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March 16, 2008

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Re: Comments on the *Draft State Water Project Delivery Reliability Report 2007*

Ms. Kelly:

The Planning and Conservation League (PCL) submits the following comments on DWR's Draft State Water Project Delivery Reliability Report 2007 (2007 DRR). As an organization that advocates for wise investment in and sustainable use of the state's water resources, as well as a party to the settlement agreement that calls for preparation of these biennial reliability reports, PCL urges DWR to substantively address the comments below so that the final report fully meets the rigorous reporting requirements specified in that agreement, and that local planning decisions can be made based on a clear and complete analysis of water delivery reliability.

1. The 2007 DRR must be sufficiently clear and accurate for use in the 2010 Urban Water Management Plans (UWMPS).

As recognized in the 2007 DRR, the Delivery Reliability Report is an important planning document used by many of the SWP contractors, and in turn local water districts as the basis for Urban Water Management Plans (UWMPS), water supply assessment and verifications.

Despite the importance of the DRR, DWR has tended to release the Delivery Reliability Report past the deadlines outlined in the settlement agreement. Per the settlement agreement the DRR is due to be updated biennially, beginning in 2003. The previous DRR was due in 2005; however the final was not issued until June 2006. As a result, all water agencies depending on the DRR were forced to rely on a May 2005 draft document for preparation of their 2005 UWMP.



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The 2007 Draft DRR was not released to the public until December of 2007, and the final will not be issued until sometime in 2008. The late release of the report is a disservice to the many water agencies which receive water from the State Water Project, as well as the many cities and counties that need the information contained in the report to assess the adequacy of water supply assessments and verifications. Indeed, by releasing these reports in such a manner, local water agencies and local planning entities are forced to rely on draft materials or significantly dated materials as the basis for legally challengeable decisions. Such situations expose these entities to significant risk.

Should DWR continue the trend of late releases of the DRR, the next report, the 2009 DRR, will be issued too late to be useful to urban water agencies for the preparation of the 2010 urban water management plans. Therefore, the accuracy and clarity of the 2007 DRR is even more crucial to water managers and planner entities. PCL respectfully recommends that DWR revise the 2007 DRR to ensure it provides the level of reliable information necessary for the purposes in which it will be used. PCL further respectfully requests that DWR commit to releasing the Draft 2009 DRR in June 2008, and the Final 2009 DRR by February 2009 in order to ensure local water agencies will have sufficient time to incorporate DWR's information into the 2010 UWMPs.

2. The 2007 DRR should provide additional explanation and clarification of data and results to ensure information is presented in a readily understandable manner.

In referring to the Delivery Reliability Report, the settlement agreement specifically states that "The information presented in each report shall be presented in a manner readily understandable by the public." While we recognize that information about the reliability of the SWP is complex, clearer explanations and specific guidance from DWR on particular points are necessary to meet the intent of the settlement agreement and assist readers in deciphering this complex information. PCL proposes the following specific recommendations to develop a more reality understandable document.

A. The DRR must fully disclose the reliability associated with water supplied from the SWP and disclose the implications associated with various levels of reliability.

While the Draft DRR includes the results of many model runs, it fails to provide a significant discussion regarding the implications of the level of *reliability* associated with SWP deliveries. In particular, the Draft DRR fails to articulate how reliability should be factored into water planning, and the DRR fails to disclose the implications of reliance on water that cannot be reliably delivered.

For instance, the DRR includes a very cursory explanation of Article 21. Through out Chapter 7 of the Draft DRR, DWR has listed an "Article 21" category within the water supply source table examples. The Draft DRR does include a footnote stating that, "Annual Article 21 amounts vary significantly from year to year. Without the ability to store Article 21 supply, it is not likely to contribute to local water supply." This statement is woefully inadequate and dangerously misleading. Indeed, a study of the actual model outputs reveals

that in one case, for example in table B-20 no Article 21 could be delivered for a period of over 20 consecutive years. Article 21 is reported to be available in only 3 years between 1922 and 1966 in Table B-20. Even when Article 21 is available, in this case 22 thousand acre-feet in a year like 1925, it is not in a quantity that would result in a significant additional local supply even if storage were available.

Even in outputs for more recent conditions, such as in Table B-16, there are long periods of 8 and 10 years when no Article 21 water would be available. Most storage facilities in the state are not designed or operated to store water for a period of 8 to 20 years.

Yet, readers would have to study the many tables in the appendices of the DRR in order to find this information. Readers would then have to interpret those tables further to understand the significance of the listed numbers.

Because Article 21 cannot be delivered in quantities sufficient enough to enhance storage or annual water supply on a consistent basis, it is not reliable and is not an appropriate water supply for those that use that require a high degree of reliability. In fact, relying on Article 21 for permanent supply is part of the “paper water” problem that was at the heart of the original Monterey Amendments litigation. By masking the dismal reliability of Article 21 with an understated and misleading footnote, DWR facilitates use inappropriate use of Article 21 for purposes that require a higher degree of reliability.

Beyond Article 21, the DRR fails to clearly disclose the reliability of all deliveries from SWP in a substantive manner. While the DRR does include modeling runs reporting the estimated delivery of water to SWP contractors, those runs omit important information, including risk factors in the Delta, and the need to respond to environmental, water quality and area of origin legal requirements. The DRR fails to inform readers that the model runs very likely overestimate the reliability of the SWP. Further, the DRR fails to provide guidance to SWP contractors on how local and overall water supply reliability could be improved.

To remedy this, PCL recommends that DWR include a full discussion regarding the reliability of all types of water delivered from the SWP. That discussion should include a full discussion of the implications of mismatching various levels of water supply reliability with the various intended uses (i.e. urban and agricultural use, or permanent and annual crops). In addition, the Final DRR should omit Article 21 from the list of Water Supply Sources in all tables. The final DRR may include Article 21 in a separate table of “interruptible and unreliable water sources.” Such tables should include a footnote that reads, “Article 21 should not be used to support a permanent economy.”

B. The DRR should include Water Supply Source tables for each SWP contractor.

DWR should include a clear and understandable forecast of how much water (both Table A and Article 21) the SWP can deliver under current and future conditions for each SWP contractor. Although some of this information is in the draft DRR, it is split up and scattered in many tables, figures, and graphs, and in some cases must be derived from information in

the DRR by means of additional calculations. Inclusion of separate tables for each contractor would allow readers to clearly find information affecting the specific area of interest.

- C. The DRR should provide estimates of SWP delivery reliability for the period required by the next UWMP.

As noted in the 2007 Draft DRR, the primary use of the DRR is by SWP contractors and their customers for use within the regional and local UWMPs. California law requires the UWMPs, and also water supply assessments and verifications to assess water supplies for 20 years into the future. In order to be useful to those water planners, DWR should extend the analysis included in the DRR to the period required by the following UWMPs, which in this case would be 2030. While this seems to be a technical detail, failing to extend the range of the DRR could result in significant legal vulnerability for water and land use planners who rely on the DRR to make legally challengeable decisions.

3. The 2007 DRR should clearly disclose the limitations of modeling outputs and the implications of the modeling assumptions in CALSIM II, and provide recommendations to water agencies for appropriate use of modeling outputs.

CALSIM II is the primary analytic tool used in estimating current and future water delivery reliability, yet it has known weaknesses that are not disclosed or discussed in the 2007 DRR. Of particular concern to PCL is the fact that, although local agencies will be using this document as a basis for developing local UWMPs there is no acknowledgement of the potential for CALSIM II to *overestimate* delivery reliability. This is a critical flaw in the document that must be addressed.

As participants in the Monterey Plus EIR Committee process, PCL has previously submitted comments to DWR expressing our concerns regarding the adequacy of CALSIM II for use in water management planning and deliveries assessment. Rather than resubmit those comments, we incorporate them by reference here, and highlight some particular issues below.

The Draft DRR reports water availability to the SWP and SWP deliveries through 2027 based on CALSIM II runs. While CALSIM II may be a sophisticated and useful modeling tool for certain purposes, it is inappropriate for determining absolute numbers for export and deliveries. It has been criticized by a panel of expert reviewers for several weaknesses, including its lack of amenability to proper calibration. (See A. Close, *et al.*, *A Strategic Review of CALSIM II and its Use for Water Planning, Management and Operations in Central California* submitted to California Bay Delta Authority Science Program, December 4, 2003.

One flaw with CALSIM II is that it fails to reflect the bimodal distribution of water years in California. Currently, the DRR reports CALSIM II runs for average years, a critical dry year, a period of dry years and wet years. Given the presentation in the DRR, it would be reasonable for a reader to assume that average years are the most likely occurrences, and therefore average deliveries are the most reliable. However, based on California's fluctuating hydrology, average years are the least likely to occur, and periods of dry years and wet years are much for likely.

CALSIM II is ill-suited to address bimodal distribution of water years because the model produces an exceedence chart that hides this reality. Arve Sjøvold has commented extensively on this point. Mr. Sjøvold's most recent comments are incorporated by reference and attached to this letter.

Throughout the 2007 Draft DRR, modeled predictions are presented as though certain, and discussion of possible error or of ranges of possible outcomes is almost entirely absent. The models used cannot possibly produce such certainty. CALSIM II includes hundreds of assumptions. There is a reasonable likelihood that one or more of the assumptions incorporated into CALSIM II will be incorrect. However, DWR does not disclose these limitations in a clear and understandable manner, and the Draft DRR fails to provide a reasonable strategy for addressing this issue.

Rather than the near certain results presented in the DRR, at best, the model runs can predict, given a certain set of data and assumptions, a range of possible outcomes, with some outcomes potentially more probable than others, and with all predictions limited by both known and unknown sources of error. An accurate discussion of the DRR's modeling results therefore cannot provide certain predictions, and instead should show the range of possible outcomes. By omitting both possible sources of error and potential outcome ranges, the DRR projects a false certainty that reported deliveries are likely.

Because CALSIM II is an optimization model that does not necessarily reflect options available to water operators, or options that water managers *would* choose, it may overestimate SWP deliveries. Despite the optimistic CALSIM II outputs, federal and state water quality and endangered species laws and regulations probably prohibit such high export levels due to endangered species requirements, water quality requirements and other regulatory requirements. Indeed, at a recent Bay Delta Conservation Plan meeting on Delta conveyance options, DWR Deputy Director Jerry Johns, noted that CALSIM II and CALSIM Lite tend to deliver "optimistic" outputs, indicating that CALSIM II may maximize potential deliveries when such deliveries would be difficult or impossible to produce in the real world.

Based on CALSIM II outputs, the DRR assumes that future water exports from the Delta will be much higher than the historic average. This DRR prediction fails to recognize that DWR has chronically failed to meet water quality standards in the Delta under historic operations, and significant environmental degradation has taken place under such operations, resulting in new regulatory actions.

In light of the recent pelagic organism declines in the Bay Delta Estuary, and resulting rulings invalidating the biological opinion for Delta smelt, it is prudent to ensure that the Final 2007 DRR modeling assumptions and predictions are conservative, rather than "optimizing." Such revisions would provide a much more realistic and reliable estimate of deliveries that are more consistent with requirements of the Federal Clean Water Act, the Federal or California Endangered Species Acts, or any other environmental permit condition, regulation, standard, or law.

The DRR should also provide reasonable recommendations to water agencies for addressing these modeling faults. In order to increase the likelihood that the estimates used in planning documents will be reasonably accurate and reliable, the DRR could recommend that water agencies consider reducing the amount of deliveries predicted by CALSIM II by certain reasonable percentage, such as 10 to 20 percent, when planning for water management.

4. The 2007 DRR should include a more comprehensive analysis of the impacts of climate change on water delivery reliability.

While the DRR recognizes that climate change will have very widespread impacts on the SWP. Yet, the DRR analyzes only one aspect associated with climate change, hydrology, for impact on the SWP deliveries. Climate change is anticipated to affect water quality in the Delta, consumptive use of water in both SWP watershed and the area of use, availability of hydropower and flood safety needs. None of these factors is analyzed for potential impact on SWP delivery reliability in the 2007 Draft DRR.

The Draft DRR proposes that some tools that may be necessary for broader analyses of climate change impacts are not yet available. For instance, the DRR states that current modeling cannot account for the impact on SWP deliveries that may result due to increasing salinity in Delta due to sea level rise. However, at a recent Bay Delta Conservation Plan meeting, DWR provided a summary of CALSIM Lite. During the presentation, it was indicated that the model is capable of assessing and responding to various salinity levels in the Delta. This implies that, at the very least, anticipated salinity increases should be taken into account along with hydrology impacts for all model runs and outputs included in the DRR. Beyond that, the DRR should clearly articulate the full range of impacts anticipated to occur under climate change. The DRR should further disclose which impacts are omitted from estimates of deliveries under climate change scenarios. Finally, the DRR should provide guidance to water agencies on how these omitted impacts are likely to affect deliveries (i.e. whether increased consumption is likely to increase or decrease the amount of water available to the SWP).

5. The 2007 DRR should evaluate variable levels of demand and in particular the 20% reduction in per capita consumption called for in Governor Schwarzenegger's recent letter.

The 2007 DRR assumes 2027 demand for supplies to be the very similar to those used in demand modeled in the 2005 DRR, an approach which neglects (a) the potential for changes in demand (for Article 21 supplies, in particular) due to changes to the SWP contracts that may result from DWR's upcoming decision on the Monterey Plus EIR (see also Section C-1 (p. 7) of the attached comments by PCL to DWR on the Draft Monterey Plus EIR), and (b) the potential for shifts in the amount and pattern of demand based on the ongoing Delta Vision and Bay Delta Conservation Plan processes.

In commenting on the 2006 DRR, PCL recommended that DWR incorporate various levels of demand into model runs. PCL repeats that comment for the 2007 DRR. Indeed, the 2007 Draft DRR, like the 2005 DRR identifies water demand in the delivery service area as one of three

primary components that determine SWP reliability. However, like the 2005 DRR, the 2007 Draft DRR does not examine a significantly varied range of possible demand. That omission is important, for such analysis would likely show that reliability is inversely proportional to the level of demand.

Rather, the 2007 Draft DRR provides no clear disclosure of the demand assumptions included in the CALSIM II outputs. The 2007 Draft DRR, instead, states that demand assumptions are based solely on information provided by contractors. PCL requests that in addition to analysis based on information provided by SWP contractors, DWR provide analysis of SWP reliability under the three demand scenarios included in DWR's 2005 California Water Plan. In addition, the DRR should include analysis that anticipates full implementation of the Governor's recent call for a 20% reduction in per capita water use.

6. The 2007 DRR should consider operations not only under the Wanger decision, but also under operations consistent with the operational recommendations of the state and federal fishery agencies for protection of species listed as threatened or endangered under the federal or state Endangered Species Acts.

The 2007 DRR assumes that 2027 operations will be subject to the current limitations proscribed by the Wanger Interim Remedy Order and SWRCB water quality requirements. However, the re-consultation on the 2004 OCAP, the continued decline of currently listed species (such as Delta Smelt and Winter-run Chinook Salmon), as well as the potential listing of additional species (such as the Longfin Smelt) are just some of the factors that may require significant changes in operations with effects on delivery reliability well before 2027.

The 2007 DRR notes that assumptions regarding 2027 operations are not a prediction of the future, but rather an assessment of the future with consideration only of hydrological effects of climate change and projections of future land and water use. This caveat must be carried clearly throughout the report, making it clear that modeled reliability is likely to be an *overestimate* based on incomplete knowledge of future operational constraints. Furthermore, the DRR should include a discussion of how water agencies may increase water supply reliability within their own service area in order to reduce the risks associated with uncertainty of future SWP supplies.

7. The DRR must recognize that DWR has not yet issued a final decision and EIR for the Monterey Plus project.

DWR is in the process of responding to comments in the Draft Monterey Plus EIR. In response to those comments and upon further analyses, it is foreseeable that DWR may choose to make changes to the Monterey Plus project. The DRR must acknowledge this fact and recognize that the outcome of DWR's Monterey Amendments decision-making may well cause further impacts to SWP delivery reliability.

PCL appreciates the opportunity to comment on the DRR, and we look forward to working with DWR to improve future drafts of the 2007 report as well as future Delivery Reliability reports.

Sincerely,

Mindy McIntyre
Water Program Manager
Planning and Conservation League

Attachments

Cc:

Lester Snow, Director , Department of Water Resources
Antonio Rossmann, Rossmann & Moore, LLP
Roger Moore, Rossmann & Moore, LLP
Senator Perata
Senator Steinberg
Senator Kuehl,
Senator Machado
Senator Kehoe
Senator Ducheny
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