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11.203.02

June 29, 2016

CWFhearing@waterboards.ca.gov (all via email)

Hearing Chair Tam Doduc
Hearing Officer Felicia Marcus
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Re: Subpoena Duces Tecum Request for Documentary Evidence of CalSim II Modeling Information

Dear Hearing Chair Doduc and Hearing Officer Marcus,

The Pacific Coast Federation of Fishermen's Associations ("PCFFA") and Institute for Fisheries Resources ("IFR") (collectively, "protestants") hereby request the issuance of subpoenas to the California Department of Water Resources ("DWR") and the United States Bureau of Reclamation ("Reclamation," collectively, "petitioners") for the following records at issue in the State Water Resources Control Board's ("Board's") WaterFix Hearing, pursuant to title 23 of the California Code of Regulations ("CCR") and Chapter 4 of the California Administrative Procedure Act, California Government Code ("Gov. Code") sections 11400 *et seq.* ("APA"). PCFFA and IFR, as well as other parties to the WaterFix proceedings, have requested modeling information relevant to these proceedings from DWR and Reclamation that has not been produced. Therefore, in advance of the commencement of the hearing, PCFFA and IFR request that this information be subpoenaed from petitioners.

The 1995 California Administrative Procedure Act covers evidentiary hearings conducted by state agencies. Under Government Code section 11445.10, the informal hearing procedure used by the Water Board is an "adjudicative proceeding . . . intended to satisfy due process and public policy requirements in a manner that is simpler and more expeditious than hearing procedures otherwise required by statute, for use in appropriate circumstances." Here, the agency has authorized the use of an informal hearing. 23 CCR § 648.7. Adjudicative proceedings are governed by Government Code section 11400 *et seq.* and 23 CCR sections 648-648.8.

As brought to petitioners' and the Board's attention in PCFFA and IFR's July 7, 2016 letter, petitioners have never provided the following information that California Water Research requested by letters to this Board dated February 4, March 10 and April 2, 2016 regarding the CalSim II model on which petitioners base their Change Petition: (1) a version history, including changes made between versions; (2) information about the availability of model runs using different scenarios; (3) information

about the availability of quality assurance and quality control information; (4) a list of sensitivity analyses that were run during the development of the models; and (5) information about the availability of model runs for the CS5 scenario, levee failure scenario, and isolated conveyance operations. California Water Research's June 20, 2016 letter to the Board also included citations to the recommendations of the Board's own scientific panel explaining why adequate model documentation, testing, and calibration information is necessary to any assessment of the modeling results that petitioners used to support their petition.

Petitioners have not produced these essential documents despite these reasonable requests from California Water Research, PCFFA, and IFR. Therefore, PCFFA and IFR, as authorized by Government Code section 11450.05(b), hereby request that the Board issue a subpoena for the production of these documents. Under Government Code section 11450.10(a), the Board may issue subpoenas or subpoenas duces tecum "for production of documents at any reasonable time and place or at a hearing." Under Government Code section 11450.20(a), the Board shall issue such subpoenas "at the request of a party, or by the attorney of record for a party, in accordance with sections 1985 to 1985.4, inclusive, of the Code of Civil Procedure."

PCFFA and IFR request the following documents:

CalSim II Code Development Information

1. All reports, analyses, presentations, correspondence, spreadsheets, 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. Administrative Draft Environmental Impact Report ("DEIR") / Environmental Impact Statement ("DEIS");
 - b. CS5 scenario;
 - c. DEIR/DEIS;
 - d. Revised DEIR ("RDEIR") / Supplemental DEIS ("SDEIS");
 - e. Biological Assessment; and
 - f. WaterFix hearing;

Necessity: CH2M Hill and other contractors developed much of the BDCP and WaterFix modeling under the supervision of petitioners and the BDCP / Delta Habitat Conservation and Conveyance Program ("DHCCP") planning parties. Simulation development and review information was not generally distributed and has not been made available to protestants. This

information is required in order to independently assess the suitability of the operations simulations for their designated purpose.

2. CalSim II model version history, in the format of a complete copy of the root directories of all version control repositories involved, including the current repositories and any other repositories that were used in the past but have been discontinued. For each repository, please provide an unabridged exact binary of the entire recursive directory structure existing on the server, including all files, links, and directories in and below the repository root, such that an installation of the version control utility (e.g. Perforce, Git) would be able to access it as an intact repository in an equivalent manner as it has been used by petitioners and their contractor, CH2M Hill. Names and versions of the version control utilities should be provided, as well as any administrative passwords required to access the repository files. These copies may be provided using the standard archiving tools tar and gzip found on Linux and other operating systems. The suggested format is one repository per tar (or .taz) file. They should be delivered on an external hard drive provided by the protestants. To the extent the repositories do not have the following information, it is also requested:
 - a. modeling code, data, and metadata for the following versions that had external review: the 2003 Historical Validation study version, the 2006 San Joaquin River review version, and the 2008 Long-Term Operational Criteria and Plan (“OCAP”) Biological Assessment version;
 - b. modeling code, data, and metadata for all BDCP and WaterFix versions; and
 - c. full version history and revision information for the BDCP and WaterFix model versions, both released and unreleased, Delivery Reliability Report (“DRR”) versions, and Review versions, including all version notes, all revision notes, and all change logs with associated comments, all whether linked or separate.

Necessity: Version history and version control information relating the CalSim II code, inputs, and changes to embedded parameters between model versions is mostly unavailable to protestants. Without this information, and without any certainty about when each component of the current model was last documented, tested, or calibrated, and what changes have been made since that time, it is impossible to independently assess modeling accuracy and reliability for its designated purpose.

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; and
- f. different project operations assumptions, including different assumptions of bypass flows past intakes.

To the extent copies of the model runs are not already provided in the copy of the root of the version control repositories, please also provide such copies.

Necessity: The model results presented for the WaterFix hearing include a number of future conditions and operational assumptions. It is prohibitively difficult to assess the effects of these changes without more model runs comparing those conditions and assumptions. Some of these runs may only be available for earlier versions.

- 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.

Necessity: No information comparing outputs for the multiple BDCP and WaterFix models and model runs has been provided. To the extent that spreadsheets comparing these outputs exist, they need to be provided for informed technical analysis.

- 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);¹
- 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; and
 - d. 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 CalSim II operations simulation presented for the WaterFix hearing, please provide all of the above for that changed hearing version.

Necessity: According to the CalSim II Strategic Review conducted in 2003, “[t]here has not been a sufficiently systematic, transparent, and accessible approach to the development and use of hydrologic, water demand, capacity, and operational data for CALSIM II. . . . The administration of data development is fragmented, disintegrated, and lacks a coherent technical or administrative framework.” A Strategic Review of CALSIM II and its Use for Water Planning, Management, and Operations in Central California, Attachment 1, p. 20 (Dec. 4, 2003).

Petitioners agreed in their response to the Review that:

[t]he 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.

Peer Review Response: A Report by DWR/Reclamation in Reply to the Peer Review of the CalSim-II Model Sponsored by the CALFED Science Program in December 2003, Attachment 2, p. 12 (§ 4.3.2 Data). Thus, petitioners have themselves acknowledged the absolute necessity for access to the data herein requested and represented twelve years ago that they believed that the effort to collect such data should be extended and updated. While such extension and update

¹ The same information for the climate change scenarios petitioners apparently considered is requested in item 6 below.

may well have occurred, documentation of such is either currently unavailable or very out of date.

6. All reports, analyses, spreadsheets, presentations, technical memoranda, notes, and other information relating to the detailed development of the hydrologic input to CalSim II from the Q1-Q5 climate change scenarios, including documentation of the assumptions of, and testing and sensitivity analyses for, the downscaling algorithm and Variable Infiltration Capacity (“VIC”) model used to develop reservoir inflows.

Necessity: Only very general information is currently available about the assumptions used in the downscaling method and VIC model used to develop hydrologic inputs to CalSim II from the Q1-Q5 climate change scenarios. Any independent evaluation of the climate modeling used by petitioners must have this information.

7. Other CalSim II model documentation. A complete copy of all documentation databases involved in the CalSim II model must be provided, such that an installation of the database utility would be able to access the database in an equivalent manner as it is being used to conduct the modeling upon which petitioners rely. Names and versions of the database utilities should be provided, as well as any administrative passwords required to access the database files. The suggested format is as provided in item 2, above. To the extent these databases do not contain all documents and information relating to the CalSim II version used as a basis for the information developed for the WaterFix hearing, or for the most recent version from which it was derived, such documents and information are also requested. This includes, but is not limited to, the following components:
 - a. basic documentation such as variable tables, current node maps, and any mass balance testing and error corrections;
 - b. documentation and notes for the simulation protocol and any scripts associated with the simulation protocol;
 - c. calibration, testing, field data, notes, and documentation of the assumptions used for Sacramento Valley Depletion Study Areas (“DSAs”) for diversions (including assumed demands for each DSA by settlement contractors, agricultural users (“AG”), and municipal/industrial users (“M&I”) and the project/non-project split for each demand), return flow calculations (including basin inefficiencies, non-recoverable losses, and surface runoff), and groundwater (including assumed demand, Central Valley Groundwater-Surface Water Model calibration information, and testing information);
 - d. refuge diversions (level 2 and level 4) and assumed return flows;
 - e. version history, documentation of assumptions, notes, field data, and calibration information for Freeport, including the demands of the East Bay Municipal Utility District, the Contra Costa Water District, and Sacramento County; and

- f. version history, calibration and testing information, field data, and documentation of assumptions for interior Delta flow splits, including the Sacramento River to Sutter and Steamboat Sloughs, and the Delta Cross Channel and Georgiana Slough, the San Joaquin River to Old and Middle River, and flow through Three Mile Slough, as well as Delta Island consumptive use;
 - g. version history, calibration and testing, field data, technical review, and documentation of assumptions for the most recent DSM2 model version used in calibration of the Delta salinity artificial neural network (including calibration at Jersey Point, Rock Slough, Emmaton, and Collinville); and
 - h. version history, calibration and testing information, field data, and documentation of assumptions for the Delta salinity artificial neural network and the X2 artificial neural network (including field data).
8. Fish life cycle model development information that includes:
- a. all information relating to development of petitioners' fish life cycle models for the BDCP and WaterFix processes, including all data, spreadsheets, analyses, notes, technical comments and other information relating to specification and review of the models, including the modeling phases specified in item 1;
 - b. fish life cycle model version histories, in the same format as that specified in item 2;
 - c. fish life cycle model run information, in particular all documents relating to the specification of BDCP and WaterFix fish life cycle model runs, including documents and correspondence relating to model runs that were performed for each version, as well as copies of all model runs that are not included in item 9;
 - d. fish life cycle model version and model run comparison information, including all sensitivity analyses and output comparisons between versions as specified in item 4; and
 - e. all available documentation, reports, and analyses of fish life cycle models, including documentation of all model assumptions, scientific research, expert opinion, testing, and field data used in the development of the models.

Necessity: This information is required in order to independently assess the reliability of the fish life cycle models developed by petitioners to show the petition's impact on fish. While some general information is available on the modeling methods petitioners used, no details are available as to model testing or validation.

Managerial, Policy, and Information Technology Information

9. Documents and other information regarding petitioners' management of CalSim II code

development and maintenance, including current information on DWR and Reclamation processes for the development and maintenance of CalSim II model versions and associated documentation, version control, quality assurance / quality control, and testing and calibration information (both within the agencies and with contractors). Please produce all documents which address the following:

- a. how source code is maintained, including the version control system;
- b. what software and/or spreadsheets for viewing the model data are maintained, and how they are maintained;
- c. what documentation of notes is maintained, both linked to the code and separately, and how it is maintained;
- d. what information on model testing and calibration is maintained, both linked to the code and separately, and how it is maintained;
- e. what quality assurance and quality control information is maintained, and how it is maintained; and
- f. what information on known model errors and “bugs” is maintained, and how it is maintained.

Necessity: By letters dated February 4, March 10, and April 12, 2016, California Water Research requested information about the following petitioner management practices: version history, model runs, quality assurance / quality control spreadsheets, and sensitivity analyses.² Petitioners did not respond fully to these requests, in spite of direction by the Board in its March 4, 2016 ruling to do so. Petitioners claimed in their June 3, 2016 letter that DWR had provided “all data reasonably in its possession responsive to the requests.” However, petitioners stated in their 2004 Peer Review Response (Attachment 2) that the agencies were maintaining a version control system for CalSim II, and that they were implementing a documentation database and standard quality assurance / quality control spreadsheets.³ Petitioners must give some explanation for these contradictory statements. Further, if petitioners cannot provide the information herein requested, petitioners should document why this information was not previously provided, why this information cannot now be provided, and what person or entity is in possession of this information and could provide it to protestants.

² This was also explained in PCFFA’s and IFR’s June 7, 2016 response to DWR and Reclamation’s Opposition to Protestants’ Request for Additional Time to File Evidentiary Objections.

³ See California Water Research, Request for Extension and Missing Modeling Information (June 9, 2016).

10. All documents that address procurement of the modeling for the BDCP and WaterFix planning and regulatory processes, including:

- a. all Memorandums of Understanding and other agreements with BDCP parties that govern the procurement of BDCP and WaterFix CEQA and NEPA documents, Biological Assessment documents, and WaterFix Hearing documents, and the development and review of any computer modeling for these processes;
- b. all contracts with consulting firms – including, but not limited to CH2M Hill, ICF International, and RBI Consulting – for preparation of hydrologic and hydrodynamic modeling and fish life cycle models for these CEQA, NEPA, Biological Assessment, and WaterFix processes;
- c. a list of all documents, data, and computer models provided to consulting firms for use in developing or refining the hydrologic and fish life cycle models for these CEQA, NEPA, and Biological Assessment documents, including field data, analyses of field data, computer models, and any testing or calibration reports, and copies of such documents, data, and models, to the extent they are not included in items 1-9;
- d. all related Task Orders and Notices to Proceed.

Necessity: Petitioners have provided incomplete responses to all previous requests for information on the development of computer modeling associated with the petition. This information may be in the possession of consultants under contract to BDCP parties. Any participation by other hearing parties in the development of the modeling used by petitioners, and any exercise of contractual rights regarding such modeling, must be made transparent to the Board and to protestants in order to obtain an objective evaluation of the modeling.

11. Documents or other information regarding external peer reviews, including all documents and correspondence relating to external peer reviews of the CalSim II and DSM2 model versions. Please include all documents which address the following:

- a. all lists or spreadsheets of external peer reviews for validation;
- b. all discussions of the need for external peer review or validation;
- c. all discussions and specification of information released for external peer reviews;
- d. all reports from external peer reviews; and
- e. all information relating to responses to external peer review, including complete specification of model changes and corrections.

Necessity: External peer reviews are recommended for complex models such as the CalSim II. According to the 2003 Strategic Review, “[n]ew models proposed for use in California should be peer reviewed.” Attachment 1, p. 12. Such review should address

the theory underlying the model, the model’s software, the documentation of the model as well as of its software, the model’s functions and capabilities including those pertaining to model data input and output, the input data themselves, model calibration and verification, capabilities for sensitivity and uncertainty analyses, user control of all model operations including pre and post analyses (GUIs), spatial and temporal resolutions, and its limiting assumptions.

Id. Protestants should at least have the information available to a peer review if they are to assess the adequacy of the evidence submitted by petitioners. This information is necessary to independently assess the reliability of the modeling petitioners have submitted to support their documentation of harms to other users of water.

12. Documents or other information regarding other internal and external technical reviews, including all documents and correspondence relating to internal or external technical review of the CalSim II model and its components. This includes the following:
 - a. any lists or spreadsheets of technical reviews that were performed;
 - b. the 2007 Common Model Assumptions Package Review;
 - c. DWR and Reclamation’s technical review of the modeling for the BDCP and WaterFix;
 - d. information produced for each technical review;
 - e. any reports, analyses, spreadsheets, presentations, correspondence, and technical memoranda from each technical review; and
 - f. any response to each technical review, including detailed specifications of model changes and corrections.

Necessity: According to the 2003 CALSIM II Strategic Review, a thorough technical analysis of CalSim II “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.” Attachment 1, p. 3. Petitioners have not yet made a comprehensive list of technical reviews performed for CalSim II available, and some of these reviews may have been internal reviews. This information is necessary to independently assess the reliability of the modeling petitioners have submitted to support their documentation of harms to other users of water.

13. Distribution policy and implementation documents, including documents and correspondence relating to the distribution of CalSim II model versions, except information currently published on open access websites, including all documents explaining or critiquing:

- a. the Transparency Policy, as referenced in DWR’s initial response to California Water Research’s request for modeling information;
- b. external access 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.

Necessity: According to the 2003 CalSim II Strategic Review, the CalSim II model should have been “[s]ubject to a systematic model and data testing regime and continuous quality improvement program.” Attachment 1, p. 21 (emphasis in original). DWR and Reclamation policies on stakeholder access to technical information about modeling appear to be poorly implemented and to contain conflicting policies, raising the potential for unequal access to such information, in contravention of the peer review’s recommendation that such information be shared among stakeholders.

PCFFA and IFR hereby request that these documents as specified in items 1-13 be produced – whether they are located on computers belonging to DWR or Reclamation, or on database servers as part of a database maintenance contract with DWR or Reclamation⁴ – either via U.S. Mail via a hard drive or zip drive which will be sent to DWR and/or Reclamation at the request of each agency, or in such form that PCFFA and IFR can easily download such documents as in the case of linked open access websites. However these documents are produced, PCFFA and IFR request that they be produced no later than Friday, July 8, 2016. PCFFA and IFR further request that any expense for the production of such documents be capped at \$100 without further express authorization from the undersigned.

DWR and Reclamation need not produce documents already publicly available and accessible to protestants, provided such availability and accessibility is adequately demonstrated. This includes documents already available to protestants at the following websites as of June 24, 2016:

1. <http://baydeltaoffice.water.ca.gov/modeling/hydrology>
2. <http://baydeltaoffice.water.ca.gov/modeling/deltamodeling/>
3. <http://baydeltaconservationplan.com/>

⁴ Information located on database servers or computers used directly by DWR or Reclamation or on database servers or computers operated by contractors to DWR and Reclamation all constitute information reasonably under the control of DWR and Reclamation.

Public Records Act Coordinator
CWFhearing@waterboards.ca.gov
June 29, 2016
Page 12

4. <https://www.californiawaterfix.com/>
5. http://www.usbr.gov/mp/cvo/ocapBA_051608.html

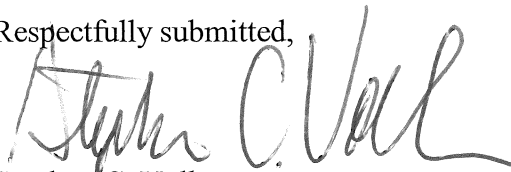
This also includes documents already released to protestants as exhibits by petitioners, or otherwise submitted to the WaterFix hearing either by Board staff or one of the parties.

PCFFA and IFR believe that the disclosure of these documents is not privileged or subject to any existing limitations or exemptions under the Evidence Code. *Cf. Sehlmeier v. Department of General Services* (1993) 17 Cal.App.4th 1072, 1079-80 (balancing test for confidential third party records which are “in fact privileged under express provisions of the Evidence Code”). If petitioners believe a portion of the information in the requested documents is exempt from disclosure, PCFFA and IFR hereby request that any such information be clearly redacted and an explanation for such redaction be provided. PCFFA and IFR also request that petitioners provide prompt notification of the reasons that any documents or portions thereof are withheld. If documents responsive to this request were erased or deleted in 2015 or 2016, please provide a complete description of any such files and the reasons why such files were erased or deleted and the procedures followed, and the availability of backups for such files.

Petitioners’ failure to respond to this request for production of documents in a timely manner will be interpreted as a determination to withhold the requested records without adequate legal justification.

Thank you for your prompt attention to this matter.

Respectfully submitted,



Stephan C. Volker
Attorney for the Pacific Coast Federation of Fishermen’s
Associations and Institute for Fisheries Resources

SCV:taf

STATEMENT OF SERVICE

CALIFORNIA WATERFIX PETITION HEARING
Department of Water Resources and U.S. Bureau of Reclamation (Petitioners)

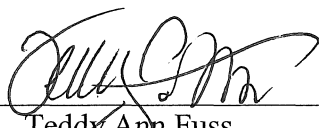
I hereby certify that I have this day submitted to the State Water Resources Control Board and caused a true and correct copy of the following document(s):

Pacific Coast Federation of Fishermen's Associations' and Institute for Fisheries Resources' Subpoena Duces Tecum Request for Documentary Evidence of CalSim II Modeling Information

to be served by Electronic Mail (email) upon the parties listed in Table 1 of the Current Service List for the California WaterFix Petition Hearing, dated June 9, 2016, posted by the State Water Resources Control Board at

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/service_list.shtml

I certify that the foregoing is true and correct and that this document was executed on June 29, 2016.



Name: Teddy Ann Fuss
Title: Assistant to Stephan C. Volker, Attorney
Party/Affiliation: Pacific Coast Federation of Fishermen's
Associations and Institute for Fisheries
Resources
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