
From: Garwin Yip - NOAA Federal <garwin.yip@noaa.gov>
Sent: Wednesday, April 24, 2019 4:57 PM
To: Brittany Cunningham - NOAA Affiliate
Subject: Cumulative Effects Section Comments

Brittany,

Below the line are some comments on the cumulative effects section that just came in. Please incorporate.
Thanks.

The *Agricultural Practices* and *Wastewater Treatment Plants* subsections address ammonia inputs in a starkly different manner. The Ag part mentions ammonia almost in passing and merely as one of a number of potential problems for fish. The WTP part describes ammonia as a definite problem for fish, and then walks back that description by stating such harmful effects have not been "demonstrated" in the Delta. Does that mean no study has definitively shown causation between the tons of ammonia that are dumped daily into the Sac River and harmful effects to listed fish under our jurisdiction? If so, that seems to cut against the precautionary principle when you know that ammonia can hurt *Oncorhynchus* species as demonstrated by your citation to Wickes 2002. I know that these two paragraphs are very similar to the corresponding sections in the Cal Water Fix BO, but if there's a way to be more specific here then we should. For example, for the statement that harm hasn't been demonstrated in the Bay-Delta, it would be better to offer potential reasons--if you have any--why (e.g., fish migrate past the area where the SRWTP dumps and may not be exposed to the concentrations that prevail in that area long enough to suffer decreased fitness) than to simply say harm hasn't been demonstrated, which leaves the open the possibility that it hasn't been demonstrated simply because people have avoided looking for it.

In the *Activities within the Nearshore Pacific Ocean* section, the text identifies a number of activities and then says that they're too speculative to be analyzed. If the potential occurrence of those effects lacks reasonable certainty, then by definition they're not "cumulative effects" and shouldn't be discussed in this section. If you want to mention them for the sake of completeness (which is not a bad idea for inclusion in the BO if it's not going to be in the AR somewhere), this paragraph should be re-written to identify potential activities that *could* occur but are too speculative to analyze and then described as not rising to the level of "cumulative effects" and being excluded from this section on that basis. I also recommend that the word "political" be omitted and replaced with "policy" or "administrative."

-Garwin-

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