



## Trinity River Restoration Program

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NC-156

### MEMORANDUM

**TO:** Trinity Management Council

**FROM:** Doug Schleusner, Executive Director  
Trinity River Restoration Program

**SUBJECT:** **DRAFT Implementation Strategy, Potential 2003 Fall Flow Releases**

**CC:** Kirk Rodgers, Regional Director  
Mid-Pacific Region, Bureau of Reclamation  
Steve Thompson, Director  
California/Nevada Operations Office, U.S. Fish & Wildlife Service  
Trinity Adaptive Management Workgroup (TAMWG)

**DATE:** June 26, 2003

### **Purpose:**

The purpose of this memorandum is to recommend a collaborative approach for updating the original implementation strategy proposed in "Recommendations for Averting Another Adult Salmonid Die-off" a proposal submitted by the Department of the Interior (DOI) to Judge Oliver Wanger on March 18, 2003 (March 18<sup>th</sup> Plan).

### **Current Status and Recommended Process:**

#### **Court Rulings:**

On April 4, 2003 Judge Wanger issued an opinion that, among other items, permits the Bureau at its own discretion to use up to 50,000 acre feet (af) of additional water (over and above the allowable dry year volume) for the Trinity River Restoration Program to minimize the likelihood of another adult salmon die-off. However, the 50,000 af allocated did not match in volume any of the alternatives presented to the court in the March 18<sup>th</sup> Plan. The opinion also stated that the water's availability was contingent on the outcome of on-going litigation in the Northern District Court. Judge Armstrong (Northern District Court) was expected to issue a ruling on the Klamath River Operations Plan by June 13.

### ***Additional Considerations:***

Issues considered in developing the following recommendations include:

- Stakeholders have expressed substantial interest in having input into the scheduling for potential pulse flow releases this fall (triggers, thresholds, release schedules).
- There is a need to develop criteria and a more detailed monitoring plan to evaluate the outcome of pulse flows, including: recommended flow rates, temperature reductions, and ability to cue migration.
- The 2003 Trinity fall run Chinook in-river run size estimate is 113,714 (CDFG Mega-Table).
- The Record of Decision (ROD) describes the Program's adaptive management flexibility to recommend possible adjustments to the daily flow schedule within the designated annual flow volume for a given water year type to ensure the restoration and maintenance of the Trinity River anadromous fishery. The environmental effects of implementing the flow program have been thoroughly analyzed in the FEIS/EIR and no further environmental compliance is needed when operating within those constraints (ROD, pp. 3, 12).
- Klamath Basin water year type has been upgraded from Dry to Below Normal.

### ***Recommendations:***

Develop collaborative approach for updating the implementation strategy in the original March 18<sup>th</sup> Plan to incorporate stakeholder input and be responsive to recent developments (court rulings, comments submitted to Judge Wanger). Prepare an action plan that will include final decision criteria for evaluating environmental triggers that would initiate action, a daily flow schedule, and a monitoring/evaluation plan. The Trinity River Restoration Program office would coordinate the effort.

### ***Schedule:***

The following schedule is proposed to update the initial implementation strategy contained in the March 18<sup>th</sup> Plan:

1. May 20, 2003. (DELAYED) Decision by Judge Armstrong regarding upper Klamath River Basin release schedule determines if 50,000 AF permitted for Trinity from Judge Wanger's opinion is available. Decision was expected by June 13, 2003.
2. June 26, 2003: Notify and distribute this memo to the TMC and stakeholders (TAMWG). Comments and recommendations due by July 18.
3. Week of July 21 2003: The annual flow schedule technical group will be reconvened to review and revise the March 18th Plan based on comments and suggested alternatives received from TAMWG and TMC members. The technical group will consider comments and suggestions from TMC and TAMWG, draft the action plan and develop criteria to evaluate the outcome of the fall release flows. The technical group will include: resource specialists from the Trinity River Restoration Program, and TMC organizations (U.S. Fish & Wildlife Service, Reclamation, NOAA Fisheries, Hoopa Valley Tribe, Yurok Tribe, US Forest Service, Trinity County, and the State of California Resources Agency). The technical group will assemble and assess current environmental conditions, and submit a recommended action plan through the Executive Director to the TMC for consideration.
4. Week of July 28, 2003: Release of draft Action Plan to TAMWG and TMC for review.

5. August 1, 2003: TMC makes a recommendation to Reclamation based on TAMWG and flow technical group input. Implementation by Reclamation proceeds as closely as possible to recommendation, given other operational requirements and Northern District Court decisions.
6. December, 2003: TRRP coordinates documentation of monitoring results and evaluation.

### **Summary of Original Plan:**

On March 12, 2003, Judge Oliver Wanger requested the U.S. Fish and Wildlife Service (Service) propose actions needed to avoid a fish die-off in the Lower Klamath River in 2003 similar to what occurred in September 2002. The Judge's directive limited the scope of the recommendations to only consider management options on the Trinity River to protect Trinity River anadromous fish. To meet the Judges' request, a small group of federal scientists from the Service and Trinity River Restoration Program met on March 14 and 15 and developed the March 18th Plan that was submitted to the Court on March 21, 2003. The Plan recommended pulse flow releases from Lewiston Dam in August and September to initiate migration as a potential emergency response action if conditions indicate the potential for another fish die-off. No long term management recommendations were expressed or implied.

The recommendations in the March 18th Plan focused on fish density as the most likely and most immediate controllable factor for preventing the disease outbreak implicated in the 2002 fish die-off. Crowded conditions have been responsible for epizootic outbreaks of the ubiquitous pathogens *Icthyophthiris multifilis* (ICH) and *Flavobacter columnare* (columnaris) in hatcheries, aquaria, fish culture operations and in other river systems.

The management objective to initiate migration of Trinity River salmon through pulsing flows is based on the hypothesis that salmonids respond to flow related environmental cues for migration. The strategy takes a proactive approach to encourage migration of Trinity River fish and prevent crowding if conditions suggest that a large run, or migration bottlenecks may result in high fish densities downstream of the Trinity/Klamath confluence.

### **Criteria that Trigger Proposed Action:**

The federal scientists who developed the proposed action were asked to establish triggers that would indicate the need to implement an action. The triggers initially proposed in the March 18<sup>th</sup> Plan are listed below. Because there is a strong interest by all agencies involved with the Trinity River and its fisheries to avoid a die-off this year, a conservative approach was taken. While those triggers are, in fact, environmental conditions in the Lower Klamath, it is emphasized that the intent of the action plan is to initiate migration of Trinity River Salmon into the Trinity River.

- **Run size** – Fall Chinook run-size greater than or equal to the long term average:
  - The average in-river run size for 1981-2002 is 110,400. The annual stock size projections developed by the Klamath River Technical Advisory Team for setting annual harvest rates includes an in-river run size estimate. The in-river estimate is determined by biologists from DFG, YT, HVT and FWS in April of each year. (50% estimated exceedance probability).

- **River discharge** – Projected flow for August less than 3,000 cfs at Terwer Gage:
  - Equal to the average daily discharge at Terwer gage on August 1 (50% estimated exceedance probability).
- **Water temperature** – Average daily water temperature greater than 19°C in the Lower Klamath River:
  - Water temperatures greater than 19°C inhibit adult salmon migration, increase thermal stress thus decreasing anadromous fish resistance to disease; and Columnaris and ICH become more pathogenic due to decreased generation times.

### ***Proposed Action***

The recommended action in the March 18 plan was an adaptable pulse flow/sustained flow scenario implemented between August 17 and September 20, 2003 (Figure 1). The recommendations provide two 2,000 cfs “peaks” early in the critical time period with an option to continue with two more pulses, or to release sustained flow for the remainder of the period. The decision between pulsing flows and sustained flow would be made depending on if the first two pulses were effective at initiating migration and reducing fish densities. If the expected migration response of the fish was not observed, flows would then be increased to 1,500 cfs for the remainder of the time period. This sustained flow option is intended to partially alleviate water temperature extremes in the Lower Klamath River and further facilitate fish migration. The sustained flow option would only be exercised if no effect on fish migration is seen in response to the pulse flows. The pulse flow concept was chosen for the proposed action because it was expected to provide the strongest environmental cues while minimizing the volume of water required for the action. The magnitude, timing, and ramping rates of the pulse or sustained flows were also chosen to minimize potential fish stranding and redd dewatering associated with a fall release, and to coincide with the Hoopa Valley Tribe’s Boat Dance ceremony.

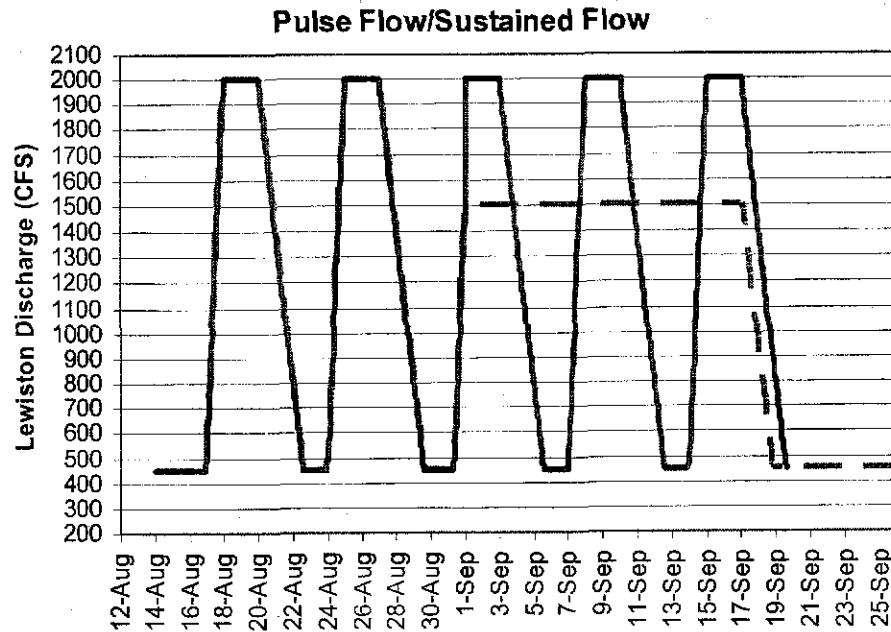


Figure 1. Pulse Flow /Sustained Flow recommendation. Two pulses of 2,000 cfs would be implemented initially. Up to three more pulses would be implemented throughout the target period if fish respond by continuing upriver migration. The relief option (dashed line), a bench release of 1,500 cfs for the remainder of the critical time period would be exercised after the first two pulses if monitoring indicates pulse flows are ineffective and hazardous conditions persist in the lower Klamath River.

### **Monitoring of Proposed Action:**

Monitoring for recommending a fall pulse flow implementation and the response of the fish will rely heavily on existing monitoring activities. Information used to trigger the action plan includes in-river run size estimates conducted annually by the Klamath River Technical Advisory Team, water temperature monitoring done by on-going projects with the Service and Yurok Tribe, and a combined effort by DWR and Reclamation will provide flow data.

On-going radio tracking studies designed to track fall Chinook from the estuary into the Klamath basin will be used to determine fish response to the flow releases. Tribal net harvest monitoring, sport fish catch/effort and data from weirs operated at Willow Creek will also be used to track fish movement during the critical time period and determine if the sustained bench option of the action plan will be exercised. Cooperating agencies will coordinate and determine appropriate monitoring activities during preparation of the Action Plan. Thermal probes placed and maintained by the Service and Yurok Tribe in the lower 30 miles of the Klamath River; the area most affected by the 2002 die-off would be used to evaluate daily water temperatures. A technical memorandum evaluating the temperature effects and biological response to the pulse flows, should they occur, will be prepared.

### ***Assumptions and Limitations:***

Some of the assumptions and limitations associated with the original March 18<sup>th</sup> Plan include:

- Management actions limited to the Trinity River only.
- Recommendations based on best current understanding of river system and fisheries.
- Plan was an emergency action for fall 2003 only.
- Evaluations of the causative factors for the 2002 fish die-off are not yet complete.
- Conservative predictions indicate that environmental conditions (river flows, summer temperatures) similar to those present in 2002 are likely to re-occur in 2003.
- Lowering water temperature and increasing flow rate will cue fish to migrate causing lower densities and reducing potential for disease outbreak and causing fish mortality.