

## Questions on Clear Creek (Trinity Division) elements of the 2019 ROConLTO BA

February 26 meeting. Katrina Harrison, Evan Sawyer, Barbara Byrne, Sarah Gallagher, Charlie Chamberlain, Paul Zedonis

- 1) Proposed temperature management is 56°F for spring-run spawning and described as **suboptimal** for survival, especially for early spawning or downstream of the compliance point. **5.1.14** "However, any eggs incubating in Clear Creek prior to September 15 or downstream of the compliance point at IGO could be subjected to water temperatures in the chronic to acute stress range (above 58°F), especially at lower exceedance probabilities (< 50%), and certain water year types. Furthermore, the incubation period (September 15-November) temperature threshold used in this action (56°F at IGO gage) falls within the suboptimal temperature range for incubating Spring-run Chinook Salmon eggs, which could result in less than optimal survival" To NMFS' evaluation of the effects of temperatures on egg to fry survival under PA, can Reclamation provide temperature output modeling for critical and dry years when base flows may be below 150 cfs? **Resolution during call:** Reclamation will run temperature model at 50 cfs scenario.
- 2) Proposed action includes 20 TAF for pulse flows (10 TAF for spring attraction; 10 TAF for geomorphic; occurrence and timing depending on water year types). CALSIM model run only includes 10 TAF (Appendix D) and effects analysis combines pulse flows into one action 10 TAF. What is the volume committed to in the PA? **Resolution during call:** Verified 20 TAF total (10 TAF each type) for pulse flows annually except in Dry years (10 TAF for spring attraction only) and Critical years (no spring attraction or geomorphic flows). Asked if the Calsim model should be run with the 20 TAF, Reclamation said this small amount would not change things.
- 3) Please describe mechanical methods to mobilize gravel for a year without geomorphic flows. **Discussion during call:** Discussion of mechanical methods and requested more details of what this means. Reclamation clarified that it was for years when geomorphic flows did not occur and to mechanically move gravel (via ripping techniques). Some discussion of how, when, and where it should occur, and if more measures should be taken to plan and reshape the channel because the proposed flows would be much less than the 3,000 cfs needed to reshape and form the channel. Preparation the summer before would be necessary in anticipation, and within the normal work window for Clear Creek in-channel activities. **Resolution during call:** Reclamation will provide additional discussion or clarifying details of mechanical methods to mobilize gravel (frequency, magnitude, and duration) for effects analysis of the actions. Based on our discussion, it may also be something similar to pulse flows, plan developed by the technical team with annual development and assessment. **Q: Follow up question:** Mechanical mobilization of gravel is not included in effects analysis for spring-run or steelhead, but is evaluated for fall and late/fall. Gravel mobilization is considered a conservation measure under 5.7.2.1 and put under the Clear Creek Restoration Program in 5.14.5.5. Can you please clarify these sections, and the distinguish when effects analysis is for gravel mobilization and the Clear Creek Restoration Program?

**Additional topics and questions not covered on call. Follow up questions from NMFS.**

1. **Q:** Can the PA wording be changed to say meet a daily average temperature for June 1-Sept 15, and be less than 56 F from September 15-October 31?

**4.9.2.5 Clear Creek Flows:** “Whiskeytown releases to meet a daily average water temperature of: (1) 60°F at the IGO gage from June 1 through September 15; and (2) 56°F at the IGO gage from September 15 to October 31.” **Q:** Can the proposed action be more specific to say 60 °F and 56° F degrees or less? For example, in the summer, there is a desire to have temperatures closer to 60 F for cold water pool conservation, and keeping temperatures close to 60 °F to encourage spring run to move upstream. In fall, because 56 ° F is suboptimal for egg to fry survival, it is better to have temperatures colder if possible.

2. The Clear Creek Restoration Program includes several components but it appears as if Reclamation is only proposing channel maintenance in the PA, and evaluating placement of large woody debris, and gravel augmentation in the Effects Analysis (see relevant BA excerpts below). **Q: What exactly is being proposed in the PA under the Clear Creek Restoration Program conservation measure? Q: If the Restoration Program is not being consulted on; why is it in the effects analysis? Is this effects analysis referring to the proposed action of mechanical gravel mobilization when geomorphic flows do not occur?**

Under status of the species (*realizing this is not part of the PA*), the goals of the Clear Creek Restoration Program are to (emphasis added):

**2.3.5 Water Operations Management:** *On Clear Creek, Reclamation has a requirement from its 2002 water right as well as the 2000 Reclamation / USFWS / CDFW agreement to provide 50 cfs flow year-round, increasing to 70 cfs in November and December of critical years and increasing to 100 cfs in November and December of normal years. In addition to these flows, Reclamation makes releases as part of the CVPIA b(2) and (b)(12) program. Reclamation’s operations follow the CVPIA AFRP guidelines (USFWS 2001) which, for Clear Creek, are: “200 cfs October 1 to June 1 from Whiskeytown dam for Spring-Run, Fall-Run, and Late Fall-Run Salmon spawning, egg incubation, emigration, gravel restoration, spring flushing and channel maintenance; and release 150 cfs or less, from July through September to maintain less than 60°F temperatures in stream sections utilized by Spring-Run Chinook Salmon.”*

**2.3.6.1 Clear Creek Restoration Program:** *Reclamation annually expends funding for the CVPIA, Section 3406(b)(12) Clear Creek Restoration Program. **The goals of the Clear Creek Restoration Program are to (1) provide flows to allow sufficient spawning, incubation, rearing, and outmigration for Salmon and Steelhead; (2) restore the stream channel and associated instream habitat; and (3) determine impacts of restoration actions on anadromous fish and geomorphology.** The program manages flows and temperatures through releases from Whiskeytown Dam on a year-round basis to support the different life stages of Salmon and Steelhead in Clear Creek. The amounts of water, considering timing, magnitude, and duration, and water temperature are controlled to meet this goal. **The Clear Creek Restoration Program is working on restoration of a 2-mile section of Clear Creek floodplain and stream channel degraded by aggregate and gold mining, dams and diversions, and annually injects gravel to recharge and maintain the system** (approximately 8,000 to 10,000 tons of gravel per year). The Clear Creek*

*Restoration Program aims to create and maintain 347,288 square feet of usable spawning habitat in Clear Creek*

Under PA and Effects:

**4.9.2.7** *Clear Creek Restoration Program, “Reclamation and DWR propose to continue channel maintenance under the Clear Creek Restoration Program”*

**5.8.4.8** *Clear Creek Restoration Program: Reclamation proposes to enhance Chinook salmon spawning and rearing habitat within Clear Creek. This action includes placement of large woody debris and gravel augmentation. This action is expected to enhance habitat complexity, benefiting salmonids that use Clear Creek and improving the habitat conservation value. The benefits from implementation of restoration projects include (1) complex channels and floodplain habitats, and (2) spawning habitat. In some years, over one hundred Spring-run Chinook Salmon have been observed in Clear Creek, so the restoration is anticipated to have beneficial effects to Spring-run Chinook Salmon spawning and rearing habitat over WOA, where no restoration would occur.*

**5.8.4.8** *“Construction-related effects include increased sedimentation and turbidity. As side channel creation and flood plain enhancement projects are implemented as a part of the restoration, construction-related activities have the potential to result in injury or death to listed fish species. Construction-related effects may include debris falling into the active channel, tools and/or equipment falling into the active channel or noise generated by displaced rock and sediment and the operation of construction machinery”*

3. On page 54 of the Appendix D PDF file (in Attachment 2-2), the PA assumption for “Minimum flow below Whiskeytown Dam” says “Same as COS”. On page 35 of the Appendix D PDF file (in Attachment 2-1), the PA Assumption for “Clear Creek Flows” is similarly described as “The regulated condition under the PA is assumed to be similar to the COS, therefore the model implementation has been assumed to be same as the COS Scenario.” The PA assumption on p. 35 goes on to note “However, ... Reclamation proposes a minimum baseflow in Clear Creek of 150 cfs year-round in all year types except Critical year types. In Critical years, Clear Creek base flows may be reduced below 150 cfs based on available water from Trinity Reservoir....”. **Q: Why wasn’t the modeling conducted to reflect the proposed 150 cfs or lower base flows in Clear Creek?**