From: rdenton06@comcast.net [mailto:rdenton06@comcast.net]
Sent: Wednesday, September 23, 2015 8:25 AM
To: Grober, Les@Waterboards; Riddle, Diane@Waterboards; Satkowski, Rich@Waterboards
Subject: Detailed graphs of WaterFix "modeling" data show real problems

Les, Diane and Rich,
DWR has done some additional modeling of the California WaterFix preferred alternative (4A) which they describe as only Sensitivity Analyses. DWR provided these data to me, as a consultant to Contra Costa County and Solano County, this month.

DWR included this disclaimer with the data transmittal:
Sensitivity analyses are not full model runs! *Minor changes have been made to the full model runs performed for the BDCP Public Draft to assess the effects of the specific change. CALSIM II sensitivity model runs were not re-balanced to address any new or modified effects (as would be done for a full model run) that may be a result of the minor changes. The sensitivity analyses are only valid to assess the impacts of the minor changes. CALSIM II and DSM2 results from the sensitivity runs should only be used to answer the specific questions for which the runs were performed.*

It is not acceptable for the regulatory agencies, and the public, to have to review and comment on this project without actual detailed modeling of the project operations and environmental impacts.

DWR and Reclamation are attempting to have it both ways – they have done sensitivity runs to show how much water they can export as long-term averages and in an attempt to demonstrate all the significant adverse water quality impacts in the BDCP Draft EIR/EIS no longer occur. Their sensitivity analyses for the effect of relocating the Emmaton standard were done based on their flawed BDCP modeling at Late Long Term, even though the Cal. WaterFix environmental analysis is at Early Long Term. However, they are also saying to those who actually want to see the modeling data that these sensitivity runs do not represent how they will really operate because they have not been balanced, etc.

Attached are detailed data plots for DWR's CALSIM II Sensitivity Run for Cal. WaterFix Alternative 4A, Scenario H3, at Early Long Term. These data were provided to me by DWR. The data are monthly data for the full CALSIM modeling period October 1921 through September 2003.

The graphs are very similar to the ones presented in Contra Costa County's extensive comments on the BDCP Draft EIR/EIS. Not surprising because DWR and Reclamation do not think that the $15 billion plus cost of the project or the potentially enormous adverse impacts on the Delta ecosystem are worth correcting the models and redoing the modeling for the new WaterFix scenarios.

Army Corps Limits for Clifton Court Inflow Exceeded

The model runs still assume the Army Corps limits on Clifton Court inflow will not apply to WaterFix (even though this is not disclosed in their application to the Army Corps). The Army Corps staff were unaware that the modeling runs include these exceedance of the 6,680 cfs inflow limit. The Draft BDCP EIR/EIS Chapter 3 (pages 3-32 and Table 3-5 on 3-36) hinted that the Army Corps limits were assumed to be eliminated, but the

tracked change versions of Chapter 3 in the WaterFix RDEIR/SDEIS contain no mention of this and no tracked change deletions.

OMR Conditions Actually Get Worse and Significant Reverses Remain

The proposed project may improve reverse flow (OMR) conditions in key months but OMR gets worse in July and August in particular. There are still important resident fish in the Delta in those months and the WaterFix project's failure to reduce reverse flows in all months will redirect impacts to those "unprotected" months and precipitate a decline on more Delta species.

The supposed benefit of the WaterFix project is to minimize reverse flows in the south Delta but OMR is still worse than -2,000 cfs (representing minimal reverse flow conditions) much of the time.

Note: The WaterFix project redirects OMR impacts to subsequent months that are not protected. This is what occurred as a result of the well-meaning 1994 Bay-Delta Accord and the SWRCB's adoption of the May 1995 Water Quality Control Plan for the Bay-Delta. The new Spring estuarine habitat standards (X2 for February-June) were a great improvement for fish, but the subsequent months were left unprotected. As a result, exports were shifted to July, August and later months, and Delta outflows were significantly reduced in the Fall. I suspect that this was a major reason for the subsequent Pelagic Organism Decline. It also prompted the USFWS to develop the Fall X2 standards in the OCAP biological opinions. Setting OMR standards in only some months and leaving other months unprotected (unregulated) will result in similar problems for resident fish in the Delta.

Exports will Increase during the Driest Periods

The Cal. WaterFix preferred alternative increases total exports (from 11,280 to 14,900 cfs) in the driest months when outflows are very low. This is in direct conflict with DWR and Reclamation's PR pieces that boast that the WaterFix preferred alternative will take a Big Gulp in wet periods and only a Little Sip in dry periods. They talk in terms of years but it is more important to think of shorter period when Delta outflows are high (wetter months or weeks) when there are opportunities to capture surplus water and store it. Similarly, during periods of low Delta outflow, the Delta ecosystem is most sensitive and needs to be protected (i.e., reduce exports and increase outflows).

Exports will be as high as 90% of Delta Inflow

DWR and Reclamation acknowledge in the Draft BDCP EIR/EIS and WaterFix RDEIR/SDEIS, that they are reinterpreting the SWRCB's D-1641 export/inflow ratio limits for Alternatives 4 and 4A. The result is that they end up exporting more than 90% of total Delta inflow is some months, which far exceeds the D-1641 standard of 65%. They would export up to 77% of the Delta inflow in months when the 35% limit applies.

DWR and Reclamation now proud that most Exports will occur from the South Delta in Dry Years

The Cal. WaterFix animation of Delta Flows
https://www.youtube.com/watch?v=1lblKcVclHA makes an interesting claim: Most of the dry year water will be pumped from the south Delta.

This statement is probably being used by the PR folk to stop the public worrying that the new Tunnels will be used to drain the Delta during dry years ..... so they boast that in dry years, they will rely on the existing south Delta exports.

What is then the ecosystem benefit of the north Delta intakes? Aren't they supposed to be constructed to reduce the use of the south Delta intakes? If that benefit is being foregone during dry years when the Delta is most stressed then there is no ecosystem benefit.

The smaller attachment shows some additional graphs of the Alternative 4A, Scenario H3, ELT "sensitivity analysis" data showing total south Delta exports versus outflow.

They seem to be relying on their assumed relaxation of the Army Corps limits to be able to pump up to 10,300 cfs at Banks and 4,600 cfs at Jones PP during the driest months when Delta outflows are very low. The fish will love that.

Delta Flow Animation - Duration: 3 minutes, 39 seconds.
by California WaterFix

https://www.youtube.com/channel/UCwshE4HatFzyTi2X1qG_tDA

Reverse Flows in the North Delta

I have not looked yet at the effect of Cal. WaterFix on flows through Sutter and Steamboat Sloughs in the north Delta – in large part because no new DSM2 modeling has been done. In July 2008, I made a presentation to the HOTT subgroup (part of the BDCP Steering Committee structure) on the effect of north Delta exports on the percentage of flow going through Sutter and Steamboat. This was a potentially large problem for fish and resulted in a long section of analysis on this topic in the BDCP. DWR's solution was habitat restoration in the Cache Slough area. This minimized reverse flows in the northern Delta. However, Cal. WaterFix does not have any significant habitat restoration and Cal.EcoRestore is only a commitment by DWR to do 30,000 acres of restoration that they were supposed to have completed anyway years ago. WaterFix will cause significant problems for migrating anadromous fish in the north Delta.

Delta ISB has pointed out need for more detailed graphical presentations

The Delta ISB in its draft comments on the WaterFix project pointed to the need for more detailed tables and graphs to better disclose to decision makers and the public the environmental impacts of the project operations. The presentations in the RDEIR/SDEIS mask the monthly features shown in my graphs and do not disclose to the Army Corps, the SWRCB, the public and others real problems with the way the WaterFix project will operate.

Other Problems with the WaterFix Project

What is missing is new storage, and new conveyance to allow surplus water to be captured and conveyed to new surface and groundwater storage (as well as actions to reduce demand from the Delta and levee strengthening, etc.). However, the frequent failure of the WaterFix project to take a Big Gulp and create any significant amounts of new water is not disclosed by the data presentations in the RDEIR/SDEIS.

That leaves the SWRCB in the position of having to again **balance** the current limited amount of managed water, i.e., pit each beneficial use against the other and continuing our current lose-lose situation. It makes it difficult for the SWRCB to make the necessary steps of adopting and implementing increased Delta flow requirements along the lines of its 2010 Delta Flow Criteria Report, or to set OMR requirements that actually represent eliminating almost all of the reverse flows in the south Delta. It leaves the export water contractors believing that there are no other alternatives to their north Delta intakes and twin tunnels, and paying $15 billion or more for no extra water supply.

What the 2009 Delta Reform Act however requires is that we develop projects that **achieve** both coequal goals, and the inherent objectives of improving water quality, etc. This is also required of the federal agencies under Public Law 112-74. To do that requires creating enough new water that there is enough to increase flows to restore the Delta ecosystem, and improve Delta water quality, and increase water supply reliability. That is a win-win situation that may sound utopian, but it is achievable if we try. The Cal. WaterFix makes no attempt to create new water and is therefore a backward step and a hindrance toward **achieving** the coequal goals.

There was some useful interaction and input on modeling issues and the range of alternatives under the Schwarzenegger administration (the Steering Committee process). When the Brown administration came in, it promised an open and transparent process, but then cut stakeholders and public out of the process.

With the export contractors paying for the planning and environmental analysis, they also got to call all the shots and get the preferred alternative they wanted with no meaningful input from Delta interests, environmental organizations, etc. The fact that the export contractors were paying also left DWR and Reclamation in a subservient role, No wonder it all went astray.

DWR with acquiesce from Reclamation has put everyone in a very difficult position. They have rushed to release a very shoddy and ineffective preferred alternative and an incomplete misleading RDEIR/SDEIS. They have wasted 9 years that should have been used to develop storage and conveyance infrastructure that would actually help restore fish and achieve both coequal goals.

It would great if the SWRCB would step up, perhaps with help from U.S. EPA and the Army Corps, and take a leadership role in getting us to a project that would actually create and sustain a healthy Delta ecosystem (increased flows year round, more stringent OMR limits year round) and "encourage" DWR and Reclamation to help develop storage and conveyance infrastructure that would actually capture water when it is truly surplus to the needs of the Bay, the Delta and senior water right holders. The current WaterFix proposal does not advance the coequal goals but hinders progress toward implementing the type of projects envisage in the California WaterFix. The WaterFix proposal would become a stranded asset once the SWRCB adopts increased flow requirements and real limits on reverse flows in the south Delta.

The California Water Action Plan (which the SWRCB helped develop) outlines in detail the kind of storage, water use efficiency, levee strengthening and ecosystem flow enhancement actions that are needed.

The rapid decline in the populations of key fish species in the Bay-Delta system needs to be addressed urgently. There is no time to waste on hearings on a water right permit application that hinders achievement of the coequal goals. It is time to look at **Plan B**.

I sent you my graphical presentations as examples of the type of graphical detail that should have been provided in the environmental documents and as examples of major problems with what is being proposed by DWR and Reclamation.

If you have any questions about these graphs, please contact me at (510) 339-3618.
Richard Denton