

## **Puntledge River Project Water Use Plan**

### **Monitoring Program Terms of Reference**

- **Addendum 1 to PUNMON-1 Assessment of Adult Fish Passage During Pulse Flow Releases**

**MAY 1, 2007**

## **Addendum #1 to: Assessment of Adult Fish Passage During Pulse Flow Releases, dated October 21, 2005.**

### **Background**

A review of information on adult fish passage in the Puntledge River collected up to November 2006 highlighted that, in addition to the data collection outlined in the Terms of Reference (TOR) dated Oct 21 2005, some additional data collection would complement the information collected to better address the Hypotheses and Management Questions (Sections 1.2 and 1.3 above). This additional data collection is outlined below.

### **Task A-1: Electromyogram (EMG) Telemetry and Physiological Sampling**

To assess fine scale energetic and behavioural responses to pulse flows, some fish will be tagged with Electromyogram telemetry tags. The TOR dated Oct 21 2005 stated that in each year of monitoring, 2 groups of 25 adult summer run Chinook salmon would be randomly selected from the lower Puntledge hatchery raceway and radio tagged. The data review recommended that 2 groups of 28 – of which 20 will be conventional radio tags and 8 will be EMG tags. EMG tagged fish will be tracked as per the conventional radio tagged fish, using mobile telemetry as outlined in Task #1, as well as at a fixed telemetry receiver (Task A-2 below).

Upon capture (i.e., netted from DFO holding facility at lower fishway), all fish will be placed in a water-filled trough and sampled (via caudal puncture) for blood (1.5 ml). In addition, a small gill biopsy will be collected (3 mm off the tips of 5 to 8 filaments). All physiological samples will be processed and stored in LN2 until analysis at our laboratory. Energetic condition will be estimated with a fat probe.

To help characterize thermal history of tagged fish, temperature loggers will be attached to all tagged fish. Water temperature in the Puntledge River will be recorded from: i) records obtained from existing gauging stations, ii) installing temperature loggers at strategic locations in the Puntledge River.

### **Task A-2 Fixed Telemetry Tracking**

In addition to the mobile tracking in Task 1, one fixed tracking station will be installed at a location of difficult fish passage.

**Table A1: Estimated costs for the Puntledge River fish passage study.**

Sub-total		\$142,363
Inflation	2%	\$5,812
Total		\$296,471

Note: Costs for the snorkel counts will be covered under the Steelhead Production monitoring program.