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May 1, 2018

### MEMORANDUM

**TO: Council Members**

**FROM: Jeff Allen**

**SUBJECT: Update on Genetic Monitoring Program**

### BACKGROUND:

**Presenters:** Dr. Shawn Narum, Lead Geneticist, CRITFC  
Matt Campbell, Fisheries Genetics Program Coordinator, IDFG

**Summary:** In 2009, the CRITFC and IDFG first presented to NWPCC the concept of using genetic tools to monitor distinct stocks of salmonids in the Columbia River Basin. The overarching goal was to monitor stock specific abundance, run-timing, and harvest to contribute to fisheries management and recovery in the Columbia River Basin. Three BPA funded projects (CRITFC 2008-907-00; IDFG 2010-026-00; IDFG 2010-031-00) enabled this concept to be developed into ongoing studies to identify stock of origin of salmonids at fixed locations (Bonneville Dam and Lower Granite Dam) and intercepted in mainstem fisheries (commercial, sport, tribal). An update on progress was delivered to the NWPCC Tagging Forum in February of 2012 that summarized the development of genetic resources, empirical testing/demonstration, and results for long-term status and trend monitoring of steelhead and Chinook Salmon stocks. Now in 2018, we provide an update on this broadly implemented genetic monitoring program of salmonids in the Columbia River Basin. This includes use of two powerful approaches to identify hatchery origin fish with Parentage Based Tagging (PBT) and natural origin fish with Genetic Stock Identification (GSI). We summarize how these technologies work, the status of genetic baselines, and provide examples of how these

studies inform fisheries management and recovery. Finally, we highlight recent advances that have led to improvements in assignment accuracy of stocks, cost efficiency, and better understanding of variable life histories of salmonids. We also discuss directions for further improvements in upcoming years.