From: Garwin Yip - NOAA Federal <garwin.yip@noaa.gov>
Sent: Wednesday, May 8, 2019 5:47 PM
To: Cathy Marcinkevage - NOAA Federal
Cc: Evan Sawyer - NOAA Federal
Subject: Re: Shasta Winter-Spring Minimum Flows

The table nor paragraph below it talks about the flows being less than 3,250 cfs, just that there would be less rearing habitat, etc. That's consistent with what CDFW has been finding at minimum 3,250 cfs releases. We may be able to eek out a report from them if we need documentation. Let me know. So, my comment stands with making the assumption of minimum 3,250 cfs. Search for 3,250 cfs and adjust text so it doesn't reflect <3,250 cfs.

-Garwin-

Garwin Yip
Water Operations and Delta Consultations Branch Chief
NOAA Fisheries West Coast Region
U.S. Department of Commerce
California Central Valley Office
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814
Office: 916-930-3611
Cell: 916-716-6558
FAX: 916-930-3629
www.westcoast.fisheries.noaa.gov

On Wed, May 8, 2019 at 4:45 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

> That.
> Changes.
> Results.
>
> Like throughout the Shasta section.
>
> Consider this table, and accompanying text. What's the expeditious way to deal with this?
>
> Sorry to flip out a bit -- there's some work to fix this if we change it up that way.

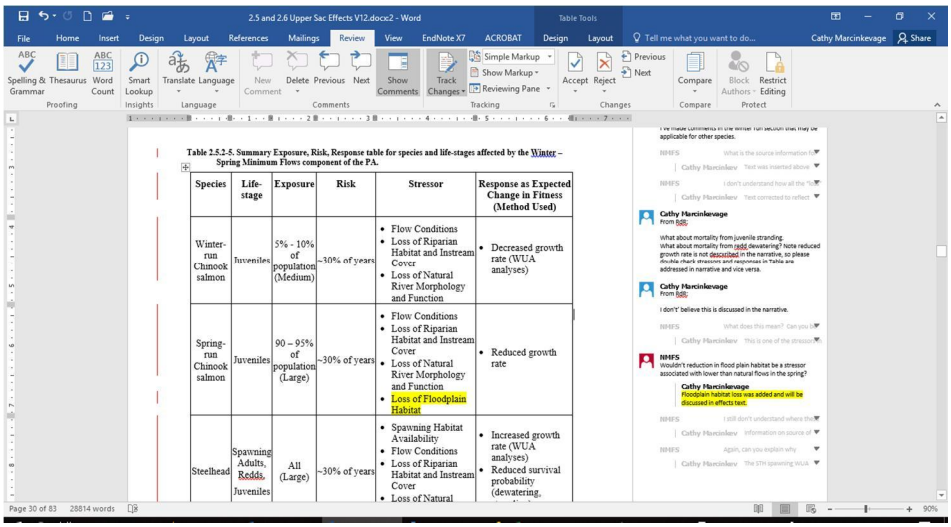

Table 2.5.2-5. Summary Exposure, Risk, Response table for species and life-stages affected by the Winter – Spring Minimum Flows component of the PA.

Species	Life-stage	Exposure	Risk	Stressor	Response as Expected Change in Fitness (Method Used)
Winter-run Chinook salmon	Juveniles	5% - 10% of population (Medium)	~30% of years	• Flow Conditions • Loss of Riparian Habitat and Instream Cover • Loss of Natural River Morphology and Function	• Decreased growth rate (WUA analyses)
Spring-run Chinook salmon	Juveniles	90 – 95% of population (Large)	~30% of years	• Flow Conditions • Loss of Riparian Habitat and Instream Cover • Loss of Natural River Morphology and Function • Loss of Floodplain Habitat	• Reduced growth rate
Steelhead	Spawning Adults, Redds, Juveniles	All (Large)	~30% of years	• Spawning Habitat Availability • Flow Conditions • Loss of Riparian Habitat and Instream Cover • Loss of Natural	• Increased growth rate (WUA analyses) • Reduced survival probability (dewatering,

During the period of winter seasonal operations, from December 1 through the end of February, winter-run Chinook salmon fry have emerged from their redds and the majority of juveniles will have migrated past RBDD. Rotary screw trap data from the last 10 years show that 5 to 10 percent of a brood year's cohort will have yet to migrate past RBDD by December 1 (Figure 2.5.2 11), meaning the potential exposure to the effects of the flow conditions and reduced access to riparian habitat is limited. However, flows during the juvenile rearing period (July – December) average about 9,000 cfs downstream of Keswick Dam; subsequent reduction in flows poses a stranding risk to juveniles. The risk associated with these operations is reflected in the proportion of years that December flows are greater than 3,250 cfs. For the PA, CalSimII modeling indicates that December flows of 3,250 cfs have an exceedance probability of 30 percent (ROC on LTO BA Appendix D Table 15-2). USFWS (2006) details the relationship between flow fluctuations and redd dewatering and juvenile stranding, noting that changing from a rearing flow of 9,000 cfs to 3,250 cfs would be expected to strand about 23,000 juvenile Chinook salmon. Likewise, flow changes from a 9,000 cfs rearing flow to 4,000, 4,500 and 5,000 cfs would be expected to strand about 11,000, 8,000 and 6,000 juvenile Chinook salmon respectively. The potential species stressor to the winter-spring minimum flows include stranding, which would increase juvenile mortality.

On Wed, May 8, 2019 at 4:25 PM Garwin Yip - NOAA Federal <garwin.yip@noaa.gov> wrote:

> According to one of the meetings, it's the text in the PA, not the modeling, that Reclamation is proposing. So, in this situation, explicitly state what the appendix indicates, what the PA text says, and our assumption that Reclamation will not release <3,250 cfs anytime.
>
> Sent from my iPad
>
> On May 8, 2019, at 3:35 PM, Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:
>
> > I think that your first block is exactly right.
> >
> > In table 15-2 December flows are higher than (or likely to exceed) 3,250 cfs 70% of the time. Therefore they are likely to NOT exceed that value 100-70=30% of the time. Or perhaps more accurately, the probability of flows being greater than 3250 in any Dec is 0.70. And the probability of them being less than 3250 in any Dec is 0.30. If they NEVER went below 3250, then the table would look like
> >
> > 100 1,000,000 cfs
> > … …
> > … …

30 3250
20 3250
10 3250

It doesn't quite look like that.

That's my take.
Maybe I'll insert a shot of the table to prove it in teh biop.

On Wed, May 8, 2019 at 3:11 PM Evan Sawyer - NOAA Federal <evan.sawyer@noaa.gov> wrote:

I get thrown off by exceedence tables/plots but in table 15-2 December flows are higher than (or likely to exceed) 3,250 cfs 70% of the time. But that doesn't necessarily mean the flows would be less than 3,250 right?

The problem I see is that under the PA end-of-September storage is ≤ 2.2 MAF only ~15% of the time (~85% exceedence), so, according to the PA, minimum Keswick flows should be 3,250 cfs in no more than ~15% of the years. What's modeled is that flows below Keswick in December will be likely to exceed 3,250 cfs 70% of the time i.e. 30% of the time minimum flows in December would not exceed 3,250 cfs. Right?

Sorry for the confusion (me being confused).

Evan

On Wed, May 8, 2019 at 2:40 PM Cathy Marcinkevage - NOAA Federal <cathy.marcinkevage@noaa.gov> wrote:

Something to ponder re: subject line project component.

We have the following table,

Table 2.5.2-4. Example of Keswick Dam Release Schedule for Various End of September Storages (from Table 4-9 in the ROC on LTO BA).

Keswick Release (cfs)	Shasta End of September Storage
3,250	≤ 2.2 MAF
4,000	≤ 2.8 MAF
4,500	≤ 3.2 MAF
5,000	> 3.2 MAF

We have text that states: "The greatest risk posed by these operations would occur when December flows are less than 3,250 cfs. For the PA, CalSimII modeling indicates that December flows of 3250 cfs have an exceedance probability of 30 percent."

Garwin noted that "Table indicates that “these operations” (if referring to the PA) won’t be less than 3,250 cfs." Rosalie noted this too.

I note back that I agree in theory, but modeling results indicate otherwise based on cited App D Table 15-2, which is exceedance tables for KWK flows by month. And in that table, flows are less than 3250 cfs 30% of the time.

Garwin, does that satisfy you? If we state that and cite to the app D table, and maybe state that we do see that probability and therefore can't (yet again) count on the "stated" operations?

--
Evan Bing Sawyer,
Natural Resource Management Specialist
NOAA Fisheries West Coast Region
U.S. Department of Commerce
Office: (916) 930-3656
Evan.Sawyer@noaa.gov
www.westcoast.fisheries.noaa.gov