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Via email

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**Request to Department of Water Resources
to provide modeling information
previously requested and subpoenaed
for the WaterFix hearing**

Deirdre Des Jardins, principal at California Water Research (“California Water Research”) hereby requests that the Department of Water Resources provide previously requested and subpoenaed modeling information for the hearing, as described below.

Justification for the request

Information on CALSIM II model testing, calibration and validation is required under the October 30, 2015 Hearing Notice. Enclosure D of the October 30, 2015 Hearing Notice also states that:

6a. Exhibits based on technical studies or models shall be accompanied by sufficient information to clearly identify and explain the logic, assumptions, development, and operation of the studies or models. (p. 33)

[...]

6d. Exhibits that rely on unpublished technical documents will be excluded unless the unpublished technical documents are admitted as exhibits. (p. 34)

Information on CALSIM II model testing, calibration, and validation was requested by California Water Research before the hearing, and also subpoenaed by PCFFA/IFR. The California Department of Water Resources has repeatedly delayed, obfuscated, and refused to provide the information. Contrary to DWR’s assertion that the BDCP/WaterFix CALSIM model is a public model, the BDCP/WaterFix modeling appears to be a proprietary version of the model for which only raw modeling data and undocumented model code has been made publicly available.

On rebuttal, it has also become apparent that some of the requested information is highly relevant to the issues raised in Part 1 of the hearing, particularly to the issue of the CALSIM modeling of reservoir operations. The information is also likely to be highly relevant to issues raised in Part 2 of the hearing.

Specific Requests

The August 1, 2016, *California Department Of Water Resources' Response To Various Filings Of California Water Research* stated:

It is apparent from the documents following the March 10, 2016, April 2, 2016, and June 9, 2016 filings in this hearing that CWR has the overbroad information it seeks to prepare for cross examination. It is CWR's responsibility to prepare its case in chief and employ the appropriate expert to advise it in these proceedings. Nevertheless, DWR provided various explanations in an effort to assist the parties. These include providing publicly available information by specific citations and/or links to the reports/analysis (p.x, line x, emphasis added.)

The following discusses the alleged “overbroad information” which DWR has refused to produce. The following request was made on p.4 of the June 9, 2016 filing by California Water Research (exhibit indices added):

The 2003 CALSIM II Strategic Review (Exhibit DDJ-101) stated the following (p. 20):

“There has not been sufficiently systematic, transparent, and accessible approach to the development and use of hydrologic, water demand, capacity and operational data. The administration of data development is fragmented, disintegrated, and lacks a coherent technical or administrative framework.”

The response by DWR and USBR (Exhibit DDJ-102) stated in part (4.3.2. Data, p. 17),

The validity of data inputs impacts both model results and model credibility. The greatest concern is the validity of the hydrologic inputs and parameters. Concern is compounded by the current lack of complete documentation. Over the last two years DWR and Reclamation have attempted to document model inputs. Reclamation is currently documenting the current CalSim-II hydrology procedures. This effort needs to be extended and updated.

Please answer the following questions:

- a) For what hydrologic, water demand, capacity and operational data was this documentation completed?
- b) In each case, was this documented for the current version of the model?
- c) If not, was it documented for prior versions?
- d) In each case, can you make the most recent version of the documentation available to all parties to the hearing, with a summary and guide to the information?

This “transparent and accessible” documentation for the CALSIM II model inputs was promised 15 years ago, and never distributed. It is relevant to both Part 1 and Part 2 of the hearing. The Department of Water Resources refused to even respond to the questions about whether the documentation exists.

The information on the CALSIM model’s representation of hydrologic processes is relevant, because there were serious, known deficiencies with the model when it first came out. Musings on a Model (Exhibit DDJ-109) stated:

Some interviewees also want to see further improvement in CalSim II’s representation of hydrologic processes. They feel that it is weak enough to

undermine the entire model, as errors in this input propagate through each layer of the model. Many claim that CalSim II's hydrology uses data and methods that are decades out of date and rely on too coarse a geographic scale. (p. 10.)

Petitioners' witnesses stated on cross-examination in Part 1A of the hearing that major errors in the Sacramento Valley hydrology were corrected, (R.T. August 26, 2017, 277 20:25.) but no objective, verifiable information has been produced for the Hearing.

There were also known deficiencies with the validation of the operations simulation, which were described by Close et. al. in the report of the CALSIM II Strategic Review panel (Exhibit DDJ-104, p. 12-13.) Petitioners testified in Part 1A of the hearing that the promised re-validation of the CALSIM model operations simulation was never done, but that the model had been improved. (R.T. August 26, 2016, 277:12-278:2.) No objective, verifiable information on these improvements has been produced for the hearing.

The Department of Water Resources stated on August 1, 2016:

In the spirit of transparency this response will provide the details and references/links that have been provided to assist this party and others in better understanding the modeling processes, programs, and application to the Proposed Project, the California Water Fix.

California Water Research notes that the modeling information provided in DWR's links included the 2003 CALSIM II peer review report (Exhibit DDJ-101) which stated that DWR had never provided the information for a full technical review to the peer review panel.

The information we received and the shortness of our meetings with modeling staff precluded a thorough technical analysis of CALSIM II. We believe such a technical review should be carried out. Only then will users of CALSIM II have some assurance as to the appropriateness of its assumptions and to the quality (accuracy) of its results. By necessity our review is more strategic. It offers some suggestions for establishing a more complete technical peer review, for managing the CALSIM II applications and for ensuring greater quality control over the model and its input data, and for increasing the quality of the model, the precision of its results, and their documentation. (p. 3)

This response was thus misleading and obfuscatory.

Subpoena by PCFFA/IFR

The information on model inputs, assumptions, and operation was also requested in a subpoena by PCFFA/IFR, including information on operational parameters. The Department of Water Resources refused to provide it. The Department of Water Resources attached their response to the PCFFA/IFR subpoena to their August 1, 2016

filing, *California Department of Water Resources' Response of Various Filings of California Water Research*, noting that the requests were for information previously requested by California Water Research.

California Water Research did work with PCFFA/IFR on their subpoena. California Water Research asserts that, contrary to misrepresentations by DWR, the information requested by PCFFA/IFR is not publicly available and is highly relevant to the hearing.

California Water Research is there requesting that the specific information relevant to the hearing be produced before surrebuttal and Part 2. Specific requests and the need to provide the information are discussed below. California Water Research reserves the right to file further responses to DWR's August 1, 2016 filing.

California Water Research notes that PCFFA/IFR also has the right to respond, independently as a party, to DWR's failure to comply with PCFFA/IFR's discovery in the hearing.

Request Number 5: Relevant information on all hydrologic data inputs, water demand data inputs and parameters, and operational parameters, including the most recent documentation on hydrologic inputs and parameters for the CalSim II base model versions used for production of CEQA/NEPA and Biological Assessment documents, including but not limited to the following:

- a. all documentation, analyses, spreadsheets, notes, technical memoranda, and other information relating to the development and testing of hydrologic input for CalSim II without climate change, including reservoir inflows and tributary stream flows through 2003 without climate change (with any analyses or comparisons with historical data) and any input data developed for years since 2003 (with any analyses or comparisons with historical data)
- b. all documentation, analyses, notes, technical memoranda, and other information relating to delivery logic, allocation modules, and export demand modeling, as well as version history, testing and sensitivity analysis, and documentation of assumptions for Central Valley Project ("CVP") Water Supply Index ("WSI") Demand Index ("DI") curves, CVP delivery logic and Delivery-Carryover curve, State Water Project ("SWP") WSI-DI curve, and SWP delivery logic and Delivery-Carryover curve;
- c. version history, testing and sensitivity analyses, notes, technical memoranda, and other information relating to model version values for all operational parameters setting operations of the major reservoirs, including the Shasta, Trinity, Folsom, Oroville, and San Luis rule curves, and assumed Trinity minimum flows;
- d. spreadsheets and related information used by the CVP and SWP system operators when setting actual deliveries and operations; and

e. optimization function version history, testing and sensitivity analyses, and documentation of assumptions for the weight table on demand nodes and weights for storage target zones on reservoirs.

To the extent that operating parameters were changed in the CaiSim II operations simulation presented for the WaterFix hearing, please provide all of the above for that changed hearing version. Version history information included in version control systems need only be provided once.

The Department of Water Resources' response to this request stated

Response to Request Number 5: DWR incorporates the objections and responses to Request Number 3 above as though fully set forth here. (p. 10 at 14-15.)

DWRS' response to request #3 stated in part:

DWR objects to this request, because it is overbroad, seeks information duplicative of information already available through more convenient, less burdensome, and less expensive methods, and constitutes an undue burden and expense on DWR. (p. 8 at 14-18.)

1. California Water Research notes that the information requested by PCFFA/IFR in subpoena request #5(b-e) is relevant to cross-examination and surrebuttal of detailed testimony by Armin Munevar and John Leahigh in the WaterFix hearing on CALSIM modelling of reservoirs, exports, and carryover storage. It is also relevant to issues in Part 2 of the hearing.
2. Furthermore, the information in PCFFA/IFR subpoena request #5(b-e) has NOT been made publicly available, except for some scattered powerpoint presentations for the California Water and Environmental Modeling Forum.
3. California Water Research requests that the Department of Water Resources provide the information outlined in PCFFA/IFR subpoena request #5(b-e) for the hearing.

The following information was also requested by PCFFA/IFR in the subpoena and not provided. It is directly relevant to cross-examination and sur-rebuttal on testimony the climate change analysis, as well as issues in Part 2 of the hearing:

Request Number 3: BDCP and WaterFix CalSim II model run information relating to the specification of BDCP and WaterFix model runs, including all documentation, reports, analyses, presentations, notes, technical memoranda, and correspondence concerning model runs that were performed for each version, including:

- a. current and future levels of development;

- b. different assumptions of shifts in hydrology due to climate change;
- c. different assumptions of sea level rise;
- d. different regulatory assumptions;
- e. different outflow assumptions, including West Delta, Spring, and Fall X2; and
- f. different project operations assumptions, including different assumptions of bypass flows at Hood, and flows at Vernalis.

This was DWR's response:

Response to Request Number 3: DWR objects to this request, because it is overbroad, seeks information duplicative of information already available through more convenient, less burdensome, and less expensive methods, and constitutes an undue burden and expense on DWR. Without waiving these objections, DWR provides the following responses.

The information for BDCP and Water Fix is provided in the various draft and final documents. The modeling data provided on a hard drive on July 20, 2016 includes all of the model data input and output for all the alternatives in the EIR/EIS, RDEIR/SDEIS, and the BA. Model data input and output for the CPOD Hearing were provided to PCFFA/IFR on May 24, 2016 and are available on the Board's website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/californiawaterfix/water_right_petition.shtml (see May 27, 2016 entry). (p. 8 at 14-20.)

California Water Research notes that information related to the SPECIFICATION of model runs is different than the model runs themselves. The SPECIFICATION of model runs relates to specifying what need to be performed, and evaluating the results.

1. California Water Research notes that the information requested by PCFFA/IFR in subpoena request #3(b) is needed for cross-examination and surrebuttal of detailed testimony by Petitioner's witnesses. It is also relevant to issues in Part 2 of the hearing.
2. Furthermore, the information in PCFFA/IFR subpoena request #3(b) has NOT been made publicly available.
3. California Water Research requests that the Department of Water Resources provide the information outlined in PCFFA/IFR subpoena request #3(b) for the hearing.

Request Number 1: All reports, analyses, presentations, correspondence, spreadsheets, notes, technical memoranda, and other information relating to specification and review of the development of petitioners' CalSim II modeling for the Bay Delta Conservation Plan ("BDCP") and WaterFix, including but not limited to the following modeling phases:

- a. Alternatives Screening, including the first and second screenings described in Appendices 3A and 31 of the Draft Environmental Impact Report ("DEIR") / Environmental Impact Statement ("DEIS"), particularly model runs relating to the Board's 2010 Flow Criteria and the Enhanced Spring Delta Outflow Approach initially recommended by the Board;
- b. Preliminary Administrative DEIR/DEIS;
- c. CS5 scenarios;
- d. DEIR/DEIS;
- e. Revised DEIR ("RDEIR") / Supplemental DEIS ("SDEIS");
- f. Biological Assessment; and
- g. WaterFix hearing.

This was DWR's response:

Response to Request Number 1: DWR objects to this request, because it is overbroad, seeks information duplicative of information already available through more convenient, less burdensome, and less expensive methods, and constitutes an undue burden and expense on DWR. Without waiving these objections, DWR provides the following responses. DWR produced responsive, non-privileged, non-duplicative documents in electronic format on July 20, 2016. (p. 4 at 7-13.)

1. California Water Research notes that DWR provided no model results for climate change scenarios Q1-Q4 for the BDCP Draft EIR/EIS and WaterFix Revised Draft EIR/EIS, either publicly, or in any response to the subpoena by PCFFA/IFR.

California Water Research notes that the information requested by PCFFA/IFR in subpoena request #1(d) is needed for cross-examination and surrebuttal of detailed rebuttal testimony by Armin Munevar. It is also relevant to issues in Part 2 of the hearing.

2. California Water Research notes that DWR provided no model results for Alternatives Screenings specified in Appendices 3A and 3I of SWRCB-4 provided, except for Alternative 7. As noted by California Water Research in a letter dated May 3, 2017, under *English v. City of Long Beach (1950) 35 Cal.2d 157*, the information presented to the State Water Resources Control Board with respect to these Alternatives Screenings and the feasibility of meeting the 2010 Delta flow criteria cannot be considered unless it is introduced at a hearing of which the parties had notice and were present.

California Water Research notes that the information requested by PCFFA/IFR in subpoena request #1(a) is also relevant to Part 2 of the hearing and should be provided.

California Water Research also notes that there is a fundamental due process issue that DWR has provided the modeling results ONLY in a raw data format that is NOT human-readable, including modeling presented as evidence for the hearing Erik Reyes testified in Part 1A of the hearing that he uses spreadsheets to review the modeling data. (R.T. August 26, 2016 111:24-113:4.)

California Water Research reminds DWR and the Hearing Officer that *Int. Com. Comm. v. Louis. & Nash. R.R.*, (1913) 227 U.S. 88, 93 requires that protestants be able to “fully examine and rebut” evidence. This was argued by California Water Research on p. 15 of California Water Research’s September 21, 2016 motion:

All parties must be fully apprised of the evidence submitted or to be considered, and must be given opportunity to cross-examine witnesses, to inspect documents and to offer evidence in explanation or rebuttal. In no other way can a party maintain its rights or make its defense. In no other way can it test the sufficiency of the facts to support the finding; for otherwise, even though it appeared that the order was without evidence, the manifest deficiency could always be explained *on the theory that the Commission had before it extraneous, unknown but presumptively sufficient information to support the finding.* (emphasis added.)

Modeling information needs to be provided for both Part 1 and Part 2 of the hearing in a format which protestants can “fully examine.” This has not been done. California Water Research requests that DWR provide the information requested in PCFFA/IFR subpoena request #1(f) and (g) for the hearing, particularly including human-readable spreadsheets used by DWR in reviewing the modeling.

The PCFFA/IFR subpoena also included this request:

Request Number 4: BDCP and WaterFix model version and model run comparison information, including, for each version and any model version it is derived from:

- a. all documentation, reports, notes, correspondence, and technical memoranda relating to the specification of sensitivity analyses or output comparisons between model versions and model runs, including quality assurance/quality control comparisons; and
- b. all spreadsheets, analyses, or other documents with results of sensitivity analyses and output comparisons performed between different model versions or model runs.

This was DWR’s response:

Response to Request Number 4: DWR incorporates the objections and responses to Request Number 3 above as though fully set forth here. (p. 9 at 8-9.)

1. California Water Research notes that Armin Munevar's rebuttal testimony (Exhibit DWR-86 errata) refers to comparing the BDCP project with the No Action Alternative, for different climate change scenarios (p. 34 at 12.) The information has not been made publicly available and has not been provided for the hearing. In addition, Petitioners' witnesses testified many times in Part 1A of the hearing that they "looked at" model results but have not made the information available.

California Water Research requests that DWR provide the information in PCFFA/IFR request #4 for the hearing.

With respect to the assertion that DWR produced non-privileged documents in response to the PCFFA/IFR subpoena California Water Research also notes that the modeling for the Draft EIR/EIS and Revised Draft EIR/EIS was produced under contract by the BDCP parties, who include the State Water Contractors and Federal Central Valley Project Contractors. DWR has refused to clarify the distribution policy for the modeling information produced under contract, although it was also requested:

Request Number 13: Distribution policy documents for the above modeling, including documents and correspondence relating to the distribution of CalSim II model versions, except information currently published on open access websites with working hyperlinks, including all documents relating to the following:

- a. the Transparency Policy, as referenced in DWR's initial response to California Water Research's request for modeling information;
- b. external access (i.e., access by any person who is not employed by DWR, Reclamation, or the California Natural Resources Agency) to or release of model source code;
- c. external access to or release of software or spreadsheets for viewing model data;
- d. external access to or release of model documentation;
- e. external access to or release of model version control information;
- f. external access to or release of model quality assurance and quality control information; and
- g. external access to or release of model testing and calibration information.

This was DWR's response:

Response to Request Number 13: DWR objects to this request, because it is overbroad, seeks information duplicative of information already available through more convenient, less burdensome, and less expensive methods, and constitutes an undue burden and expense on DWR. Without waiving these objections, DWR provides the following responses.

CalSim does not have an official User Group. (p. 20 at 23-28.)

California Water Research notes that the Department of Water Resources appears to have removed the spreadsheet introduced by PCFFA/IFR in cross-examination in Part 1A of the hearing (Exhibit PCFFA 21) from its msb.water.ca.gov website. This removal creates very real questions about access by stakeholders and the general public to software or spreadsheets for viewing CalSim II model data.

California Water Research requests that the Department of Water Resources respond fully and completely to PCFFA/IFR request #13.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Des Jardins', with a small mark above the final 's'.

Deirdre Des Jardins

California Water Research

Cc: WaterFix hearing parties

**STATEMENT OF SERVICE
CALIFORNIA WATERFIX PETITION HEARING**

Department of Water Resources and U.S. Bureau of Reclamation (Petitioners)

I hereby certify that I have this day submitted to the State Water Resources Control Board and caused a true and correct copy of the following document(s):

**Request to Department of Water Resources
to provide modeling information
previously requested and subpoenaed
for the WaterFix hearing**

to be served by Electronic Mail (email) upon the parties listed in the Current Service List for the California Water Fix Petition Hearing, dated March 30, 2017, posted by the State Water Resources Control Board at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/docs/111516revsvrlist.pdf

Note: In the event that any emails to any parties on the Current Service List are undeliverable, you must attempt to effectuate service using another method of service, if necessary, and submit another statement of service that describes any changes to the date and method of service for those parties.

I certify that the foregoing is true and correct and that this document was executed on May 8, 2017.



Deirdre Des Jardins
California Water Research

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