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Northern Wasco County People's Utility District
Sampling Facility Biological Testing

Approximate Dates for Testing: TBD – sometime in March, depends on construction progress.

Introduction

Northern Wasco County People's Utility District (NWCPUD) is building a new sampling facility for their turbine on the north shore of The Dalles Dam. This document describes the biological testing of this new facility.

The basic premise of this evaluation will be to release a known quantity and quality of fish at an upstream location and recapture them downstream. Recaptured fish will be examined and counted and the results compared to the number and condition of the fish at release.

Construction of the facility will essentially take place in two phases. Phase 1 will focus on installation of the switch gate and reconnection of the bypass pipe downstream. Phase 2 will consist of constructing all of the components on the sample leg of the switchgate, including the screen entrance flume, the dewatering screen, the sampling platform and building and all the pipes leading from the screen back to the bypass pipe.

The primary objective is to determine if the sampling facility, including the switch gate, causes delay or injury to fish passing through the project bypass, both during sample collection operations and when it is bypassing fish. Because the switch gate is a new component in the bypass route as well as the sample collection route, the bypass route also requires biological testing. The PUD will plan on testing the bypass side as soon as the phase 1 work is complete. Testing of Phase 2 work will commence when that work is complete.

This approach prioritizes the need to have the bypass operational before April 1 when sampling for fish condition begins. Sampling will be accomplished with the old system until the sample collection side of the new facility is complete. The PUD had originally planned to have the entire facility operational sometime in mid to late March, but it looks like that schedule will not be met.

Fish Source

Fish for these tests will be obtained from the Klickitat Salmon Hatchery, near Glenwood Washington. The hatchery is federally funded through the Mitchell Act and jointly operated by the Yakama Nation and the Washington Department of Fish and Wildlife. The hatchery will have Coho (Oncorhynchus kisutch) available that should be about 110 mm.

Very few smolts are migrating in March, making acquisition and use of Run-of-River (RoR) fish impractical. Behavioral differences between hatchery and RoR fish should be minimal due to velocities throughout the system.

1. **Obtaining, transporting, and preparing fish for tests.**
    a. Hatchery staff will net fish from the holding pond and count 360 fish into the two transport/holding totes. Each tote can hold between 55 and 60 gallons of water.

b. Aquarium bubblers will keep fish oxygenated during transport and ice will be available for temperature maintenance if needed.
c. At the PUD, the fish totes will be irrigated with river water and held overnight.
d. The next day, a sanctuary net will be used to net small numbers of fish into an exam basin laced with MS-222. Once anesthetized, individual fish will be removed, checked for descaling and injury and placed into replicate buckets. This will be repeated until there are eight buckets with 30 fish in each bucket. Buckets are fitted with lids to reduce stress prior to use.
e. Injured fish and fish with more than 20% scale loss on either side will be rejected.

2. Phase 1 Testing, the Bypass route

a. Testing will consist of 4 replicates of 60 fish each and one control group of 60 fish.
b. For each replicate, two buckets of fish will be released into the entrance of the bypass pipe. The control group will be released directly into the net pen.
c. Fish will be recaptured in a net pen positioned under the bypass pipe outfall.
Note:
The bypass outfall discharges directly downstream of the fishway entrance. With AWS water being added, the velocities are too great to hold the net pen in place. Consequently, during testing, the generator will have to be shut down and the AWS water eliminated. The regulating weir at the end of the dewatering structure will maintain normal bypass pipe flows.

d. After sufficient time has passed for the fish to reach the bypass outfall (travel time will be estimated before testing using an orange) the net pen will be lifted out of the water and positioned over a collection tank. Fish will be emptied into the tank.
e. Fish will be anesthetized and examined, results recorded and summarized.
f. After completing the 4 replicate tests, a control group of 60 fish will be released directly into the net pen, using the same release hopper and hose, and held for the approximate amount of time a test group would be held in the pen. Once that time has lapsed, the control fish will be processed in the same manner as the test fish.
g. Processing each group separately should eliminate the need for marking the fish.
h. Two veteran biologists, Greg Kovalchuk and Dean Ballinger, that have worked in the Smolt Monitoring Program for many years will be doing the fish evaluations.

3. Phase 2 Testing, the sample collection route

a. Testing the sample collection route will follow the same procedures outlined in Phase 1, except that the switch gate will divert fish to the sample collection side.
b. The test fish will collect in the collection tank instead of the net frame and be processed in the same way.
c. The same number of replicates and the same number of fish will be used.
d. A control group will be added to the collection tank and held approximately the same amount of time that a test replicate would take to execute.
e. Additional fish will be available if unforeseen problems require additional replicates.
f. Phase 2 testing will occur as soon as possible after the sample collection leg of the system is complete.