

## Plaintiffs' Remedy Proposal

### Deadlines

- Corps and NMFS: Complete new ESA consultation for Willamette Project by December 2024.
- Corps: Complete Cougar 2.0 study of fish passage alternatives under no-power scenario by December 2021.

### Interim Measures

The Corps will implement the following measures to the maximum extent practicable under existing hydrologic conditions and necessary flood control operations until the new biological opinion is issued.

### North Santiam

- Detroit
  - Draw down Detroit Reservoir below min cons. pool (1450') by Nov 1 and maintain below 1450' through Dec. 1, use lower regulating outlet ("RO") during that time for temperature control.
  - From Nov 1 through Feb. 1, use upper RO and turn off turbines during the hours of 4 pm to 8 am.
  - As soon as Detroit refills to 1543', operate the spillway so that at least one-half of the total project discharge (as measured below Big Cliff) is released from 6 pm to 6 am daily for thirty consecutive days.
  - Monitor total dissolved gas ("TDG") within 1 mile below Big Cliff from Nov 1 through Feb 1 and during the spring spill operation. If TDG levels exceed the state standard, the technical advisory team would advise the Corps on when it is appropriate to use the turbines at Detroit or Big Cliff to dissipate TDG based on the extent and duration of the TDG exceedance and the impacts to salmon and steelhead from TDG versus use of turbines.
  - During other times, manage discharge at Detroit to reduce TDG below Big Cliff.
  - The technical advisory team will recommend whether or not flows must meet North Santiam spring flow targets each year based on hydrologic conditions and maximizing overall benefits to both species.
  - After monitoring the impacts of these operations on UWR Chinook and steelhead for two years, the technical advisory team will decide whether to continue the same operations or implement alternative operations.
- Big Cliff
  - Spread spill across gates at Big Cliff to the maximum extent possible to reduce TDG.

- When spawning and incubation below Big Cliff is occurring, prohibit operations that would result in TDG exceeding the state standard in spawning areas unless necessary for flood control.
- The technical advisory team will assess structural solutions, including a flip lip, to permanently lower TDG below Big Cliff and will select one by December 2022. The technical advisory team may seek input from other experts, such as fish passage engineers, for their assessment. The Corps will complete the 60% Design Documentation Report by December 2023.

### South Santiam

- Green Peter
  - Start outplanting adult fish above Green Peter within one year.
  - Within two years: (1) design and construct two permanent adult release sites along Quartzville Creek, (2) repair the adult release site on the South Santiam at River Bend Campground, and (3) design and construct up to two permanent adult release sites on the Middle Fork Santiam River.
  - After outplanting begins, once the reservoir reaches 970' the following spring, operate the spillway on a 24-hour basis for thirty days at a rate that is at least one-half of the daily average outflow, and open the upper fish horn during that time.
  - During fall drawdown, when the reservoir elevation is within 40' of a fish horn, open the fish horn until the reservoir drops below it.
  - Within one year, model alternative downstream passage operations, such as deep drawdown or delayed refill of the reservoir, and provide results to the technical advisory team and the WATER team.
  - Conduct operations to improve downstream water temperatures and meet flow targets.
  - After monitoring the results of the above actions for two years, the technical advisory team will decide whether to continue the same operations or implement alternative operations.
- Foster
  - By December 2022, the technical advisory team will assess structural options to improve fish passage (including fixing the current fish weir) and select a preferred option. By December 2023, the Corps will complete the 60% Design Documentation Report for the preferred option.
  - Until the long-term fish passage structure is in use, operate the spillway and turn turbines off Oct 1-Dec. 15 for the hours of 4 pm to 8 am and March 1-June 15 for the hours of 7 pm to 7 am. If TDG levels exceed the state standard, the technical advisory team would advise the Corps on when it is appropriate to use the turbines to dissipate TDG based on the extent and duration of the TDG exceedance and the impacts to salmon and steelhead from TDG versus use of turbines.
  - Maintain Foster Reservoir at minimum conservation pool through May 15.

- Spread spill across gates to reduce TDG.
- Conduct operations to meet water temperature targets.
- After monitoring the results of the above actions for two years, the technical advisory team will decide whether to continue the same operations or implement alternative operations.
- Within two years, implement structural improvements and operations to improve the adult collection facility and ladder below the dam.

### **South Fork McKenzie**

- **Cougar**
  - Limit refill of reservoir to 1600’.
  - Drop reservoir to 1570’ by Sept. 1.
  - Drop reservoir to 1505’ by Nov 15 and hold there until Dec. 15. Turn off turbines when the reservoir reaches minimum conservation pool (1532’).
  - Maintain the reservoir at minimum conservation pool until May 1 unless the technical advisory team recommends beginning refill prior to that date based on current hydrologic data.
  - Turn off turbines from 6 pm to 7 am and operate RO Feb. 15-June 1.
  - Within one year, model a run-of-river operation and provide the results to the technical advisory team and the WATER team.
  - After monitoring the results of the above actions for two years, the technical advisory team will decide whether to continue the same operations or implement alternative operations, such as testing the run-of-river operation.
  - Within two years, add fish friendly coatings to the RO spillway and develop a plan for a flip lip at the lower end of the RO discharge slope to reduce vertical plunge in the RO spillway. Within four years, construct a flip lip at the lower end of the RO discharge slope.

### **Middle Fork Willamette**

- **Lookout Point**
  - Begin reservoir drawdown Aug 1, lower the reservoir to 750’ by Nov. 15 and hold there until Dec. 15.
  - Begin using RO Aug 15 for temperature control.
  - Turn off turbines when reservoir reaches minimum conservation pool (825’).
  - Prioritize refill of Lookout Point Reservoir to maximize opportunity for spill in spring. When reservoir reaches 889’ in spring, conduct free, ungated spill for 2-4 weeks. Maintain reservoir below 911’ during this operation.
  - Within one year, model other passage operations, including delayed refill and run-of-river operations, and provide results to the technical advisory team and the WATER team.
  - After monitoring the results of the above actions for two years, the technical advisory team will decide whether to continue the same operations or

- implement alternative operations, such as testing delayed refill or run-of-river operations.
- Within two years, the technical advisory team will assess methods for reducing predators in Lookout Point Reservoir. Within four years, the Corps will implement recommended actions from the technical advisory team.
  - Dexter
    - During the fall drawdown operation at Lookout Point, conduct spill and turn turbines off at Dexter Dam from 4 pm to 8 am. During the spring spill operation at Lookout Point, conduct spill and turn turbines off at Dexter Dam from 7 pm to 7 am. If TDG levels exceed the state standard, the technical advisory team would advise the Corps on when it is appropriate to use the turbines at Dexter to dissipate TDG based on the extent and duration of the TDG exceedance and the impacts to salmon and steelhead from TDG versus use of turbines.
    - Spread spill across gates at Dexter Dam to reduce TDG.
    - Conduct a study of pathogen loads by testing for pathogens below Dexter Dam before and after the deep drawdown of Lookout Point and compare to pre-spawn mortality data below Dexter.
    - Within two years, improve the Dexter adult fish facility.
  - Fall Creek
    - Conduct the deep drawdown at Fall Creek similar to prior years but extend the dates from Dec. 1 through Jan. 15.
    - From April 1 to June 30, operate the ROs to maintain the reservoir at 728'.

### **Monitoring and Other Measures**

- The Corps must fund monitoring to evaluate the effects of the Interim Measures on UWR Chinook and steelhead. This includes monitoring survival and migration timing of juveniles and adult spawning success, as well as water quality parameters.
- The Corps must fund monitoring and research needed for the new biological opinion. This includes monitoring Viable Salmonid Population (VSP) attributes for both species to assess ESU and population status by monitoring:
  - Abundance /Productivity and Spatial Structure of natural origin fish. This would include spawning ground surveys above and below dams, video monitoring, and collection of other relevant information.
  - Life History Diversity. This would include collecting data on adult and juvenile life history types, including migration timing, spatial distribution, age and length composition, run timing, and spawn timing at various locations in tributaries and the mainstem.
  - Genetic Diversity. This would include collection and analysis of genetic samples from adult and juvenile fish to assess structure and diversity of natural origin fish.

- The technical advisory team identified in the Interim Measures would consist of two NMFS biologists, two ODFW biologists, and two experts chosen by Plaintiffs. In addition to the tasks identified in the Interim Measures, the technical advisory team would determine the monitoring plans and protocols, and the appropriate researchers, to conduct the monitoring listed above. The technical advisory team will have access to all data collected during monitoring and research and any other data in the Corps' possession that the team requests. The Corps will follow the direction of the technical advisory team on all matters unless the team's decision is unattainable or must be refined due to hydrologic conditions, flood control needs, or dam safety issues.
- The Corps must strictly follow maintenance outage schedules and emergency protocols recommended by NMFS, ODFW, and the WATER technical team. It must take all reasonable and practicable steps to notify the technical advisory team prior to any declared system emergency. If unforeseen circumstances arise, the Corps shall report those events to the technical advisory team as soon as practicable and recommend actions to avoid similar circumstances in the future.
- Within one year, the Corps will begin discussions with DEQ and EPA to seek a rule change that would allow for temporary, short-term TDG exceedances up to 120% within the waters discussed in this proposal (North Santiam, South Santiam, South Fork McKenzie, Middle Fork Willamette).
- The Corps will update the OMET report by evaluating potential operational measures related to fish passage, flows, water temperatures, and TDG issues using information acquired since the 2012 report, and without incorporating the assumption that the agency must fulfill purposes of hydropower, recreation, irrigation, and municipal and industrial water supply.
- The Corps will provide biannual status reports with supporting documentation to the Court on progress and compliance with remedy measures. These status reports must include summaries of the following: (1) the measures that have occurred at each dam, (2) any deviations from outage schedules or emergency protocols that have occurred, (3) all monitoring and research planned for the next six months, (4) all monitoring and research that was conducted during the prior six months and any preliminary results.
- The Corps will post all completed studies on a publicly-accessible website.