

# Ad-Hoc Stakeholder Technical Work Group for Common Assumptions

## Meeting Summary For July 20, 2004

### **Background**

During the October 2003 BDPAC Water Supply Subcommittee (WSS) meeting, the WSS requested that an ad-hoc technical stakeholder group (Group) be formed to help inform WSS members of current and upcoming technical activities associated with the Common Assumptions Team. The meetings are primarily for the purpose of informing Group participants of current model development and schedules to help them provide informed feedback to the WSS members. Meetings have previously been held on December 17, 2003 and January 14, 2004.

This meeting was held to inform Group participants of (1) current interim CALSIM II and DSM2 modeling for the surface storage investigations, (2) inputs associated with the baselines for these models, (3) common reporting metrics to be used to report modeling results in the anticipated Fall 2004 *Surface Storage Progress Report*, and (4) the process for developing long-term baselines for use by the surface storage investigations for upcoming plan formulation studies.

### **Participants**

*(A detailed list of invitees is included as Attachment A)*

Ann Hayden, Environmental Defense  
Jeff Phipps, NCPA  
David Purkey, NHI  
Bernice Sullivan, Friant WA  
Peter Vorster, Bay Institute (by phone)  
Nannette Engelbrite, Reclamation  
Sharon McHale, Reclamation  
Sean Sou, DWR, Surface Storage Investigations  
Sergio Guillen, CBDA  
Greg Young, SWS  
Roger Mann, RMecon

Kevin Wolf, SVEWC  
Cindy Kao, SCVWA  
Dave Forkel, Delta Wetlands  
Merritt Rice, MWH  
Noel Williams, CH2M Hill  
Jason Phillips, Reclamation  
Walter Bourez, MBK  
Rob Leaf, CH2M Hill  
Mark Roberson, CBDA  
Jeremy Arrich, DWR  
Chuck Vogelsang, DWR

### **Meeting Discussion Summary**

The following is a synopsis of the discussions that occurred during the course of the meeting:

#### **Review of Interim Modeling and Input Assumptions**

Rob Leaf led an overview of the interim CALSIM II and DSM2 baseline modeling assumptions for the Fall 2004 *Surface Storage Progress Report*. As part of this discussion, Rob discussed and responded to questions regarding the input assumptions used to develop the Interim Common Assumptions CALSIM II and DSM2 future baselines. The following are the main questions and responses:

- 1. Issue:* Why are the Level 4 refuge demands not included in the baseline demands? (Raised in concerned for not capturing potential implications to power when this water is redirected from agricultural uses to refuge.)
- Response:* First, the interim baseline is based on Reclamation’s spring 2004 OCAP (operations coordination and plan) modeling, which did not include Level 4 refuge demands. Secondly, if these demands were included, they would be offset by a reduction in demand for exchange contractors (in the export area), so there is no appreciable change in “total demand” in the system
- 2. Issue:* Do the American River flows include the minimum instream flows now being discussed as part of the Water Forum implementation?
- Response:* Because that agreement is still pending, the minimum flows only reflect b(2) requirements.
- 3. Issue:* Will the land use subdivisions being developed by the Natural Heritage Institute and Reclamation (to be used for refinement of the Sacramento basin hydrology) be used?
- Response:* We have noted this for the long-term base, but the interim baseline – which is currently in-use – does not reflect these potential subdivisions.
- 4. Issue:* What is the effect of representing a “Full Table A” demand for Metropolitan Water District of Southern California (MWD)?
- Response:* In some years, slightly more supply will be delivered to MWD. Rob Leaf’s recollection is that the long-term average delivery is increased by about 40 taf.
- 5. Issue:* Related to #4: Can there be an analysis that indicates the periods when more water was delivered because of the Full Table A demand when compared to previous demand patterns used for MWD? Also, is the Kern County Water Agency (KCWA) demand still variable?
- Response:* We do not intend to undertake such an analysis at this time. MWD has requested that we represent their 2020 future demand this way. Yes, the KCWA demand is still variable in the model.
- 6. Issue:* Are the Mokelumne River flow requirements – obtained from East Bay Municipal Utilities District (EBMUD) – based on their new modeling (Riverware)? If so, has DWR reviewed the model for acceptability?
- Response:* No, the Mokelumne River flows are the same as those in the 2003 Freeport Regional Water Project modeling. If new information is made available, the Common Assumptions Technical Coordination Team (TCT) should coordinate review of the model’s acceptability prior to using any new input data.
- 7. Issue:* Has any thought be given to retraining ANN (artificial neural network) relating to salinity standards? [Note: David Purkey believes that use of CALSIM II should NOT continue without retraining ANN for salinity management.]
- Response:* DWR has a team working on several aspects of the ANN, including retraining, but has a timeline of mid-2005 – too late for our use for the long-term baselines (which will be developed by early 2005)
- 8. Issue:* Does the interim baseline reflect OCAP’s discussion of moving the Sacramento River temperature target location further upstream?
- Response:* The interim baseline is derived from the spring 2004 OCAP modeling. It does not reflect the latest OCAP discussions. This change would be considered for the long-term baseline.

*9. Issue:* If there is a court decision requiring flows in the San Joaquin River, but the decision does not include actual values, what process would be used to derive appropriate values for the model(s)?

*Response:* This is a good potential future agenda item – depending on status of litigation. Most likely, the agencies would work with the various stakeholders to develop a proposed representation.

*10. Issue:* Is there a “soft-constraint” in CALSIM II to keep storage levels in San Luis Reservoir above 300 taf?

*Response:* The only constraint in CALSIM II is that storage cannot drop below 100 taf. When the 2002 CALSIM II benchmark was developed the model was "trained" to balance reservoir storage in an attempt to mimic real-time operations. Included in this training was an attempt to maintain San Luis Reservoir carryover storage at levels similar to those observed historically. Though using supply-forecasting methods similar to real-time operation, CALSIM does not have risk-management logic as sophisticated or as conservative as the brains of the real-time operators of the system. As a result, CALSIM II runs for both the 2002 benchmark and the Common Assumptions baselines show San Luis storage dropping lower than actual present operations. Thus, the specific output from CALSIM II regarding San Luis storage should not be used to predict San Luis Reservoir carryover conditions.

A footnote will be added to the input assumptions matrix to indicate this situation.

*11. Issue:* Related to #10: Will individual project scenario runs adjust the percentage of time San Luis end of September carryover storage is less than 300 taf as a result of the model operator’s actions to optimize their “with project scenario”?

*Response:* The CTC will be performing consistency checks to attempt to avoid any inappropriate changes to the baseline run.

*12. Issue:* [Raised by Cindy Kao in a separate e-mail sent after the July 20<sup>th</sup> meeting] It is not clear if the San Felipe Division deliveries modeled in CALSIM II include deliveries to Pajaro Valley Water Management Agency If so, what is the assumed demand for Pajaro and how is it incorporated into the model?

*Response:* Pajaro demands are not incorporated into the model at this time.

### **Interim Common Reporting Metrics**

Noel Williams provided an overview of the proposed interim common reporting metrics. These will be used to present results of the interim model runs in the Fall 2004 *Surface Storage Progress Report*. The following summarizes many of the questions and associated responses raised during this agenda item:

*1. Issue:* A metric for power needs to be added.

*Response:* Yes, we’ve heard that comment and would appreciate assistance in identifying such a metric. For the interim modeling, any information would have to derive from the CALSIM II runs, since no specific power modeling will be done.

*2. Issue:* The water supply reliability needs to be expanded beyond just long-term and dry year averages.

*Response:* This suite of metrics is intended to be an “executive summary”, so it will include a subset of the full set of results generated during modeling. The detailed results will also be provided as appendices to the *Surface Storage Progress Report* or as separate project-specific documents.

*3. Issue:* Looking at monthly EC will not provide an indication of how often a daily standard has been violated.

*Response:* Since the daily trace in DSM2 is based upon monthly CALSIM II values, we feel it is inappropriate to indicate any results associated with daily violations, since they are a result of the model constraints and may mislead readers.

*4. Issue:* We should consider using “median” instead of “average” for many of the values. Also what about reporting by year type?

*Response:* This can be discussed as we formulate sample tables and results and share these with the Group at subsequent meetings.

*5. Issue:* We need a metric indicating the percentage of years when end-of-September carryover storage in San Luis is below 300 taf.

*Response:* This will be considered.

*6. Issue:* How are ecosystem needs (as opposed to the surrogate regulatory requirements such as X2, Sacramento River Temp which are directly available from CALSIM II) represented in the interim performance metrics? Can we include reporting for river gauge stations on the tributaries?

*Response:* We need to engage the ecosystem experts to identify what metrics at what locations needs to be reported.

*7. Issue:* Why is the Environmental Water Account (EWA) listed as a metric if EWA operations are not being modeled in the interim effort?

*Response:* This is representative of the “EWA asset to be provided by new storage”. For instance, in the base condition, the value will be zero. Under a with-project scenario, a quantity may be provided as a result of the direct operations of the new project.

*8. Issue:* What will be shown for the cost metric?

*Response:* This will be the total estimated project cost. A Common Assumptions economic team is working on a common protocol for estimating cost, such that values indicated for the metric are comparable.

*9. Issue:* What is the “groundwater banking” element listed under water supply reliability? Where is it listed in the assumptions table?

*Response:* This is a demand that is in the base as well as with-project conditions. It is representative of storage space available in a groundwater storage facility south of the Delta such as Kern Water Bank. During interim modeling, we will only track water delivered to this demand – i.e. outflow from the groundwater bank will not be modeled. It will be added to the assumptions matrix.

*10. Issue:* [Raised by Cindy Kao in a separate e-mail sent after the July 20th meeting] Please add a reporting metric to indicate the number of times San Luis Reservoir falls below 300 taf of storage.

*Response:* As stated previously – please see response #10 under the review of interim modeling assumptions for more details -CALSIM II should not be used to predict San Luis storage conditions.

*11. Issue:* [Comments from Dennis Majors of MWD in a separate e-mail] Comments on the Common Assumptions draft reporting metrics (see *Attachment B*).

*Response:* These comments will be considered as we formulate the reporting metrics. A follow-up conversation with Mr. Majors will likely occur to clarify his comments.

### **Long-term baseline development**

Rob Leaf provided an overview of the intended process for developing the long-term Common Assumption baselines. These are anticipated to be available by January 2005 for use by the individual storage investigation teams for their Plan Formulation Studies. The Common Assumptions Team is interested in discussing the intended model improvements and refinements to the input assumptions with the Group. Kevin Wolf indicated that a group of environmental interests have secured a grant to pursue what they term as a “fully compliant” baseline. They would like to present their work to the Group in September.

### **Next Meeting**

The next meeting of the Ad-Hoc Technical Stakeholder Group will be held in mid- to late-September, depending on the timing of the environmental interests’ efforts to develop their “fully compliant” baseline.

# Attachment A

Ad-Hoc Stakeholder Technical Work Group & Agencies staff and consultants

| Name                | Attended July 20 Meeting | Organization                      | Email  |
|---------------------|--------------------------|-----------------------------------|--|
| <b>Stakeholders</b> |                          |                                   |  |
| Ann Hayden          | ✓                        | Environmental Defense             | <a href="mailto:ahayden@ed.org">ahayden@ed.org</a>   |
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Ad-Hoc Stakeholder Technical Work Group & Agencies staff and consultants

| Name   | Attended July 20 Meeting | Organization  | Email  |
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# Attachment B

## MWD Review of Common Assumptions Performance Measures for the Storage Program June 10, 2004

These are my comments on your Common Assumptions draft performance measure metrics. I understand you will use these metrics in interim CALSIM II baseline runs to develop a common comparison of alternatives for all the storage projects. I am also using this analysis in an effort I lead for CUWA, addressing performance measurement for the storage program.

The storage program should meet fisheries, water quality and water supply needs in a cost effective manner. Equally important, is the flexibility a storage project affords, providing opportunities for coordinated operations with other facilities. We have considered the following performance measure levels described in a CBDA briefing in early 2004:

- Level 1: Quantitative: number of projects and dollars spent
- Level 2: Simple program accomplishments (cost per acre foot yield, etc.)
- Level 3: Complex or system wide (system wide relationships, etc.)

Level 3 provides a basis for alternative selection or broad comparisons between different storage studies. Our analysis has considered the following categories under our CUWA evaluations, which are further summarized and compared below:

- Administrative Performance Measures
- Project Performance Measures
- Program Performance Measures

| CBDA Level | CBDA Description   | Storage Performance Measures  |
|------------|--|---|
| 1          | <b>Quantitative:</b> number of projects, progress achieved and dollars spent | <b>Administrative Performance Measures:</b> Provides information on how well the project is performing against expected budget and schedule, and conformity with planned cost-sharing arrangements.   |
| 2          | <b>Project Accomplishments:</b> for example, acre feet of yield, etc.        | <b>Project Performance Measures:</b> <i>Provides information for evaluation of benefits and costs at a project level. These measures can be used as input to a broader suite of measures to assess value or rank project alternatives and need to be consistent among the projects being compared. They provide information on potential trends due to the operation of projects.</i> |
| 3          | <b>System Wide Issues:</b> for example, system wide relationships, etc.      | <b>Program Performance Measures:</b> These measures assess broad program goals, such as improving water supply reliability, water quality and fisheries   |

| CBDA Level | CBDA Description | Storage Performance Measures   |
|------------|------------------|--|
|            |                  | enhancement, but also address the flexibility to provide coordinated storage opportunities within an operating system. The reservoir's location in the system is a determining factor in its effectiveness in coordinated operations. Such measures can facilitate project selection by measuring performance and ranking. |

The following table expands on your table of water supply reliability, water quality and fisheries enhancement metrics. It further assesses the flexibility of the five new storage facilities to perform coordinated operations within an overall storage system. For each storage study, values would be determined for the metrics within the categories shown. We would then determine whether these measured benefits could meet equivalent storage needs at existing reservoirs (a complimentary benefit), thus adding more flexibility to that reservoir's operations. Such flexibility is highly dependent of the new reservoir's location within the operating system.

| Storage Study:                  |                           |   |       |                       |
|---------------------------------|---------------------------|---|-------|-----------------------|
|                                 | Benefit                   | Metric  | Value | Complementary Benefit |
| <b>Water Supply Reliability</b> |                           |   |       |                       |
|                                 | Sacramento River & Tribs  |   |       |                       |
|                                 | CVP Ag                    | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | CVP M&I                   | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | Bay Area                  |   |       |                       |
|                                 | CVP Ag                    | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | CVP M&I                   | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | SWP M&I                   | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | In-Delta                  |   |       |                       |
|                                 |                           | Stage and Scouring  |       |                       |
|                                 | San Joaquin River & Tribs |   |       |                       |
|                                 | CVP Ag                    | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | CVP M&I                   | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | SWP Ag                    | Long Term Average & Driest Years Contract Delivery (TAF/year) |       |                       |
|                                 | South Coast               |   |       |                       |
|                                 | SWP M&I                   | Long Term Average & Driest Years Contract Delivery            |       |                       |

|                       |                           |   |  |  |
|-----------------------|---------------------------|---|--|--|
|                       |                           | (TAF/year)  |  |  |
| <b>Water Quality</b>  |                           |   |  |  |
|                       | Sacramento River & Tribs  |   |  |  |
|                       |                           |   |  |  |
|                       | Bay Area                  |   |  |  |
|                       | M&I Intake Locations      | Long Term Average & Driest Years EC (umhos/cm), Bromide (mg/L) & TOC (mg/L) (Flow Weighted) |  |  |
|                       | In-Delta                  |   |  |  |
|                       | All Compliance Locations  | Long Term Average & Driest Years EC (umhos/cm), Bromide (mg/L) & TOC (mg/L)                 |  |  |
|                       | Delta Export              |   |  |  |
|                       | Tracy                     | Long Term Average & Driest Years EC (umhos/cm), Bromide (mg/L) & TOC (mg/L)                 |  |  |
|                       | Banks                     | Long Term Average & Driest Years EC (umhos/cm), Bromide (mg/L) & TOC (mg/L)                 |  |  |
|                       | San Joaquin River & Tribs |   |  |  |
|                       | Vernalis                  | Monthly EC (umhos/cm)   |  |  |
|                       | South Coast               |   |  |  |
|                       | Edmonston                 | Long Term Average & Driest Years EC (umhos/cm), Bromide (mg/L) & TOC (mg/L)                 |  |  |
| <b>Ecosystem</b>      |                           |   |  |  |
|                       | Sacramento River          |   |  |  |
|                       | Temperature               | % months > criterion and/or May storage conditions for Long Term Average and Driest Years   |  |  |
|                       | Level 4 Refuge            | Long Term Average & Driest Years Delivery (TAF/year)  |  |  |
|                       | Tributary Flows           | % Long Term Average & Driest Years Flows (TAF/year)   |  |  |
|                       | San Joaquin River         |   |  |  |
|                       | Tributary Flows           | % Long Term Average & Driest Years Flows (TAF/year)   |  |  |
|                       | Delta                     |   |  |  |
|                       | X2 Location               | Feb thru June Long Term Average & Driest Years X2 Location (km from Golden Gate)            |  |  |
|                       | Reverse/Cross-Delta Flow  | Qwest   |  |  |
|                       | Delta Outflow             | March thru May Long Term Average and Driest Years Delta Outflow (TAF/year))                 |  |  |
|                       | EWA                       | Long Term Average, Driest Yrs, & Wet Yrs Quantity (TAF/yr) & Location (NOD or SOD)          |  |  |
| <b>Cost Estimates</b> |                           |   |  |  |

|              |   |                     |  |  |
|--------------|---|---------------------|--|--|
|              | Capital Cost  | (2004 \$)           |  |  |
|              | Annual O&M  | (2004 \$)           |  |  |
|              | Annualized Cost   | (2004 \$)           |  |  |
|              | Yield Cost  | (2004 \$/acre foot) |  |  |
| <b>Notes</b> |   |                     |  |  |
|              | All results are estimated using the Interim CALSIM II and DSM2 2020 baselines which are based on current public OCAP model runs   |                     |  |  |
|              | as modified by the Monterey Agreement EIR studies and do not necessarily reflect Future No-Action conditions that will be used in |                     |  |  |
|              | Feasibility Studies and EIS/EIRs for individual projects.   |                     |  |  |
|              | Long Term Average is the average monthly quantity between 1922 and 1994.  |                     |  |  |
|              | Driest Years is the average monthly quantity for the periods of 1928-1934, 1976-1977, and 1987-1992.                              |                     |  |  |