ROBERT C. WILKINSON
1428 West Valerio
Santa Barbara, California 93101 USA

tel: (1-805) 569-2590 fax: (1-805) 569-2718
E-mail: wilkinso@lifesci.ucsb.edu

10/31/2002

Thomas Hannigan
Director
Department of Water Resources
By e-mail <hannigan@water.ca.gov>

Cc: Steve Macaulay <macaulay@water.ca.gov>
Katherine Kelly <kkelly@water.ca.gov>
Jonas Minton <jminton@water.ca.gov>

DWR
Attn: SWP Water Delivery Report, Room 215-37
PO Box 942836
Sacramento, CA 94236-0001

RE: Comments on DWR's Draft Report "The State Water Project Delivery Reliability Report"

Dear Tom,

I appreciate the opportunity to comment on the department's Draft Report: "The State Water Project Delivery Reliability Report" dated August 2002. The points enumerated below are consistent with the conversation I had with your staff during the briefing DWR held when the draft was released. Again, thank you for providing this opportunity for public input.

Overview

This draft report is an important step in the DWR's efforts to plan and manage the state's limited water resources. An assessment of the actual amounts of water the state system can reliably deliver to users is long overdue. It is critical that the assessment of SWP supply reliability transcend the wishful thinking of the past and accurately set forth the physical and legal limits of the system. I applaud your efforts in this regard.

Though the draft report represents a step in this direction, it is a small step. Unfortunately, the analysis places inappropriate confidence in a single computer model as the sole basis for its questionable findings. We are asked to believe that the SWP will reliably, on average, provide an additional million acre feet of water (50% greater than past performance). The finding defies logic and is inconsistent with the system's actual performance.

The recommendation presented here, as outlined in greater detail below, is that DWR utilize the approach of your own Bulletin 160-03 process, both as a means of improving policy through expanded public input and with

specific regard to the use of models (including the same model used in this draft report). As such, DWR should withdraw this draft report and start over with a more credible and thorough assessment of system reliability.

A Step Forward

I will begin these comments with sincere praise for the changes DWR is making in water policy analysis and development. The State Water Plan process is providing a valuable and appropriate forum for dialogue regarding critically important water policy issues in California. This planning process, as it is being currently managed, is unprecedented in DWR's history. It is an extremely valuable and important contribution for the state.

The department has appropriately focused this reliability analysis on the SWP itself. As noted in the report, users of state water will need to determine for themselves the reliability of their specific supply mixes. An accurate assessment of the SWP's capabilities is important for this purpose.

For the first time, DWR has clearly stated in this report that the SWP cannot reliably deliver "Table A" water, or what used to be referred to as "contract" or "entitlement" water. Many critics of DWR, and indeed the courts, have called for this basic admission and correction. It is helpful for DWR to "commit truth" on this basic point. The question then becomes, if not the mythical 4.2 mafy originally envisioned, what amount of water is in fact available on a reliable basis? As suggested below, more work is needed to provide an accurate and useful answer.

DWR also deserves credit for providing a draft document and seeking public input. Again, this is a positive step. Further dialogue regarding the basis for an analysis of reliability, including the proper role and application of computer models, will certainly enhance both the accuracy and public acceptance of the reliability forecast. I would urge you to expand the process of analyzing SWP reliability in the same spirit demonstrated by DWR in planning for California's water future.

Integrate the Reliability Assessment of the SWP and CVP in One Document

An accurate assessment of the reliability of the state's water supplies is essential. The State Water Project and the Central Valley Project extract water from the delta in a coordinated management program – including pumping, storage, and conveyance. The reliability of both systems must therefore be examined in an integrated assessment. As I understand it, the basic data for both systems is already used in the analysis that DWR staff has undertaken. Indeed, it is impossible to separate the two because of the joint operation. Thus, the reliability of the SWP and CVP must be presented together so that the impacts of shortages, physical constraints, and legal constraints are readily understood.

Address SWP Water Rights

The reliability of the SWP is in part determined by how much water it may legally extract from the delta. As I understand it, the state has direct legal rights to something like 25% of the water extracted (based on Feather River water and the state's facilities on that watershed). The rest is unappropriated "surplus" water slurped out of the delta. If that "surplus" is unavailable to DWR due to uses by more senior appropriators and upstream users exercising their legal claims to greater amounts of water, and/or due to water quality, environmental, and other legal requirements, the SWP's ability to deliver water will be impacted.

DWR should clearly outline the actual water rights it holds and the nature of those rights in relation to other water rights holders. It should explain the basis for its assertion that surplus water will remain available in the amounts it forecasts, and at the times it forecasts its extractions (based on hourly pumping, or at least daily as a start). As

part of this analysis, the assumptions it is using regarding all of those more senior and upstream users should be clearly identified. What water rights may impact DWR's reliable water supply options, and what water will actually be available if those rights holders use their legal amounts?

All of these factors should be made explicit so that calculations of supply reliability – done by computer models or otherwise – may be properly accounted for.

Address Environmental Constraints on Water Extractions

Excessive extraction of water from natural systems has caused significant environmental impacts in California. Over the past several decades these environmental impacts have led to restrictions on extraction of water from various systems including the Mono and Owens watersheds, the Trinity River, and others. Of obvious importance to the SWP are the environmental impacts to the delta as well as up-stream impacts within the watershed.

During the 1980s, the SWP extracted from the delta an average of about 2 mafy. The condition of the delta declined during the decade, and several species were seriously impacted. The SWRCB held hearings and indicated, to be diplomatic, that the situation was not sustainable. During the 1990s, DWR again extracted an average of 2 mafy from the delta. The environmental impacts worsened, and several species were listed. The SWRCB was joined by others in its concern. The CALFED process was created in response to the problem. Clearly, the declining condition of the delta is not attributable to any one single cause. Just as clearly, the SWP's extractions are a critical part of the problem.

The draft report suggests that *on average*, half-again *more water* can be *reliably* extracted from the delta in the future (an average of about 3 mafy) than was extracted during the 1980s and the 1990s. DWR's analysis, and assertion, must indicate how in the world the SWP can increase its extractions by such a large amount while at the same time *restoring* the species already impacted and avoiding harm to others. (Note that the law requires restoration of the listed species, not simply avoiding further harm.)

Perhaps this is possible with existing facilities as the report asserts. If so, the report needs to explain in detail how it can do so. Simply stating that "the model says so" is insufficient.

Computer Models and Assertions of Reliability

DWR has based its draft reliability report and its forecasts entirely on a single computer model that was not designed for the purpose. CALSIM is not capable of providing robust results for SWP system reliability, and it cannot be properly validated. DWR explicitly, and inappropriately, dismisses actual historical data and other information that indicates the model results are almost certainly wide of the mark. At the same time, in other DWR work, the department has in fact acknowledged serious limitations of this model and the need for significant work on model development and testing. It is quite possible that CALSIM is not even the right model design to be used for this kind of reliability analysis.

As part of the Bulletin 160 process, DWR has facilitated a valuable dialogue regarding the use of computer models, and specifically CALSIM – the model used in the draft report. There has been much discussion of appropriate – and inappropriate – uses of models in water policy and planning. It is most unfortunate that even while the public advisory committee for Bulletin 160-03 and DWR staff were engaging in this dialogue, DWR staff separately used the model in a manner that is directly contradictory to the findings of the advisory group and DWR. In short, there is a serious disconnect between what DWR is saying and what it is doing with regard to the use of CALSIM.

Modeling is useful when the model is properly designed, used for its intended purpose, and when the limitations of the model, and limitations of the data used in the model, are well understood and acknowledged. There must also be a way to test and validate the results produced by a model to establish a basis for understanding its margin of error or range of reliability. The Bulletin 160 process has discussed these issues at length. Unfortunately, there are serious questions regarding CALSIM for each one of the conditions stated: it does not appear that CALSIM was designed as a water reliability forecasting tool, it is therefore being used in a way it was not designed to be used, the limitations of the model and the data are potentially significant and are not clearly stated (notwithstanding information on the model available on the web), and perhaps most importantly, there is presently no way to validate the model.

Does this mean modeling is worthless? No. It means that modeling must be done properly if the results are to be used as a basis for decisions and policy. This takes time. At this point, a model that can predict SWP reliability with sufficient accuracy to be relied upon as the sole basis for policy does not exist. With all due respect, DWR staff knows this.

The Illogic of "Demand Constrained" Deliveries

The draft report asserts that the reason more water has not been extracted in the past is that contractors haven't asked for it. Therefore, it argues, if more water is demanded, the SWP can deliver an average of 150% of historical averages – reliably.

A cursory examination of contractor requests and actual deliveries during the past decade indicates that this assertion in unfounded. Simply put, the reason the SWP has not been delivering more water is not that contractors haven't asked for it. It is because the system cannot legally extract that much water. The system is constrained by the limits of the water legally available for diversion and by the damage that extractions have done. Perhaps additional water can be pumped during floods, as some suggest, but the timing of these pumping events would need to be modeled with much greater precision than has been done to date. Carry-over storage and other constraints also need to be examined in greater detail to provide a more realistic and accurate measure of water supply reliability and the actual capacity of the system.

Conclusion

The draft report correctly focuses on the SWP's reliability rather than the reliability of local supplies. The report acknowledges for the first time that the system cannot deliver "Table A" volumes. This is an important step towards a more honest and accurate assessment of system reliability.

The report misapplies a computer model designed for other purposes to support an assertion that huge increases in water extractions are not only possible, but may be reliably counted on for development under new legal requirements. By relying exclusively on this computer model, the report fails to provide a reasonable basis for establishing reliability of the system. This draft should be withdrawn.

At a time when public confidence has been understandably shaken by corporate scandals, the energy problems California has experienced, and more, it is critical that DWR consider the roles it is playing with regard to water policy and assertions of supply reliability. DWR is a purveyor of water. DWR sells water through the SWP. At the same time, DWR would like the people of California to believe that it is a neutral and dispassionate source of information regarding the reliability of its own system. That trust requires a more rigorous assessment than the present draft report provides.

For decades DWR has perpetuated the misconception in its official documents that the SWP could deliver more water than it in fact can. The unanimous appellate court decision against DWR in the Monterey Agreement litigation makes rather pointed reference to the fact that the SWP cannot deliver the volumes of water that DWR has claimed it could, and that this fact should be acknowledged. Indeed, the Monterey Agreement sought to eliminate the provision in the contracts that deals with the obvious – the SWP cannot deliver "Table A" volumes. This was a key reason for the litigation. One would hope a lesson was learned.

It is discouraging and disconcerting that DWR would release a draft report that seems to so obviously fall back into the realm of wishful thinking. "Our model says so" is not enough to base policy on. The people of California deserve more.

DWR should design and implement a new, open, transparent process to determine the reliability of the SWP based on all available information and tools. All of the constraints and variables described above, and others, should be discussed in the public dialogue.

Sincerely,

Robert C. Wilkinson