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**From:** Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov>  
**Sent:** Friday, May 24, 2019 8:54 AM  
**To:** Eric Danner - NOAA Federal  
**Cc:** Cathy Marcinkevage - NOAA Federal; Miles Daniels - NOAA Affiliate  
**Subject:** Re: Interior Comments on Shasta Effects, PART 2

Hi Eric, Miles,

I really like the graph as is but October looks weird to me? If I'm reading this right (probably not) flows above 12,000 cfs 'cool' from KWK to CCR in October? And really high flows 'cool' considerably between KWK and CCR (e.g. 18,000 cfs drops a degree). Is there an easy explanation or is this a 'fitting' issue with the linear model?

I also had a question that may be for another (not so crazy) time: Is there a way to show the cold water pool 'cost' of the different flows? Maybe a graph that describes how much cold water (<52\* F) is needed in a particular month to meet a particular temperature, location, and flow? What I'm trying to answer is: 'what's the most efficient use of the limited cold water resource?' Just looking at July, a flow of 9,000 cfs has to be 52\*F at KWK to meet 53.5\*F at CCR right? But a flow of say 14,000 cfs needs to be 52.5\*F at KWK to be 53.5\* at CCR, how much of the 14,000 cfs needs to be drawn from the cold water pool? Obviously it depends on a lot of things like the month, the temperature of the water you're blending and the volume of that water but is there an easy way of describing that relationship?

Thanks,  
Evan

On Fri, May 24, 2019 at 7:56 AM Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)> wrote:  
Hi Cathy,

These installments are great, I just wish I could stay up late enough to enjoy them in real time.

Miles already generated the plot (attached) but can re-do it with fewer lines if you want. Take a look and let us know.

From Miles:

Attached is an updated plot predicting the maximum KWK temperature required to meet 53.5F at CCR for a suit of flow values from 3,000 cfs to 18,000 cfs.

Note, these predictions were based on fitting a linear model using observed CCR temperature, KWK temperature, and KWK flow from 1998 to 2017.

On Thu, May 23, 2019 at 11:39 PM Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)> wrote:

Eric and Miles --

It's time for your next installment of " Late Night Emails from Cathy ". More entertaining than Conan!

Going into next week and our revisions of the Shasta section, here's what I could use from you all (in addition to the great stuff you have already provided!):

Figure 2.5.2-4. Can you revise this to 1) remove the 3000 cfs line and 2) add lines for additional greater flows, perhaps 9000 and 11000 cfs? We got over Rec's ruffled feathers on this figure by agreeing to do that. They had an optics concern.

Thanks for the EOA vs EOS storage plot. I'll likely include that!

We got the TDM data -- great!

I think that is actually all for now.

The performance measures conversation went quite well -- there was oddly little pushback. We'll be talking about it more at the director's meeting on Friday, so let's talk on Tuesday if you did get any insight on analysis options from Noble.

Thanks!  
Cathy

On Wed, May 22, 2019 at 12:00 PM Eric Danner - NOAA Federal <[eric.danner@noaa.gov](mailto:eric.danner@noaa.gov)> wrote:  
Hi Cathy,

We are working on this. When do you want to chat? I am pretty open today and tomorrow.

Eric

On Tue, May 21, 2019 at 10:27 PM Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)> wrote:

Hi guys!

Two more things:

1. On the section I sent in my previous email, see the figure on p. 9 (inserted by Rec, plotting end of April storage vs. end of Sept storage from previous year) and their comment. I like that they provided something, but I'm thinking that it would be much more solid to have some sort of analysis. And while the comment from Rec says that they do not see a correlation...well...without a line or analysis that seems to be in the eye of the beholder.

We'll probably talk with them about this on Wednesday, and I may put it in a parking lot with them until we can look into it more. Any thoughts on the relationship between these two storage values? Have you looked at this before?

2. Can you send us the hindcasted TDM for whatever time period you've got? We are working on performance metrics and realized that we don't have on hand and with confidence the values for 2016-2018. It would probably be best to just get it all in one file and we'll have that in our record.

Finally....look for one more email from me regarding the performance metrics. We made some good progress over the last two days, and will probably try to discuss either Wed afternoon or Thurs morning. I plan to get that out tonight. I'll try to connect with you to see if/when we can touch base on them.

Thanks!  
Cathy

On Tue, May 21, 2019 at 2:57 PM Cathy Marcinkevage - NOAA Federal <[cathy.marcinkevage@noaa.gov](mailto:cathy.marcinkevage@noaa.gov)> wrote:

Miles and Eric --

We provided Interior a courtesy copy of our draft effects section for Shasta. They responded with providing over 500 comments and track changes back. Yay!

There are a few that I would like your feedback on. With tracks ON, please see:

p. 10 - 11. Comments on your figure. Any thoughts on this? My initial thoughts are:

-This is a NMFS analysis and is used in considering management and operational challenges in our analysis. And this kind of info would be used in developing a TMP.

-Temperatures aren't typically a concern when flows are as high at 17,000 cfs, so not really needed to inform us here.

p. 60. Text "according to the authors...." Is this accurate?

Please know that we are by no means poised to simply accept these edits and comments. First, NMFS writes NMFS' effects analysis. Next, many revisions are written as Rec would write them, not as the fisheries agency would. But we may discuss these in a meeting tomorrow and I'd like to have your thoughts.

We have some updates on performance metrics but they aren't ready yet -- there's a lot moving very quickly. Have fun at your training, but know there may be a document for you to review while in the airport tomorrow ☺.

Thanks --  
Cathy

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