Advisory Committee Suggestions
&
DWR Review and Response

Work Completed January - May 2001
For
California Water Plan – Update 2003

Executive Summary

Department of Water Resources
June 20, 2001

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Advisory Committee Suggestions and DWR Review and Response
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I. Introduction

Collaborative Process

The Department of Water Resources and the Advisory Committee have been working together since January 2001 to accomplish two related tasks during the winter and spring of 2001. On the one hand, they have embarked together on a three year "strategic planning" process that will culminate with the release, by December 31, 2003 of the *California Water Plan - Update 2003*. On the other hand, DWR is now required by a statute enacted in 2000 to produce, by January 1, 2002 a preliminary draft report to "daylight" the assumptions and other estimates that will be used in *Update 2003*.

With these twin challenges in mind, DWR began the process with a series of overview presentations to the Advisory Committee at its March 8, 2001, meeting. At the end of the meeting, Advisory Committee members were invited to join one or more of eight initial Work Groups that would meet during March and April 2001 to develop more focused proposal for these items for early Advisory Committee input.

Between March 19 and March 30, 2001, the eight initial Work Groups each met, and in total, over 40 Advisory Committee members, joined by additional interested members of the public, met with a total of over 30 DWR staff members. At three follow-up Work Group meetings held between April 17 and 20, 2001 DWR staff and Work Group members discussed the draft Discussion Papers.

Following the Work Group meetings, DWR staff revised the draft Discussion Papers to incorporate the Work Group's insights and proposals. The revised Discussion Papers were specifically keyed to agenda items for the April 25 and May 3 Advisory Committee meetings. At those two meetings, Advisory Committee members received presentations by DWR staff on the Work Group proposals.

Consensus-seeking

During the April 25 and May 3 Advisory Committee meetings, after time for clarifying questions and full discussion, consensus was sought among the full Advisory Committee members on each proposal prepared by the Work Groups. In some instances, where the discussion indicated overwhelming Advisory Committee support for a proposal, members were simply asked to speak up if they had any fundamental disagreement with the proposal. In most cases, however, members were asked to indicate formally their level of support for a proposal using a five-point scale.

DWR Review and Response

After the May 3 Advisory Committee meeting, DWR staff and management began its formal review of the Advisory Committee's suggestions on the following eight topics:

1. Prepare "Water Portfolios" for each Hydrologic Region and Statewide.
2. Describe "Where We Are Now" using actual data for multiple years.
3. Present water balance data for unique areas (Mountain Counties) and counties.
4. Consider Planning Horizons 2010, 2020, 2030, and 2050.
5. Consider a range of hydrologies from wet to dry for "Where We Are Going."
6. Consider a list of "Key Drivers and Constraints" for planning for the future.
7. Improve Agricultural Water Use data; use existing ETAW data.
8. Improve Urban Landscape Water Use estimates.

Time/Resource Limitations; Commitment to Further Dialogue

There is a substantial chance that limitations on available time, DWR staffing and resources will pose real challenges to the DWR's ability to implement fully the Advisory Committee's suggestions for *Update 2003*. To address this, DWR has described its approach to prioritizing work and allocating available resources in relevant sections of this report. To help manage this apparent conflict between desired products in *Update 2003* and available time and resources, and in keeping with its commitment to an open and transparent stakeholder collaboration, DWR will communicate with the Advisory Committee when significant staffing and resources challenges appear and solicit the Committee's input on priorities and level of detail. DWR staff and Advisory Committee members can then explore the specific challenge(s) together and attempt to develop solutions to meet the interests of DWR and the Advisory Committee. Such solutions might entail, for example, adoption of DWR's approach and prioritization suggested in this report; development of a different prioritization; reframing or refocusing the work in question; and/or identification and development of additional resources.

Report Organization

The full report is organized in three sections, Section I – Introduction, Section II – Advisory Committee Suggestions, and Section III – Additional Matters. The eight Advisory Committee suggestions are presented in Section II and the customer survey and draft Assumptions and Estimates Report are discussed in Section III.

Each of the Advisory Committee suggestions is described separately in subsections A through H of Section I. Each suggestion includes the "Advisory Committee's

Consideration" (topics: specific suggestion, rationale, background, range of perspectives and follow-up), followed by "DWR Review and Response."

II. Water Portfolio Concept

Advisory Committee Suggestion

If water balances are to be calculated, create a "water portfolio" that would show the State's actual and potential supplies as akin to "assets" and its actual and potential uses as akin to "liabilities." Allow the Advisory Committee to review and express its perspective on both the categories and the regions that are developed for the portfolio.

DWR Review and Response

DWR supports the concept of using a "water portfolio", as an expanded and enhanced water balance, to describe both current and future water supplies, uses, constraints, and key water management decisions or drivers. The "water portfolio" would significantly enhance the water balance prepared and presented in Bulletin 160-98, and preparing them would require more time and resources. DWR will need to work with the Advisory Committee as work progresses to assist in identifying priorities and level of detail.

Based on Advisory Committee input from the May 3 meeting (namely, additional categories, category definitions, and supplemental information), staff is currently preparing a proposed "water portfolio" (categories and structure) for the June 20 Advisory Committee meeting. For the proposal, staff is working with the 40 categories in *B160-83* and additional categories suggested by the Advisory Committee.

DWR currently considers the "water portfolio" including the following elements:

1. Water balance categories from *B160-98.*
2. Additional categories from *B160-83*, as expanded and modified with input from the Advisory Committee suggestions.
3. Narrative to annotate the "water portfolio" categories.
4. Supplemental information and/or data tables.

DWR recommends a four-step approach and work sequence for preparing each set of "water portfolios" for the ten hydrologic regions and statewide. Staff will use this process to begin its work on describing "where we are now."

III. Describing "Where We Are Now"

Advisory Committee Suggestion

1. Prepare a Water Portfolio (a comprehensive water balance) for:
    - Each Hydrologic Region and Statewide;

- Actual 1999 (Wet) or 1998 (Wet); and
- Actual 2000 (Average).

2. Identify Water Portfolio Categories relevant for each region and year.
3. Assign best values for each Water Portfolio category using measured data if available or estimates if not.
4. Prepare a detailed narrative for each Water Portfolio (regions and years) to capture real-time constraints and management decisions.
5. In addition, prepare a qualitative/narrative Water Portfolio for actual 2001 (Dry or Below Average) to capture categories, constraints, and management decisions unique to drier conditions.

DWR Review and Response

For *Update 2003*, DWR will work to expand the water balance, as suggested by the Advisory Committee, to describe current water supplies, uses, and management, in the form of regional and statewide "water portfolios" using the procedure described in Section I.A.2 of this report with actual data. This is a fundamental departure from the way DWR calculated and presented current conditions in the last and prior *Water Plan* updates, which used the "typical" or "normalized" year approach to prepare water balances describing the "baseline" or current conditions.

Another fundamental difference is that the actual year "water portfolio" would likely *not* serve as the starting point for future forecasts, recognized by DWR and the Advisory Committee. What has complicated DWR's review of this topic is not knowing at this time what approach(es) we will use to forecast future water supply and use conditions, including how to initialize the forecasts. We have only begun discussing these topics with the Advisory Committee.

DWR understands and appreciates the value of using actual data to help capture and explain the complex nature of California water management decisions. Based on input from some Advisory Committee members at the May 3 meeting, DWR recommends using 1998 to as a recent wet water year, 2000 as a recent average water year, and 2001 as a recent below normal water year.

DWR recommends a process and prioritization for completing this work, in light of when data will be available for water years 1998 (wet), 2000 (average), and 2001(below normal), as well as possible limitations in time and resources.

IV. Additional Geographic Areas for Reporting

Advisory Committee Suggestion

The Advisory Committee made near-consensus suggestions on three separate but related proposals on data availability and reporting for geographic areas not addressed in comparable detail in previous updates.

- All but two Advisory Committee members gave at least qualified support to a proposal that, in addition to the information presented in *Bulletin 160-9*8, *Update 2003* present water balances for additional regions with unique characteristics (e.g., Mountain Counties).
- All but three Advisory Committee members gave at least qualified support to make available county level data easily accessible, e.g., through web pages.
- All but nine Advisory Committee members gave at least qualified support to a proposal to, where possible, include reports in *Update 2003* on at least some water portfolio categories at the county level.

DWR Review and Response

- With respect to county level information, DWR supports the suggestion to make this information available as part of *Update 2003*. DWR has and will be collecting data at the county level for some, but not all of the categories of the "water portfolio," which can be made available to customers and stakeholders of *Update 2003*.

- With respect to additional regions, DWR will maintain the existing ten hydrologic regions which are based on watershed, not political boundaries. However, for providing information on other sub-regions of interest (e.g., Mountain Counties), DWR will consider and handle them as "overlays" on the existing ten regions. The information and data that could be presented for an "overlay" area would depend on the specific boundaries of that region.

V. Planning Horizons

Advisory Committee Suggestion

Use four planning horizons in Update 2003: 2010, 2020, 2030, and 2050. If staff resources are limited, prioritize them after considering the advantages of each particular horizon and the recorded Advisory Committee member preferences.

DWR Review and Response

DWR thinks it would be most productive to address the topic of multiple planning horizons on two levels: (1) for considering and planning for future scenarios, and (2) for quantifying estimates for future water supplies and uses, both of which are important for *Update 2003*.

On the first level, DWR believes it is essential to discuss multiple planning horizons in *Update 2003* for the purpose of working with the Advisory Committee and other stakeholders to consider future scenarios and to discover which water management strategies/options are relevant to the various planning horizons. For example, the 2050 horizon would be valuable for long-term scenario planning for uncertain future(s), such as global climate change.

On the second level, DWR believes more work is needed. DWR believes the scenario planning process discussed above should help guide which planning horizons are quantified, and of those, which are presented in the form of "water portfolios." Two other factors make it difficult for DWR to commit at this time to preparing quantitative estimates of future supplies and uses for the three planning horizons 2010, 2020, and 2030 (assuming that 2050 would be described qualitatively). First, DWR is just beginning the dialogue with the Advisory Committee on what approach(es) to use for estimating future water supplies, uses and management options. Second, DWR is uncertain that it has sufficient resources to complete quantitative "water portfolios" for all possible combinations of planning horizons, water year types, and future scenarios horizon. (The factors affecting the potential number of "water portfolios" are described in Section I.A.2.)

Therefore, with respect to the quantification of the various planning horizons, DWR thinks the best approach at this time is to prioritize the order in which DWR would quantify (prepare "water portfolios") for the different planning horizons. DWR thinks it would be best to begin quantification with planning horizon 2020, because (in the eventuality that we have sufficient time and resources to complete a detailed [quantified] "water portfolio" for scenarios for only one planning horizon) the 2020 horizon would serve as a longer term forecast, it is the second choice of the Advisory Committee, and it is CALFED's long-term planning horizon.

Time permitting, DWR would quantify scenarios for the other planning horizons, guided by the higher-lever scenario planning process that will be done for all of the four suggested planning horizons.

VI. Range of Hydrologies for "Where We Are Going"

Advisory Committee Suggestion

In *Update 2003*, include a range of hydrologies from "wet" to "dry" in future forecasts.

DWR Review and Response

DWR would like to make the distinction between "hydrologies" and "water year types." The question as posed to the Advisory Committee was intended to determine if we should examine a "range of water year types, from wet to dry" from our historic (observed) hydrologic record. It was not intended to decide if we should examine a "range of different hydrologies" (i.e., multiple hydrologic series). The exception would be for future scenarios with climate change that would consider a future hydrology different than the historic record.

DWR and the Advisory Committee have completed little or no pre-work on the question as posed on April 25, and DWR is just beginning the dialogue with the Advisory Committee on what approach(es) to use for estimating future water supplies and uses, including how best to consider a range of water year types (wet to critically dry) in the forecasts.

For these reasons, DWR is unable at this time to estimate the time and resources necessary to address this suggestion by the Advisory Committee. Therefore, DWR thinks it would be better to defer this decision until after we have worked with the committee on the approach(es) for futures planning for *Update 2003*. Further discussions with the Advisory Committee would allow us to follow up on some of the strategies considered during the Work Group meetings, such as using DWR's CALSIM2 model to consider a series of water year types for the Central Valley and South Coast region (CALSIM2 model boundary). For areas of the State that are not included in the CALSIM2 model, DWR could use historic hydrologic data to represent three water year types, namely wet, below normal, and critically dry, for preparing a quantitative "water portfolio" for a planning horizon.

VII. List of Key Drivers and Constraints for Forecasts

Advisory Committee Suggestion

At its May 3, 2001 meeting, the Advisory Committee generated the following list of key drivers and constraints for Update 2003 to consider in planning for the future (in alphabetical order).

1.	Climate & Climate Change
2.	Commercial, Industrial & Institutional Use (including energy generation)
3.	Economics
4.	Environmental Factors
5.	Infrastructure Constraints
6.	Land Use
7.	Long Term Groundwater Quantity & Quality
8.	Other Planning Processes (CALFED, etc.)
9.	Population
10.	Public Education and Acceptance
11.	Public Policies
12.	Regulatory Factors
13.	Technology (new industries; genetically modified crops, etc.)
14.	Water Quality
15.	Water Use Efficiency

DWR Review and Response

DWR staff worked with Advisory Committee members in the Work Groups to develop the list of 15 key drivers and constraints presented above. Many of the drivers and constraints were suggested by staff based on the data needed for developing and applying water use forecasting tools used in preparing *Bulletin160-98*.

During the remainder of 2001, staff will need to allocate significant time and resources to compile data and information on these drivers and constraints. The resulting "data

base" will determine in large part the most appropriate/accurate forecasting tools that can be developed for estimating future water use for the ten hydrologic regions.

VIII. Improve Agricultural Water Use Data – Use Existing ETAW Data

Advisory Committee Suggestion

The Advisory Committee reached consensus on the following proposal for describing "where we are now" for agricultural water usage:

- Conduct an irrigation methods distribution survey.
- Add information from available Agricultural Water Management plans.
- Add Mobile Lab information.
- Supplement with a Delphi approach that includes talks with farm advisors, irrigation district staff, and at least one outside expert.
- Let the Department decide whether additional consultations (i.e., beyond the group identified above) with outside experts are needed.

Consensus should soon be reached on the following additional language:

- Use existing ETAW figures to display total current ETAW

Additional work needs to be done on the following proposals:

- Where possible, clearly define non-productive evaporative losses as a factor in evaluating the potential for improving agricultural water-use efficiency.
- Where possible separate out "E" and "T" to identify potential water savings from reduced evaporative losses.
- Where such estimates are not possible, note it.
- Assist UC and CALFED in studying the issue.

DWR Review and Response

DWR agrees with the Advisory Committee's suggestion to improve to the extent possible (time and resources) agricultural water use data. During the Work Group meetings, staff presented a number of DWR's on-going activities addressing this topic, which were incorporated in the Committee's suggestion. DWR plans to address the Committee's suggestion as follows.

- For Update 2003, DWR will use estimates of crop evapotranspiration, effective precipitation, and ET of applied water for the years selected to reflect current conditions. Crop water use estimates would be based on evaporative demand and precipitation that occurred during those years.

- In addition to the suggested measures for augmenting information on agricultural irrigation practices, DWR will submit assumptions regarding on-farm irrigation efficiency for peer review by a select panel including researchers at the Center for Irrigation Technology (CSU Fresno), the Irrigation Training and Research Center (Cal Poly, San Luis Obispo), and the University of California Cooperative Extension.

- DWR recommends that *Update 2003* include an in-depth discussion on the state of the science regarding quantification of non-productive evaporative losses in agriculture, details on the results of the three current studies, and an overview of the potential implications of reduced evaporation in terms of agricultural water use, productivity, and costs. Three current studies, two by U.C. Davis and one by Cal Poly, San Luis Obispo, promise to shed light on this issue.

IX. Improve Urban Landscape Water Use Estimates

Advisory Committee Suggestion

The Advisory Committee reached agreement on the following proposal for describing "where we are now" for urban landscape water use:

- Use a combination of remote sensing, disaggregate approach and minimum monthly approach.
- More specifically, use remote sensing data where it already exists (e.g., through Urban Water Management Plans, Urban Water Conservation Council data, NASA data, AWAR data).
- Where remote sensing data does not now exist, use a combination of a disaggregate approach and a minimum monthly approach.
- In the disaggregate approach, separately identify single family residential, multi-family residential, commercial, industrial, and institutional uses; and reflect significant regional differences.
- Where possible, separate out large turf (e.g., parks and golf courses) and small turf (e.g., residences) watering uses.

DWR Review & Response

DWR agrees with the Advisory Committee's suggestion to improve to the extent possible (time and resources) urban landscape water use estimates. During the Work Group meetings, staff presented a number of DWR's on going activities addressing this topic, which were incorporated in the committee's suggestion. DWR plans to address the committee's suggestion as follows:

- Use the suggested method for combining information from existing studies on landscape area and water use, and extending those results to other areas of the state by various means.
- Estimate landscape area based on existing studies of landscape area in California, including studies using remote sensing methods. Study results would be extended

by applying per unit (e.g., single family dwelling, multifamily dwelling) landscape area coefficients derived for the study area to other similar areas of sparse data.

- Apply landscape water use coefficients to the landscape area estimates to determine landscape water use. Water use coefficients would be derived from various sources including existing studies on landscape water use, the landscape coefficient method, and the minimum month method.
- Separately tabulate, to the extent possible, the area and water use of large turf landscapes such as parks and golf courses.

X. Customer Survey

Advisory Committee Suggestion

Survey external stakeholders, such as those involved in other planning processes and other potential "customers" of *Update 2003*, to get their input on "what will make *Update 2003* a useful plan" and to find out what information they have to share with the *Update 2003* planning process.

DWR Review and Response

Staff is working with members of the Advisory Committee, facilitation team members, and the Governor's Office of Innovations to prepare a comprehensive customer survey.

XI. Assumptions and Estimates Report

Advisory Committee Suggestion

With as much detail as possible given the available time, prepare a "process map" to describe the assumptions and estimates to be used in preparing *Update 2003*. At a minimum, for each legislatively required component of the Assumptions and Estimates report, indicate where the Department will use observed data, where it will make assumptions or estimates, and where it will report the output of specific calculations. At a minimum, where output will come from specific calculations, identify the specific steps of each calculation.

DWR Review and Response

DWR has selected a process and data mapping protocol developed by the Department of Commerce (IDEF0) to "daylight" the processes, data, assumptions, and estimates used in preparing *Update 2003*. DWR has set up a Documentation Team to coordinate this documentation and the preparation of the Draft Assumptions and Estimates Report due for distribution by the end of this year. The Advisory Committee will have the opportunity to comment on the internal draft of this report before staff submits it for DWR management review.