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**From:** Google Docs <d+MTAzNzY3NjkzNTI4ODM2ODQ1MTlw@docs.google.com>  
**Sent:** Monday, November 26, 2018 5:43 PM  
**To:** evan.sawyer@noaa.gov  
**Subject:** 20181116\_ROC Proposed Action\_NOAA\_(internal)

Garwin Yip - NOAA Federal, J. Stuart - NOAA Federal, and Barbara Byrne - NOAA Federal added comments to [20181116\\_ROC Proposed Action\\_NOAA\\_\(internal\)](#)

New

3 comments

New

Comments



**Garwin Yip - NOAA Federal**

lethal incubation temperature for eggs in the river was 12 degrees Celsius or 53.6 degrees Fahrenheit

Should check on this. Seems like egg mortality increases considerably starting at 53.6oF, not that it's lethal.



**Barbara Byrne - NOAA Federal**

The Martin et al 2017 paper in Ecology Letters concluded that "Tcrit" was 12 degree C (equivalent to 53.6 degrees F), where "Tcrit" is "the temperature below which there is no mortality due to temperature".

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**Garwin Yip - NOAA Federal**

found

On multiple occasions, Anderson has mentioned that this is a theory that warrants additional study.

Also, NMFS refers Reclamation to documentation sent by NMFS indicating that warmer water temperatures in April and May would likely delay winter-run spawning.

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**J. Stuart - NOAA Federal**

real-time monitoring

Also per Evan's comment - what sort of spatial distribution is being considered as well as timing? Do you protect all spawners, early spawners, late spawners, or some "median" distribution of spawners? Obviously fish farther downstream will need more water released to meet the temperature needs.

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