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**From:** Sarah Gallagher - NOAA Federal <sarah.gallagher@noaa.gov>  
**Sent:** Thursday, April 25, 2019 3:42 PM  
**To:** Howard Brown - NOAA Federal  
**Cc:** Barbara Byrne; J. Stuart; Evan Sawyer - NOAA Affiliate; Cathy Marcinkevage; Garwin Yip  
**Subject:** Re: Uncertainties

Howard, after reading you last email; three more for Clear Creek:

- If using the 56 F is appropriate for criteria for spawning since it's below optimal based on current studies and literature, and if it's a factor limiting establishment of a population.
- Lack of details about the process for developing mechanical channel maintenance and how this would occur annually.
- If water temperature regime is appropriate for driving anadromy in O.mykiss population.

**Sarah Gallagher | Fish Biologist**

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On Thu, Apr 25, 2019 at 3:27 PM Sarah Gallagher - NOAA Federal <[sarah.gallagher@noaa.gov](mailto:sarah.gallagher@noaa.gov)> wrote:  
For Clear Creek:

- Ability of Reclamation to meet water temperature criteria during the spring-run spawning period (based on results from current monitoring data and modeling)
- That proposed pulse flows/mechanical channel maintenance will provide adequate geomorphic benefit to maintain habitat. This is based on lack of details in PA of mechanical maintenance, and water year type restrictions.

Let me know if you have any questions or need more details.

**Sarah Gallagher | Fish Biologist**

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On Thu, Apr 25, 2019 at 2:03 PM Howard Brown - NOAA Federal <[howard.brown@noaa.gov](mailto:howard.brown@noaa.gov)> wrote:  
Sorry for this late-in-the-day request, by I am hoping you folks might be able to pull together a short list of key uncertainties from your effects analysis drafting. I am meeting with Reclamation and FWS tomorrow to discuss adaptive management and it would be more than helpful to get your latest views on uncertainty. I suggest now more than key uncertainties per division. Short bullet points would be perfect. COB today would be ideal!  
Thank you!

Howard

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**Howard L. Brown**

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