, specific yield, lag

time, bedrock infiltration, agricultural crop needs, and the like. Other sources of recharge to the basin, including artificial recharge-water pumped into the aquifer from external sources are not in dispute.

Evidence established that during the entire historical period presented, populations increased within the valley and water use changed in a variety of ways. There has been a shift in some areas to urban uses and away from agriculture although in recent years agricultural pumping has also increased. The nature of agricultural duties has changed as well. The type of irrigation used by farmers has become more efficient and less water is needed per acre (depending on the crops grown) with more efficient uses of water. But there has also been an increase as well as a change in the nature of the type of agriculture in the valley in material quantities in recent years. More of such changes may occur and it is important to both current and future generations to ensure that the water resources within the basin are managed prudently.

The Court heard from a very large number of experts, some of whom have provided opinion testimony of what constitutes safe yield. All the experts testifying acknowledged that changes in the selection of a base study period, lag time, agricultural water duties, evapotranspiration, specific yield, runoff quantities, well level contours, bedrock infiltration, return flows, playa evaporation relating to run off and bedrock infiltration, chloride measurements, satellite imaging, and agricultural and municipal pumping estimates, among others, would affect the ultimate opinion of natural recharge and return flows.

The opinions of all the experts are estimates, based upon their professional opinion. All of the opinions were critiqued by other experts who often had different opinions. The Court recognizes the imprecision of the various estimates and the fact that an estimate by definition is imprecise. But the fact that estimates lack precision does not mean that the Court cannot rely upon such estimates. The scientific community relies upon such estimates in the field of hydrogeology and the Court must do the same.

Reasonable experts can differ as to reasonable estimates of natural recharge and virtually all other components of water budgets, computations of change of storage, and the

like, all the while using the same formulae and scientific principles to reach their conclusion. For example, all the experts could agree on the definition of "Darcy's Law" and the physics principle of "conservation of mass" but still reach different conclusions.

Some of the experts opined that the basin was not in overdraft and that recharge was in excess of or in balance with extractions so that there was a surplus in the aquifer. One expert opined that loss of storage was merely space for temporary storage. Observable conditions in the valley are inconsistent with those conclusions. If there were a surplus, even in the shortened base periods used by the some experts, there should not be subsidence of land, nor the need to drill for water at deeper and deeper levels in those parts of the aquifer most affected by the overdraft. The physical condition of the valley is inconsistent with those estimates that there is and has been a surplus of water in the aquifer.

The selection of a safe yield number for an aquifer the size of the Antelope Valley is made difficult because of not only its size but because of the complexity of its geology. As reflected above, hydro-connectivity and conductivity varies considerably between various parts of the aquifer. The hydro-connectivity between some portions of the adjudication area aquifer and others is so slight as to be almost (apparently) nonexistent. Pumping in those areas may have little or no effect on other areas of the aquifer. The Antelope Valley basin is not like a bathtub where lowering and raising of water levels is equal in all parts of the "tub."

Therefore, assigning a safe yield number (what quantity of pumping from the basin will maintain equilibrium in the aquifer) may require different numbers for different parts of the aquifer (and clearly may also provide for some level of separate management). No attempt has been made in this phase of trial to define geological differences in the valley that would justify different safe yield numbers for different parts of the valley in light of the decision in Phase Two regarding connectivity (the Phase Two trial focused on hydro-connectivity for purposes of determining necessary parties to the action).

Weighing the various opinions of the experts, however, the Court finds by a preponderance of the evidence that conservatively setting a safe yield at 110,000 acre feet a

year will permit management of the valley in such a way as to preserve the rights of all parties in accordance with the Constitution and laws of the State of California. Some portions of the aquifer receive more recharge than others and pumping requirements vary. These differences require management decisions that respect the differences in both the geology and the cultural needs of the diverse parts of the valley.

It should not be assumed that the safe yield management number may not change as climate circumstances and pumping may change, or as the empirical evidence based on experience in managing the basin suggests it is either too high or too low.

Dated: JUL 13 2011

Hon. Jack Komar
Judge of the Superior Court