CALENDAR YEAR 2013
OF ACTIVITIES UNDER THE ANADROMOUS FISH AGREEMENT
AND HABITAT CONSERVATION PLAN
WELLS HYDROELECTRIC PROJECT FERC LICENSE NO. 2149

Prepared for
Federal Energy Regulatory Commission
888 First Street N.E.
Washington, D.C. 20426

Prepared by
Anchor QEA, LLC
720 Olive Way, Suite 1900
Seattle, Washington 98101
and
Public Utility District No. 1
of Douglas County, Washington
1151 Valley Mall Parkway
East Wenatchee, Washington 98802-4497

March 2014
ANNUAL REPORT
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1 INTRODUCTION

On June 21, 2004, the Federal Energy Regulatory Commission (FERC) approved an Anadromous Fish Agreement and Habitat Conservation Plan (HCP) for the Wells Hydroelectric Project (Wells Dam – FERC License No. 2149) on the Columbia River in Washington State. The Wells Project is owned and operated by Public Utility District No. 1 of Douglas County (Douglas PUD). The HCP provides a comprehensive and long-term adaptive management plan for species covered under the HCP (Plan Species) and their habitats. This document is intended to fulfill Section 6.9 of the HCP, which requires an annual report of progress toward achieving the No Net Impact (NNI) goal, as described in Section 3 of the HCP, and a summary of common understandings based upon completed studies.

Designated representatives of the signatories of the Mid-Columbia HCPs (HCPs for the Wells, Rocky Reach, and Rock Island hydroelectric projects) comprise the Coordinating Committees, Hatchery Committees, and Tributary Committees for each HCP, which meet collectively to expedite the process for overseeing and guiding the implementation of their respective HCPs. Minutes from the monthly meetings are compiled in Appendices A (Coordinating Committees), B (Hatchery Committees), and C (Tributary Committees). In addition, a Policy Committee provides a forum for resolution of disputes that are either elevated to or arise in the Coordinating Committees and remain unresolved. The Policy Committees did not meet in 2013 because there were no disputes. Appendix D lists members of the Wells HCP Committees. The Coordinating Committee for the Wells HCP oversaw the preparation of this tenth Annual Report for calendar year 2013, which covers the period from January 1 to December 31, 2013 (the first through ninth Annual Reports covered January 1 to December 31, 2004 through 2012).
2 PROGRESS TOWARD MEETING OR MAINTAINING NO NET IMPACT

The Wells Project HCP requires preparation of an Annual Report that describes progress toward achieving the performance standard of NNI for each Plan Species. The NNI standard consists of two components: 1) 91 percent combined adult and juvenile project survival achieved by project improvement measures implemented within the geographic area of the project, and 2) 9 percent compensation for unavoidable project mortality, with 7 percent compensation provided through hatchery programs and 2 percent through tributary programs (Section 3.1 of the HCP). In 2013, Douglas PUD was also required to prepare for the Coordinating Committees a comprehensive progress report that assesses the status of NNI during the first ten years of the HCP by no later than March 2013, per Section 6.9 of the Wells HCP.

In December 2012, Douglas PUD distributed their draft Comprehensive 10-Year NNI Progress Report for review by the Coordinating Committee. The report described the means by which Douglas PUD achieved NNI for all Plan Species by the 2013 deadline, and also the measures through which Douglas PUD has maintained NNI to the present, per the requirements contained in the Wells Project HCP. On March 26, 2013, the Wells Coordinating Committee approved a Statement of Agreement (SOA) approving the Douglas PUD Final 2013 Comprehensive 10-Year NNI Progress Report (Appendices A and E). The final report (Appendix G) was distributed to the Coordinating Committees on April 4, 2013.

In 2013 Douglas PUD continued achievement of NNI for the Wells Project by successfully meeting or exceeding all requirements for NNI under the Wells HCP.

The remainder of this section of the report summarizes decisions and agreements reached by the Wells Coordinating, Hatchery, and Tributary committees in 2013 in support of achieving NNI. This section is followed by sections summarizing achievements, actions, and activities specific to the areas of Wells Project survival and dam operations, hatchery compensation, and Tributary Committees funding of habitat protection and restoration.

Throughout 2013, the HCP Coordinating, Hatchery, and Tributary Committees reached agreement on numerous issues during meetings, all of which were documented in the
meeting minutes, with many of those decisions described in stand-alone SOAs. All of the agreements approved during calendar year 2013 are summarized in Table 1 and are discussed in the remainder of this section.

Table 1
Summary of 2013 Decisions by the Wells HCP Committees

<table>
<thead>
<tr>
<th>Date</th>
<th>Agreement</th>
<th>HCP Committee</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 10, 2013</td>
<td>Approved the Douglas PUD 2013 HCP Action Plan</td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>January 10, 2013</td>
<td>Approved the Okanagan Nation Alliance’s (ONA’s) request for additional funds needed to complete the final report for the Okanagan River Restoration Initiative (ORRI) monitoring; and approved a 2-month time extension for the project</td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>January 16, 2013</td>
<td>Approved the Douglas PUD 2013 HCP Action Plan</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>January 16, 2013</td>
<td>Agreed that the revised Hatchery Monitoring and Evaluation (M&amp;E) Analytical Framework 5-Year Update will consolidate and replace both the former Hatchery M&amp;E Analytical Framework and Conceptual Framework</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>January 16, 2013</td>
<td>Agreed to extend the current HCP Hatchery Committees Conflict of Interest Policy, which was originally approved in November 2010, for 2 additional years</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>January 22, 2013</td>
<td>Approved the Douglas PUD 2013 HCP Action Plan</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>January 22, 2013</td>
<td>Approved the Douglas PUD 2013 Bypass Operations Plan</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>January 22, 2013</td>
<td>Agreed to include in the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report the Executive Summary of the Fish and Water Management Tool (FWMT) Report from Dr. Kim Hyatt, Department of Fisheries and Oceans Canada (DFO), in lieu of the full report, with the expectation that the full report will be appended when available about August 2013</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>February 1, 2013</td>
<td>Approved the Douglas PUD 2013 Gas Abatement Plan</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>February 11, 2013</td>
<td>Approved the Douglas PUD Sub-yearling 2011 Interim Report</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>Date</td>
<td>Agreement</td>
<td>HCP Committee</td>
<td>Reference</td>
</tr>
<tr>
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</tr>
<tr>
<td>February 26, 2013</td>
<td>Approved the SOA for Wells Dam 2013 Lamprey Operations, as revised</td>
<td>Coordinating</td>
<td>Appendix A and Appendix E</td>
</tr>
<tr>
<td>February 26, 2013</td>
<td>Approved the Douglas PUD 2012 Wells Post-season Bypass Report</td>
<td>Coordinating</td>
<td>Appendix E</td>
</tr>
<tr>
<td>March 14, 2013</td>
<td>Approved funding for Cascade Columbia Fisheries Enhancement Group's (CCFEG’s) Methow/Chewuch Shallow Groundwater Monitoring Project</td>
<td>Tributary</td>
<td>Appendix A</td>
</tr>
<tr>
<td>March 20, 2013</td>
<td>Agreed to use the steelhead broodstock collected in the fall of 2012 for the Douglas PUD Methow Safety-Net program broodstock, and to not collect additional broodstock in the Methow basin in the spring of 2013 for this program, unless an unexpected need for additional broodstock is identified by hatchery personnel</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>March 26, 2013</td>
<td>Approved the SOA approving the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report</td>
<td>Coordinating</td>
<td>Appendix A and Appendix E</td>
</tr>
<tr>
<td>March 26, 2013</td>
<td>Approved the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report with the expectation that the Executive Summary of the FWMT Report from Dr. Kim Hyatt, of DFO, will be incorporated when available <em>(Note: based on subsequent discussions with Dr. Hyatt, the Coordinating Committees later agreed to revise the existing FWMT summary that was included in the report to reflect that those data are based on preliminary analysis. A separate FWMT Report will be prepared by Dr. Hyatt, but will not be appended to the 10-year NNI Comprehensive Progress Report.)</em></td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>March 26, 2013</td>
<td>Approved the Douglas PUD 2012 Pikeminnow Program Annual Report</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>April 17, 2013</td>
<td>Approved the Douglas PUD SOA approving the revised M&amp;E Plan for PUD Hatchery Programs: 2013 Update</td>
<td>Hatchery</td>
<td>Appendix B and Appendix F</td>
</tr>
<tr>
<td>April 23, 2013</td>
<td>Conditionally approved Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) annual request for tagging sockeye at Wells Dam, with the requirement that sockeye are also Floy-tagged</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>Date</td>
<td>Agreement</td>
<td>HCP Committee</td>
<td>Reference</td>
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</tr>
<tr>
<td>May 22, 2013</td>
<td>Approved Douglas PUD’s revised Wells Summer Chinook Hatchery and Genetic Management Plan (HGMP) and SOA by email vote, with the National Marine Fisheries Service (NMFS) abstaining</td>
<td>Hatchery</td>
<td>Appendix B and Appendix F</td>
</tr>
<tr>
<td>June 13, 2013</td>
<td>Approved a contract extension for Trout Unlimited’s Twisp River Well Conversion</td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>June 13, 2013</td>
<td>Approved a budget amendment for CCFEG’s Methow/Chewuch Shallow Groundwater Monitoring Project</td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>June 19, 2013</td>
<td>Approved CRITFC’s request to collect tissue samples from broodstock for parentage-based tagging (PBT) of Columbia River hatchery programs. The Colville Confederated Tribes (CCT) approved the request, but did not participate in 2013</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>June 19, 2013</td>
<td>Approved Grant PUD’s request for Douglas PUD to produce 100,000 steelhead at Wells Hatchery for release in the Okanogan River, and 134,126 Methow River spring Chinook at the Methow Hatchery, for Grant PUD’s respective programs</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>June 25, 2013</td>
<td>Approved the amendment to the final SOA for Wells Dam 2013 Pacific Lamprey Operations. The Committee also agreed that it would suffice to simply note in the meeting minutes the approved change in start date for lamprey operations, rather than amending the final SOA. <em>(Note: Teresa Scott indicated Washington Department of Fish and Wildlife (WDFW) approval of the amended SOA via email on June 21, 2013.)</em></td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>June 25, 2013</td>
<td>Agreed to review the Phase III (Additional Juvenile Studies) designation for subyearling Chinook under the Wells, Rocky Reach, and Rock Island Hydroelectric Projects HCPs in January 2015</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>June 25, 2013</td>
<td>Agreed to amend the start date for research identified in the final SOA for Wells Dam 2013 Pacific Lamprey Operations, from August 1, 2013, to no earlier than July 15, 2013. <em>(Note: Teresa Scott indicated WDFW approval to amend the SOA for Wells Dam 2013 Pacific Lamprey Operations via email on June 21, 2013.)</em></td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>Date</td>
<td>Agreement</td>
<td>HCP Committee</td>
<td>Reference</td>
</tr>
<tr>
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</tr>
<tr>
<td>July 13, 2013</td>
<td>Approved the Wells Fish Hatchery Modernization Master Plan</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>July 23, 2013</td>
<td>Agreed to include data from the month of June in the summer study period in the updated flow duration curves for valid survival studies</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>August 15, 2013</td>
<td>Approved funding for Trout Unlimited – Washington Water Project’s <em>MVID Instream Flow Improvement Project</em></td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>August 21, 2013</td>
<td>Agreed that Greg Mackey would develop draft tables for inclusion in the Hatchery M&amp;E Plan Appendices, for Hatchery Committee review</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>September 12, 2013</td>
<td>Approved funding up to $68,022.58, for Trout Unlimited’s <em>Twisp River Well Conversion</em></td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>September 12, 2013</td>
<td>Approved a time extension for ONA’s <em>Shingle Creek Fish Passage Project</em></td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>September 24, 2013</td>
<td>Agreed to hold the Coordinating Committees meeting on October 22, 2013, by conference call</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>September 24, 2013</td>
<td>Agreed to reschedule the Coordinating Committees meeting on November 26, 2013, to November 19, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>September 24, 2013</td>
<td>Agreed to reschedule the Coordinating Committees meeting on December 24, 2013, to December 17, 2013, to be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington</td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>October 9, 2013</td>
<td>Approved the Wells Dam Water Quality Attainment Plan <em>(WQAP)</em></td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>October 16, 2013</td>
<td>Agreed to consider approval of the Twisp River Steelhead Live Spawning Plan SOA by e-mail</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
<tr>
<td>October 18, 2013</td>
<td>Approved, via e-mail, a contract extension for Trout Unlimited’s <em>Twisp River Well Conversion Project</em></td>
<td>Tributary</td>
<td>Appendix C</td>
</tr>
<tr>
<td>October 22, 2013</td>
<td>Approved the 2013 Wells Dam Post-Season Bypass Report, as revised <em>(WDFW abstained citing their recent changes in HCP representation)</em></td>
<td>Coordinating</td>
<td>Appendix A</td>
</tr>
<tr>
<td>November 4, 2013</td>
<td>Approved the Twisp River Steelhead Live Spawning Plan SOA, as revised, via email</td>
<td>Hatchery</td>
<td>Appendix B and Appendix F</td>
</tr>
<tr>
<td>November 14, 2013</td>
<td>Approved the Douglas PUD 2012 M&amp;E Plan Report</td>
<td>Hatchery</td>
<td>Appendix B</td>
</tr>
</tbody>
</table>
2.1 Wells Project Survival and Dam Operations

2.1.1 Status of Phase Designations for Current Plan Species

A major feature of the Wells HCP is what is termed a “phased implementation plan” to achieve the survival standards. These phases have been described in previous HCP Annual Reports to FERC. Since February 2005, steelhead, subyearling Chinook, yearling Chinook, and sockeye salmon have been in Phase III (either designated Standard Achieved or Additional Juvenile Studies; see Table 2). In December 2007, coho salmon were designated as in Phase III (Additional Juvenile Studies). In 2008, land and cash with a total value of $600,000 were transferred to the Yakama Nation (YN) pursuant to Douglas PUD’s coho mitigation agreement. This transaction completes Douglas PUD’s coho mitigation obligation through 2017. No changes in phase designations have occurred since. Douglas PUD, in coordination with the Wells Coordinating Committee, plans to re-evaluate the phase designation for subyearling Chinook in 2015, following the completion of their 3-year subyearling life history study (see Sections 2.1.2 and 2.1.2.2).
Table 2  
Phase Designations for Wells Dam

<table>
<thead>
<tr>
<th>Plan Species</th>
<th>Phase Designation</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Columbia River (UCR) steelhead</td>
<td>Phase III (Standard Achieved)</td>
<td>February 22, 2005; verified November 16, 2010 ¹</td>
</tr>
<tr>
<td>UCR yearling Chinook</td>
<td>Phase III (Standard Achieved)</td>
<td>February 22, 2005; verified November 16, 2010 ¹</td>
</tr>
<tr>
<td>UCR subyearling summer/fall Chinook</td>
<td>Phase III (Additional Juvenile Studies)</td>
<td>February 22, 2005</td>
</tr>
<tr>
<td>Okanogan River sockeye</td>
<td>Phase III (Additional Juvenile Studies)</td>
<td>February 22, 2005</td>
</tr>
<tr>
<td>Methow River Coho</td>
<td>Phase III (Additional Juvenile Studies)</td>
<td>December 12, 2007</td>
</tr>
</tbody>
</table>

Note:
1 Verified in a SOA on November 16, 2010, by the Wells Coordinating Committee. Verification study included Okanogan Basin yearling Chinook per Sections 4.2.1 and 8.4.5.2 of the Wells HCP.

Under Phase III conditions (Standard Achieved), Douglas PUD is required to re-evaluate survival every 10 years, following the initial completion of three years of valid juvenile project survival studies. Douglas PUD conducted valid juvenile survival studies in 1998, 1999, and 2000. In 2010, Douglas PUD completed the first 10-year juvenile survival validation study, verifying the continued achievement of Phase III (Standards Achieved) for yearling Chinook and steelhead migrating through the Wells Project (see Section 2.1.2). There were no juvenile project survival studies conducted in 2011, 2012, or 2013.

2.1.2 Assessment of Wells Project Survival

As previously reported, Douglas PUD has met the HCP survival standard of 91 percent combined adult and juvenile Wells Project survival, and is in Phase III of the phased implementation plan for all Plan Species. As required by Section 4.2.5.1 of the Wells HCP, in 2010, Douglas PUD re-evaluated survival, constituting the first 10-year “verification” survival study. The Wells Coordinating Committee selected yearling summer Chinook as representative of spring migrant salmonids (juvenile spring Chinook and yearling summer Chinook and steelhead), and directed Douglas PUD to include both Methow and Okanogan release sites for the study to fulfill Sections 4.2.1 and 8.4.5.2 of the Wells HCP. The results of the 2010 survival study (96.38 percent Wells Project survival for yearling Chinook smolts)
confirmed the continued achievement of Phase III (Standards Achieved) for yearling Chinook and steelhead migrating through the Wells Project, even during the second lowest flow year in the past 25 years. Douglas PUD is required to re-evaluate juvenile project survival for yearling spring migrants again in 2020.

In 2011, Douglas PUD initiated a 3-year subyearling life history study aimed at determining whether the technology and tools exist to empirically estimate survival of subyearling Chinook migrating through the Wells Project. By the end of 2012, over 30,000 subyearling Chinook were tagged and released above Wells Dam. The study continued in 2013, implementing the same methods that proved effective in 2011 and 2012. A final report is expected in 2014 that will include comprehensive 3-year comparisons (2011-2013) to examine year-to-year variability in behavior and life-history strategies.

2.1.2.1 Adult Passage Monitoring

When the HCP was completed in 2002, the signatories acknowledged the lack of a scientifically accepted methodology for assessing adult Wells Project survival for Plan Species (presumed to be 98 percent). Available methods cannot differentiate between mortality caused by the project versus other sources of non-detection. Such sources might include mortality from natural causes or fisheries; delayed mortality from injuries resulting from passage at downstream projects, or from injuries sustained by marine mammals or harvest activities; or fish not detected for other reasons, such as spawning in locations downstream from Wells Dam or loss of body-cavity Passive Integrated Transponder (PIT)-tags due to gonadal maturation during migration. Regardless of tagging method, this limitation remains: technology still does not allow a determination of the fates of all tagged fish detected passing a dam but not detected at the next dam upstream. However, calculations of total losses of tagged fish between projects provide a means for evaluating compliance with the Wells HCP standards for adult passage. Sequential detections of PIT-tagged adult salmonids through PIT-tag-detection systems in the fishways of each dam provide data for calculating conversion rates through the hydrosystem. Calculated per-project conversion rates furnish sufficient evidence for the achievement of adult survival standards, in that project-related mortality must be less than 2 percent when per-project...
conversion rates exceed 98 percent (i.e., less than 2 percent of fish missing from all sources including Wells Project-related mortality).

Table 3 details, for all run-years available, PIT-tag detections at Rocky Reach Dam of known-origin adult spring and summer Chinook salmon and steelhead, the number of those adults redetected at Wells Dam, and the estimated conversion rate (Rocky Reach Dam to Wells Dam). The Rocky Reach-to-Wells conversion rate is 98.4 percent for spring Chinook (that is, mortalities from all sources averaged less than 2 percent), 98.1 percent for steelhead, and 96.5 percent for summer Chinook. Most of the summer Chinook used in the conversion-rate analyses were raised at either the Wells Fish Hatchery or the Eastbank Fish Hatchery, located downstream of Wells Dam, and were released as smolts upstream from Wells Dam. Similarly, most steelhead originated from the Wells Hatchery but were released upstream from Wells Dam. Thus, these fish may exhibit homing to their hatchery of origin and may not attempt passage of Wells Dam. Additionally, summer Chinook, steelhead, and sockeye are subjected to popular recreational fisheries downstream of Wells Dam. All spring Chinook used in the conversion-rate calculations originated from hatcheries upstream from Wells Dam and most are not subjected to fisheries in the mainstem Columbia River between Rocky Reach and Wells dams, although late-running fish may be inadvertently harvested in some years when their migration overlaps with the summer Chinook fishery (overlap of run timing with summer Chinook fishery estimated from PIT-tag detections at Rocky Reach and Wells dams: 1.4 percent of the run in 2012, 3.3 percent in 2011, 2.1 percent in 2010, 11.1 percent in 2007, and 1.2 percent in 2006). Insufficient numbers of sockeye have been PIT-tagged as juveniles to develop a per-project conversion rate of known-origin fish; however, the CRITFC PIT-tags adult sockeye at Bonneville and Priest Rapids dams without determining the origins of those fish. Table 3 includes conversion rates of sockeye from Rocky Reach Dam to Wells Dam (98.6 percent). The Rocky Reach-to-Wells conversion rate for sockeye was further refined by subtracting from the Rocky Reach detections those fish that were subsequently detected passing Tumwater Dam in the Wenatchee River (indicating a voluntary fallback event at Rocky Reach Dam).
Progress Toward Meeting No Net Impact

Table 3

Rocky Reach-to-Wells Adult Conversion Rates for Available Release Groups

<table>
<thead>
<tr>
<th>Stock Species</th>
<th>Number Detected at Rocky Reach Dam</th>
<th>Number Detected at Wells Dam</th>
<th>Rocky Reach-to-Wells Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Steelhead</td>
<td>4,315</td>
<td>4,235(^3)</td>
<td>98.1%</td>
</tr>
<tr>
<td>Return Years 2006-2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring Chinook</td>
<td>676</td>
<td>665(^5)</td>
<td>98.4%</td>
</tr>
<tr>
<td>Return Years 2006-2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>1061</td>
<td>1026(^7)</td>
<td>96.7%</td>
</tr>
<tr>
<td>Return Years 2011-2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sockeye</td>
<td>2,585(^9)</td>
<td>2,550(^{10})</td>
<td>98.6%</td>
</tr>
<tr>
<td>RY 2010-2013</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Source of conversion-rate calculations for steelhead and Chinook: Columbia River DART website (http://www.cbr.washington.edu/dart/query/pitatdult_conrate). Calculation parameters: Basin = Columbia River and Tributaries; Conversion Reach = Rocky Reach to Wells; Species = respective species; Run = respective run; Rear Type = All. Minijacks and fish tagged as adults were excluded, and recaptures, mortalities, upstream detections, upstream recaptures, and upstream mortalities were included.
2. Summer steelhead released into the Okanogan and Methow River Systems—PIT-tag release site designations: BEAV2C, CHEWUR, GOLD2C, LIBBYC, METH, METHR, METTRP, OKANR, OMAKC, SALMOC, SGOLDC, SIMILR, STAPAC, TWIS2P, TWISPP, TWISPR, TWISPW, WINT, and WOLFC. Please note that some fish detected at Rocky Reach Dam in 2013 will not pass Wells Dam until the spring of 2014.
3. Number corrected (added 34 fish) for fish trapped at Wells Dam for broodstock and stock assessment in 2006 and 2007 when the PIT-tag-detection system on the west ladder trap and Wells Dam was malfunctioning. Wells counts are not corrected for fish harvested between Rocky Reach and Wells dams.
4. Spring Chinook released into the Methow River System—PIT-tag release site designations: BEAV2C, BIDDLP, CHEWUP, CHEWUR, MDVAP, METH, METHR, METTRP, TWISPP, TWISPR, WINT, WINTBC, and WOLFC.
5. Number corrected (added 8 fish) for fish removed at Wells Dam for broodstock for Methow Hatchery in 2006 and 2007 when the PIT-tag-detection system on the west ladder trap and Wells Dam was malfunctioning. Wells spring Chinook counts are not corrected for fish harvested between Rocky Reach and Wells dams (late running spring Chinook are subjected to harvest in July in some years by fishers targeting summer Chinook).
6. Summer Chinook released upstream of Wells Dam—PIT-tag release site designations: CARP (Eastbank Hatchery), COLR8, METHR (Wells Hatchery), OKANR (Wells Hatchery), and SIMILR (Eastbank Hatchery). Most of these release groups originated from hatcheries downstream of Wells Dam, COLR8 comprises returns from wild Chinook tagged in Wells Reservoir in 2011 and 2012.
7. Number corrected (added 9 fish) for fish trapped at Wells Dam/Hatchery. Wells counts are not corrected for fish harvested between Rocky Reach and Wells dams.
8. PIT-tagged sockeye primarily comprise run-at-large adults tagged by CRITFC at Bonneville and Priest Rapids dams and include fish originating from Lake Wenatchee and the Canadian Okanagan Basin. Sockeye destined for Redfish Lake in Idaho were excluded from conversion-rate calculations. Rocky Reach-to-Wells conversion rates for sockeye were calculated with data from PTAGIS (http://www.ptagis.org/) rather than via the conversion-rate function on the Columbia River DART site because the latter option does not allow the inclusion of sockeye adults tagged at Bonneville Dam.
9. Rocky Reach sockeye counts exclude fish detected at Tumwater Dam after being detected at Rocky Reach, as a means of excluding Wenatchee-origin fish that ascended and voluntarily fell back over Rocky Reach.
10. The Wells sockeye counts are not corrected for fish harvested between Rocky Reach and Wells dams.
Conversion rates of PIT-tagged fish provide a minimum survival estimate between detection sites because they encompass mortalities from all sources and non-detected fish (as described in Table 3) between the two detection sites. They do not include any indirect or delayed mortality that might occur upstream of Wells Dam (the redetection site). As noted above, conversion rates reflect a combination of mortality attributable to both non-project related causes (e.g., recreational and tribal harvest, predation, and disease) and dam passage, as well as non-detections resulting from straying and spawning downstream of Wells Dam. For this reason, the actual Wells Project survival rate for adult Plan Species exceeds or likely exceeds the 98-percent assumption set forth in the HCP.

Although not addressed in the HCP, passage of adult bull trout has been considered in the operation of Wells Dam for almost a decade. In 2004, FERC issued an order incorporating the HCP and the U.S. Fish and Wildlife Service’s (USFWS’s) Bull Trout Biological Opinion into the FERC license for the Wells Dam Project. Article 62 of the original Wells Project license requires Douglas PUD to file an annual report with FERC describing the activities required by Douglas PUD’s Bull Trout Monitoring and Management Plan. In May 2013, Douglas PUD filed the Bull Trout Management Plan 2012 Annual Report that included activities conducted between January 1, 2012, and December 31, 2012 (Appendix H).

In November 2012, the Wells Project was issued a new FERC license which requires Douglas PUD to implement, among other measures, three bull-trout-related plans and programs. Specifically, the license requires Douglas PUD to implement the Bull Trout Management Plan contained within the Aquatic Settlement Agreement, the 2012 Bull Trout Biological Opinion, and Section 18 of the Federal Power Act: Fishway Prescriptions for Bull Trout.

The first license deadline for reporting annual 2013 bull trout activities is April 15, 2014, when the Annual Bull Trout Report is due to be filed with USFWS, and the second is May 31, 2014, when the Annual Bull Trout Report is scheduled to be filed with FERC.

2.1.2.2 Grand Coulee Valid Study Flow Duration Curve Update

The Wells HCP, Section 4.1.4, requires that spring and summer period Flow Duration Curves used to define valid survival studies must reflect “Representative Environmental Conditions”
for each test, and for each Plan Species and life history. “Representative Environmental Conditions,” as defined by the Wells HCP, means river flows between the 10 percent and 90 percent points on the Flow Duration Curve, as calculated using the best available information on historical average river flow (1929-1978, 1993-2001 HydroSim) as measured at the Grand Coulee Dam tailrace. In March 2013, data were compiled to update the Flow Duration Curves, as periodically required by the Wells HCP. The HCP Coordinating Committees agreed to develop an updated Flow Duration Curve using the historical 1929-1978 and 1983-2001 data sets to which the new 2002-2012 dataset is added, and for comparison, also using only the 1983-2012 dataset. They also agreed to revise the definition of “summer period,” to include June 1 through August 15, as opposed to the former July 1 through August 15 summer dataset. Efforts to update the Flow Duration Curves are underway, and are expected to become finalized in early 2014. These efforts are driven by requirements in the Rocky Island and Rocky Reach HCPs for updating the Flow Duration Curves in 2013, whereas the Wells HCP specifies only periodic review. Nevertheless, the Wells Coordinating Committee considers the updated curves applicable to future survival studies conducted by Douglas PUD.

2.1.2.3 Completed Studies 2013

Pikeminnow Removal Program
Since 1993, Douglas PUD has funded research on, and removal of, northern pikeminnow at the Wells Hydroelectric Project in an effort to understand and control predators of juvenile salmonids within the Project. Annual reports are developed that summarize the pikeminnow research and removal efforts for each year. The 2012 Douglas PUD Pikeminnow Program Annual Report (Appendix I) was finalized in May 2013. Douglas PUD documented the removal of 13,218 northern pikeminnow from the Wells Reservoir and tailrace during annual removal efforts occurring from April 12, 2012, to November 18, 2012. Catch Per Unit Effort (CPUE) levels in 2012 were the lowest to date of any of the annual pikeminnow removal projects. A trend in decreased annual CPUE has been documented over the previous 4 years. This trend suggests that removal efforts are effectively reducing the pikeminnow population within Wells Reservoir and the Wells tailrace area. However, as experienced in 2011, high spring flows in the Columbia River during 2012 prevented pikeminnow capture during the seasonal period when capture has been historically the
highest. From 1995 to 2012, the pikeminnow removal programs, funded by Douglas PUD, have resulted in the removal of approximately 241,000 pikeminnow from the Wells Project.

In 2013, Douglas PUD continued pikeminnow removal efforts, and a final report is expected to be available by spring 2014.

**Lamprey Passage Studies**

In 2009 and 2010, Douglas PUD conducted studies of adult lamprey fishway entrance efficiencies at both 1.0-foot and 1.5-feet head differentials in water surface elevations between the Wells fishway collection gallery and the Wells tailrace, using Dual Frequency Identification Sonar (DIDSON) cameras. A 0.5-foot head differential was tested in 2009, but was abandoned in 2010 because that differential appeared to offer no additional benefits to lamprey passage in comparison to the 1.0-foot differential. The effect of the different operating conditions on Wells fishway residency times for salmonids was evaluated by species.

In 2009, no differences were detected in fishway residency times for any salmonid species evaluated (coho, sockeye, steelhead, and Chinook), although the sample size may have been too low to detect significant differences. In 2010, there was a large sample size of steelhead and Chinook and no differences were detected at either the 1.0-foot or 1.5-feet head differential. Based on the study findings, it was concluded that lamprey appeared to have increased entrance efficiency at the 1.0-foot head differential with no apparent decrease in salmonid passage relative to the 1.5-foot differential. National Marine Fisheries Service (NMFS) staff questioned whether the statistical tests applied were appropriate for the study design, and requested additional statistical analysis of the data on salmonid passage during the lamprey studies.

In 2012, Columbia Basin Research and the University of Washington’s School of Aquatic and Fishery Sciences completed a report that examined the possible effects of changes in fishway entrance water velocity on the passage counts of Chinook, coho, and sockeye salmon, and steelhead (Skalski, J. R., and R. L. Townsend, 2012). Results of the analysis indicated that there were no statistically detectable effects on salmonids from reduced velocities at the fishway entrances (at the 1.0-foot head differential) during the study hours of operations.
NMFS approved the report and the implementation of a 1.0-foot fishway entrance head differential was approved for each night, from 1700 to 0100 hours, of the 2012 lamprey migration period at Wells Dam.

In 2013, as treatments in the Adult Lamprey Passage and Enumeration Study, lamprey operations consisted of alternating 1.0-foot and 1.5-feet head differentials. The Adult Lamprey Passage and Enumeration Study is a radio-telemetry study of lamprey dam-passage behavior being conducted at the request of Douglas PUD’s Aquatic Settlement Work Group (SWG). The study employs active tagging of translocated adult lamprey to assess lamprey passage and enumeration under reduced Wells Project fishway entrance velocities at Wells Dam.

Subyearling Studies
In 2010, Douglas PUD and Chelan PUD agreed to monitor PIT-tagged, natural-origin summer/fall Chinook detected at the Rocky Reach Juvenile Fish Bypass (RRJFB) to begin study of their life history diversity. A focus of the study was to determine outmigration timing and size-at-migration: information that is necessary for estimating the survival of migratory summer/fall Chinook salmon. However, the initial year of study (2010) revealed limited numbers of PIT-tagged subyearlings in the Upper Columbia River.

In 2011, Douglas PUD conducted a pilot study to investigate spatial and temporal distribution of subyearling Chinook in the Wells Reservoir and to identify opportunities to increase the numbers of PIT-tagged subyearling Chinook for the life history investigation. In 2011, Douglas PUD staff successfully collected more than 18,500 natural-origin subyearling Chinook, and PIT-tagged and released 13,223 subyearling Chinook back to the Wells Reservoir. The collections occurred at several locations in the Wells Reservoir. The 2011 study results, reported in the Wells Project Subyearling Chinook Life-History Study 2011 Interim Report, which was appended to the 2012 Wells HCP Annual Report and approved by the HCP Coordinating Committees in February 2013, identified study limitations and logistical obstacles, primarily regarding fish availability, migratory behavior, and fish size, that were used to inform future research.
In 2012, Douglas PUD implemented a similar study, during which more than 30,000 subyearling summer/fall Chinook salmon were collected and more than 20,000 were tagged and released. Fish were collected at three locations in the reservoir: 1) on the right bank upstream of the Okanogan River near Washburn Island; 2) on the right bank downstream from the mouth of the Okanogan River; and 3) on the left bank approximately one mile upstream of Wells Dam. The data collected during the 2012 study were compared to the 2011 data and the results were reported in a technical memorandum (Appendix J), which was presented at the HCP Coordinating Committees meeting on March 26, 2013.

In 2013, Douglas PUD implemented the third year of study on the life-history diversity of subyearling Chinook in the Wells Reservoir, in accordance with the study plan *Subyearling Study Plan Year 3* (Appendix K). The same methods were used as those used in 2011 and 2012 to allow comparison of year-to-year findings and to evaluate behavior under different environmental conditions. Approximately 20,000 subyearling summer/fall Chinook salmon were collected and nearly 18,000 were tagged and released. Fish were collected from the same locations that proved successful in 2012, with the addition of a collection site used in 2011 but not in 2012. A comprehensive 3-year report is being developed and is expected to be available in 2014.

**Wells Dam Bypass Operations and Outmigration Effects**

The Wells HCP, Section 4.3.2, requires Douglas PUD to conduct a 10-year verification of the effectiveness of the timing of bypass operations at Wells Dam in passing 95 percent of the spring and summer migration of HCP Plan Species. Historically, hydroacoustic and fyke netting studies at Wells Dam provided these data on passage timing necessary to determine the timing of annual bypass operations. Douglas PUD discussed the requirement found in Section 4.3.2 of the HCP with the Wells Coordinating Committee in early 2011 to plan for a study in 2012. The Wells Coordinating Committee representatives questioned the need for such a study because of the potential for take, and instead suggested an alternative to using the past methods of hydroacoustic monitoring and fyke netting for species verification. Douglas PUD agreed to verify run-timing by comparing Rocky Reach Dam juvenile bypass index samples to bypass operations at Wells Dam, using the run-timing of fish passing through the RRJFB as a surrogate for run-timing at Wells Dam.
Results of the analysis of run-timing at the RRJFB confirmed that in most years the Wells bypass was appropriately operated to cover 95 percent of the spring and summer migration at Wells Dam. However, in 2 of the 6 years analyzed, an earlier start of the Wells bypass would have provided additional benefits to spring Chinook. Also, the analysis determined that the Wells bypass system could have been shut down earlier in each of the 6 years analyzed and would still have provided greater than 95 percent protection for summer migrating Chinook. The Wells Coordinating Committee agreed that this data would be used to guide the operations of the Wells Bypass System, beginning in 2012.

In 2012, following the termination of sampling at the RRJFB, Douglas PUD updated the analysis with data from 2012; and in December 2012, distributed the report, *Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2012* (Columbia Basin Research, Skalski and Townsend 2012). The updated analysis indicated that the modified bypass timing initiated in 2012 provided bypass passage for greater than 99 percent of both spring and summer migrations of Plan Species.

Similarly, in 2013, following the termination of sampling at the RRJFB, Douglas PUD updated the analysis with 2013 bypass data; and in October 2013, distributed the report, *Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2013* (Columbia Basin Research, Skalski and Townsend 2013), which was appended to the final 2013 Wells Dam Post-Season Bypass Report (Appendix O). The updated analysis indicated that the modified bypass timing implemented in 2013 provided bypass passage for greater than 98 percent of both spring and summer migrations of Plan Species (see Section 2.1.3.1).

**Gas Bubble Trauma Monitoring**

In conformance with the 2013 Gas Abatement Plan (Appendix L), Douglas PUD implemented monitoring for Gas Bubble Trauma (GBT) in adult Plan Species at Wells Dam and the Wells Hatchery, and in juvenile Plan Species at the RRJFB sampling facility. Total dissolved gas (TDG) conditions in 2013 necessitated only one sampling event (on April 12), and none of the fish sampled showed any indication of GBT.
2.1.2.4  Planned Studies 2014

No new studies are planned for implementation at the Wells Project in 2014. However, Douglas PUD will continue the annual implementation of the pikeminnow removal program in 2014. Also, as in previous years, Douglas PUD will continue the evaluation of the effectiveness of the timing of bypass operations at Wells Dam and its effects on outmigration, by updating the analysis of run-timing at the RRJFB with 2014 data, following the termination of sampling at the RRJFB; a report will be developed summarizing the results.

2.1.3  Wells Project Operations and Improvements

This section summarizes project operations toward meeting and maintaining HCP requirements at Wells Dam in 2013. Actions in 2013 were guided by the 2013 Wells HCP Action Plan (Appendix M), as approved by the Coordinating Committees on January 22, 2013 (Appendix A).

2.1.3.1  Operations

Wells Project FERC License

In November 2012, FERC issued Douglas PUD their new Wells Hydroelectric Project license. The term of the new license is 40 years. The new license requires additional documentation of Project activities including the development of a number of reports. The license also stipulates additional review and approval processes, including a new requirement to provide the HCP Coordinating Committees with the opportunity to review certain documents. In December 2012, Douglas PUD filed a request for re-hearing to address a number of questions regarding the new license. The FERC issued orders on May 16, 2013, granting in part and denying in part Douglas PUD’s request for rehearing. In June 2013, Douglas PUD filed with the FERC a request for reconsideration of two of the decisions for which the FERC had denied a rehearing: 1) the decision by the FERC to exclude the costs of the HCP in the evaluation of the extent of measures included in the new license, and 2) the FERC decision to issue a 40-year license rather than the requested 50-year license. That request was denied on September 19, 2013, and the new license stands as revised by the FERC orders of May 16, 2013.
Juvenile Bypass System
As in past years, operation of the juvenile bypass system in 2013 was guided by the Juvenile Bypass Operating Plan (BOP; Appendix N) and criteria contained within Section 4.3 of the Wells HCP. Bypass operations were initiated on April 9, 2013, at 0000 hours, and operated continuously until terminated at 2400 hours on August 19, 2013, for a total of 133 days. To implement compliance measures as described in the 2013 BOP (Appendix N) and provisions of the 2013 Gas Abatement Plan (GAP; Appendix L), bypass barriers in Spill Bay 6 were pulled on May 23, 2013, and reinstalled on May 30, 2013; and then removed again on July 1, 2013, and reinstalled on July 11, 2013. Douglas PUD achieved the HCP requirement to provide bypass operations during 95 percent of the juvenile salmon and steelhead migration passing Wells Dam by providing bypass passage during 98.29 percent of the yearling Chinook migration, 99.21 percent of the steelhead migration, 99.99 percent of the sockeye migration, 100 percent of the coho migration, and 99.33 percent of the sub-yearling Chinook migration passing Wells Dam in 2013. A complete summary of 2013 bypass operations at Wells Dam is included in the final 2013 Post-Season Bypass Summary (Appendix O). In December 2013, the draft Wells Dam 2014 GAP and BOP were distributed to the Coordinating Committees for review, and in January 2014, the plans were approved by the Wells Dam Coordinating Committee.

Modified Wells Dam Fishway Entrance Velocities
In February 2013, the Wells Coordinating Committee approved implementation of modified Wells Dam fishway entrance velocities (lamprey operations) during the 2013 lamprey migration, to enhance lamprey entrance efficiency. Studies in 2009 and 2010 at Wells Dam indicated that the reduction of the fishway collection gallery-to-tailwater head differential from 1.5 feet to 1.0 foot may enhance lamprey entrance efficiencies into the Wells Dam fishways by reducing velocities at the entrance. In 2012, the Wells Coordinating Committee approved implementation of a 1.0-foot head differential at Wells Dam fishway entrances each night during the 2012 lamprey migration. Prior to approving the changes, an evaluation of the effects of the change in entrance velocities on salmonid species passage rates was conducted. The evaluation showed no differences in passage rates for Chinook, coho, and sockeye salmon and steelhead, in 2009 and 2010. In 2013, lamprey operations consisted of a 1.0-foot head differential at Wells Dam fishway entrances every other night, and the normal, 1.5-feet head differential operating on alternating days. The alternating
operations served as treatments in a radio-telemetry study of lamprey dam-passage behavior being conducted at the request of the Aquatic SWG. Timing of the initiation of lamprey operations at Wells Dam fishways, which was based on the timing of release of radio-tagged lamprey below Wells Dam, was implemented from 1900 hours to 0200 hours from July 15, 2013, until October 7, 2013. Douglas PUD committed to conducting a full study of the effects of modified head differentials on salmonid passage rates prior to considering any permanent change in fishway operations.

**Trapping Activities at Wells Dam**

Multiple hatchery programs obtain broodstock from the Well Dam fishway traps and Wells Hatchery volunteer channel. The Coordinating Committees oversee these activities as certain trapping activities can affect passage at the dam. In 2013, trapping operations at Wells Dam included: 1) Washington Department of Fish and Wildlife (WDFW) for Douglas PUD’s spring Chinook and steelhead programs; 2) the Colville Confederated Tribes (CCT) as backup for the Chief Joseph Hatchery program; 3) Dr. Jeff Fryer for the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) sockeye study; 4) the YN for their coho reintroduction program and their Yakima River summer Chinook reintroduction program; 5) Grant PUD for their Carlton summer Chinook program; and 6) USFWS for their Entiat summer Chinook program. Douglas PUD also occasionally receives trapping requests from various interests and those associated with research proposals.

**Water Quality Documentation**

Douglas PUD develops a number of plans that address water quality in the Wells Reservoir. Historically, these types of documents have solely been the purview of the Aquatic Settlement Workgroup. However, with the issuance of the new FERC License Order in 2012, there is now a requirement to provide the HCP Coordinating Committees with the opportunity to review these documents. In 2013, the Wells Dam Water Quality Attainment Plan (WQAP; Appendix P), which addresses meeting water quality standards for Washington State, was reviewed and approved by the HCP Coordinating Committees.
2.1.3.2 Improvements

Facility improvements and maintenance at Wells Dam in 2013 that had the potential to affect Plan Species are discussed in the paragraphs that follow.

The fishways at Wells Dam are inspected annually during winter, but at least one fishway is always in service to provide fish passage. Typically, each fishway receives, according to an alternating schedule, either a routine annual or a more substantial biannual inspection and maintenance. However, during the 2012/2013 winter fishway maintenance at Wells Dam, both east and west fishways were offline for staggered, extended maintenance periods, as several projects were scheduled to be completed for both ladders. Maintenance on the east fishway commenced the first week of December 2012 and concluded on January 24, 2013. Specific projects included: 1) installation of grating to benefit passage of lamprey and other plan species; 2) installation of safety railings and walkways on lower ladder sections; 3) installation of half-duplex (HD)-PIT detection at pool 19; 4) installation and repair of radio telemetry (RT) antennas in preparation for the 2013 Adult Lamprey Passage and Enumeration Study; and 5) completed work on the fish pumps for the auxiliary-water-supply system that provides attraction flow in the Wells Dam collection gallery. Maintenance on the west fishway in February included installation of lamprey grating, safety railings, and walkways, and also installation of RT antennas.

In December 2013, the west fish ladder was dewatered, which allowed a modification to the count window area to improve fish count efficiency. Hydromechanics removed a ramp on the upstream side of the count window that was installed during last year’s winter fishway maintenance at Wells Dam. The upstream ramps were installed in both ladders to improve lamprey passage and enumeration; however, based on an evaluation conducted by NMFS, it was determined that the upstream ramps may actually be inhibiting the ability to accurately count fish by causing uneven hydraulics and flow separation through the count window area, and subsequently causing smaller fish to repeatedly pass back and forth through the count window area. After review of available data, it was also determined that lamprey were not using the ramps to pass through the count window area. Therefore, the HCP Coordinating Committees approved removing the ramps from both ladders to improve fish count efficiency in future years. The ramp will be removed from the east ladder in February 2014. Other improvements to the count window area to improve fish count efficiency
included improved lighting and camera and recording technology (i.e., installation of a high-definition system that will enable quicker fish identification). These same improvements will be implemented in the east fish ladder before fish counting begins in April 2014.

In September 2013, infrastructure for a new TDG monitoring station was installed in the Wells Reservoir near Washburn Island. The new station will be activated in early 2014, and is located downstream of where Chief Joseph Dam spillway zone and powerhouse flows meet, which will provide a more accurate TDG reading of water entering the Wells Dam forebay.

2.2 Hatchery Compensation

As required by the HCP, Douglas PUD supported hatchery production in 2013 to compensate for unavoidable project mortality and loss of habitat resulting from original inundation by the project. Section 8 of the Wells HCP outlines a Hatchery Compensation Plan with two hatchery objectives for Douglas PUD: 1) to provide hatchery compensation for spring Chinook, summer/fall Chinook, sockeye, and coho salmon; and for summer steelhead; and 2) to implement specific elements of the hatchery program consistent with the overall objectives of rebuilding natural populations and achieving NNI.

In March 2012, the draft 2013 Broodstock Collection Protocols (for Chinook and coho salmon, and steelhead) were distributed to the HCP Hatchery Committees for review. The protocols were finalized in November 2013 and implemented at program hatcheries (Appendix Q); in-season revisions were made as needed in coordination with the Wells Hatchery Committee. As agreed by the HCP Hatchery Committees, a provision was added to the 2013 protocols stipulating that in the event that Carson stock ancestry is detected in natural origin spring Chinook collected for broodstock, those fish may be retained and used for broodstock. The 2013 Broodstock Collection Protocols were intended to guide the collection of salmon and steelhead broodstock in the Methow, Okanogan, Wenatchee, and Columbia River basins. The protocols are consistent with previously defined program objectives such as program operational intent (i.e., conservation and/or harvest augmentation) and mitigation production levels (HCPs, and the Priest Rapids Dam 2008 Biological Opinion), and they comply with Endangered Species Act (ESA) permit provisions.
Hatchery compensation for NNI and inundation compensation in 2013 included the release of 677,094 yearling and 493,451 subyearling salmonids from hatcheries associated with the Wells Project (Tables 4 and 5). These totals do not include the increased production of natural-origin sockeye smolts attributed to Douglas PUD’s sockeye NNI compensation—the continued implementation of the Fish-Water Management Tool project administered by the Okanagan Nation Alliance and funded by Douglas PUD. The total also does not include NNI compensation paid by Douglas PUD to the YN for the Coho Enhancement Program in the Methow Basin. Lastly, these totals also do not include the Methow Basin spring Chinook raised by Douglas PUD for Chelan and Grant PUDs or the yearling steelhead produced at the Wells Hatchery by Douglas PUD for Grant PUD.

2.2.1 Hatchery Production Summary

Tables 4 and 5 summarize and compare HCP hatchery production objectives and actual 2013 production levels (release numbers) for both the fixed hatchery compensation for the original Inundation and Harvest Enhancement Programs, and the HCP passage loss (NNI) compensation programs.

2.2.1.1 Inundation Compensation Program

The FERC license to operate the Wells Hydroelectric Project requires Douglas PUD to rear and release fish to compensate for original impacts associated with the development of the Wells Dam and Reservoir. All of the fish for this program are raised at the Wells Hatchery. The number of fish to be released each year for the Inundation and Harvest Enhancement Program can be found in Section 8.4.6 of the Wells HCP Agreement.

<table>
<thead>
<tr>
<th>Inundation and Harvest Compensation Program</th>
<th>Numeric Target</th>
<th>Number Released</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearling Summer/Fall Chinook (2011 BY)</td>
<td>320,000</td>
<td>289,998</td>
</tr>
<tr>
<td>Subyearling Summer/Fall Chinook (2012 BY)</td>
<td>484,000</td>
<td>493,451</td>
</tr>
<tr>
<td>Yearling Summer Steelhead (2012 BY)</td>
<td>300,000</td>
<td>207,404</td>
</tr>
</tbody>
</table>
2.2.1.2 **NNI Compensation Program**

Section 8.4.3 of the Wells HCP contains the initial numbers of juvenile HCP Plan Species to be produced to meet Douglas PUD’s NNI production levels for unavoidable juvenile losses at the Wells Project. These initial production targets were decreased in 2011, following the demonstration of higher than expected survival through the Wells Project for spring-migrating yearling Chinook and steelhead (per the 2010 Survival Verification Study). The hatchery compensation production targets were also adjusted (Wells HCP Agreement Section 8.4.5), with NNI steelhead releases adjusted starting in 2013 and NNI spring and summer Chinook targets adjusted starting with the 2014 releases. The NNI production goals for the 2013 releases are contained in Table 5 (Numeric Target). Juvenile passage losses are offset through the production of juvenile Plan Species at three facilities (Wells Hatchery, Methow Hatchery, and Eastbank Hatchery) and through the implementation of mitigation options identified in the Sockeye Enhancement Decision Tree.

<table>
<thead>
<tr>
<th>NNI Compensation Program</th>
<th>Numeric Target</th>
<th>Number Released</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearling Summer Steelhead (2012 BY)</td>
<td>8,000</td>
<td>8,000&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Yearling Summer/Fall Chinook (2011 BY)</td>
<td>105,714</td>
<td>115,253&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Yearling Spring Chinook (2011 BY)</td>
<td>59,464</td>
<td>56,439&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Yearling Osoyoos Lake Sockeye&lt;sup&gt;4&lt;/sup&gt;</td>
<td>NNI achieved by annually funding the Fish-Water Management Tool</td>
<td></td>
</tr>
<tr>
<td>Methow Coho&lt;sup&gt;5&lt;/sup&gt;</td>
<td>NNI achieved by payment to the YN for the Coho Enhancement Program in the Methow Basin</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. The total wild X wild production released into the Twisp River was 51,473, including 8,000 NNI fish and 43,473 inundation fish (Table 4, [C. Snow, WDFW 2014, personal communication]).
2. Carlton Pond Summer Chinook are released by Chelan PUD for Douglas PUD as part of the Douglas-Chelan Hatchery Sharing Agreement. 2013 is the final year of releases under this terminated agreement.
3. There were 452,961 spring Chinook smolts released from the Methow Hatchery in 2013 (C. Snow, WDFW 2014, personal communication), and an additional 51,556 spring Chinook from Methow Hatchery were transferred to the YN and released from Heath Pond (Mid-Valley Acclimation Pond). The total Methow Hatchery production target of 548,464 fish is a combination of Wells NNI (59,464) and the sharing agreements with Chelan PUD (288,000) and Grant PUD (201,000). Releases from Heath Pond and Methow Hatchery were combined to determine overall production.
4. Okanogan Sockeye obligation for NNI is covered by Douglas PUD funding of the FWMT program (Wells HCP: Sections 8.4.4 and 14, and Figure 3) managed through the Okanagan Nation Alliance.
5 NNI for Methow coho is achieved through the funding provided to the YN for the Coho Enhancement Program as approved by the HCP Hatchery Committees at the December 12, 2007 meeting.

BY = brood year

### 2.2.2 Hatchery Planning

#### 2.2.2.1 Monitoring and Evaluation Plan Implementation and 5-year Update

Since 2006, Douglas PUD hatchery programs have been operated in accordance with three documents: 1) the Hatchery Monitoring and Evaluation (M&E) Plan, titled *Conceptual Approach to M&E for Hatchery Programs Funded by Douglas County Public Utility District*, originally developed in 2005 and updated in 2007, addresses the Wells HCP, Section 8.5, and is the guiding document for the M&E program; 2) the Hatchery M&E Analytical Framework, titled *Analytical Framework for M&E PUD Hatchery Programs*, prepared in 2006 and updated in 2007, provides the analysis tools for the Hatchery M&E Plan; and 3) the Douglas PUD Hatchery M&E Implementation Plan, titled *Implementation of Comprehensive M&E of Hatchery Programs funded by Douglas County PUD*, prepared and approved by the Wells HCP Hatchery Committee annually to describe the M&E activities for the next calendar year. The Douglas PUD 2013 Hatchery M&E Implementation Plan was approved by the HCP Hatchery Committees in December 2012, and was appended to the 2012 Wells HCP Annual Report.

The Wells HCP, Section 8.5.1, requires updates to the Hatchery M&E Plan every 5 years. In April 2012, the HCP Hatchery Committees began the process of updating the Hatchery M&E Plan, capitalizing on the lessons learned during the first 5 years of Hatchery M&E Plan implementation; and in June 2012, a Hatchery M&E Workgroup was formed to review and recommend revisions to the Hatchery M&E Plan. In August 2012, with the Wells Hatchery Steelhead and Methow Hatchery Spring Chinook Hatchery and Genetic Management Plan (HGMPs) still pending consultation, the HCP Hatchery Committees agreed to defer implementation of the fully revised Hatchery M&E Program until 2014, and agreed to implement the existing M&E programs with minor updates in 2013. This revised schedule would align new ESA permit deadlines with the proposed schedule for the M&E program updates, and also would allow more time for a thorough review of the existing M&E program and for development of M&E updates.
In January 2013, while updating the Hatchery M&E Plan, for efficiency, the HCP Hatchery Committees agreed to consolidate the Hatchery M&E Plan and the Hatchery M&E Analytical Framework into a single document, simply referred to as the Hatchery M&E Plan. In April 2013, after several meetings of the Hatchery M&E Workgroup and months of revisions and review, the Wells HCP Hatchery Committee approved the 5-year update of the Hatchery M&E Plan, titled *Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update*, with the caveat that any future appendices for the plan will require HCP Hatchery Committee approval (Appendix R and Appendix F).

The Douglas PUD 2012 hatchery M&E Plan report, titled *Monitoring and Evaluation of Wells and Methow Hatchery Programs: 2012 Annual Report*, which documented M&E activities in 2012 (Appendix T), was approved in November 2013. A similar report will be completed in 2014 for 2013 M&E activities of natural production and hatchery operations. In December 2013, the Douglas PUD 2014 Hatchery M&E Implementation Plan (Appendix S) was finalized after a 30-day HCP Hatchery Committees review period.

### 2.2.2.2 Hatchery and Genetic Management Plans

In October 2008, NMFS requested that the Wells Hatchery Committee prepare updated HGMPs for Douglas PUD hatchery programs, including the Methow Hatchery Spring Chinook and Wells Hatchery Steelhead programs. NMFS is using the HGMPs to conduct ESA consultations, prepare Biological Opinions (BiOps), and issue new 10-year Incidental Take Permits for those programs. In February 2013, NMFS also requested an updated HGMP for Douglas PUD’s Wells Hatchery Summer Chinook program.

#### Methow Hatchery Spring Chinook

The Methow Hatchery Spring Chinook HGMP was developed and refined throughout 2009 and approved by the Wells Hatchery Committee on February 17, 2010, and was then submitted to NMFS for ESA consultation on March 12, 2010. NMFS subsequently requested additional analyses to inform the potential to achieve management objectives of interest to NMFS. Douglas PUD performed these analyses for the Methow Hatchery Spring Chinook Program and submitted them to NMFS in November 2012, in the form of a supplemental information package. In March 2013, Douglas PUD received a letter of scientific sufficiency.
for their Methow Hatchery Spring Chinook HGMP, initiating consultation for the Methow Hatchery Spring Chinook program. In August 2013, NMFS alerted the Hatchery Committees that the new permits would not be complete by the expiration of the current permits. Subsequently, on September 20, 2013, Douglas PUD received a letter from NMFS indicating that the existing ESA permits would be extended until consultation is complete and a new permit is issued. Permitting is anticipated to be complete by June 2014.

**Wells Hatchery Steelhead**

The Wells Hatchery Steelhead HGMP was developed in 2009 and 2010. The extended time required to reach consensus on this HGMP was largely the result of efforts to coordinate federal, state, and tribal interests in the Methow Basin. On March 7, 2011, the Wells Hatchery Committee approved the Wells Hatchery Steelhead HGMP, which was then submitted to NMFS on April 13, 2011, for ESA consultation. In November 2011, NMFS began reviewing the Wells Hatchery Steelhead HGMP and subsequently requested additional analyses to inform the potential to achieve management objectives of interest to NMFS. Douglas PUD performed these analyses for the Wells steelhead program and submitted them to NMFS in October 2012, in the form of a supplemental information package. In March 2013, Douglas PUD received a letter of scientific sufficiency for their Wells Hatchery Steelhead HGMP, initiating consultation for the Wells Hatchery Steelhead program. In August 2013, NMFS alerted the Hatchery Committees that the new permits would not be complete by the October 2, 2013 expiration of the current permits. Subsequently, on September 20, 2013, Douglas PUD received a letter from NMFS indicating that the existing ESA permits would be extended until consultation is complete and a new permit is issued.

**Wells Hatchery Summer Chinook**

The Wells Hatchery Summer Chinook HGMP was developed in March 2013, and was approved by the Wells Hatchery Committee on May 22, 2013 (Appendix U and Appendix F). In August 2013, NMFS alerted the Hatchery Committees that the new permits would not be complete by the October 23, 2013 expiration of the current permits. Subsequently, on September 20, 2013, Douglas PUD received a letter from NMFS indicating that the existing ESA permits would be extended until consultation is complete and a new permit is issued.
2.2.2.3 2013 to 2023 NNI Recalculation

The Wells HCP, Section 8.4.5, requires that hatchery production, except for original inundation mitigation, be adjusted in 2013 and every 10 years thereafter to achieve and maintain NNI. In September 2010, the process to recalculate hatchery production was initiated by the HCP Hatchery Committees. After first approving a method for recalculating hatchery production on July 20, 2011, the database with the numeric inputs for use in the recalculation efforts was approved as final by the HCP Hatchery Committees on August 17, 2011. The HCP Hatchery Committees then approved the recalculated hatchery production levels for Douglas PUD’s NNI supplementation programs for 2013 through 2023 (Table 6) on December 14, 2011. In 2013, the recalculated hatchery production levels were implemented, as required.

Table 6
Douglas PUD’s Recalculated (2013 to 2023) NNI Hatchery Obligations by Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Facility</th>
<th>Release Location</th>
<th>Recalculated 2013-2023 Obligation</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Chinook</td>
<td>Chief Joseph Hatchery¹</td>
<td>Okanogan Basin</td>
<td>33,300</td>
<td>NNI</td>
</tr>
<tr>
<td></td>
<td>Methow Hatchery</td>
<td>Methow Basin</td>
<td>29,123</td>
<td>NNI</td>
</tr>
<tr>
<td>Summer Chinook²</td>
<td>Chief Joseph Hatchery</td>
<td>Upper Columbia</td>
<td>48,100</td>
<td>NNI</td>
</tr>
<tr>
<td></td>
<td>(yearling)</td>
<td>Mainstem/Okanogan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chief Joseph Hatchery</td>
<td>Upper Columbia</td>
<td>49,000</td>
<td>NNI</td>
</tr>
<tr>
<td></td>
<td>(subyearling)</td>
<td>Mainstem/Okanogan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steelhead</td>
<td>Wells Hatchery</td>
<td>Twisp River</td>
<td>8,000</td>
<td>NNI</td>
</tr>
<tr>
<td>Sockeye</td>
<td></td>
<td></td>
<td>NNI met through funding of Fish-Water Management Tool</td>
<td></td>
</tr>
<tr>
<td>Coho</td>
<td></td>
<td></td>
<td>NNI met through a funding Agreement for the YN Coho Reintroduction Program</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1 Douglas PUD has agreed to provide funding for spring Chinook salmon at Chief Joseph Hatchery.
2 Douglas PUD has agreed to provide funding for summer Chinook salmon at Chief Joseph Hatchery (54,575 yearlings, or 48,100 yearlings plus 49,000 subyearlings). Prior to recalculation, funding was provided for 105,714 yearling Chinook at the Carlton Acclimation Pond.

2.2.2.4 Hatchery Production Management Plan

In 2011, WDFW, in coordination with the HCP Hatchery Committees, drafted a Hatchery Production Management Plan to document criteria, measures, and actions that contribute to better meeting hatchery production targets, and minimize overproduction. Although not finalized in 2011, WDFW began implementing those actions identified in the draft 2011
Hatchery Production Management Plan for which there was support among the fishery co-
managers. In 2012, the Hatchery Production Management Plan was finalized and approved
and included as an appendix to the Final 2012 Broodstock Collection Protocols. Similarly, in
2013, the Hatchery Production Management Plan was appended to the Final 2013
Broodstock Collection Protocols (Appendix Q) that were submitted to NMFS in November
2013.

2.2.2.5 **Objective 10 of the Hatchery M&E Plan – NTTOC**

The HCP Hatchery Committees began addressing the interaction of Plan Species with non-
target taxa of concern (NTTOC; Objective 10 of the original Hatchery M&E Plan) in early
2008. At the close of 2008, the HCP Hatchery Committees agreed to conduct a review of
risks to NTTOC using an expert-panel and a risk-based model that WDFW had previously
developed and applied in the Yakima River basin (Ham and Pearsons, 2001, Fisheries 26: 15-
23). The HCP Hatchery Committees agreed on the species to be analyzed and containment
objective categories for these species, as well as potential panel members for the exercise, in
November 2008. The final documentation for this decision was summarized in *Summary and
Strategy for Monitoring and Evaluation Plan Objective 10 (NTTOC)*.

In August 2009, the HCP Hatchery Committees directed the Hatchery Evaluation Technical
Team (HETT) to conduct the NTTOC assessment. For review, input, and approval by the
HCP Hatchery Committees, the HETT developed a list of regional and local ecological
experts to invite to serve on a panel to estimate the risk of HCP Plan Species hatchery
programs to NTTOC, and developed a strategy and logistics for conducting the assessment
panel workshops (by phone, in person, or a combination of the two).

In 2010, the HETT worked on completing the NTTOC risk-assessment template (a dataset
structured for modeling and expert panel review) and a draft manuscript describing the risk-
assessment approach, with the intentions of providing the template and manuscript to
potential panel members, along with a cover letter requesting their participation in a Delphi
process.
In May 2011, the risk-assessment manuscript was completed, and in October 2011, the HETT completed the risk-assessment template and developed a database to house the risk-assessment input data and to use as an analytical tool. In November 2011, the HCP Hatchery Committees approved the HETT recommendation to use the recalculated hatchery production numbers in the risk assessment.

In 2012, the HETT began conducting preliminary runs of the risk-assessment model using the recalculated production numbers. In August 2012, the HETT began compiling the results of model runs completed to date into the database for analysis, which would then also be used to assess Delphi panel results in comparison with the model results. The HETT also recommended that the Delphi panel should initially consist of a smaller group of local scientists and that the HETT would produce a report on the NTTOC modeling and the Delphi results for the HCP Hatchery Committees.

By November 2013, all anticipated model runs were complete and those data were entered in the NTTOC database. While running the models, a coding issue was discovered in the model that caused certain runs to fail, and fixing the program could not be resolved easily. In the interest of finalizing the NTTOC study, the HCP Hatchery Committees agreed to move forward and develop a report that summarizes the modeling results, and also acknowledges the limitations of the existing model. This report is expected to be available in early 2014. The content of this report will allow the Hatchery Committee to make an informed decision on whether this effort fulfills Objective 12 of the Hatchery M&E Plan (formerly Objective 10), or if further work is warranted.

### M&E Program Reference/Control Groups

Between 2007 and 2011, the HETT identified reference populations for the Chiwawa, Methow, Twisp, and Chewuch spring Chinook programs. They also found a suitable reference population for the Wenatchee, Methow, and Okanogan summer Chinook programs. The Methow, Twisp, and Chewuch reference populations were used in analyses for the 5-year M&E report (Section 2.2.2.2). They did not, however, identify suitable reference populations for sockeye or steelhead. Therefore, in 2012, the HETT recommended that prior to the development of the next 5-Year M&E Report (due in 2017), the HCP
Hatchery Committees consider how best to evaluate the effects of supplementation when no reference populations are available (as in the case of steelhead and sockeye).

### 2.2.2.7 Steelhead Reproductive Success Study

The Wells HCP, Section 8.5.3, requires Douglas PUD to fund and implement a steelhead relative reproductive success study (RSS). On February 1, 2010, the Wells HCP Hatchery Committee approved the Twisp Steelhead Reproductive Success Study plan. The study covers a 12-year period beginning in 2010 (and also includes tissue samples collected in 2009). It focuses on an adult-to-adult assessment of the relative reproductive success of hatchery and wild fish, and includes the measurement of covariates of fitness. The study is designed to provide data to distinguish genetic and environmental influences on reproductive success. Study results will be used in management of summer steelhead in the Methow subbasin.

To date, genetic analyses have been completed by the WDFW Molecular Genetics Laboratory on the first four brood years in the study of adult steelhead returns to the Twisp River, with the fifth year (2013) underway. Fish were genotyped using 192 single nucleotide polymorphism (SNP) loci. The number of adult steelhead genotyped each year has varied, including 361 for brood year 2009, 346 for brood year 2010, 264 for brood year 2011, and 262 for brood year 2012.

In September 2013, WDFW issued the final report for the 2012 samples, titled *Relative reproductive success of Twisp River hatchery and wild steelhead (Oncorhynchus mykiss): Summary report for Single Nucleotide Polymorphism (SNP) genotyping of adult collections – Return Year 2012* (Appendix V). In the 2012 report, WDFW updated the SNP panel that was used for analysis because certain markers were not conforming or meeting genetic statistical expectations with the former panel. Analyses from previous years of the study were rerun with the new SNP panel and no differences from past analyses were observed.

Currently, genotyping of approximately 163 samples from 2013 is in process. For all years completed, the SNP loci are assessed for appropriateness for the Twisp River steelhead population and study goals, and several population genetic analyses are conducted. These
data will be used to conduct parentage analysis in future years. Field work for this study is conducted under the M&E program. A report summarizing findings from the 2013 samples will be available by fall 2014.

2.2.2.8 *Multi-Species/Expanded Acclimation*

In the interest of developing a long-term multi-species/acclimation plan for Upper Columbia River salmon mitigation programs, the Joint Fisheries Parties (JFP) agreed to develop a draft plan outlining multi-species acclimation options for Upper Columbia River salmon and steelhead mitigation programs. In January 2013, the YN distributed an Expanded Acclimation Plan for review and discussion. In October 2013, the YN further discussed potentially expanding acclimation areas in the Upper Methow, and agreed to develop a document summarizing the details of these plans. Additional discussion is anticipated for 2014.

2.2.2.9 *Fish Water Management Tool*

In 2013, Douglas PUD continued to fund the Fish Water Management Tool (FWMT) in lieu of providing hatchery-reared sockeye smolts as compensation, as previously agreed upon by the HCP Hatchery Committees in October 2004. The FWMT, developed through a collaborative effort led by Dr. Kim Hyatt of Fisheries and Oceans Canada, is a water management decision model that guides water management in the Canadian Okanagan River basin for the benefit of Okanagan sockeye and Okanagan Lake kokanee. The FWMT is used by water and fisheries managers to minimize flooding, limit desiccation and scouring of salmon redds, and minimize the spatial extent of low oxygen levels in Osoyoos Lake.

2.2.2.10 *Confidence in Estimation of Broodstock Numbers*

In February 2013, Douglas PUD completed exploratory work on broodstock calculations for managing risk and expectations in broodstock collection, and a white paper was developed summarizing the findings (Appendix W). The analysis provides an approach to estimate the number of broodstock required to meet programmatic goals with a specified level of confidence. This approach would allow managers to balance the potential costs and benefits of collecting a certain number of broodstock for a program. The Hatchery Committee was
undecided as to how this would be implemented in developing the annual Broodstock Protocols. This topic will be addressed again in 2014.

2.2.2.11 Grant PUD Fish Production Request

Each year, Grant PUD submits a request to Douglas PUD to produce fish for Grant PUD programs (Appendix X). The Hatchery Committees have routinely approved these requests after determining that a request would not impact Douglas PUD’s HCP production. In June 2013, the Hatchery Committees approved Grant PUD’s request that Douglas PUD produce 100,000 steelhead for release in the Okanogan at Wells Hatchery, and 134,126 Methow River spring Chinook at the Methow Fish Hatchery.

2.2.3 Maintenance and Improvements

Several maintenance and improvement activities were completed in 2013 in support of hatchery production under the Wells HCP. These activities included the CCT’s completion of the new Chief Joseph Hatchery (where Douglas PUD’s NNI production of Okanogan spring Chinook and Upper Columbia River summer Chinook are now produced). Also, progress has been made on plans for the modernization of the Wells Hatchery to meet the new requirements of the steelhead and summer Chinook HGMPs as well as to produce sturgeon and resident trout for the Off-license Settlement Agreement, as further described below.

In September 2012, Phase I of the modernization of Wells Hatchery was completed, which included the initial assessment of all infrastructure in order to identify needed upgrades. Phase I efforts also included useful life facility assessment, surface water and groundwater well field assessments, and bio-programming. Phase II was completed in January 2013, which finalized the bio-programming, addressed handling and management of adult returns, refined programmatic needs including potential changes to the programs in the future, and addressed configuration options for the facility in terms of water needs, rearing vessels, biological logistics, and workflow for Wells Hatchery operations. Phase III focused on creating the Wells Hatchery Modernization Master Plan, which includes all information generated in Phases I and II, and synthesizes that information into a facilities and operation overview. The Master Plan also guides development of bid drawings in Phase IV. The draft
Wells Hatchery Modernization Master Plan was completed in May 2013, provided to the Hatchery Committee for review, and finalized in July 2013 (Appendix Y). In August 2013, Douglas PUD held a Wells Modernization Workshop with the Hatchery Committee to review design aspects of the modernization; HDR Engineering, Inc., the engineering firm developing the plan, also participated. The 30 percent designs were nearly complete in December 2013 (completed in January 2014), and a Hatchery Committee workshop to review the 30 percent design is planned for February 2014. Construction is expected to commence in 2015.

2.3 Tributary Committees and Plan Species Accounts

As outlined in the Wells HCP, the signatory parties designated one member each to serve on the Tributary Committee. The Rock Island, Rocky Reach, and Wells Tributary Committees meet on a regularly scheduled basis as a collective group to enhance coordination and minimize meeting dates and schedules. Subject items requiring decisions are voted on in accordance with the terms outlined in the specific HCPs. During 2013, the Tributary Committees met on eight occasions.

An initial task of the Tributary Committees in 2013 was to review and update their operating procedures, which provide a mechanism for decision-making; these procedures were initially developed in 2005 and were included in that year’s annual report (Anchor 2005). At that time, the Tributary Committees also developed Policies and Procedures for soliciting, reviewing, and approving project proposals (Anchor 2005); this document was last reviewed and updated in January and March 2013. The Policies and Procedures provide formal guidance to project sponsors on submission of proposals for projects to protect and restore habitat of Plan Species within the geographic scope of the HCP. The Tributary Committees established two complementary funding programs: the General Salmon Habitat Program and the Small Projects Program.

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In 2013, the Tributary Committees updated the membership list in Section III in the Operating Procedures. The WDFW representative was changed from Dennis Beich to Jeremy Cram. In the Policies and Procedures document, under Section 3.4, The General Salmon Habitat Program, the Tributary Committees agreed to increase the minimum size proposal value from $50,000 to $100,000 (total project cost). The Tributary Committees may provide lesser amounts for phased projects. Under Section 4.4, Administrative and Support Costs, the Tributary Committees included language about the use of approved appraisers for evaluating conservation easements and acquisitions funded by the Tributary Committees.

Under Section 3.8, Management Guidelines for Conservation Easements/Acquired Lands, the Tributary Committees added language that states that all protection projects funded by the Tributary Committees will have public access except under extraordinary circumstances. In addition, they added language that states that the project sponsor will allow restoration on protection projects if deemed necessary and that the restoration actions must be approved by the Tributary Committees. Under Section 4.2, Eligible Projects and Elements, the Tributary Committees added language that indicates that they may provide a one-time fee for the development of a stewardship plan for acquisition projects. Finally, under Section 4.4, Administrative and Support Costs, the Tributary Committees included by reference the items described in the Salmon Recovery Funding Board (SRFB) document for Architectural and Engineering Services (A&E) and Administrative costs for restoration projects. Thus, the revised language in the Policies and Procedures document reads:

Acceptable Architectural and Engineering Services and Administrative costs are provided on pages 11-15 in Section 2 of the SRFB Manual 5 Restoration Projects document (see: http://www.rco.wa.gov/documents/manuals&forms/Manual_5.pdf). A&E costs cannot exceed 15% of the total restoration cost and Administrative costs cannot exceed 15% of the total restoration cost.

In August 2013, the Wells Tributary Committee voted to retain Tracy Hillman as the Chairperson for the next 3-year period (2014 through 2016). Dr. Hillman is an Ecological Society of America board-certified senior ecologist and CEO of BioAnalysts, Inc. He has 28 years of experience as an ecologist and has chaired the Wells Tributary Committee since 2007.
2.3.1  **Regional Coordination**

Similar to the Hatchery Committees and to improve coordination, a representative from Grant PUD and the facilitator of the Priest Rapids Coordinating Committees (PRCC) Habitat Subcommittee were invited to the Tributary Committees monthly meetings. In addition, they received meeting announcements, draft agendas, and meeting minutes. This arrangement benefits the Tributary Committees through increased coordination and sharing of expertise. The Grant PUD representative and PRCC Habitat Subcommittee facilitator have no voting authority. The Tributary Committees, through the HCP Coordinating Committees, also invited American Rivers and the Confederated Tribes of the Umatilla Indian Reservation to participate in Tributary Committees meetings. Both parties contributed to the development of the HCP, yet elected not to sign the document. Neither of these parties participated in the deliberations of the Tributary Committees in 2013.

The Tributary Committees also coordinate with the Upper Columbia Salmon Recovery Board (UCSRB). Coordination is typically between the chairperson of the Tributary Committees and the Executive Director or Associate Director of the UCSRB. The Tributary Committees also invite representatives from the UCSRB to at least one meeting per year to update the Tributary Committees on activities proposed by the UCSRB. In addition, some members of the Tributary Committees typically attend the UCSRB meetings to foster coordination in developing and selecting projects for funding. Some members of the Tributary Committees are also members of the UCSRB’s Regional Technical Team (RTT), which increases coordination in selecting projects for funding. Many of the policies and procedures of the SRFB and Tributary Committees are complementary, and annual funding rounds by these funding entities have been coordinated over the last several years.

In August 2013, the Wells Tributary Committee received a letter from the UCSRB extending an opportunity for the Tributary Committee to help sponsor the 2013 Upper Columbia Science Conference on November 13 and 14, 2013. The UCSRB asked for a contribution of $500 or more to help organize and implement the event. The Wells Tributary Committee elected to contribute $1,000 from its administrative allowance (no greater than $80,000 per year) of the Plan Species Account.
2.3.2 Fiscal Management of Plan Species Accounts

The Tributary Committees set up methods for the long-term management of the Plan Species accounts for each HCP. The Wells Tributary Committee agreed to have Douglas PUD manage the accounting services internally, and to structure the relationship so that it can invoice these administrative costs to the Wells Plan Species account. The beginning balance of the Wells Plan Species Account on January 1, 2012, was $1,003,713.82; Douglas PUD’s annual contribution was $250,729.00; interest accrued during 2013 was $1,478.74; funds disbursed for projects in 2013 totaled $145,998.92; disbursements for administrative costs included $3,882.85 to Chelan PUD for administrative support provided to the Wells Plan Species Account, and $2,272 to Douglas PUD for account administration during 2013; $6,500 was paid for appraisal fees for the Twisp River-Poorman Creek Habitat Acquisition Project; and $1,000 was paid to the UCSRB for sponsorship of the 2013 Upper Columbia Science Conference, resulting in an ending balance of $1,096,267.79 on 31 December 2013. The 2013 Annual Financial Report for this Plan Species Account is provided in Appendix Z.

In January 2009, the Wells Tributary Committee recommended to the JFP (via the Wells Coordinating Committee) that Douglas PUD make annual payments to the Wells Plan Species Account beginning in 2010, per Section 7.4.1 of the Wells HCP. The annual contribution would be $176,178 (in 1998 dollars). In February 2009, the Wells Coordinating Committee accepted the recommendation that Douglas PUD make annual payments to the Wells Plan Species Account beginning in January 2010. Accordingly, at the end of each January, Douglas PUD makes an annual payment into the Wells Plan Species Account. In 2013, Douglas PUD deposited $250,729.00 into the Wells Plan Species Account.

The Wells Tributary Committee delegated signatory authority to the Tributary Committees chairperson for processing of payments for invoices approved by the Tributary Committee, with the Coordinating Committees chairperson serving as the alternate. The Tributary Committees chairperson works for a limited liability corporation and the Tributary Committees provide funds for liability insurance.
2.3.3 **General Salmon Habitat Program**

The Tributary Committees established the General Salmon Habitat Program as the principle mechanism for funding projects. The goal of the program is to fund projects for the protection and restoration of Plan Species habitat. An important aspect of this program is to assist project sponsors in developing practical and effective applications for relatively large projects. Many habitat projects are increasingly complex in nature and require extensive design, permitting, and public participation to be feasible. Often, a reach-level project involves many authorities and addresses more than one habitat factor. Because of this trend, the General Salmon Habitat Program was designed to fund relatively long-term projects. There is no maximum financial request in the General Salmon Habitat Program; the minimum request is $100,000, although the Tributary Committees may provide lesser amounts for phased projects.

In an effort to coordinate with ongoing funding and implementation programs within the region, the Tributary Committees used the previously established technical framework and review process for this geographic area, and worked with the other funding programs to identify cost-sharing procedures (see Section 2.3.1).

2.3.3.1 **2013 General Salmon Habitat Projects**

The Tributary Committees announced their 2013 funding cycle in March, with pre-proposal applications due on May 7, 2013, and full proposals due on July 12, 2013. The Tributary Committees received and reviewed 13 pre-proposal applications, and identified nine projects that they believed warranted full proposals and dismissed four projects because they did not have strong technical merit.

In July, the Tributary Committees received nine full proposals to the General Salmon Habitat Program, all of which were “cost-shares” with the SRFB or other funding entities. The Tributary Committees approved funding for seven projects. Table 7 identifies the projects, sponsors, total cost of each project, amount requested from Tributary Funds, and, if funded, which Plan Species Account supported the project.
Table 7
General Salmon Habitat Program Projects Reviewed by the Tributary Committees in 2013

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sponsor 1</th>
<th>Total Cost</th>
<th>Request from T.C.</th>
<th>Plan Species Account 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Side Channel Design</td>
<td>CCFEG</td>
<td>$183,733</td>
<td>$66,000</td>
<td>RR: $132,000</td>
</tr>
<tr>
<td>Chiwawa Nutrient Enhancement</td>
<td>CCFEG</td>
<td>$684,000</td>
<td>$342,000</td>
<td>RI: $342,000</td>
</tr>
<tr>
<td>Janis Rapids Side Channel</td>
<td>CCFEG</td>
<td>$98,750</td>
<td>$37,000</td>
<td>Not funded</td>
</tr>
<tr>
<td>Twisp to Carlton Reach Assessment</td>
<td>CCFEG</td>
<td>$173,016</td>
<td>$46,500</td>
<td>RI: $46,500</td>
</tr>
<tr>
<td>Icicle-Peshastin Irrigation Dist Pump Exchange</td>
<td>CCNRD</td>
<td>$322,000</td>
<td>$25,000</td>
<td>Not funded</td>
</tr>
<tr>
<td>Nason Creek RM 4.6 Side Channel Reconnection</td>
<td>CCNRD</td>
<td>$525,030</td>
<td>$88,000</td>
<td>RI: $88,000</td>
</tr>
<tr>
<td>CDLT Entiat Stillwaters Gray Reach Acquisition</td>
<td>CDLT</td>
<td>$569,625</td>
<td>$170,000</td>
<td>RR: $170,000</td>
</tr>
<tr>
<td>Similkameen RM 3.8 Habitat Design</td>
<td>OCD</td>
<td>$84,640</td>
<td>$21,160</td>
<td>RR: $84,640</td>
</tr>
<tr>
<td>MVID Instream Flow Improvement</td>
<td>TU-WWP</td>
<td>$9,747,000</td>
<td>$400,000</td>
<td>W: $400,000</td>
</tr>
</tbody>
</table>

Notes:
1 CCFEG = Cascade Columbia Fisheries Enhancement Group; CCNRD = Chelan County Natural Resource Department; CDLT = Chelan-Douglas Land Trust; OCD = Okanogan Conservation District; TU-WWP = Trout Unlimited – Washington Water Project.
2 RI = Rock Island Plan Species Account; RR = Rocky Reach Plan Species Account; W = Wells Plan Species Account.
3 The Silver Side Channel Design did not receive funding from the SRFB; therefore, the Rocky Reach Plan Species Account funded the SRFB and Committee’s share of the project ($132,000).
4 The Similkameen RM 3.8 Habitat Design Project did not receive funding from the SRFB; therefore, the Rocky Reach Plan Species Account funded the entire cost of the project ($84,640).

In 2013, the Wells Tributary Committee agreed to fund the following General Salmon Habitat Program project:

- **Methow Valley Irrigation District (MVID) Instream Flow Improvement Project** for the amount of $400,000 (with cost share, the total cost of the restoration project was $9,747,000). The project will: 1) improve instream flows in the lower 4.5 miles of the Twisp River by eliminating the MVID irrigation diversion and returning up to 15 cubic feet per second (cfs), which will be placed in permanent trust; 2) improve instream flow in the Methow River by piping a portion of the east canal and permanently trusting the saved water; 3) improve instream flow (2 cfs) and wetland and side channel habitat by restoring the natural flow in Alder Creek and
permanently trusting the water; and 4) prevent fish injury and mortality associated with MVID’s Twisp River pushup dam, fish screen operations, and the stranding of redds and juveniles in the MVID West Canal’s intake canal and fish return channel.

2.3.3.2 Modifications to General Salmon Habitat Program Contracts

In 2013, the Wells Tributary Committee received the following requests from sponsors asking for modifications to General Salmon Habitat Program projects funded by the Committee:

- In September, the Okanagan Nation Alliance (ONA) asked the Wells and Rocky Reach Tributary Committees for a time extension on the Shingle Creek Fish Passage Project. This was because there were some issues with coordination between ONA and the contractor. Because there was no contract in place, rock from the quarry was not available for the fish passage project. To that end, ONA asked the Wells and Rocky Reach Tributary Committees for a contract extension from December 31, 2013, to December 31, 2014. The Wells and Rocky Reach Tributary Committees approved the time extension.

- In December, WDFW asked the Wells and Rocky Reach Tributary Committees for a time extension on the Silver Protection Project. The contracts were scheduled to end on December 31, 2013. The sponsor requested that the contracts be extended to December 31, 2014, because they needed additional time to explore opportunities related to ensuring the permanent preservation and enhancement of salmonid habitat on the properties. The Wells and Rocky Reach Tributary Committees approved the time extension.

2.3.4 Small Projects Program

The Small Projects Program has an application and review process that increases the likelihood of participation by private stakeholders that typically do not have the resources or expertise to go through an extensive application process. The Tributary Committees encourage small-scale projects by community groups, in cooperation with landowners, to support salmon recovery on private property. Project sponsors may apply for funding at any time, and in most cases, will receive a funding decision within three months. The maximum contract allowed under the Small Projects Program is $100,000 (total project cost).
2.3.4.1 2013 Small Projects

In 2013, the Tributary Committees received four requests for funding under the Small Projects Program. The Tributary Committees approved funding for two projects. Table 8 identifies the projects, sponsors, total cost of the projects, amount requested from Tributary Funds, and which Plan Species Accounts supported the projects.

Table 8
Projects Reviewed by the Tributary Committees under the Small Projects Program in 2013

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sponsor¹</th>
<th>Total Cost</th>
<th>Request from T.C.</th>
<th>Plan Species Account²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okanogan Basin Stream Discharge Monitoring</td>
<td>CTCR</td>
<td>$90,954</td>
<td>$74,984</td>
<td>RR</td>
</tr>
<tr>
<td>Methow/Chewuch Shallow Groundwater Monitoring</td>
<td>CCFEG</td>
<td>$34,180</td>
<td>$30,580</td>
<td>W</td>
</tr>
<tr>
<td>Beaver Creek Late Season Well Installation</td>
<td>TU-WWP</td>
<td>$16,397</td>
<td>$16,397</td>
<td>Not funded</td>
</tr>
<tr>
<td>Antoine Creek Feedlot Relocation</td>
<td>TU-WWP</td>
<td>$97,533</td>
<td>$37,533</td>
<td>Not funded³</td>
</tr>
</tbody>
</table>

Notes:
1 CTCR = Confederated Tribes of the Colville Reservation; CCFEG = Cascade Columbia Fisheries Enhancement Group; TU-WWP = Trout Unlimited – Washington Water Project.
2 RR = Rocky Reach Plan Species Account; W = Wells Plan Species Account.
3 The sponsor withdrew the project application because the Confederated Tribes of the Colville Reservation elected to fund the entire project.

In 2013, the Wells Tributary Committee agreed to fund the following Small Project:

- Methow/Chewuch Shallow Groundwater Monitoring Project for the amount of $30,580 (with cost share, the total cost of the project was $34,180). This project will establish groundwater monitoring sites on three floodplain parcels owned by WDFW to determine if it is feasible to pursue habitat restoration projects in these areas. The three parcels are the Silver Side Channel Complex (Methow River downstream from Twisp), Lewisia Floodplain (middle Methow River), and the Burns-Garrity Floodplain (lower Chewuch River). These sites were selected because they contain remnant channel features and there is evidence of shallow groundwater. The project required the purchase of 12 piezometers equipped with continuously recording water surface elevation and temperature data loggers. The Wells Tributary Committee provided the sponsor with the funding needed to purchase the monitoring equipment. Once
the monitoring work is completed, the sponsor will return the equipment to the Wells Tributary Committee.

2.3.4.2 Modifications to Small Project Contracts

In 2013, the Wells Tributary Committee received the following requests from sponsors asking for modifications to Small Projects funded by the Committee:

- In May, Cascade Columbia Fisheries Enhancement Group (CCFEG) asked the Wells Tributary Committee for a budget amendment on the Methow/Chewuch Shallow Groundwater Monitoring Project. The sponsor indicated that a Cultural Resource Survey was not necessary for this project. Therefore, they asked to move the Cultural Resource Survey funds ($4,500) to Sponsor Salaries and Benefits, and Contract Labor. Specifically, they asked to move $3,000 to Sponsor Salaries and Benefits, and $1,500 to Contract Labor. The Wells Tributary Committee approved the budget amendment.

- In June, Trout Unlimited asked the Wells Tributary Committee for a time extension on the Twisp River Well Conversion Project. This was because there were unforeseen delays in implementation. Thus, the sponsor asked the Wells Tributary Committee for a contract amendment that would extend the deadline from June 30, 2013, to October 31, 2013. The Wells Tributary Committee approved the time extension.

- In September, Trout Unlimited asked the Wells Tributary Committee for a budget amendment to the Twisp River Well Conversion Project. Well testing in the spring indicated that there was adequate water available to run the system (i.e., 150 gallons per minute). However, in August, the system was only able to produce 90 gallons per minute. The driller, hydrogeologist, and water witcher confirmed that the well needed to be drilled deeper to produce the required production. Deepening the well increased costs, which included pulling the pumps, fabrication to lower the pumps, a booster pump, and the well driller costs. In addition, the Natural Resources Conservation Science (NRCS) contribution was less than originally thought. Therefore, the sponsor asked the Wells Tributary Committee if they would provide additional funding for the project. The revised total cost of the project is $99,188.58 (the original cost was $87,738.87). The sponsor asked the Wells Committee if they would increase their contribution to $68,022.58 (the original contribution was
The Wells Committee approved funding up to $68,022.58, an increase of $24,472.31 from the original contribution.

- In October, Trout Unlimited asked the Wells Tributary Committee for another time extension on the Twisp River Well Conversion Project. This was because contractors were unavailable and the irrigation system had been drained and would not be turned on until spring. Thus, the sponsor requested that the contract be extended from October 31, 2013, to June 30, 2014. This extension gives the sponsor time to complete the project when the system is turned on in the spring. The Wells Tributary Committee approved the time extension.

- In November, CCFEG asked the Wells Tributary Committee for a scope change and budget amendment to the Methow/Chewuch Shallow Groundwater Monitoring Project. The sponsor wanted to conduct a pump-drawdown test to measure groundwater quantity and recharge on the Burns-Garrity property. Because excavation of the test pits requires the presence of an archeologist, the sponsor asked to move $1,000 from contract labor to professional services. The Wells Tributary Committee approved the scope change and budget modification.

### 2.3.5 Tributary Assessment Program

In 2008, the ONA responded to the Tributary Committees’ request for a proposal to monitor the Okanagan River Restoration Initiative (ORRI) Project. The Wells Tributary Committee agreed to fund three monitoring tasks of ORRI: 1) Fish Holding and Rearing, 2) Channel Morphometry and Hydraulics, and 3) Substrate Composition. As required in the Wells HCP, Douglas PUD provided funding for the approved monitoring tasks through the Wells Tributary Assessment Program, as per Section 7.5 of the Wells HCP, rather than through the Wells Plan Species Account.

In May 2012, the Wells Tributary Committee recommended that Douglas PUD fund the fifth and final year of ORRI monitoring. The cost of the monitoring approved by the Wells Tributary Committee and Douglas PUD during the fifth year was $18,984. ONA proposed to produce a final report that described results from the 5 years of monitoring. The report would also include the many additional data sources and analyses conducted as part of the monitoring program. To that end, in January 2013, the ONA asked the Wells Tributary
Committee for an additional $6,799 to complete the final report. Thus, the total amount for the fifth year would be $25,783. The Wells Tributary Committee approved the increase and directed Douglas PUD to provide via the Tributary Assessment Program (Wells HCP Section 7.5) the additional funding needed to complete the final report. In addition, the Wells Tributary Committee approved a 2-month time extension for the project. Thus, the contract period ended on August 31, 2013. In September 2013, ONA submitted a final report titled *Aquatic Monitoring of the Okanagan River Restoration Initiative—Post Construction 2012* to the Wells Tributary Committee.
3 HCP ADMINISTRATION

This chapter lists events of note that occurred in 2013 related to the administration of the HCPs, and provides a list of reports published in 2013 that relate to the HCPs.

3.1 Mid-Columbia HCP Forums

In 2005 and 2006, Mid-Columbia Forums (Forums) were held as a means of communicating and coordinating with the non-signatories and other interested parties regarding the implementation of the HCPs. Non-signatory parties at the time of the 2006 meeting included the Confederated Tribes of the Umatilla Reservation, and American Rivers. As in 2006 through 2012, these parties were invited by letter in 2013 to attend a Forum, in conformity with the 2005 FERC Order on Rehearing 109 FERC 61208 and in accordance with the offer to non-signatory parties of non-voting membership in HCP Tributary and Hatchery Committees processes. The non-signatory parties again indicated no interest in attending a Forum in 2013, and thus a Forum was not held in 2013.

3.2 Mid-Columbia HCP File Sharing

In January 2013, the HCP Coordinating Committees discussed transitioning HCP file sharing from the historically used ftp site to a more user-friendly platform. One of the primary purposes for transitioning to a new filing system is to facilitate a more efficient process for retrieving historical documents. In May 2013, Douglas PUD presented to the Coordinating Committees an overview of their new SharePoint system, as a potential option for the new HCP document repository. The Coordinating Committees raised no concerns with the proposed SharePoint repository, and Douglas PUD proceeded with the development of the repository. Douglas PUD unveiled the SharePoint Extranet file repository with presentations to the Hatchery Committees on January 15, 2014, and to the Coordinating Committees on January 28, 2014. The Tributary Committees portion of the SharePoint Extranet site will be available in the spring of 2014.
3.3 Mid-Columbia HCP Committees’ Chairperson

In 2013, a review was held of the HCP Coordinating Committees’, HCP Hatchery Committees’, and HCP Tributary Committees’ chairpersons and supporting staff, and all three Committees agreed to renew the existing contracts for an additional 3-year term.

3.4 HCP Related Reports and Miscellaneous Documents Published in Calendar Year 2013

The following is a list of reports released in 2013 that are related to the implementation of the Wells HCP:


APPENDIX A
HABITAT CONSERVATION PLAN
COORDINATING COMMITTEES
2013 MEETING MINUTES AND CONFERENCE CALL MINUTES
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees
From: Michael Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the January 22, 2013 HCPs Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Hotel in SeaTac, Washington on Tuesday, January 22, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Tom Kahler will send Kristi Geris the Douglas PUD Final 2013 HCP Action Plan for distribution to the Coordinating Committees (Item II-A).
- Bryan Nordlund will send Shane Bickford a letter or email documenting National Marine Fisheries Service (NMFS) approval of the Douglas PUD Final 2013 Bypass Operations Plan, no later than Friday, February 1, 2013 (Item II-B).
- Jim Craig will send Shane Bickford a letter or email documenting United States Fish and Wildlife Service (USFWS) approval of the Douglas PUD Final 2013 Bypass Operations Plan, no later than Friday, February 1, 2013 (Item II-B).
- Bryan Nordlund will review the Douglas PUD Draft 2013 Gas Abatement Plan, and upon approval, will send Shane Bickford a letter or email documenting NMFS approval of the plan, no later than Friday, February 1, 2013 (Item II-C).
- Jim Craig will review the Douglas PUD Draft 2013 Gas Abatement Plan, and upon approval, will send Shane Bickford a letter or email documenting USFWS approval of the plan, no later than Friday, February 1, 2013 (Item II-C).
- Coordinating Committees representatives will review the Douglas PUD Draft 2013 Gas Abatement Plan and provide comments to Tom Kahler and Kristi Geris no later than Friday, February 1, 2013 (Item II-C).
• Coordinating Committees representatives will review the Douglas PUD Draft 2013 10-year No Net Impact (NNI) Comprehensive Check-in Report and provide comments to Tom Kahler no later than Monday, February 11, 2013 (Item II-D).

• Coordinating Committees representatives will review the Douglas PUD Draft 2012 Wells Post-Season Bypass Report and provide comments to Tom Kahler no later than Friday, February 15, 2013 (Item II-E).

• Steve Hemstrom will add information on juvenile survival estimates (dates tested and results) to the Statement of Agreement (SOA) to Re-approve Phase III Standards Achieved for Combined Adult and Juvenile Survival at Rocky Reach and Rock Island, and will provide the revised SOA to Kristi Geris for distribution to the Coordinating Committees (Item IV-C).

• Chelan PUD will incorporate the latest revisions to the Chelan PUD Draft 2013 NNI Report and redistribute the revised report to the Coordinating Committees; the report will be considered for approval at the Coordinating Committees February 26, 2013 meeting (Item IV-D).

• Chelan PUD and Douglas PUD will explore options for developing a shared HCP filing system and will report back to the Coordinating Committees for further discussion (Item VI-A).

DECISION SUMMARY

• No SOAs were approved at this meeting.

AGREEMENTS

• Coordinating Committees representatives present approved the Douglas PUD 2013 HCP Action Plan, as revised (Item II-A).

• Coordinating Committees representatives present approved the Douglas PUD 2013 Bypass Operations Plan (Item II-B).

• Coordinating Committees representatives present agreed to include in the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report the Executive Summary of the Fish and Water Management Tool (FWMT) Report from Dr. Kim Hyatt, Department of Fisheries and Oceans Canada (DFO), in lieu of the full report,
with the expectation that the full report will be appended when available about August 2013 (Item II-D).

- Coordinating Committees representatives present approved the Rocky Reach Juvenile Bypass Final Operating Plan for April 2013 (Item IV-A).

**REVIEW ITEMS**

- The Douglas PUD Draft 2013 Gas Abatement Plan is available for review, with comments due to Tom Kahler and Kristi Geris no later than Friday, February 1, 2013.
- Kristi Geris sent an email to the Coordinating Committees on December 11, 2012, notifying them that the Douglas PUD Sub-yearling Report is available for a 60-day review period, with comments due to Tom Kahler and Andrew Gingerich no later than Monday, February 11, 2013.
- Kristi Geris sent an email to the Coordinating Committees on December 27, 2012, notifying them that the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report is available for review. Comments are due to Tom Kahler no later than Monday, February 11, 2013.
- Kristi Geris sent an email to the Coordinating Committees on January 17, 2013, notifying them that the Douglas PUD Draft 2012 Wells Post-Season Bypass Report is available for a 30-day review period, with comments due to Tom Kahler no later than Friday, February 15, 2013.

**REPORTS FINALIZED**

- The Douglas PUD 2013 HCP Action Plan was finalized and distributed to the Coordinating Committees on January 23, 2013.
- The Douglas PUD 2013 Bypass Operations Plan was finalized and distributed to the Coordinating Committees on January 23, 2013.

**I. Welcome**

Mike Schiewe welcomed the Coordinating Committees and announced that Kirk Truscott will be replacing Jerry Marco as the Colville Confederated Tribes (CCT) HCP Coordinating Committees representative. He has requested that Randy Friedlander, Interim Director of
Fish and Wildlife for the CCT submit a formal letter designating the replacement. Schiewe asked for any additions or other changes to the agenda, and the following revisions were requested:

- Tom Kahler requested two additions: 1) Douglas PUD Draft 2012 Wells Post-Season Bypass Report; and 2) Wells Dam ladder outage and maintenance activities update.
- Steve Hemstrom requested one addition: 1) Chelan PUD Draft 2013 HCP Action Plans for Rocky Reach and Rock Island.
- Schiewe requested one addition: 1) file sharing follow-up discussion.

A. Meeting Minutes Approval (Mike Schiewe)
The Coordinating Committees reviewed the revised draft December 11, 2012 meeting minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to consider. The draft December 11, 2012 meeting minutes were approved as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Douglas PUD
A. Douglas PUD Draft 2013 HCP Action Plan (Tom Kahler)
Tom Kahler said that the Douglas PUD Draft 2013 HCP Action Plan (Attachment B) that was distributed to the Coordinating Committees by Kristi Geris on December 26, 2012, was reviewed and approved by the Wells HCP Tributary Committee. He said that the Wells HCP Hatchery Committee also reviewed and approved the draft action plan with incorporation of the following revisions to the hatchery section of the plan:

- Item 1e – “August 2013” was revised to read “July 2013”
- Item 1f – “October 2013” was revised to read “September 2013”
- Item 1g – This item has been deleted
- Item 3 – “2010 Broodstock Collection Protocol” was revised to read “2013 Broodstock Collection Protocol”
- Item 3b – “Approval deadline” was revised to read “NMFS Submission deadline”
Kahler said that the draft action plan is now ready for review by the Wells HCP Coordinating Committee. Teresa Scott asked if the draft 2013 action plan differs appreciably from the 2012 action plan. Kahler said that the 2013 action plan addresses similar measures that are addressed every year, but also includes the completion of the NNI progress report.

The Coordinating Committees representatives present approved the Douglas PUD 2013 HCP Action Plan, as revised. Kahler will send Geris the Douglas PUD Final 2013 HCP Action Plan for distribution to the Coordinating Committees.

B. Douglas PUD Draft 2013 Bypass Operations Plan (Tom Kahler)

Tom Kahler said that the Douglas PUD Draft 2013 Bypass Operations Plan (Attachment C) was distributed to the Coordinating Committees by Kristi Geris on December 26, 2012. He said that Douglas PUD is requesting a shortened review period because the draft plan needs to be filed with Washington State Department of Ecology (Ecology) no later than February 28, 2013.

Kahler noted that a change was made to the Juvenile Fish Bypass Contingency Plan (Bypass Contingency Plan) in this year’s Bypass Operations Plan. He recalled that the 2010 Bypass Contingency Plan was developed in response to a gate-hoist cable failure in a bypass spillway at Wells Dam that resulted in shutting down a turbine in August 2010. He said that in the event that a similar incident would occur, the 2010 Bypass Contingency Plan prescribed shutting down associated turbine units as per Section 4.3 of the Wells HCP. Kahler said, however, that high river discharge in 2011 and 2012 highlighted the need to incorporate total dissolved gas (TDG) compliance requirements into the Bypass Contingency Plan. He said that the plan was, therefore, modified to include Option 1 that spills greater than 10,000 cubic feet per second (kcfs) through adjacent odd-numbered spillways as necessary to minimize TDG, when the HCP-required turbine shutdowns would threaten TDG compliance. Bryan Nordlund asked if the Wells Dam bypass can be operated in full when high TDG water is entering the project. Kahler clarified that in scenarios where Douglas PUD would implement Option 1, the project would already be spilling in excess of bypass spill (i.e., full bypass spill plus involuntary spill, and that the new plan prescribes spilling in adjacent odd-numbered spillways to avoid the resultant dramatic increase in involuntary
spill and associated TDG from shutting down the turbines associated with a crippled bypass spillway.

Kahler also noted a minor change to the Emergency Action Plan measures. He said that in previous years, bypass barrier removal was initiated at an inflow forecast of 210 kcfs; whereas now, an inflow forecast of 200 kcfs triggers bypass barrier removal (see Table 2 in Attachment C). He said that the basic operating dates are the same as last year, from April 9 at midnight to August 9 at midnight. He reminded the Coordinating Committees that Dr. John Skalski’s analysis of the new dates of bypass operations at Wells Dam was distributed to the Coordinating Committees on December 7, 2012, and that the Douglas PUD Draft 2012 Wells Post-Season Bypass Report was distributed to the Coordinating Committees on January 17, 2013. Teresa Scott asked about the “Spill Playbook,” as described on page 4 of Attachment C, and Kahler said that the annual spill playbooks are further described on page 3 and are the same as in previous years.

Kahler said that after Coordinating Committees approval, the Douglas PUD Final 2013 Bypass Operations Plan needs to be submitted to Ecology, per Section 401 of the Wells Dam Federal Energy Regulatory Commission (FERC) License. He said that the FERC license also requires coordination of the Bypass Operations Plan and the Gas Abatement Plan; and, in addition to Aquatic Settlement Workgroup (SWG) and HCP Coordinating Committees approvals, FERC also requires separate approvals from NMFS and USFWS. Kahler said that the provisions of the new license are not totally clear but clarifications are not expected until FERC rules on Douglas PUD’s request for rehearing. He said for now, however, that Douglas PUD is requesting letters, or emails, of approval from NMFS and USFWS, and that Douglas PUD will coordinate submittal of the Bypass Operations Plan and the Gas Abatement Plan as separate but “coordinated” documents.

Coordinating Committees representatives present approved the Douglas PUD 2013 Bypass Operations Plan; and Nordlund and Jim Craig said that they will send Shane Bickford a letter or email documenting NMFS and USFWS approval, respectively, of the Douglas PUD Final 2013 Bypass Operations Plan, no later than Friday, February 1, 2013.
C. Douglas PUD Draft 2013 Gas Abatement Plan (Tom Kahler)
Tom Kahler said that the Douglas PUD Draft 2013 Gas Abatement Plan was distributed to
the Coordinating Committees by Kristi Geris on December 28, 2012. He said that there were
a few grammatical revisions; however, there was nothing substantive. Mike Schiewe added
that the draft plan will also be thoroughly vetted within the Aquatic SWG as a part of their
Water Quality Management Plan. Coordinating Committees representatives agreed to
review the Douglas PUD Draft 2013 Gas Abatement Plan and provide comments to Kahler
and Kristi Geris no later than Friday, February 1, 2013; and Bryan Nordlund and Jim Craig
said that they will review the draft plan and, upon approval, will send Shane Bickford a letter
or email documenting NMFS and USFWS approval, respectively, of the Douglas PUD Draft
2013 Gas Abatement Plan, no later than Friday, February 1, 2013.

D. Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report (Tom Kahler)
Tom Kahler said that the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in
Report was distributed to the Coordinating Committees by Kristi Geris on December 27,
2012, and that the 60-day review period is underway. Coordinating Committees
representatives will review the Douglas PUD Draft 2013 10-year NNI Comprehensive
Check-in Report and provide comments to Kahler no later than Monday, February 11, 2013.
Kahler noted that Douglas PUD is still waiting for the full FWMT Report from Dr. Kim
Hyatt, DFO, and that only a summary of the FWMT Report is currently included in the
Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report that is available for
review. Kahler explained that Hyatt originally intended to have the full report available by
August 2013, and therefore will not have it finished before the March 2013 deadline.
However, Kahler said that the executive summary of the FWMT Report will be available by
the March 2013 deadline. Coordinating Committees representatives present agreed to
include in the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report the
Executive Summary of the FWMT Report, in lieu of the full report, with the expectation that
the full report will be appended when available around August 2013. Kahler suggested
inviting Hyatt to provide a presentation of the FWMT at either a HCP Hatchery Committees
or Coordinating Committees meeting after his report is completed.
E. Douglas PUD Draft 2012 Wells Post-Season Bypass Report (Tom Kahler)

Tom Kahler said that the Douglas PUD Draft 2012 Wells Post-Season Bypass Report was distributed to the Coordinating Committees on January 17, 2013. He said that the draft report includes discussions from the December 11, 2012 meeting of the Coordinating Committees, and also includes Dr. John Skalski’s analyses of bypass operations in 2012, which Kahler noted, documented that all plan species were provided with bypass passage for more than 99 percent of their respective migrations in 2012. Coordinating Committees representatives agreed to review the Douglas PUD Draft 2012 Wells Post-Season Bypass Report and provide comments to Kahler no later than Friday, February 15, 2013. This report will be considered for approval at the Coordinating Committees February 26, 2013 meeting.

F. Wells Dam Ladder Outage and Maintenance Activities Update (Tom Kahler)

Tom Kahler said that the Wells Dam east ladder was taken offline on December 4, 2012. He said that completed work includes: 1) installation of grating to benefit passage of lamprey and other plan species; 2) installation of walkways on lower ladder sections; and 3) installation of half-duplex passive integrated transponder (HDX-PIT) detection in the east ladder at pool 19, which Kahler noted is similar to what was installed in the west ladder in January 2012. He said that now both Wells Dam fish ladders have 2020 readers with both full-duplex (FDX) and HD-PIT detection which greatly increases detection efficiency for fish tagged with FDX PIT tags. He said that radio telemetry (RT) antennas in both fishways are being installed or repaired in preparation for the upcoming lamprey passage study. He also said that PUD mechanics completed work on the fish pumps for the auxiliary-water-supply system that provides attraction flow in the collection gallery. Kahler said that the east ladder will be back in service by January 24, 2013, and that the west fish ladder will be taken offline for a 3-week maintenance period on January 29, 2013. He said that work on the west ladder will also include installation of lamprey grating and walkways, and also installation of RT antennas.
III. Douglas PUD and Chelan PUD

A. NNI Hatchery Obligation Re-Calculation for Population Dynamics (Josh Murauskas)

Josh Murauskas said that the presentation on hatchery recalculation (Attachment D) was distributed to the Coordinating Committees by Kristi Geris on January 21, 2013. He said that the presentation was prepared in response to an inquiry from Bryan Nordlund on the process used to recalculate NNI hatchery program sizes. Mike Schiewe explained that recalculation is a requirement of the HCPs, and was completed for the first time last year; from start to finish this process took a total of 15 months and involved a great deal of discussion on appropriate data and methods. Murauskas reviewed the presentation which included a brief explanation of NNI and recalculation. He also reviewed methods employed and examples of calculations, technical issues, and conclusions. Bryan Nordlund asked if the calculation method adjusted for larger runs, i.e., higher dam counts. Murauskas responded that they did. Schiewe said that the PUDs have both NNI responsibilities and inundation responsibilities under their licenses, and the inundation requirements are not subject to recalculation. Nordlund asked if there is a mechanism to adjust program sizes based on increasing numbers of natural origin fish resulting from, for example, habitat improvements. He also asked if certain fish are treated differently in the recalculation if they have higher survival. Murauskas replied that, for example, increased production from Chief Joseph Hatchery (CJH) will be proportionally incorporated in future recalculations along with any increase in the numbers of natural origin returns. Murauskas said that there was concern on the part of some Hatchery Committees members that reducing program sizes would decimate populations in the Mid-Columbia; however, while Douglas PUD and Chelan PUD mitigation had decreased, there will be an increase in production with CJH and Grant PUD facilities.

Bob Rose noted that Yakama Nation (YN) staff associated with the Hatchery Committees were not aware that this information was being presented to the Coordinating Committees, and commented that the presentation should have been reviewed by the Hatchery Committees prior to presenting it to the Coordinating Committees. Murauskas acknowledged the oversight and said that in the future, he will first coordinate with the Hatchery Committees. Nordlund also explained that the presentation was by his request and he had not intended to go around the Hatchery Committees.
IV. Chelan PUD

A. Rocky Reach Juvenile Bypass Final Operating Plan for April 2013 (Steve Hemstrom and Lance Keller)

Steve Hemstrom said that the Rocky Reach Juvenile Bypass Final Operating Plan for April 2013 (Attachment E) was distributed to the Coordinating Committees by Kristi Geris on January 10, 2013. Hemstrom reviewed the operating plan and noted that the six items summarized in the plan are based on discussions from the last couple of Coordinating Committees meetings, and include (briefly): 1) three additional Rocky Reach Juvenile Fish Bypass surface collector (SC) pumps for additional flow to maintain efficiency; 2) increased automated screen cleaning, as needed; 3) uniformly increased water velocity (Vn) through the dewatering screens, proportionate to the SC inflow-rate increase; 4) increased Turbine Unit 2 (C2) flow; 5) pre-season testing of increased Turbine Unit 2 (C2) flow with marked fish releases; and 6) normal SC/Bypass operation will resume once Turbine Unit 1 (C1) work is completed (no later than April 30, 2013).

Bryan Nordlund said that NMFS was previously concerned with increased Vn through the dewatering screens due to the possibility of fish impingement; however, further analysis indicated that the proposed increase in Vn should not present an issue. Lance Keller also noted that testing of the increased Turbine Unit 2 (C2) flow will occur the week of March 18, 2013. Nordlund asked if there would be an opportunity to conduct testing using smaller fish, and Keller replied that only fish representative of spring migrants (100 to 120 millimeters, maybe longer) will be available for testing. Nordlund said that he understands the logistical difficulties in testing smaller fish at that time of year; however, he asked that fish as small as possible be selected for the test. Keller said that smaller fish will be targeted for the testing.

Coordinating Committees representatives present approved the Rocky Reach Juvenile Bypass Final Operating Plan for April 2013.

B. Rocky Reach/Rock Island Fishway Maintenance Updates (Lance Keller)

Lance Keller said that the upper portion of the Rocky Reach adult ladder was dewatered on December 17, 2012, and that the lower portion of the adult fishway was dewatered on
December 20, 2012, with a fish rescue occurring on the both days, respectively. Keller said that the dewatering of the lower fishway was compromised by a piece of the right powerhouse entrance half-duplex PIT antenna that broke and fell, resting on the sill for the stop logs. He said that divers were deployed to remove the obstruction, and that a second dewatering and fish rescue of the lower fishway was conducted on December 27, 2012. He said that annual maintenance and inspections are currently being performed, and crews are prepping to replace the damaged half-duplex PIT antenna at the right powerhouse entrance. Keller said that the ladder is scheduled to be back in service March 1, 2013.

At Rock Island, Keller said that the left ladder was dewatered for maintenance on December 3, 2012, and a fish rescue was conducted on the same day. He said that the left ladder is still currently dewatered. Keller said that a fish exclusion grating has been installed on the left ladder blowout gate, preventing adults from entering the deadwater space should the gate be open; which, Keller noted is the same spacing as in the fishway wall. Keller said that pictures of the newly installed 1-inch bar screen (Attachment F) were distributed to the Coordinating Committees by Kristi Geris on January 21, 2013. He said that during the yearly inspection, a structural issue in the concrete floor associated with the attraction flow regulating gates was discovered. Repairs are currently being implemented, but there is a possibility that the repairs may not be completed prior to the March 1, 2013, water-up date. Keller said that the current floor will be cut and drilled for new steel support brackets on January 25, 2013, the brackets and steel deck will be installed on February 5, 2013, and concrete should be poured by February 8, 2013. He added that the concrete should be set up and ready for operation by February 20, 2013. Keller said that the center ladder was dewatered on December 10, 2012, a fish rescue was conducted on the same day, and the center ladder was back in service on January 4, 2013. He explained that last year, the center ladder was subject to a long outage, and so this year, only general maintenance was required. Keller said that the right ladder was dewatered on January 7, 2013, and fish rescues were conducted in the upper fishway on January 7, 2013, and the lower fishway on January 9, 2013. He said that annual maintenance and inspections are currently being performed, as well as the "ping" test on the diffuser grating bars. The right ladder is scheduled to be back in service on February 4, 2013, to coincide with the dewatering of Unit 7.
C. Coordinating Committees December 2012 Approval of Juvenile and Adult Combined Survivals (Steve Hemstrom)

Steve Hemstrom explained that the table of adult, juvenile, and combined survival estimates for the Rock Island and Rocky Reach Projects was discussed at the December 11, 2012 meeting of the Coordinating Committees. He said that per recommendations at the December meeting, the revised table (Attachment G) was distributed to the Coordinating Committees by Kristi Geris on December 18, 2012, and that approval was requested via email by December 31, 2012. Hemstrom said that Chelan PUD has now drafted an SOA to approve Phase III Standards Achieved for Combined Adult and Juvenile Survival at Rocky Reach and Rock Island; and added that the SOA was distributed to the Coordinating Committees by Geris on January 18, 2013. Hemstrom reminded the committees that Chelan PUD would like to incorporate this table into their Draft 2013 10-Year NNI Check-in Report.

Bob Rose noted that Chelan PUD had not noted the differences in years between adult and juvenile studies as discussed at the Coordinating Committees December 11, 2012, meeting. Hemstrom explained that the information is implicitly included in the background language, and that he had hoped this was sufficient. Teresa Scott said that she would also like to see that information explicitly included in the SOA. Josh Murauskas noted that the years in which studies were conducted for each species are thoroughly reported in the Chelan PUD Draft 2013 10-Year NNI Check-in Report. Hemstrom said that Chelan PUD will add information on juvenile survival estimates (dates tested and results) to the SOA, and will provide the revised SOA to Geris for distribution to the Coordinating Committees.

D. Chelan PUD 2013 NNI Check-In Report – Status of Draft and Final (Steve Hemstrom)

Steve Hemstrom said that the Chelan PUD Draft 2013 NNI Check-in Report, with track changes, was distributed to the Coordinating Committees by Kristi Geris on December 3, 2012. He said that he expects to receive all comments by January 14, 2013. Chelan PUD will then incorporate the latest revisions into the draft report and redistribute the revised report to the Coordinating Committees at least two weeks prior to the February 26, 2013 meeting of the Coordinating Committees, when the report will be considered for approval.
E. **Timeline and Path Forward for HCP Subyearling Chinook (Steve Hemstrom)**

Steve Hemstrom said that a proposed timeline and path forward for HCP Subyearling Chinook (Attachment H) was distributed to the Coordinating Committees by Kristi Geris on December 28, 2012. He said that based on past Coordinating Committees discussions, Chelan PUD proposed a four-step process to review technology and survival studies from 2009 to those that are most current. Bryan Nordlund noted that he is particularly interested in technical upgrades (step 1 in Attachment H), and consideration of new biological data (step 2 in Attachment H). He added that this document as an outline looks good. Josh Murauskas noted the diagram attached to the end of the outline, where convening a workshop is incorporated. Hemstrom said that this proposed timeline and path forward is also incorporated into Chelan PUD’s 2013 Action Plan.

F. **Chelan PUD Draft 2013 HCP Action Plans for Rocky Reach and Rock Island (Steve Hemstrom)**

Steve Hemstrom said that the Chelan PUD 2013 HCP Action Plans for Rocky Reach and Rock Island (Attachment I) were distributed to the Coordinating Committees by Kristi Geris on January 16, 2013. He said that the proposed Coordinating Committees 2013 activities are the same as those performed in 2012 with the exception of three: 1) Rocky Reach and Rock Island 2013 Comprehensive NNI Progress Report; 2) Rocky Reach and Rock Island Subyearling Chinook Path Forward; and 3) Piscivorous Bird Monitoring and Report. Mike Schiewe explained that Chelan PUD will vet the proposed activities within the respective committees and after approval, will bring the action plans back to the Coordinating Committees for final approval.

G. **A Case Study – Adult sockeye passage under intensive trapping operations at Tumwater Dam (Josh Murauskas and Bryan Nordlund)**

Josh Murauskas said that this presentation on adult sockeye passage under intensive trapping operations at Tumwater Dam (Attachment J) was distributed to the Coordinating Committees by Kristi Geris on January 21, 2013. Murauskas explained that PIT-tag arrays were installed at Tumwater Dam in 2008 and that, by 2010, analyses of PIT-tag data indicated that significant delays were occurring as a result of trapping. Bryan Nordlund said that after Chelan PUD presented these data to him, operations were modified and, subsequently, delays were decreased. Murauskas said that after implementation of a new
operating plan at Tumwater Dam, a drastic reduction in delay time was observed, from greater than 8.7 days in 2010, to 6 minutes in 2011. Murauskas said that the return in 2011 was also lower than in 2010; but then in 2012, nearly 70,000 fish passed Tumwater Dam (almost a record return), and the average delay times remained only approximately 6 minutes. He said that the 2012 results confirmed that the reduced delay times were a result of operational improvements.

Nordlund recalled a similar situation in the early 1990s, when he observed poor fish passage at the Imnaha weir. He recalled that he consulted Steve Rainey at the time, and they developed a paper, based on minimal data, on issues to consider when installing fish weirs. Nordlund noted that a clear message from the Tumwater Dam experience is to check the facility design to make sure it accomplishes what it is intended to do. He added that it is important that management and research objectives outweigh the detriments.

V. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees meeting on January 16, 2013:

- **Review of Policies and Procedures Documents**: In the Policies and Procedures document under Section 3.4, The General Salmon Habitat Program, the Tributary Committees agreed to increase the minimum size proposal value from $50,000 to $100,000 (total project cost).

- **Wells 2013 Draft Action Plan**: The Wells Tributary Committee reviewed and accepted the 2013 Wells Action Plan for the Wells Tributary Committee.

- **Okanagan River Restoration Initiative Monitoring Budget Modification**: The Wells Committee reviewed and approved a budget increase request from the Okanagan Nation Alliance (ONA) for Okanagan River Restoration Initiative (ORRI) monitoring, and also approved a two-month time extension for the project.

- **Public Outreach and Coordination**: Tom Kahler said that Pyramid Communications investigated the success of outreach efforts by local restoration practitioners in the Methow and Entiat basins and compared those with other outreach efforts around North America. The goal of this exercise was to identify approaches that could potentially be applied in the Methow and Entiat basins that would improve messaging.
to the target audiences within the local basins. He said that this is a tailoring exercise to determine what will work well, and what will not considering the specific misunderstandings in the local basins.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees meeting on January 16, 2013, hosted by Douglas PUD:

- **Updating the PUD Monitoring and Evaluation Plans**: Greg Mackey and Josh Murauskas reported progress updating the Hatchery monitoring and evaluation (M&E) Plans based on new information from the 5-year summary reports. Up until now, a smaller working group has been developing the revised document that details the plans, and it is now being presented to the full Hatchery Committees for approval in April 2013. This update will be the basis for contracting for M&E in 2014.
- **Methow Hatchery and Genetic Management Plans Update**: Lynn Hatcher has replaced Craig Busack as the NMFS Hatchery Committees Representative; however, Busack still participates for select agenda items. Busack noted that there is controversy surrounding the percentage of hatchery origin spawners (pHOS) target of 0.25, which was proposed by NMFS, in an effort to minimize hatchery fish spawning in the wild; this proposal will likely go beyond the technical group to the *U.S. v Oregon* Policy Group. Another issue Busack noted was the controversy over planting of hatchery steelhead in the Elwha River after dam removal is complete. He noted that the Wild Fish Conservancy and several other groups have filed a lawsuit to block the planting and has named NMFS as one of several defendants. One result of the litigation is that National Oceanic and Atmospheric Administration (NOAA) General Counsel is now taking a much harder look at Hatchery Biological Opinions (BiOps) and permits, and in particular, the sections dealing with the potential adverse effects of ecological interaction between hatchery and wild fish.
- **Chelan PUD Methow Spring Chinook Production**: Arrangements for 2013 have been agreed to by Chelan PUD and USFWS. Broodstock will be obtained, spawned, and fertilized at Winthrop National Fish Hatchery (NFH), and rearing will occur at
Eastbank Fish Hatchery (FH). A couple of in-basin acclimation options are being discussed. Options for brood year (BY) 2014 and beyond are still under discussion.

- **Kelt Reconditioning Update:** The YN is exploring options for live-spawning natural-origin steelhead (females) from the Twisp River, and then reconditioning them to spawn again in the wild.

- **Steelhead/Chinook Conversion Follow-up:** The YN is proposing to convert 40,000 Lake Wenatchee sockeye to spring Chinook, instead of steelhead (as specified in the 2011 SOA on hatchery recalculation). There is currently no Hatchery Committees consensus. This is not an active dispute, but rather was brought up to keep the discussion on the table.

- **Conflict of interest:** The Hatchery Committees agreed to extend the current HCP Hatchery Committees Conflict of Interest Policy two additional years.

**VI. HCP Committees Administration (Mike Schiewe)**

**A. File Sharing**

Mike Schiewe recalled that he had previously indicated two different platforms for creating an archive for the Coordinating Committees and Hatchery Committees: SharePoint and Relativity. Schiewe said that he had previously stated that Relativity was capable of searching all platforms; whereas, SharePoint could only search Microsoft Office documents. He said, however, that Douglas PUD reported that SharePoint with an available add-on is also capable of searching all documents. Schiewe noted that Douglas PUD and Chelan PUD both have a requirement to maintain their own sites, and now the discussion is whether to create a third SharePoint site. Tom Kahler said that Douglas PUD plans to maintain its own repository and also a public site. He said additionally, Douglas PUD would be willing to maintain an extranet site for the use of the Committees. He explained that this system would facilitate a process where, for example, links to documents would be distributed, as opposed to the actual document. He added that once the details are worked out, a presentation could be provided to the Coordinating Committees which would better explain system capabilities. Schiewe reminded the Committees that the primary purpose for this new filing system is to facilitate a more efficient process for retrieving historical documents. Kahler said that this system could also better facilitate the ability to revert back to combining the meeting attachments and
meeting minutes into a single document. Josh Murauskas said that Chelan PUD has created an internal SharePoint site for Hatchery materials, and noted that the system has filters and search features that are really helpful. Kahler said that Douglas PUD Information Systems (IS) Staff will be installing SharePoint 2013, and did not want to roll out the proposed file-sharing system until that version was installed. Kahler suggested that they present this system at the Coordinating Committees May 28, 2013 meeting in Eastern Washington.

Schiewe asked how ownership of this third SharePoint site will work between the PUDs, and Kahler asked if Chelan PUD would agree to Douglas PUD as the “data keepers” for the HCP. Schiewe said that the SharePoint site would not only be a repository, but also a workspace; and Kahler added that all three committees would use this same site. Kahler also noted that each entity would have its own login and password information. Teresa Scott verified that final documents will be available to the public, and that it is the workspace that would be password protected. Kahler confirmed this and said that Douglas PUD has requirements under their FERC license to make all final documents available to the public. Schiewe added that until documents are final, they will be password protected. Bryan Nordlund requested that the Coordinating Committees have input on setting up the file structure, and Kahler agreed and said that some different options will be demonstrate during the presentation in May. Chelan PUD and Douglas PUD agreed to explore options for developing a shared HCP filing system and will report back to the Coordinating Committees for further discussion.

B. Next Meetings
The next scheduled Coordinating Committees meeting is February 26, 2013, to be held in person in at the Radisson Hotel in SeaTac, Washington. The March 26, 2013, and April 23, 2013 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, but this is yet to be determined.

List of Attachments
Attachment A List of Attendees
Attachment B Douglas PUD Draft 2013 HCP Action Plan
Attachment C  Douglas PUD Draft 2013 Bypass Operations Plan
Attachment D  Presentation: Overview of hatchery recalculation
Attachment E  Rocky Reach Juvenile Bypass Final Operating Plan for April 2013
Attachment F  Pictures of the new hydraulic relief gate screen at Rock Island Dam
Attachment G  Adult, juvenile, and combined survival estimates for the Rock Island and Rocky Reach Projects
Attachment H  Proposed timeline and path forward for HCP Subyearling Chinook
Attachment I  Chelan PUD 2013 HCP Action Plans for Rocky Reach and Rock Island
Attachment J  Adult sockeye passage under intensive trapping operations at Tumwater Dam presentation
# Attachment A

## List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Lance Keller*</td>
<td>Chelan PUD</td>
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<tr>
<td>Josh Murauskas</td>
<td>Chelan PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<tr>
<td>Bob Rose*†</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Jim Craig*†</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Teresa Scott*†</td>
<td>Washington Department of Fish and Wildlife</td>
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</tbody>
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* Denotes Coordinating Committees member or alternate
† Joined by phone
FINAL 2013 ACTION PLAN
WELLS HCP

WELLS HCP COORDINATING COMMITTEE

1. Juvenile Fish Bypass Plan
   a. Draft to Coordinating Committee (CC) ....................................................... December 2012
   b. CC comments to DCPUD ................................................................................ January 2013
   c. Submit to FERC for approval ........................................................................ February 2013
   d. Draft report to CC ........................................................................................ November 2013

2. 2013 NNI Progress Report (per Wells HCP §6.9)
   b. Report deadline .......................................................................................... March 2013

3. Predator Control Programs
   a. Draft 2012 pikeminnow report to HCP CC .................................................... January 2013
   c. Pikeminnow removal – Wells Project......................................................... March – November 2013
   d. Draft 2013 pikeminnow report to DCPUD .................................................. January 2014
   e. Draft 2013 pikeminnow report to HCP CC ................................................... March 2014
   f. Avian predator hazing at Wells................................................................. October 2012 – May 2013
   g. 2012-2013 hazing memo to PUD ................................................................. June 2013
   h. 2012-2013 hazing memo to HCP CC .......................................................... July 2013
   i. 2012-2013 hazing memo integrated into 2013 HCP Annual Report ................. March 2014

4. Sub-yearling Chinook Life-history Study
   a. 2011 draft report to HCP CC ....................................................................... December 2012
   b. 2011 final report to HCP CC ...................................................................... February 2013
   c. Presentation of 2012 data analysis to HCP CC ............................................ December 2013
   d. Update study plan for 2013 ...................................................................... January-April 2013
   e. Tag and release study fish ........................................................................ June-July 2013
   f. Monitor study fish ...................................................................................... through life cycle
   g. 2011-13 draft report to CC ......................................................................... December 2013
   h. 2011-13 final report ..................................................................................... April 2014

5. Annual Monitoring of Juvenile Migration Run Timing
   a. 2013 Skalski analysis of index data from RR............................................. September 2013
   b. 2013 draft of Skalski’s report to DCPUD ................................................... October 2013
   c. 2013 final report presented to CC ................................................................. November 2013

6. Fish Passage and Count-station Maintenance
   a. Install grating around count station in the east ladder .............................. December 2012
   b. Install grating around count station in the east ladder ................................ January 2013
7. **FDX/HDX PIT-tag Detection System Installation**
   a. Install system in Pool 19 of east ladder ................................................. December 17-20, 2012

8. **Fishway Outage Schedule for Fishway Inspection, Maintenance, and Fishway Projects**
   b. West Fishway .............................................................. January 21 – February 21, 2013

9. **Lamprey Passage and Enumeration Study**
   a. Study plan .............................................................................. February 2013
   b. Conduct head-differential test and efficiency study ...................... July – October 2013
   c. Draft report ............................................................................. November 2013
   d. Final report .............................................................................. February 2014

10. **HCP Annual Report**
    a. Draft 2012 annual report to DCPUD for review ......................... January 16, 2013
    b. Draft 2012 annual report to CC for 30-day review ...................... February 8, 2013
    c. CC comments due to Anchor QEA ........................................... March 6, 2013
    d. Final 2012 annual report to DCPUD ......................................... March 22, 2013
    e. Final 2012 annual report due to FERC ................................. March 29, 2013

11. **License Amendments (requiring HCP CC approval)**
    a. Counting Facility Modifications (Lamprey Count Station Improvements) .... March 2013
    b. Temporary Operational Modifications (Lamprey Ladder Operations) ........ May 2013
WELLS HCP HATCHERY COMMITTEE

1. Implement 5-year Hatchery Monitoring and Evaluation (M&E) Plan
   a. Ongoing implementation ................................................................. January – December 2013
   b. Draft annual report for 2012 to Douglas PUD ................................................. June 2013
   c. Draft annual report to Hatchery Committee (HC) ................................ August 2013
   d. Final annual report to HC ................................................................. October 2013
   e. Draft 2014 implementation plan to HC ................................................... August 2013
   f. HC approval of final 2014 implementation plan .................................... October 2013
   g. HC approved 2014 implementation plan to FERC for approval ............. October 2013

2. Update 5-year M&E plan (per Wells HCP §8.5.1)
   a. Draft to HC ........................................................................... April 2013
   b. Final to HC ............................................................................. June 2013
   c. Approved M&E plan to FERC for approval ........................................ August 2013

3. 2010 Broodstock Collection Protocol
   a. Draft to HC: ........................................................................ March 2013
   b. Approval deadline: ......................................................................... April 2013
   c. Implementation: ........................................................................ May 2013 to April 2014

4. Annual Implementation - Sockeye Fish/Water Management Tools
   a. Period covered: .................................................. Water Year 2012-2013 (October – September)
   b. Water Year 2011-2012 Report and Presentation to HC: .................... to be determined

5. Methow Steelhead Relative Reproductive Success Study
   a. Implementation: ................................................................. March 2010 - December 2021
   b. Final report: ........................................................................ 2021/2022

6. Wells Hatchery Modernization
   a. Draft Master Plan to Douglas PUD ................................................ January 2013
   b. Final Master Plan ........................................................................ March 2013
   c. Final Construction Drawings ........................................................ March 2014
   d. Provide updates to the HC ......................................................... Monthly
   e. Provide opportunities for HC input ............................................ Periodically
WELLS HCP TRIBUTARY COMMITTEE

1. Plan Species Account Annual Contribution
   a. $176,178 in 1998 dollars (estimated $250,000 2013 dollars)............................. January 2013

2. Annual Report - Plan Species Account Status
   a. Draft to Tributary Committee (TC): ............................................................... February 2013
   b. Approval deadline: ....................................................................................... March 2013
   c. Period covered: .................................................................January to December 2012

3. 2013 Funding-round – General Salmon Habitat Program
   a. Request for project pre-proposals:......................... To be determined (typically in March)
   b. Pre-proposals to TC: .................................To be determined (typically in early May)
   c. Tours of proposed projects: .................................To be determined (typically in late May)
   d. Project sponsor presentations to TC: ..............To be determined (typically in early June)
   e. Final project proposals to TC: ........................To be determined (typically in late June)
   f. RTT project rating decisions: ...............................To be determined (typically in early July)
   g. Supplemental sponsor presentations, as necessary ............................To be determined
   h. TC final funding decisions: ..............................To be determined (typically before December)

4. Small Project Program
   a. Project review and funding Decision.......................................................January – December 2013

5. Tributary Assessment Program
   a. Draft final report to TC on Year 5 of 5, and all years of ORRI monitoring........ April 2013
   b. Final report to TC.................................................................June 2013
Memorandum

TO: Wells HCP Coordinating Committee

FROM: Tom Kahler, Shane Bickford, Douglas PUD

DATE: December 26, 2012

SUBJECT: Wells Dam 2013 Juvenile Fish Bypass Operating Plan

Anticipated Juvenile Migrants during the 2013 Juvenile Fish Bypass Period

The 2013 spring and summer outmigration of naturally produced juvenile HCP Plan Species at Wells Dam will consist of offspring of adults that spawned above Wells Dam during brood years (BY) 2011 and 2012 (Table 1). The spring migration will include juvenile spring Chinook, coho, sockeye, and steelhead, and summer/fall Chinook sub-yearlings will migrate during both spring and summer bypass operations.

Table 1. Ladder counts at Wells Dam of HCP Plan Species whose progeny are anticipated to migrate through the Wells Project during the 2013 bypass period. Juvenile steelhead migrate predominantly as yearlings from the Okanogan River and as age-2 and age-3 fish from the Methow River; thus, 2009, 2010, and 2011 steelhead adult counts are included (BY 2010, 2011, and 2012, respectively).

<table>
<thead>
<tr>
<th>Species</th>
<th>Adult Migration Year</th>
<th>Ladder Count</th>
<th>Juvenile Migration</th>
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<tbody>
<tr>
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<td>2011</td>
<td>8,122</td>
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<tr>
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<td>2012</td>
<td>46,835</td>
<td>Summer</td>
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<tr>
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<td>2011</td>
<td>5,796</td>
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<td>2011</td>
<td>111,508</td>
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<tr>
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<td>2009</td>
<td>25,422</td>
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<tr>
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<td>2010</td>
<td>12,929</td>
<td>Spring</td>
</tr>
<tr>
<td>Summer Steelhead</td>
<td>2011</td>
<td>12,069</td>
<td>Spring</td>
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Scheduled hatchery releases above Wells Dam in 2013 include yearling spring Chinook from the Methow Fish Hatchery (495,000) and the Winthrop National Fish Hatchery (WNFH; 375,000). The WNFH also will release approximately 300,000 coho. Summer Chinook yearlings will be released from the Carlton (420,000) and Similkameen (620,000) acclimation ponds. Hatchery steelhead scheduled for release above Wells Dam include approximately 150,000 fish to the Methow Basin and 100,000 to the Okanogan Basin from Wells Hatchery, and 114,000 to the Methow Basin from WNFH. In general, the hatchery yearling Chinook, coho and steelhead are
scheduled for release after April 15th with Winthrop coho and Wells steelhead scheduled for release after April 20th. By mid-May, all of the yearling Chinook and coho will have been released. The steelhead releases have historically continued into late May.

2013 Juvenile Fish Bypass Operations

Operation of the bypass system throughout the 2013 season will follow the criteria contained within the Wells Dam Juvenile Dam Passage Survival Plan (Wells Juvenile Bypass Plan) found in Section 4.3 of the Wells HCP. One of the main goals of the Wells Juvenile Bypass Plan is to provide bypass operations for at least 95% of both the spring and summer migration of juvenile plan species.

From 2004 through 2011, the timing of the implementation of bypass operations was based upon an analysis of 21 years of hydroacoustic and 14 years of species composition information collected on juvenile run patterns at Wells Dam. From the data available to the Wells HCP Coordinating Committee in February 2004, they agreed that initiation of the Wells bypass system on April 12th and termination on August 26th would conservatively provide bypass operations for more than 95% of both the spring and summer migrations of juvenile Plan Species.

In 2011, Columbia Basin Research performed an analysis using seven years of passage data obtained from daily sampling at the Juvenile Sampling Facility of the Rocky Reach Juvenile Fish Bypass System to more accurately estimate the contemporary percentage of the migration of spring and summer migrants that passed during bypass operations at Wells Dam. From that analysis, the Wells HCP Coordinating Committee adjusted the starting and ending dates for bypass operations at Wells Dam, moving the starting date three days earlier to April 9 to cover early-migrating natural origin spring Chinook, and moving the ending date seven days earlier to August 19 to more accurately reflect the contemporary passage timing of the sub-yearling Chinook outmigration. Thus, for 2012, bypass operations at Wells Dam commenced at 00:00 on April 9 and ended at 24:00 hours on August 19. For accounting purposes, the end of the 2012 spring bypass season was June 13th at 24:00 hours and the beginning of the summer bypass season was June 14th at 00:00 hours.

Upon completion of the 2012 bypass season, Columbia Basin Research updated the original analysis that supported the decision by the Wells Coordinating Committee to adjust the dates of bypass operations. The updated analysis determined that the adjusted dates of bypass operations at Wells Dam in 2012 provided bypass passage for 99.96 percent of yearling Chinook, 99.86 percent of steelhead, 100 percent of sockeye, and 99.30 percent of subyearling Chinook. Based upon this high level of compliance with the HCP bypass operating criteria (exceeding the 95% bypass-passage criteria for all species), Douglas PUD proposes to commence operation of the bypass system starting at 00:00 on April 9 and to end operations at 24:00 hours on August 19. For accounting purposes, the 2013 spring bypass season will end on June 13th at 24:00 hours and the beginning of the summer bypass season will begin on June 14th at 00:00 hours.

The Federal Energy Regulatory Commission (FERC) requires Douglas PUD to operate Wells Dam with sufficient automatic-gate-opening capacity in the spillway to pass the flow from a load rejection of 200 thousand cubic feet per second (kcf/s), in addition to any concurrent inflows. Of the 11 spillways at Wells Dam, only spillways 3 through 9 have automated gate hoists. Thus, the
seasonal installation of bypass barriers in spillways 2, 4, 6, 8 and 10, substantially reduces the automatic-gate-opening capacity of Wells Dam by reducing the capacity of each bypass spillway to 8.6 kcfs. Consequently, Douglas PUD must remove bypass barriers systematically when discharge estimates exceed certain flow thresholds, as per Table 2, sufficient to provide the necessary automatic-gate-opening flow capacity as described in the FERC approved Emergency Action Plan for the Wells Project (EAP, Appendix I). Decisions to remove bypass barriers for FERC compliance will be made each Monday (or at other times as necessary) during the bypass period and will be based on weekly forecasts of combined discharge from Chief Joseph Dam and side-flows from the Okanogan and Methow rivers (from the National Weather Service Northwest River Forecast Center [NWRFC]; http://www.nwrfc.noaa.gov/).  

Table 2. Schedule for removal of spillway flow-barriers (bypass barriers) to accommodate flood flows and load rejections.  

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<tr>
<th>Inflow Forecast (kcfs)</th>
<th>Bypass Barriers Removed</th>
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<tr>
<td>Up to 200</td>
<td>None</td>
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<td>200 – 240</td>
<td>Spillway 6</td>
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<td>240 – 275</td>
<td>Spillways 6, 8</td>
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<td>275 – 310</td>
<td>Spillways 4, 6, 8</td>
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<tr>
<td>310 – 350</td>
<td>Spillways 4, 6, 8, 10, &amp; preset gates 10, 11 to spill excess of 312 kcfs</td>
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<tr>
<td>350 – 400</td>
<td>Spillways 4, 6, 8, 10, &amp; preset gates 1, 10, 11 to spill excess of 312 kcfs</td>
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<tr>
<td>400 – 450</td>
<td>All spillways (2, 4, 6, 8, 10)</td>
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Juvenile Fish Bypass Operations and Clean Water Act TDG Compliance  
Seasonal bypass operations generally coincide with the spring freshet, an event during which operators of hydroelectric projects must cope with flows that often exceed the hydraulic capacity of their powerhouses. When flows exceed the hydraulic capacity of the generating units, water must be passed via the spillway in what is termed “involuntary spill.” Involuntary spill increases the concentration of atmospheric gases in the water below hydroelectric projects, and can result in excessive levels of total dissolved gas (TDG) that may injure fish. To minimize the potential for fish injury, the Washington Department of Ecology (WDOE) imposes TDG standards on operators of hydroelectric projects.  

Extensive study of spill operations at Wells Dam and modeling exercises at the University of Iowa provide the basis for the development of annual spill “playbooks” for operations at Wells Dam aimed at achieving the WDOE standards for TDG in the Wells tailrace. From modeling and physical-spill studies over the past several years, Douglas PUD has determined that concentrating spill through the middle of the spillway and supporting that concentrated spill with turbine discharge results in the most effective minimization of TDG in the Wells tailrace. Specifically, the best TDG performance is achieved when concentrating involuntary spill through Spillway 5, and allocating additional spill, beyond the capacity of Spillway 5, to Bypass Bay 6 and then to Spillway 7, up to a maximum of 43 kcfs per spillway.  

To accomplish this TDG-minimizing pattern of concentrated spill requires the removal of the bypass barriers from at least one spillway during periods with excessive involuntary spill. The removal of the bypass barriers from one bypass bay takes approximately eight hours and requires the use of a four-man mechanical crew and several gantry cranes. To comply with the TDG
standards below Wells, the bypass barriers must be removed from at least one spillway whenever involuntary spill exceeds 30 kcfs and one or both of the following conditions applies: 1) prolonged (> 8 hours) involuntary spill in excess of 40 kcfs is predicted (based on forecasted tributary inflows from the NWRFC and estimated discharge from Chief Joseph Dam provided by the US Army Corps of Engineers); or 2) total spill is predicted to exceed 53 kcfs, regardless of duration. Once involuntary spill of less than 40 kcfs, for a period of at least four days is predicted, the respective bypass barriers would be reinstalled. At river flows greater than 240 kcfs, bypass barriers would be removed from additional bypass bays as described above (see Table 2) and reinstalled sequentially as appropriate.

**Juvenile Fish Bypass Contingency Plan**

The failure of a gate-hoist cable in a bypass spillway at Wells Dam in late August 2010 provided the impetus for the development of a contingency plan for bypass operations during similar events that could occur in the future. Under the 2010 Juvenile Fish Bypass Contingency Plan (Bypass Contingency Plan), in the event of a failure of a bypass gate or other such accident or unanticipated mechanical failure that rendered impossible normal bypass operations, Douglas PUD’s initial response would follow the Wells Juvenile Bypass Plan, shutting down associated turbine units as prescribed in Section 4.3 of the Wells HCP. However, high river discharge in 2011 and 2012 highlighted the need to incorporate the consideration of TDG into the Bypass Contingency Plan, and we have modified the plan accordingly.

During periods of high river discharge, mid-Columbia hydroprojects maximize powerhouse discharge to minimize spill and associated increases in TDG. Shutting down a turbine at Wells Dam when all other turbines are loaded would increase spill by 20 kcfs, which would also increase TDG. However, losing function of one bypass unit at Wells Dam affects two turbine units; thus, shutting down both turbine units associated with the malfunctioning bypass spillway would increase spill by 40 kcfs. Therefore, Douglas PUD has modified the Bypass Contingency Plan to avert unnecessary increases in TDG from shutting turbine-units due to a mechanical failure of the bypass system.

Section 4.3 of the Wells HCP directs Douglas PUD to shut down the turbine units adjacent to the bypass spillway that is not operating due to either a lack of water or an inability to operate the bypass spillway. Under the 2010 Bypass Contingency Plan, the associated turbine units would have remained inactive until personnel at Wells Dam could determine the cause of the bypass failure and the nature of and time required for the necessary repair. Under the new Bypass Contingency Plan, if shutting down the turbines would not threaten compliance with TDG standards, Douglas PUD would shut down the associated turbine units. However, if doing so would threaten compliance with TDG standards, Douglas PUD would not shut down the associated turbines but would instead direct spill through spillways adjacent to the affected turbine units in a manner that provides bulk flow for fish passage while minimizing TDG (Figure 1, Option 1). Douglas PUD would consult the Spill Playbook (see above) to select such spill configurations, and would spill at least 10 kcfs through selected spillways to engage the submerged flip-lip as a TDG minimization measure and to provide bulk flow for fish attraction to the surface passage route. In circumstances where turbine shutdown would not jeopardize TDG compliance, Douglas PUD would shut down the associated turbine units to evaluate and repair the malfunction, but may then elect to move the bypass barriers from the inoperable
bypass spillway to an adjacent, non-bypass spillway to obtain the use of an additional turbine unit (see Figure 1, options 2 and 3). The gate for that substitute bypass spillway would then be set at the standard 1-foot opening for bypass spillways and the adjacent turbine unit could be operated without constraints. This configuration would meet the intent of HCP Section 4.3 by providing bypass spill immediately adjacent to every operating turbine unit and would comply with the goal of the Total Dissolved Gas Abatement Plan.

During the repair of a bypass malfunction, Douglas PUD would daily reevaluate forecasts of Chief Joseph Dam discharge, tributary inflows, and TDG conditions, as well as repair progress, and determine which bypass option to implement.

**Figure 1.** Evaluation flow chart for daily decisions regarding bypass, spill, and turbine operations during a bypass malfunction.
Overview of Hatchery Recalculation

Chelan and Douglas HCP Coordinating Committees

Josh Murauskas and Tom Kahler
January 2013
What is NNI?

Before Mid-C PUDs
- Okanogan
- Methow
- Entiat
- Wenatchee
- Grand Coulee + Natural Production
- No Net Impact

After Mid-C PUDs
- Okanogan
- Methow
- Entiat
- Wenatchee
- Grand Coulee + Natural Production
- WEL
- RRH
- RIS
- WAN/PR
- Project Mortality
- PUD Hatchery Production
- No Net Impact

Attachment D
What is “Recalculation”

- HCPs, section 8.4.3

- Essentially:
  - More juveniles = more losses
  - Better performance = fewer losses
Methods

- “BAMP” application for wild fish
- Hatchery release targets for hatchery fish
Wild Fish Example

- Consider 9,300 wild adult returns…
- Absent mortality, 10,000 wild adults would be expected (i.e., 9,300 ÷ 93% = 10,000)
- Therefore, 700 adults needed to meet NNI
- Hatchery SAR of 0.5%, =140,000 smolts owed
Hatchery Fish Example

- Target hatchery releases represent hatchery smolts in calculations
  - $600,000 \times 7\% \text{ loss} = 42,000 \text{ smolts owed}$

- “Residual” production.
  - Difference between individual mitigation and cumulative mortality offset commensurate with survival at each project…
Rock Island Spring Chinook

- Wild fish:
  - 1,534 wild adult returns, smolt survival = 93.75 %
  - 102.3 adults owed for NNI
  - 0.540 % hatchery SAR
  - 18,939 smolts to replace wild-origin adults
Rock Island Spring Chinook

• Hatchery fish:
  • 400K WNFH smolts × 6.25 % = 25,000 owed
    • + 8,440 residual production
  • 1.2M LNFH smolts × 6.25 % = 75,000 owed
    • +16,648 residual production
  ◦ 125,088 smolts to replace hatchery releases
Chiwawa Spring Chinook

144,026 total
Technical issues

- Chinook runs
- “Residual” losses
- Hatchery M&E data
- Many more…
Conclusions

- Hatchery compensation plan fully implemented: facilities and production
- Projects “transparent” to smolt migration
- Continued incentive for PUDs to improve programs
Final Operating Plan for Rocky Reach Surface Collector and C2 Turbine unit during the C1 Turbine unit outage in April 2013

1) RR JFB Surface Collector (SC) will utilize three additional installed SC pumps to increase attraction flow from 6,000 to 6,660 cfs into the SC entrances (3,330 cfs each side) beginning April 1, 2013.

2) The dewatering screen cleaning system will function normally under the increased entrance flow and the cleaning process should not be affected. The automated screen cleaning routine will be more frequent if increased debris load is encountered (unlikely in April).

3) Normal water velocity (Vn) through the dewatering screens in the SC channels will increase proportionally to the SC flow-rate increase, which is approx 11%. Calculations show screen velocity will increase from 0.4 fps to about 0.444 fps (an 11% increase) under the 6,660 SC flow. Water velocity will increase uniformly (no hot spots) across the entire SC dewatering screen surface area as regulated by the tuned screen baffling.

4) RR will increase turbine unit C2 flow, from its normal soft-limit set-point of 12.2 kcfs to a soft-limit flow of 15.2 kcfs during the C1 outage.

5) RR will test this operation during the normal pre-season (last week of March) marked fish releases into the surface collector/bypass to insure there are no effects on fish condition or passage. Marked fish will be recollected and observed at the RR juvenile sampling facility.

6) RR will return to its normal SC/Bypass operation if C1 work is completed early and C1 can return to service before April 30.
Newly installed 1-inch bar screen covering the opening of the Hydraulic relief-gate which protects against excessive flow in the Left Bank Fishway at Rock Island Dam. Screen will preclude adult fish from entering the hydraulic relief space from the tailrace if the gate ever opens again to discharge excess water from the fishway.
Juvenile, Adult, and Combined Survival Estimates at Rock Island and Rocky Reach Projects, for inclusion in 2013 HCP Comprehensive NNI Check-in Report

Table 1. Juvenile, adult, and combined survival rates for the Rock Island and Rocky Reach Projects. Adult conversion rates calculated from adult passage data for years 2010-2012 (Buchanan and Skalski, University of Washington 2012). HCP Combined Adult and Juvenile Project Survival standard is 91%.

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<th>Project</th>
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<th>Adult Survival</th>
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<tr>
<td>Rock Island</td>
<td>Steelhead</td>
<td>96.75%</td>
<td>99.31%</td>
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<td></td>
<td>Spring Chinook</td>
<td>93.75%&lt;sup&gt;1&lt;/sup&gt;</td>
<td>99.89%</td>
<td>93.65%</td>
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<td></td>
<td>Sockeye</td>
<td>93.27%</td>
<td>98.37%</td>
<td>91.75%</td>
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<td>Rocky Reach</td>
<td>Steelhead</td>
<td>95.79%</td>
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<td>Spring Chinook</td>
<td>92.37%&lt;sup&gt;1&lt;/sup&gt;</td>
<td>99.90%&lt;sup&gt;3,4&lt;/sup&gt;</td>
<td>92.28%</td>
</tr>
<tr>
<td></td>
<td>Sockeye</td>
<td>93.59%</td>
<td>98.92%</td>
<td>92.58%</td>
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</table>

<sup>1</sup> Spring-migrating, yearling Chinook salmon.
<sup>2</sup> Estimate does not account for fish losses due to recreational harvest in any years.
<sup>3</sup> No recreational harvest occurred for adult spring Chinook.
<sup>4</sup> Adult conversion rate and Combined Project Survival approved by SOA for Rocky Reach on August 30, 2011 using 2009-2011 adult spring Chinook passage data.
<sup>5</sup> Estimate adjusted for loss of fish from recreational harvest in 2010 and 2011, but not for harvest losses in 2012.
<sup>6</sup> Combined survival is the product of juvenile and adult survival estimates (e.g., 98% × 93% = 91%).
Chelan PUD Subyearling Chinook- Proposed Path Forward

This document describes a stepwise approach for developing a comprehensive status assessment of (1) subyearling studies and biology, and (2) decisions related to the future monitoring and evaluation of subyearling Chinook survival. The ultimate goal is to create a path forward that is supported and approved by the Coordinating Committees. The individual steps are also depicted in a diagram at the end of the document.

**Step 1: Review current survival study technology and applicability to Rocky Reach and Rock Island projects.**

- **February 2013-Status of survival studies document:** Summarize historic subyearling survival studies including ecological, technological and analytical features as they pertain to HCP requirements. Compare and contrast current technology with presentations from 2009 subyearling summit. Examine assumptions of mark-recapture designs and caveats of violating assumptions.

**Step 2: Summarize biological and ecological data to establish a baseline status assessment of summer Chinook.**

- **March 2013- Summary of resident fish and predator interaction studies in Rocky Reach:** Provide literature review of potential interactions among predators and habitats within Rocky Reach. Present data on the littoral distribution and relative abundance of predator species within Rocky Reach. Present preliminary evaluation of overwater structure/dock habitat use by predators in Rocky Reach. Describe future sampling plans.

- **April 2013-Evaluation of carrying capacity of summer and fall Chinook in habitats above Rock Island:** Present quantitative analyses of population and productivity trends across subyearling habitats. Evaluate carrying capacity estimates and target escapement values for spawning areas. Attempt to define expectations for productivity.

- **April 2013-Summary of life history data collected from Chelan PUD hatchery M&E activities:** Present data on migration timing and abundance of subyearling juveniles.

- **April 2013-Review of innovations in summer Chinook hatchery programs:** Chelan is investing significant resources in hatchery technology to create higher performing smolts and more adult returns. These are expected to boost natural productivity and additional hatchery improvements are possible.

- **April 2013 Spawning Habitat Improvements in Chelan River:** Present data on new habitat provided by the Chelan River habitat project.
Step 3: Make a determination if additional questions need to be answered (i.e., 2013 subyearling summit).

- **Decision Point—Adequacy of existing information?**:
  - YES- If information is adequate, identify key elements of an SOA to describe specific path forward and phase designation.
  - NO-If more information is needed; identify data gaps and process for obtaining new information. This could include planning and organization of a subyearling summit for late summer 2013 or collection of additional data.

Step 4: Approve Path Forward

- **Statement of Agreement**: If adequate information exists, present draft “path forward” SOA for consideration at Coordinating Committee meeting in early summer 2013.
  
  -or-

- **Decision Point—Adequacy of existing information?**:
  - YES-If after consideration of new data, the Coordinating Committee determines that adequate information exists, identify key elements of an SOA to describe specific path forward.
  - NO-If more information is needed; identify data gaps and process for obtaining new information.
Evaluate biological and compensation information
• Review predation studies
• Status of population & biology
• Status of hatchery contributions
• Chelan habitat enhancement

Adequate Information?

Yes

Step 1: February 2013

Step 2: March-April 2013

No

Obtain additional information
• Sub yearling summit II
• Additional data

Adequate Information?

Yes

Step 3: June 2013

Yes

Step 4: Summer/Fall 2013

No

SOA describing actions and Phase Designation

SOA describing actions and Phase Designation
### COORDINATING COMMITTEE

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### HATCHERY COMMITTEE

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*Start RI spill 4/17*
A case study of adult sockeye salmon passage under intensive trapping

Josh Murauskas
Presentation to HCP Coordinating Committee
January 22\textsuperscript{nd}, 2013
Tumwater trapping

2004-2010:
Trapping 100% of spring migrants
Up to ~ 40,000 adults annually
Reproductive success study

2008-2010:
Substantial delays observed

2011-2012:
Limited trapping of sockeye

2012-2013:
Effects quantified
Results

- > 8.7 days
- 38% obstructed
- ~21,000 adults

- 6 minutes
- < 0.6% obstructed
Conclusions

• Trapping may have unintended consequences

• Precautions
  – Need for trapping, risks and benefits identified
  – Facility design should minimize trap effects
  – Non-target species considered
  – Passage goals and effective monitoring needed
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees
From: Michael Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the February 26, 2013 HCPs Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Hotel in SeaTac, Washington, on Tuesday, February 26, 2013, from 9:30 am to 11:00 am. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Lance Keller will provide the Coordinating Committees an update on the status of the re-watering of the lower adult fishway ladder at Rocky Reach Dam (Item II-D).
- Chelan PUD and Douglas PUD will prepare a draft update of the flow duration curve (Item III-B)
- Tom Kahler will provide the Coordinating Committees clean and redlined versions of the revised Douglas PUD Draft 2013 10-year No Net Impact (NNI) Comprehensive Check-in Report, along with the compiled comments, no later than 10 days prior to the Coordinating Committees’ March 26, 2013 meeting (Item III-C).
- Tom Kahler will verify that the total combined capture reported in the Douglas PUD Draft 2012 Pikeminnow Program Annual Report, for pikeminnow at Rocky Reach and Wells dams, is correct (Item III-E).
- Chelan PUD and Douglas PUD will explore options for developing a shared HCP filing system and will report back to the Coordinating Committees for further discussion, prior to the Coordinating Committees’ May 21, 2013 meeting (Item V-A).
- The Coordinating Committees’ May 28, 2013 meeting has been rescheduled to May 21, 2013, and will be held in eastern Washington at a location that is yet to be determined (Item V-B).
**DECISION SUMMARY**

- Coordinating Committees representatives present approved the Statement of Agreement (SOA) for Phase III standards achieved for the combined adult and juvenile survival of steelhead, sockeye, and spring-run Chinook at Rocky Reach and Rock Island hydroelectric projects (Item II-A).
- Coordinating Committees representatives present approved the SOA that approves the Chelan PUD Final 2013 HCP Comprehensive Progress Report (Item II-B).
- Coordinating Committees representatives present approved the SOA for Wells Dam 2013 Lamprey Operations, as revised (Item III-A).

**AGREEMENTS**

- Coordinating Committees representatives present approved the Chelan PUD 2013 HCP Action Plan (Item II-C).
- Coordinating Committees representatives present approved the Douglas PUD 2012 Wells Post-Season Bypass Report (Item III-B).

**REVIEW ITEMS**

- The Douglas PUD Draft 2012 Pikeminnow Program Annual Report was distributed to the Coordinating Committees by Kristi Geris on February 12, 2013, for a 30-day review, with comments due to Tom Kahler no later than March 15, 2013.
- The Chelan PUD 2013 Rock Island and Rocky Reach Draft Fish Spill Plan was distributed to the Coordinating Committees by Kristi Geris on February 21, 2013, for review, with comments due to Steve Hemstrom no later than March 21, 2013.

**REPORTS FINALIZED**

- The Douglas PUD 2013 Final HCP Action Plan was distributed to the Coordinating Committees on January 23, 2013.
- The Douglas PUD 2013 Final Bypass Operations Plan was distributed to the Coordinating Committees on January 23, 2013.
• The Chelan PUD Final 2013 Comprehensive Progress Report was distributed to the Coordinating Committees on February 4, 2013.
• The Douglas PUD 2013 Final Gas Abatement Plan was distributed to the Coordinating Committees on February 6, 2013.
• The Douglas PUD 2012 Final Wells Post-Season Bypass Report was distributed to the Coordinating Committees on February 26, 2013.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda, and the following revisions were requested:

• Bob Rose requested that decision items be discussed first.
• Steve Hemstrom added a notification of Chelan PUD management changes.
• Tom Kahler requested that the Douglas PUD Subyearling Update be moved to the Coordinating Committees’ March 26, 2013 meeting, and he also added a Wells Dam maintenance update.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft January 22, 2013 meeting minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to consider. Geris did note, however, one clarification regarding attaching draft and final plans to the meeting minutes. Geris clarified that draft documents are only attached to the meeting minutes when required to supplement the discussions. The reasoning is to limit the number of draft documents compiled in the annual reports. Further, any final plans and reports that are not included as a meeting attachment are appended separately to the annual reports. The draft January 22, 2013 meeting minutes were approved as revised. Geris will finalize the meeting minutes and distribute them to the Committees.
II. Chelan PUD

A. DECISION: Revised SOA approving Chelan PUD Adult and Juvenile Combined Survival Standard at Rocky Reach and Rock Island (Steve Hemstrom)

Steve Hemstrom recapped that Chelan PUD presented to the Coordinating Committees a table of Phase III standards achieved for the combined adult and juvenile survival of steelhead, sockeye, and spring-run Chinook at Rocky Reach and Rock Island. He said that the table was revised per the Coordinating Committees’ recommendations, and that the SOA (Attachment B) that was distributed to the Coordinating Committees by Kristi Geris on January 26, 2013, is intended to document approval of the table, as revised. Coordinating Committees’ representatives present approved the SOA.

B. DECISION: SOA approving Chelan PUD 2013 Rocky Reach and Rock Island HCP Comprehensive Progress Report(s) (Steve Hemstrom)

Steve Hemstrom said that the SOA approving the Chelan PUD Final 2013 HCP Comprehensive Progress Report (Attachment C) was distributed to the Coordinating Committees by Kristi Geris on February 4, 2013. Coordinating Committees’ representatives present approved the SOA.

C. DECISION: Draft 2013 Rocky Reach and Rock Island HCP Action Plans (Steve Hemstrom)

Steve Hemstrom said that the Chelan PUD 2013 HCP Action Plans for Rocky Reach and Rock Island that describe activities planned for 2013 were distributed to the Coordinating Committees by Kristi Geris on January 16, 2013. He said that Chelan PUD is now requesting approval of the plans. Mike Schiewe clarified that SOAs are not typically completed for action plans; however, the Coordinating Committees do formally indicate approval of the plans. Coordinating Committees’ representatives present approved the Chelan PUD 2013 HCP Action Plan.

D. Update: Rocky Reach and Rock Island Adult Fishway maintenance and return to service (Lance Keller)

Lance Keller said that after a short outage, the right ladder at the Rock Island Dam was back in service on February 1, 2013. He said that Turbine Unit 7 was also taken down for rehabilitation during this time. Keller said that next year, this ladder will be scheduled for a
long outage. He said that the left ladder at the Rock Island Dam is currently being re-wated, and noted that the repairs to the concrete floor associated with the attraction flow regulating gates, as described at the Coordinating Committees’ January 22, 2013 meeting, were completed and the floor is now secure. Keller said that at Rocky Reach Dam, during the re-watering of the lower ladder of the adult fishway, crews discovered that a gasket was missing from the flap gate indicator rod that is associated with the attraction water pumps for the adult fishway. He said that this gasket is currently being repaired and the re-watering will resume upon completion. Keller said that he will provide an update on the status of the re-watering as the repair is completed. (Note: Keller notified the Coordinating Committees on February 27, 2013, that the missing gasket on the flap gate indicator rod had been repaired and the re-watering of the fishway resumed that morning; it is anticipated to have the ladder back in service by the March 1, 2013 deadline.)

E. Notification of Chelan PUD Management Changes (Steve Hemstrom)
Steve Hemstrom notified the Coordinating Committees that Chelan County PUD’s General Manager, John Janney, announced his resignation, effective August 2013.

III. Douglas PUD

A. DECISION: Draft SOA Wells Lamprey Operations 2013 (Tom Kahler)
Tom Kahler said that the SOA for Wells Dam 2013 Lamprey Operations (Attachment D) was distributed to the Coordinating Committees by Kristi Geris on February 12, 2013. Bob Rose requested that in the background section of the SOA, the word “definitively” be replaced with “better.” He also suggested that the release of translocated fish be characterized as “below” Wells Dam. Kirk Truscott asked about the evaluation of potential effects on salmonid passage, as noted in the background section, and Kahler explained that Douglas PUD had Dr. John Skalski conduct an analysis of data collected during the 2009 and 2010 studies to evaluate potential impacts to salmonid passage; the results were that there were no statistically detectable effects to the treatment proposed in the 2013 study. Kahler said that he will forward Skalski’s analysis to Truscott.
Coordinating Committees’ representatives present approved the SOA, as revised. Kahler revised the SOA, as discussed, and provided the final SOA to Geris for distribution to the Coordinating Committees the same day.

B. **DECISION: Douglas PUD Draft 2012 Post-Season Bypass Report (Tom Kahler)**

Tom Kahler said that the Douglas PUD Draft 2012 Wells Post-Season Bypass Report was distributed to the Coordinating Committees on January 17, 2013, by Kristi Geris for a 30-day review period, with comments due no later than Friday, February 15, 2013. He said that no comments were received. Bryan Nordlund asked about the timing of adjusting representative flow conditions by updating the flow duration curve. Steve Hemstrom said that the HCPs require that the flow duration curve is updated every 10 years. Chelan PUD and Douglas PUD agreed to prepare a draft flow duration curve update.

Nordlund also asked about the timing of fish passage operations at Rock Island Dam, and Hemstrom replied that Rock Island bypass starts no later than April 1 and spill starts on April 17. He said that these operations are outlined in the Chelan PUD Smolt Monitoring Program (SMP), and added that the start dates have never been adjusted.

Coordinating Committees’ representatives present approved the Douglas PUD 2012 Wells Post-Season Bypass Report, and the final was distributed to the Coordinating Committees by Kahler the same day.

C. **Discussion: Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report (Tom Kahler)**

Tom Kahler said that the Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report was distributed to the Coordinating Committees by Kristi Geris on December 27, 2012, for a 60-day review period, with comments due no later than Monday, February 11, 2013. Kahler said that comments were received from National Marine Fisheries Service (NMFS); and he added that Teresa Scott indicated via email that she had no comments to the draft report. He said that Douglas PUD has not yet received Kim Hyatt’s Fish Water Management Tool weight of evidence report, but the summary is expected by the end of March 2013. Kahler said that, as Chelan PUD had done with their NNI report, Douglas PUD
will provide to the Coordinating Committees a clean and redlined version of the revised Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report, along with the compiled comments, no later than 10 days prior to the Coordinating Committees’ March 26, 2013 meeting. Kristi Geris agreed to contact Scott to let her know that the revised Douglas PUD Draft 2013 10-year NNI Comprehensive Check-in Report will be up for approval at the Coordinating Committees’ March 26, 2013 meeting.

D. Update: Subyearling Life History / Douglas PUD Draft 2012 Subyearling Study Results Technical Memorandum (Tom Kahler)

Tom Kahler requested that this agenda item be rescheduled to the Coordinating Committees’ March 26, 2013 meeting. He said that the technical memorandum summarizing 2012 Subyearling Study results was just recently completed. Mike Schiewe reminded the Committees that once the 2013 results are collected, those data will be integrated with data from 2011 and 2012 to produce a more comprehensive report.

E. Comment: Douglas PUD Draft 2012 Pikeminnow Program Annual Report (Tom Kahler)

Tom Kahler said that the Douglas PUD Draft 2012 Pikeminnow Program Annual Report was distributed to the Coordinating Committees by Kristi Geris on February 12, 2013, for a 30-day review, with comments due no later than March 15, 2013. He said that in 2012, there was a declining catch, and added that this is partially due to the challenge of fishing in the Wells Dam tailrace with such high flows. He said that fish size is also declining. Lance Keller said that at Rocky Reach and Rock Island the average fish size is around 218 millimeters (mm); and he added that this has been steadily declining over recent years. Kahler said that the catch of fish 350 mm and larger declined over the first several years of the program and has now stabilized at a relatively small proportion of the annual catch. Kahler said that another notable observation from 2012 was the dramatic increase in burbot by-catch. He said that the burbot seem to be targeting pikeminnow on the line. Steve Hemstrom asked about the total combined capture at Rocky Reach and Wells dams that was reported in the draft report. He said that the figure seemed high. Kahler said that he will verify that the total combined capture reported is correct. Mike Schiewe said that the draft report will be on the Coordinating Committees’ March 26, 2013 meeting agenda for approval.
F. **New Total Dissolved Gas Station in Wells Reservoir (Tom Kahler)**

Tom Kahler explained that total dissolved gas (TDG) concentrations in the Wells Dam forebay are often higher than would be expected based on TDG readings in the Chief Joseph Dam (CJ) tailrace. He said that currently, the CJ TDG monitoring station is located along the right-bank in the spillway zone by the CJ fish ladder, which is not picking up the powerhouse TDG along the left-bank. He said that this results in water with high concentrations of TDG bypassing the monitoring station. Therefore, Kahler said that another TDG monitoring station is being installed at Washburn Island located approximately 7 miles downstream from CJ and 23 miles upstream of Wells Dam. Kahler said that the new TDG station is located downstream of where both flow sources meet, and it will give a reading of water that is fully mixed.

G. **Wells Dam Maintenance Update (Tom Kahler)**

Tom Kahler said that the west fish ladder was back online on February 21, 2013, and that fishway maintenance at Wells Dam is now complete. He said that, like Chelan PUD at Rock Island, Douglas PUD typically has an extended maintenance period on one ladder and a shorter maintenance period for the other ladder, every other year. He said that this year, however, both ladders were down for an extended maintenance period, as several projects were scheduled to be completed for both ladders. Kahler said that all scheduled maintenance projects were complete.

IV. **Hatchery and Tributary Committees Update (Mike Schiewe)**

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees’ meeting on February 14, 2013:

- **Washington Department of Fish and Wildlife (WDFW) Representative on the Tributary Committees**: Jeremy Cram was announced as the new WDFW representative on the Tributary Committees, and Carmen Andonaegui will serve as the alternate.
- **Review of Policies and Procedures Documents**: The Tributary Committees are refining their Policies and Procedures for Funding Projects and their Operating Procedures, including revising and updating language associated with Conservation
Easements and Acquisitions. Also, language is being added stating that all Tributary Committees-funded protection properties will allow public access.

- **Small Projects Program Application**: The Tributary Committees considered one small project from the Colville Confederated Tribes (CCT) that is titled *Okanogan Basin Stream Discharge Monitoring Project*. Sites include Loup Loup and Nine-Mile creeks. The total cost of the project is $94,924, and the sponsor requested $62,984 from HCP Tributary Funds. Tom Kahler said that the Tributary Committees requested additional information from the CCT to help inform a funding decision. He said that the information requested was provided and the Tributary Committees approved $74,985 from HCP Tributary Funds for the project.

- **Annual Deposits to the Plan Species Accounts**: Contributions to the Plan Species Accounts include: Rock Island—$690,515; Rocky Reach—$327,041; and Wells—$250,729. Kahler clarified that these amounts include this year’s contributions only. He added that the Rock Island fund is becoming quite large, the Wells fund is now slightly more than one million dollars, and the Rocky Reach fund is somewhere in the middle. Schiewe noted that it may be helpful to include current fund totals in future reports. Steve Hemstrom also added that the annual contribution amounts are in 1998 dollars, and so the values are now inflated.

- **General Salmon Habitat Program Schedule**: The Tributary Committees approved the General Salmon Habitat Program schedule for 2013. Pre-proposals will be delivered to the Tributary Committees on May 7, 2013, and will be reviewed during the Tributary Committees’ May 9, 2013 and June 13, 2013 meetings. Pre-proposal presentations will occur on June 12, 2013, and final proposals will be delivered to the Tributary Committees on July 12, 2013. Project tours are also scheduled for May 2013 and June 2013. The Tributary Committees will make funding decisions on August 8, 2013. Kahler said that pre-proposals will likely be narrowed down at the May 9, 2013 meeting, and that after the June 13, 2013 meeting, the Tributary Committees will likely provide sponsors with letters requesting either a full proposal or requesting that they do not provide a full proposal.
Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees’ meeting on February 20, 2013, which was hosted by Chelan PUD:

- **Hatchery And Genetic Management Plans (HGMP) Update.** Craig Busack reviewed the status of NMFS processing of the HGMPs; he also reminded the Committees about the requirements for bull trout consultations with the U.S. Fish and Wildlife Service (USFWS) for both direct and non-direct take hatchery programs. A follow-up meeting was planned to continue this discussion. *(Note: due to scheduling conflicts, a follow-up discussion is planned for the Hatchery Committees’ March 20, 2013 meeting.)*

- **Wenatchee Steelhead Release Strategy:** In 2012, the survival of steelhead reared at the Chelan PUD Chiwawa Facility and released in the Wenatchee River was exceptionally low. This was the first year of the full relocation from the Turtle Rock Facility to overwinter acclimation at the Chiwawa Facility. During discussion it was noted that during the time that Turtle Rock was operational, steelhead were drop-planted directly at selected locations in the Wenatchee River; in contrast, with relocation to Chiwawa in 2012, a volitional collection and release strategy was used. Because there was no similar decline in survival for other Mid-Columbia steelhead programs in 2012, there was concern that the change to volitional release may have been a contributing factor. Accordingly, the Hatchery Committees agreed to test different release strategies in 2013.

- **Summer Chinook Brood Collection at the EBO:** Chelan PUD is working with WDFW to continue exploring the Eastbank Hatchery outfall (EBO) as a potential broodstock collection location for Chelan Falls summer Chinook brood.

- **5-Year Monitoring and Evaluation (M&E) Plan Update Discussion and Review of Draft Plan:** The Hatchery Committees are working on revisions to the hatchery M&E programs. This marks one year after completion of the last 5-year cumulative report. Chelan PUD, Douglas PUD, and Grant PUD are working jointly to develop an integrated approach for all programs in the Mid-Columbia. Comments on the draft report have been received, and the report is within one month of being complete. Once the report is finalized, the HCP PUDs will move forward to develop contracts for the coming years—likely via a request for proposal (RFP) process.
• **Update on Wells Hatchery Modernization:** Douglas PUD is expecting the Wells Hatchery Modernization Master Plan to be delivered in March 2013. The plan will be made available to the Hatchery Committees for review and comment.

• **Confidence in Estimation of Broodstock Numbers:** Greg Mackey gave a presentation on Confidence in Estimation of Broodstock Numbers. Kristi Geris will distribute the presentation to the Coordinating Committees, and Kahler said to contact Mackey with questions.

• **Run-Composition Sampling at Wells Dam for Summer Chinook:** Douglas PUD, Chelan PUD, Grant PUD, and the CCT are planning to meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook.

• **Chief Joseph Hatchery M&E Presentation:** A presentation was provided by Keith Wolf about the CCT Hatchery M&E Program. He also announced the upcoming CCT’s Annual Program Review Workshop scheduled for March 5 to 8, 2013. Kirk Truscott provided the Coordinating Committees with the hyperlink to the CCT’s new webpage.

• **HETT Update:** Greg Mackey said that the Predation, Competition, and Disease (PCD) risk models that were written in Fortran have been crashing. Mackey is having the code reviewed.

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### V. HCP Committees Administration (Mike Schiewe)

#### A. File Sharing

Steve Hemstrom noted that the action item for Chelan PUD and Douglas PUD to explore options for developing a shared HCP filing system needs to be carried forward. Mike Schiewe recommended that this discussion be held prior to the file sharing presentation that is planned for the Coordinating Committees’ May 28, 2013 meeting in eastern Washington.

#### B. Next Meetings

Bryan Nordlund said that the Priest Rapids Coordinating Committee’s (PRCC’s) May 22, 2013 meeting is also planned to be held in eastern Washington, potentially for a Pacific Northwest National Laboratory (PNNL), or other, site visit. Mike Schiewe suggested
rescheduling the Coordinating Committees' May 28, 2013 meeting to May 21, 2013, to accommodate PRCC’s arrangements with PNNL.

The next scheduled Coordinating Committees’ meeting is March 26, 2013, to be held in person in at the Radisson Hotel in SeaTac, Washington. The April 23, 2013 meeting will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined. The Coordinating Committees’ May 28, 2013 meeting has been rescheduled to May 21, 2013, and will be held in eastern Washington at a location that has yet to be determined.

**List of Attachments**

Attachment A  List of Attendees
Attachment B  Revised SOA approving Chelan PUD Adult and Juvenile Combined Survival Standard at Rocky Reach and Rock Island
Attachment C  SOA approving Chelan PUD 2013 Rocky Reach and Rock Island HCP Comprehensive Progress Reports
Attachment D  Draft SOA for Wells Dam 2013 Lamprey Operations
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<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Lance Keller*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Bob Rose*†</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Kirk Truscott*†</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
</tbody>
</table>

Notes
* Denotes Coordinating Committees member or alternate
† Joined by phone
Agreement Statement
The Rocky Reach and Rock Island HCP Coordinating Committee (CC) has reviewed project conversion rates for adult steelhead, adult spring-run Chinook salmon, and adult sockeye salmon at the Rocky Reach and Rock Island Projects. Together with previously achieved HCP Juvenile Project Survivals, the CC approves Phase III Standards Achieved for the Combined Adult and Juvenile Survivals at Rocky Reach and Rock Island for the HCP Plan Species shown below.

Rocky Reach Adult and Juvenile Combined Survival
- Steelhead - 94.77%
- Sockeye - 92.58%

Rock Island Adult and Juvenile Combined Survival
- Steelhead - 96.08%
- Spring-run Chinook - 93.65%
- Sockeye - 91.75%

Background
The Rocky Reach and Rock Island HCP Passage Survival Plans (HCPs Section 5) require achievement of the 91% Combined Adult and Juvenile Survival Standard when both components can be measured (Table 1). Juvenile Project Survival was tested and achieved at the Rocky Reach Project from 2004 through 2011, and for the Rock Island Project in years 2007 through 2010 for yearling Chinook, steelhead, and sockeye (Table 2). Adequate numbers of PIT tagged adult fish allowed subsequent measurement of adult passage survival at Rocky Reach for spring-run Chinook in migration years 2009-2011, followed by migration years 2010-2012 for adult steelhead and sockeye. Rock Island adult passage survival was also estimated using migration years 2010-2012 (Table 1).

Table 1. HCP Juvenile, Adult, and Combined Survivals for steelhead, Chinook, and sockeye at the Rock Island and Rocky Reach Projects.

<table>
<thead>
<tr>
<th>Project</th>
<th>Species</th>
<th>Juvenile Survival</th>
<th>Adult Survival</th>
<th>Combined6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Island</td>
<td>Steelhead</td>
<td>96.75%</td>
<td>99.31%2</td>
<td>96.08%</td>
</tr>
<tr>
<td></td>
<td>Spring Chinook</td>
<td>93.75%1</td>
<td>99.89%3</td>
<td>93.65%</td>
</tr>
<tr>
<td></td>
<td>Sockeye</td>
<td>93.27%</td>
<td>98.37%2</td>
<td>91.75%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>Steelhead</td>
<td>95.79%</td>
<td>98.93%2</td>
<td>94.77%</td>
</tr>
<tr>
<td></td>
<td>Spring Chinook</td>
<td>92.37%1</td>
<td>99.90%3,4</td>
<td>92.28%</td>
</tr>
<tr>
<td></td>
<td>Sockeye</td>
<td>93.59%</td>
<td>98.92%5</td>
<td>92.58%</td>
</tr>
</tbody>
</table>

1. Spring-migrating, yearling Chinook salmon.
2. Estimate does not account for fish losses due to recreational harvest in any years
3. No recreational harvest occurred for adult spring Chinook
5. Estimate adjusted for loss of fish from recreational harvest in 2010 and 2011, but not for harvest losses in 2012.
6. Combined survival is the product of juvenile and adult survival estimates (e.g., 98% × 93% = 91%)
Table 2. Study years and juvenile survival estimates used in Phase Designations at the Rock Island and Rocky Reach projects, 2004-2011. See 2013 Comprehensive Progress Report for more detailed description of individual studies.

<table>
<thead>
<tr>
<th>Project</th>
<th>Species</th>
<th>Juvenile Survival</th>
<th>HCP Study Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Island</td>
<td>Steelhead</td>
<td>96.75%</td>
<td>2008, 2010 (n = 2)(^1)</td>
</tr>
<tr>
<td></td>
<td>Spring Chinook(^1,2)</td>
<td>93.75%</td>
<td>2007-2010 (n = 3)(^1)</td>
</tr>
<tr>
<td></td>
<td>Sockeye</td>
<td>93.27%</td>
<td>2007-2009 (n = 3)(^1)</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>Steelhead</td>
<td>95.79%</td>
<td>2004-2006 (n = 3)</td>
</tr>
<tr>
<td></td>
<td>Spring Chinook(^2)</td>
<td>92.37%</td>
<td>2004-2005, 2010-2011 (n = 4)</td>
</tr>
<tr>
<td></td>
<td>Sockeye</td>
<td>93.59%</td>
<td>2006-2009 (n = 3)</td>
</tr>
</tbody>
</table>

\(^1\) Juvenile survival standards tested at the Rock Island Project under a 10% project spill level.

\(^2\) Spring-migrating, yearling Chinook salmon.
Agreement Statement
The Rock Island and Rocky Reach Habitat Conservation Plans’ (HCPs) Coordinating Committee (CC) has reviewed and approved Chelan PUD’s 2013 Comprehensive Progress Report for the Rock Island and Rocky Reach HCPs. This report describes the status in achieving No Net Impact (NNI) for each Plan Species, at each project, and satisfies Chelan PUD’s ten-year Progress Report requirement described in Section 4.8 of the HCPs.

Background
Section 4.8 of the Rocky Reach and Rock Island HCPs includes a requirement for Chelan PUD to prepare a comprehensive progress report “at the direction of the Coordinating Committee” by March 2013. More specifically:

“By March 2013, a comprehensive progress report shall be prepared by the District, at the direction of the Coordinating Committee assessing overall status in achieving NNI, and shall include the status of each Plan Species.” (See Sections 4.8: Progress Reports, from Rock Island and Rocky Reach HCPs)

Chelan PUD will continue to prepare Comprehensive Progress Reports on the status of NNI at successive ten-year intervals.
Wells HCP Coordinating Committee
Statement of Agreement to Modify Fishway Operations for a Lamprey Radio-telemetry Study at Wells Dam in 2013

Date of Approval:

Statement

The Wells HCP Coordinating Committee (CC) approves the request of the Wells Aquatic Settlement Work Group (ASWG) for operating the Wells Dam fishway collection galleries at a 1.0’ head differential from 19:00 to 02:00 every other day during the 2013 lamprey migration. The fishway collection galleries will operate at the normal, 1.5’ head differential on alternating days. These alternating operations will serve as treatments in a radio-telemetry study of lamprey dam-passage behavior that is being conducted at the request of the ASWG. The requested operations will commence on August 1st and will continue through October 7th.

Background

In 2013, Douglas PUD proposes to conduct a radio-telemetry study of Pacific lamprey at Wells Dam to evaluate, 1) their passage behavior and success through the fishways, with an emphasis on the fishway entrances and collection galleries; and, 2) their enumeration efficiency, behavior, and passage efficiency at the fish-count stations. This proposed study follows up on previous investigations of lamprey passage and entrance efficiency at the Wells Dam fishways. The Wells HCP CC approved studies in 2009 and 2010 that used Dual Frequency Identification Sonar (DIDSON) technology to observe the behavior of lamprey attempting to pass the fishway entrances under different operating conditions. The results of those studies indicated that lamprey entrance efficiency can be enhanced by reducing the collection-gallery-to-tailwater head differential from 1.5’ to 1.0’. However, conclusions regarding lamprey performance under different flow velocities were drawn from DIDSON observations of only a few lamprey. Following the DIDSON studies both the HCP CC and the ASWG recognized that only an active-tag study could definitively determine lamprey response to and performance under the different fishway-entrance head-differentials. Additionally, a radio-telemetry study could inform the ASWG regarding the behavior of lamprey at the fish-count stations in each fishway. To avoid the potential of conducting an active-tag study with insufficient sample size, the radio-telemetry study proposed for 2013 will collect 125 lamprey at Bonneville and Priest Rapids dams and translocate them to Wells Dam where they will be tagged and released into the tailrace.

Analysis of salmon and steelhead passage data collected in 2009 and 2010 during the DIDSON studies indicated no significant difference in passage rates of steelhead, sockeye, Chinook, or coho with either a 1.0’ or 1.5’ head differential during the period from 19:00 to 02:00.
To: Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees

From: Michael Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the March 26, 2013 HCPs Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Hotel in SeaTac, Washington, on Tuesday, March 26, 2013, from 9:30 am to 1:30 pm. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Coordinating Committees representatives will submit questions and comments on the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) annual request for tagging sockeye at Wells Dam, and associated materials, to Tom Kahler no later than April 5, 2013 (Item II-B).

- Douglas PUD and Chelan PUD will develop Gantt charts or similar graphic displays that summarize trapping activities at Wells Dam, Twisp Weir, Tumwater Dam, and the Dryden Facilities, as well as diagrams of trapping facilities at these same locations (Item II-C).

- Tom Kahler will verify the number of pikeminnow that have been reportedly captured within the Wells tailrace/Rocky Reach Reservoir from 2008 to 2013, as was reported in the Douglas PUD Draft 2012 Pikeminnow Program Annual Report (Item II-D).

- Chelan PUD will provide an updated flow duration curve for valid survival studies to Kristi Geris for distribution to the Coordinating Committees (Item III-A).

- Steve Hemstrom will provide details on the “top panel” of the Rocky Reach Dam Intake Screens to Kristi Geris for distribution to the Coordinating Committees (Item IV-B).
• Steve Hemstrom will provide fish lengths and sampling duration after fish release for the 2013 preseason tests of the Rocky Reach bypass, to Kristi Geris for distribution to the Coordinating Committees (Item IV-B).

• Steve Hemstrom will revise the 2013 Rocky Reach Juvenile Fish Bypass Operations Plan to clarify that the 20 percent descale metric used to evaluate safe bypass system passage for migrating juvenile salmon and steelhead applies to individual fish (Item IV-B).

DECISION SUMMARY


AGREEMENTS

• Coordinating Committees representatives present approved the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report with the expectation that the Executive Summary of the Fish and Water Management Tool (FWMT) Report from Dr. Kim Hyatt, of Department of Fisheries and Oceans Canada (DFO), will be incorporated when available (Item II-A). (Note: based on subsequent discussions with Dr. Hyatt, the Coordinating Committees later agreed to revise the existing FWMT summary that was included in the report to reflect that those data are based on preliminary analysis. A separate FWMT Report will be released from Dr. Hyatt, when available, and will not be appended to the 10-year NNI Comprehensive Progress Report.)

• Coordinating Committees representatives present approved the Douglas PUD 2012 Pikeminnow Program Annual Report (Item II-D).

• Coordinating Committees representatives present approved the Rocky Reach and Rock Island 2013 Fish Spill Plan (Item IV-A).

• Coordinating Committees representatives present approved the 2013 Rocky Reach Juvenile Fish Bypass Operations Plan, as revised (Item IV-B).
REVIEW ITEMS

- The 2012 Rocky Reach Juvenile Fish Bypass Draft Report was distributed to the Coordinating Committees by Kristi Geris on March 14, 2013, for a 30-day review period with comments due to Lance Keller no later than April 15, 2013.
- The draft 2012 Chelan Pikeminnow Control Report was distributed to the Coordinating Committees by Kristi Geris on March 15, 2013, for a 30-day review period with comments due to Lance Keller no later than April 15, 2013.

REPORTS FINALIZED

- The Douglas PUD 2012 Final Wells Post-Season Bypass Report was finalized and distributed to the Coordinating Committees on February 26, 2013.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. Tom Kahler added a request for approval of the Douglas PUD Draft 2012 Pikeminnow Program Annual Report.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft February 26, 2013 meeting minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes. Geris also noted two revisions that were made to the revised minutes after they were distributed to the Coordinating Committees on March 18, 2013. The minutes were revised accordingly, and the draft February 26, 2013 meeting minutes were approved, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Douglas PUD

A. DECISION: Douglas PUD 2013 10-year NNI Comprehensive Progress Report (Tom Kahler)

Tom Kahler said that comments received on the Douglas PUD revised draft 2013 10-year NNI Comprehensive Progress Report were compiled and appended to the report, and a clean and redlined version of the draft report, along with a draft SOA approving the report, were
distributed to the Coordinating Committees by Kristi Geris on March 19, 2013. Kahler said that Douglas PUD is still waiting for the Executive Summary of the FWMT Report from Dr. Kim Hyatt, of DFO, and asked if the Coordinating Committees had any concerns with approving the plan prior to incorporating Dr. Hyatt’s piece. Coordinating Committees representatives agreed that they had no concerns with incorporating Dr. Hyatt’s piece when available, and approved both the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report and the SOA approving the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report. *(Note 1: Kahler finalized and distributed to the Coordinating Committees the final SOA that approved the Douglas PUD Final 2013 10-year NNI Comprehensive Progress Report [Attachment B] on March 27, 2013. Note 2: based on subsequent discussions with Dr. Hyatt, the Coordinating Committees later agreed to revise the existing FWMT summary that was included in the report to reflect that those data are based on preliminary analysis. A separate FWMT Report will be released from Dr. Hyatt, when available, and will not be appended to the 10-year NNI Comprehensive Progress Report.)*

**B. Annual CRITFC Request for Sockeye Tagging at Wells Dam (Tom Kahler)**

Tom Kahler said that Douglas PUD has received the CRITFC’s annual request for tagging sockeye at Wells Dam (Attachment C), as distributed to the Coordinating Committees by Kristi Geris on March 21, 2013. He reminded the Coordinating Committees that last year, the Committees requested that Dr. Jeff Fryer (the study’s Principal Investigator) provide the Committees with a study plan with future requests and annual reports of study results prior to receiving future requests. The Committees also requested that the submittal of future requests be in time to be included in the March meeting agenda. Kahler said that the 2012 final report was not yet complete, and so instead, Dr. Fryer provided the final 2011 report and a draft 2012 progress report, which Kahler said should cover the Coordinating Committees’ interests. He said that Dr. Fryer also provided a narrative of the project, and CRITFC’s Endangered Species Act (ESA) (spring Chinook, steelhead, and bull trout) permits.

Kahler said that CRITFC has installed a number of passive integrated transponder (PIT) tag arrays and acoustic arrays, and noted that this year CRITFC is interested in increasing the sample size. He said that CRITFC’s 2013 request includes PIT tagging and collecting scale
samples from up to 800 sockeye, and additionally, acoustic tagging up to 70 sockeye and affixing temperature tags on up to 200 sockeye. *(Note: Kahler later confirmed that the 70 acoustic tags and 200 temperature tags will be subsets of the 800 sockeye sampled.)* Kahler said that sampling will likely take place from late June through early August 2013, and added that, as requested last year, tagged adults will be released upstream of Wells Dam rather than into the ladders. Kahler said that in consideration of the proposed sampling period, the Coordinating Committees will need to reach a decision no later than the Coordinating Committees’ May 28, 2013 meeting.

Bryan Nordlund said that his only concern would be if the 2013 sockeye run is really small. Kahler agreed and said that reduced adult returns are expected in 2013, in comparison to previous years, due to the Testalinden Creek slide that adversely affected the rearing area in Lake Osoyoos with an influx of suspended sediment shortly after fry entered the lake. He said that even the smaller return is still expected to be larger than the historic mean. Kahler said that there is a lot of interest in what happens with the fish once they pass Wells Dam, and added that he supports the project, in general; however, he is unsure if the benefit is worth taking that many fish when the run is low. Mike Schiewe suggested that Kahler invite Dr. Fryer to a future Coordinating Committees meeting to present his studies. Kirk Truscott also requested that Dr. Fryer include Okanagan sockeye projections at Wells Dam when he submits future annual requests for sockeye tagging at Wells Dam.

Coordinating Committees representatives agreed to submit questions and comments on CRITFC’s annual request for tagging sockeye at Wells Dam, and associated materials, to Kahler no later than April 5, 2013.

C. Coordination of Trapping Activities at Wells Dam (Tom Kahler)

Tom Kahler suggested that the Coordinating Committees become more involved in all discussions regarding trapping at Wells Dam. He noted that there are multiple hatchery programs that obtain broodstock in the Well Dam fishway trap; and he added that these discussions typically have taken place in the Hatchery Committees, but should have also included the Coordinating Committees, as trapping can affect passage at the dam. He said that current trapping operations at Wells Dam include: Washington Department of Fish and
Wildlife (WDFW) for some of Chelan PUD's hatchery programs as well as Douglas PUD's spring Chinook and steelhead programs; the Colville Confederated Tribes (CCT) as back-up for the Chief Joseph Hatchery (CJH) program; likely Dr. Jeff Fryer for CRITFC's sockeye study; and the Yakama Nation (YN) for their coho reintroduction program. Kirk Truscott added that Grant PUD uses Wells Dam for collecting broodstock for their Carlton program. Kahler added that U.S. Fish and Wildlife Service (USFWS) currently uses the Wells Hatchery volunteer channel to collect broodstock for their Entiat program, although not passage-related, and the YN also uses the volunteer channel for their Yakima River summer Chinook reintroduction program as well. Kahler explained that Wells Dam has ladder traps on both east and west fish ladders, and the fishway channel that leads into Wells Hatchery—the volunteer channel—is used to collect summer Chinook brood. Kahler said that Douglas PUD also occasionally receives trapping requests from random interests and those associated with research proposals; as a result, Douglas PUD is often left with the challenge of how to coordinate all of these activities.

Bryan Nordlund asked if PIT-tag detector arrays are installed in the fish ladders. Kahler replied that antenna arrays are installed in Pools 67 and 68 of both ladders and have essentially 100 percent detection. Last year antennas were installed in Pool 19 of both ladders (below the traps); however, the lower sections of both ladders (including Pool 19) have both orifice and overflow weirs, so fish could avoid detection by using the overflow weir rather than an orifice. Kahler said that the new readers powering the antennas in Pool 19 provide very good detection, and can detect fish that get close to the orifice. Nordlund said that if those tools are in place, passage can be evaluated throughout the ladders. He also suggested that because there are so many entities trapping at Wells Dam, perhaps a Gantt chart of the different trapping activities would be helpful. Truscott said that he believes that the different trapping efforts are authorized by their respective Section 10 permits; he said trapping is limited to a three-days-per-week limit. Mike Schiewe noted that when a proliferation of trapping at Tumwater Dam “flew under the radar,” it resulted in significant delays. He said the vast majority of trapping at Tumwater Dam was vetted through the HCP Hatchery Committees, but according to the HCPs, fish passage is the responsibility of the Coordinating Committees. Schiewe added that the HCP Hatchery Committees should
continue to vet the trapping issues, as there may be different ways to collect broodstock, but ultimately the Coordinating Committees need to review these actions as well.

Schiewe said Nordlund’s suggestion to compile trapping information in the form of a Gantt chart is a good start to bring the Coordinating Committees into the discussions, and Douglas PUD and Chelan PUD agreed to develop these, or similar graphic displays, that summarize trapping activities at Wells Dam, Twisp Weir, Tumwater Dam, and the Dryden Facilities, as well as diagrams of trapping facilities at these same locations.

D. Douglas PUD Draft 2012 Pikeminnow Program Annual Report (Tom Kahler)

Tom Kahler said that the Douglas PUD Draft 2012 Pikeminnow Program Annual Report was distributed to the Coordinating Committees by Kristi Geris on February 12, 2013, and that the 30-day review period ended March 15, 2013. Steve Hemstrom had, at the February meeting, asked about the number of pikeminnow reportedly captured within the Wells tailrace/Rocky Reach Reservoir from 2008 to 2013, as was reported in the draft report, and Kahler said that he was unable to reconcile the number based on catch data from the Wells and Rocky Reach programs, and will ask the contractor to verify or correct that the number. Coordinating Committees representatives present approved the Douglas PUD 2012 Pikeminnow Program Annual Report.

E. 2012 Subyearling Study Results (Tom Kahler)

Tom Kahler gave a presentation on 2012 Subyearling Study Results (Attachment D), based on the 2012 Subyearling Life-history Study Technical Memorandum that was distributed to the Coordinating Committees by Kristi Geris on March 22, 2013. (Note: Geris distributed the 2012 Subyearling Study Results presentation directly after the meeting on March 26, 2013.)

Kahler reviewed 2011 and 2012 seining locations and operations, and summarized detection statistics. He noted that Gebber’s Landing just downstream of the Okanogan River mouth was a particularly successful seining location. He said that fish that were too small to tag were collected at all of the seining locations throughout the tagging period, but the numbers varied substantially among locations. Average fish length varied by location and sampling week, and the proportion of larger fish increased in Wells Pool locations farther
downstream. He also said that due to high variability in the observed growth rates of fish recaptured 2 to 11 days post-tagging, no statistical difference was found in growth between 2011 and 2012, as depicted on graphs on page 12 of Attachment D.

Rocky Reach Juvenile Fish Bypass (RRJFB), McNary Dam, John Day Dam, and Bonneville Dam PIT-tag detections were reviewed. Kahler noted that detection frequencies in 2012 had a more pronounced bimodal distribution for each location than observed in 2011. Travel times to RRJFB were slower in 2012 than 2011, and travel times from RRJFB to downstream detection sites were faster. In general, though, the patterns of travel times in 2012 were similar to those observed in 2011, and travel times of larger fish (i.e., greater than or equal to 87 mm) were faster than those of smaller fish (i.e., less than 87 mm); Kahler noted the difference was not as pronounced in 2012 as was the case in 2011. Kahler said the same was observed with detection rates and fish size—larger fish had higher detection rates than smaller fish in 2012; however, the difference was not as pronounced in 2012 as was observed in 2011. Kahler said that the measurement errors and natural variability in growth rates that complicated the determination of actual growth rates within the first few days following tagging affected all size classes equally. Kahler reviewed the challenges of tagging in 2012, which were similar to those found in 2011, such as, a high proportion of fish too small to tag in earlier sampling, and the reduced availability or susceptibility to capture of the largest fish. He said the inability to tag smaller fish early in the outmigration or to capture the largest fish, although common in tagging studies, suggests the tagged fish were not representative of the entire population. Lastly, Kahler reviewed length frequency of captured fish by week, as shown in a graph on page 30 of Attachment D. Kahler noted that for PIT-tag studies, Douglas PUD typically is comfortable using 70 mm fish, but according to the graph, that means almost half of the fish available during this time frame are unusable—that is, until smaller, but comparably efficient PIT tags are made available.

Kahler said that Gebber’s Landing is probably a productive sampling site because the area largely consists of cobble and sand, almost no vegetation, and low slope at the mouth of a tributary supporting a large number of spawners. Truscott asked if Douglas PUD has considered offshore sampling techniques for sampling later in the year, and Kahler replied that they attempted pulling a beach seine with two boats without success, and added that
they would need to try something else, such as purse seines. He said, however, that previous data collected in the Wells Dam forebay using purse seines indicated low numbers, so Douglas PUD may not want to focus efforts on that option.

Kahler said that Douglas PUD plans to continue this study in 2013, and that they will extend tagging efforts to include one additional week, as outlined in the technical memorandum. Nordlund asked if John Day Dam and Bonneville Dam bypass detection systems run year round, and Kahler replied that they run as long into the year as weather permits (e.g., down until icy conditions force closure). Kahler also noted that as spill declines, detection in the bypass increases. Teresa Scott asked about the status of the Priest Rapids Coordinating Committee’s (PRCC’s) recommendation for Grant PUD to convene a subyearling Chinook workshop, and Schiewe replied that their plan is to wait to see what Chelan PUD and Douglas PUD developed first. Nordlund added that Grant PUD is not planning any survival studies until they wrap up a few other ongoing projects. Hemstrom said that Chelan PUD is planning a presentation soon to compare 2009 and 2013 data and technology.

III. Chelan PUD and Douglas PUD

A. Grand Coulee Valid Study Flow Duration Curve Update (Steve Hemstrom and Tom Kahler)

Steve Hemstrom said that he started tracking down data in order to draft an update of the flow duration curve. He said that he was unable to locate the 1929 to 1978 data that were used to develop the existing curve, and discovered that those data were actually model data. He said that he combined the 1983 to 2001 data with the earlier data, and that he plans to add post-2001 flow data from Grand Coulee to calculate the new numbers. Bryan Nordlund agreed that using the 1983 to 2012 data made the most sense. Hemstrom agreed and said that he will use those data to compare to the old curve; and he added that he will provide an updated flow duration curve for valid survival studies to Kristi Geris for distribution to the Coordinating Committees.
IV. Chelan PUD

A. DECISION: Rocky Reach and Rock Island 2013 Fish Spill Plan (Steve Hemstrom)

Steve Hemstrom said that the Chelan PUD 2013 Rock Island and Rocky Reach Draft Fish Spill Plan was distributed to the Coordinating Committees by Kristi Geris on February 21, 2013, for review, with comments due no later than March 21, 2013. He said that overall, the 2013 plan is largely similar to the 2012 plan.

At Rock Island Dam, Hemstrom said that spring spill will start no later than April 17, 2013, and the dam will spill 10 percent of the daily average river flow until the beginning of summer spill, when the dam will then spill 20 percent of the daily average river flow for a duration that covers 95 percent of the summer outmigration of subyearling Chinook. Hemstrom said that the criteria to end summer spill are when subyearling counts from the Rock Island trap are 0.3 percent or less of the cumulative run total for any three out of five consecutive-day periods. He added that these spill levels have been tested in survival studies. Bryan Nordlund asked about spill shaping at Rock Island Dam, and Hemstrom reviewed the different spill levels, noting that the higher spring spill (12.5 percent) and higher summer spill (23 percent) both occur around midnight. Hemstrom said that this is the same as in 2012.

At Rocky Reach Dam, Hemstrom said that summer spill starts as soon as subyearling Chinook smolts arrive in the Rocky Reach bypass, which is typically in late-May to early-June; and he added that often times in June, the project is already spilling above the 9 percent level. Hemstrom noted that spill shaping at Rocky Reach Dam goes up to 12 percent between 0900 and 1500, i.e., the afternoon is the highest proportion of spill.

Coordinating Committees representatives present approved the Rocky Reach and Rock Island 2013 Fish Spill Plan.

B. 2012 Rocky Reach Bypass Report and 2013 Rocky Reach Bypass Operations Plan (Steve Hemstrom)

The 2012 Rocky Reach Juvenile Fish Bypass Draft Report was distributed to the Coordinating Committees by Kristi Geris on March 14, 2013, for a 30-day review period with comments
due no later than April 15, 2013. Jim Craig noted that descaling in 2004, as reported in the 2012 draft report, was higher than usual but still below the threshold, and Kirk Truscott said that he would like to confirm that those levels are acceptable to move forward. Steve Hemstrom said that the acceptable descaling rates that are reported in the 2012 report are based on the 2003 Rocky Reach Juvenile Fish Bypass Operations Plan; and added that those rates can be updated, if necessary. Mike Schiewe said that the 2012 Rocky Reach Juvenile Fish Bypass Draft Report will be considered approved if no comments are received by the review period deadline.

The draft 2013 Rocky Reach Juvenile Fish Bypass Operations Plan was distributed to the Coordinating Committees by Kristi Geris on March 7, 2013; however, based on comments received from Bryan Nordlund, a revised draft plan was redistributed by Lance Keller on March 12, 2013, for review, with comments due no later than March 25, 2013. Hemstrom reviewed that the 2013 plan proposes to use three additional pumps in the RRJFB Surface Collector (SC) to increase attraction flow to 6,660 cubic feet per second (cfs) into the SC entrances; and the plan also proposes increases to the turbine unit C2 flow from its normal set-point of 12,200 cfs (12.2 thousands of cubic feet per second [kcfs]) to 15.2 kcfs during the turbine unit C1 outage. Also included in the 2013 plan were the preseason tests of the Rocky Reach bypass using marked fish releases to insure that there was no effect on fish condition or passage. Hemstrom said that these tests are conducted each spring to insure that the system is performing properly, and that this year, the fish were ventral fin-clipped and released in two locations: 1) 100 fish were released at the entrance to the RRJFB SC; and 2) 100 fish were released at the SC intake screens. He said that as requested, Keller selected the smallest fish available to evaluate the potential of impingement with the increased screen velocities. Hemstrom said that zero descale was observed in the fish that were recovered. He also said that 100 percent of the fish that were released were not recovered, and he added that this is typical. He said that 92 fish and 95 fish were collected from each location, respectively, and suggested that this could be due to predation, or that the fish could be failing to enter the system. Brian Nordlund suggested that the missing fish could be related to small fish size, and noted that flow through the bypass can be quite turbulent. Hemstrom said that he did not know the exact fish lengths, but said that he will locate them and provide that information and sampling duration, after fish release for the 2013 preseason
tests of the Rocky Reach bypass, to Geris for distribution to the Coordinating Committees. Hemstrom said that 100 fish were also released into turbine unit C2 via delivery pipes; however, a top panel located on the intake screens was left open which resulted in only 14 recaptures of the 100 fish released. Hemstrom said that he will locate further details on the top panel of the Rocky Reach Dam Intake Screens and provide them to Geris for distribution to the Coordinating Committees. He said that once the top panel was closed, the test was performed again and all 100 fish were recovered.

Truscott asked about the 20 percent descale metric used to evaluate safe bypass system passage for migrating juvenile salmon and steelhead, as was described in the 2013 Rocky Reach Juvenile Fish Bypass Operations Plan, and Hemstrom said that he will revise the plan to clarify that the 20 percent descale metric used to evaluate safe bypass system passage for migrating juvenile salmon and steelhead applies to individual fish, not to the proportion of fish sampled that were descaled. Truscott also asked for clarification on “ambient descaling,” and how it is assessed. Hemstrom clarified that “ambient descaling” is meant to characterize fresh, versus pre-existing descaling, which Hemstrom said is typically easy to differentiate. Schiewe added that previously descaled fish can also be evaluated under a microscope to observe presence of epidermic regrowth. Hemstrom invited Truscott to visit Rocky Reach Dam to observe the process if he would like, and Truscott said that based on the 2012 report, descaling is likely not an issue anyway. Coordinating Committees representatives present approved the 2013 Rocky Reach Juvenile Fish Bypass Operations Plan, as revised.

C. Rocky Reach and Rock Island Bypass Operation Dates (Steve Hemstrom)

Steve Hemstrom said that Bryan Nordlund had asked if the bypass at Rocky Reach Dam and Rock Island dam were ever implemented outside the typical period of April 1 through August 31. Hemstrom said that, to date, bypass at the dams have run no later than September 7, and added that the HCPs contain language to evaluate whether bypass operations cover 95 percent of passage. He said specifically, that Nordlund asked how Rocky Reach Dam and Rock Island Dam staff determine whether there are additional fish in a given run remaining to pass. Hemstrom said that operating data were reviewed for the past 10 years, and since 2003, on average, 33 fish have passed the dams during the last week of August. He added that these data were based on four 2-hour sampling periods. Nordlund
explained that the reasoning for his question was to determine whether the University of Washington RealTime Model is capable of projecting late-migrating Chinook. He suggested that, in light of trying to learn more about subyearlings, this would be something to investigate. Hemstrom said that several years ago, Dr. John Skalski’s group was asked to add a logarithm to the RealTime model which continues to add hypothetical fish numbers as if Rocky Reach Dam was still operating. Mike Schiewe noted that Jerry Marco had raised this same issue in the past, but that there were staffing issues that complicated extending bypass sampling. Schiewe asked if the Coordinating Committees would, again, like to consider extending the sampling period. Hemstrom said that extended sampling would need to be for 2014 because contracts are already in place for 2013. Nordlund said that as far as getting labor in place, he did not think that sampling would need to take place around the clock; however, Hemstrom said that Chelan PUD would prefer that staff were onsite. Nordlund added that this question was based on why the provision to evaluate bypass operations was included in the HCPs—not because he was particularly concerned. Hemstrom noted that as fish populations grow, the tails grow. Kirk Truscott asked if there is an opportunity to use PIT-tag arrays at the end of August, and Hemstrom noted that if the bypass is not operational, the fish would not pass the arrays. Schiewe suggested that, for now, the Coordinating Committees might consider the extended sampling period for 2014.

D. Final Rocky Reach and Rock Island Fishway Return-to-Service Information (Steve Hemstrom)

Steve Hemstrom said that the Rocky Reach fishway was re-watered and back in service on March 1, 2013. He said that the missing gasket on the flap gate indicator rod that was discussed at the Coordinating Committees’ February 26, 2013 meeting has been repaired, as described in an email distributed by Lance Keller on February 27, 2013. Hemstrom said that the Rock Island left ladder was up sooner than expected, on March 8, 2013, and that all other ladders at Rock Island Dam were operational at that time.

E. Chelan PUD 2013 10-year NNI Comprehensive Progress Report: Production (Steve Hemstrom)

Steve Hemstrom said that the Chelan PUD Final 2013 10-year NNI Comprehensive Progress Report is now in final production, and asked if Coordinating Committees representatives would like hardcopies of the final report. Bryan Nordlund, Teresa Scott, and Kirk Truscott
requested three copies each for National Marine Fisheries Service (NMFS), WDFW, and the CCT, respectively. Jim Craig requested two copies for the USFWS; Mike Schiewe requested two copies for Anchor QEA; and Hemstrom said that he will prepare three copies for the YN.

V. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees’ meeting on March 14, 2013:

- **Review of Policies and Procedures Documents**: The Tributary Committees adopted select Salmon Recovery Funding Board (SRFB) policies and procedures to be incorporated into the Tributary Committees’ Policies and Procedures document. The revised Policies and Procedures document will be shared with project sponsors during the SRFB/ Tributary Committees/Bonneville Power Administration (BPA) kick-off meeting on March 27, 2013.

- **Small Projects Program Application**: The Tributary Committees reviewed two Small Projects Program Applications: 1) Okanogan Basin Stream Discharge Monitoring Project; and 2) Methow/Chewuch Shallow Groundwater Monitoring Project. The Tributary Committees approved funding for both projects.

- **General Salmon Habitat Program Schedule**: The Tributary Committees finalized their 2013 schedule for the General Salmon Habitat Program. Pre-proposals will be delivered to the Tributary Committees on May 7, 2013; pre-proposal presentations will occur on June 12, 2013; final proposals will be delivered to the Tributary Committees on July 12, 2013; and funding decisions will be made on August 8, 2013.

Steve Hemstrom noted that looking back at the past 10 years and the amount of money spent, it seems that tributary funds are still growing. He asked what happens to the balance of the funds when the HCPs end. Tom Kahler agreed that the funds are growing, and indicated that this was intentional so that funds were available for future larger, high-cost projects that have significant benefits. He added that there is a provision that explains where excess funds would go, if needed. Teresa Scott asked if the Tributary Committees are responsible for monitoring, and Kahler replied that they are not directly responsible, but that each PUD has a separate responsibility to evaluate the relative performance of projects (i.e., which projects perform as intended and which did not) that are funded by the initial contributions to the respective Plan.
Species Accounts. This responsibility is funded directly by each PUD through a $200,000 Tributary Assessment Program, rather than with the Plan Species Accounts, and the respective Tributary Committees must approve measures toward the implementation of the Tributary Assessment Programs. The Wells Tributary Committee directed Douglas PUD to fund the monitoring of a large oxbow-reconnection project on the Okanagan River in Canada (final report pending) and has considered monitoring the recolonization of Shingle Creek following a dam-removal project scheduled for this summer. He also noted that the Integrated Status and Effectiveness Monitoring Program (ISEMP) focuses on monitoring efforts in the Wenatchee and Entiat basins and so the Tributary Committees did not want to overlap efforts with that program.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees’ meeting on March 20, 2013, which was hosted by Douglas PUD:

- **HGMP Update:** Lynn Hatcher provided an update on HGMPs. Permit 1347, which covers all non-direct take programs, will expire in October 2013, and NMFS is currently discussing options on how to efficiently package and process all programs that require new permits. Hatcher said that litigation was winding down in the Elwha, and just starting in the Sandy. There has also been discussion on the needs of bull trout consultations. The Methow HGMPs have been a continuing challenge in the US v OR process based on NMFS’ goal of managing for a low percent hatchery origin spawners (pHOS).

- **5-Year Monitoring and Evaluation Plan Update:** A revision has been completed. There is still some interest in looking harder at the revisions, but in general, those who have been involved in the re-write are comfortable with the revised document, which will be up for approval at the Hatchery Committees’ April 17, 2013 meeting. The Request for Proposal (RFP) process contracts to collect and analyze the monitoring data will be slightly different from the past, and at this time, how RFPs will be processed could be a sensitive topic. The Hatchery Committees have a Conflict of Interest Policy in place that will potentially exclude several HCP signatories from participating in proposal reviews.
• **2013 Wenatchee Steelhead Releases**: There was extremely low post-release survival of steelhead in 2012, and Chelan PUD and WDFW were asked to investigate what factors may have contributed. One potential factor was volitional release, and a study has been developed to investigate whether volitional release contributed to the low proportion of PIT-tagged steelhead detected at McNary Dam.

• **Spring Chinook HGMPs**: Joe Miller provided an outline for a revised HGMP for Chelan PUD’s spring Chinook Methow program.

• **Spring Chinook Pilot at Rocky Reach**: In 2013, Chelan PUD will obtain brood from Winthrop National Hatchery; however, plans for 2014 and beyond are yet to be determined. Chelan PUD is discussing a pilot study that tests the Rocky Reach trap as a collection location, and may eventually upgrade the trap to include a sort-by-code function. At this point, however, the pilot is only focused on the functionality of the trap.

• **Draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols**: The 2013 Broodstock Protocols are due to NMFS on April 15, 2013. This year’s protocols include several new provisions resulting from recalculation, so Mike Tonseth walked through notable changes in this year’s protocols. Although the protocols do not require Hatchery Committees’ approval, they are reviewed by and completed in collaboration with Hatchery Committees.

VI. HCP Committees Administration (Mike Schiewe)

A. **Next Meetings**

The next scheduled Coordinating Committees’ meeting is April 23, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington. The May 21, 2013 meeting (formerly scheduled for May 28, 2013) will be held in eastern Washington at a location that has yet to be determined. The June 25, 2013 meeting will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

**List of Attachments**

Attachment A  List of Attendees
Attachment B  Final SOA approving the Douglas PUD revised draft 2013 10-year NNI Comprehensive Progress Report
Attachment C  CRITFC’s Annual Request for Tagging Sockeye at Wells Dam
Attachment D  2012 Subyearling Life-history Study Presentation
<table>
<thead>
<tr>
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<th>Organization</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Tom Kahler*</td>
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<td>Kirk Truscott*†</td>
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<td>Bryan Nordlund*</td>
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<td>Teresa Scott*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
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Notes
* Denotes Coordinating Committees member or alternate
† Joined by phone
Wells HCP Coordinating Committee
Statement of Agreement to Approve the 2013 Wells Comprehensive Progress Report Assessing the Status of Achieving NNI

Date of Approval: 26 March 2013

Statement
The Wells HCP Coordinating Committee (CC) has reviewed and approved Douglas PUD’s 2013 Comprehensive Progress Report: Status of Achieving NNI under the Anadromous Fish Agreement and Habitat Conservation Plan for the Wells Hydroelectric Project. This report satisfies Douglas PUD’s requirement to produce such a report by March 2013.

Background
Section 6.9 states the following regarding Douglas PUD’s requirement for assessing the achievement of NNI:

“By March 2013, a comprehensive progress report shall be prepared by the District [Douglas PUD], at the direction of the Coordinating Committee, assessing overall status of achieving NNI.”
March 15, 2013

Tom Kahler
Public Utility District Number 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, Washington 98801

Dear Tom:

In 2013, we are planning to once again sample sockeye salmon at Wells Dam. We hope to collect scale samples from up to 800 sockeye, all of which we will PIT tag (if they have not already been tagged). In addition, we will acoustic tag up to 70 sockeye salmon and affix temperature tags on to up to 200 sockeye salmon. We anticipate sampling from late June through early August. We will coordinate sampling activities with Wells Hatchery brood stock collection programs. Sampling personnel may include myself of CRITFC, Jennifer Miller of the CCT, and Greg Robison, Tim Jeffries, Barry Hodges, and Arlene Heemsah of the Yakama Nation.

As requested last year, I am attaching a copy of the technical report describing 2011 results, a draft progress report giving an overview of 2012 results, as well as the narrative describing this project prepared for BPA and the ISAB upon this project’s inception in 2009.

Please contact me if you have any questions. Thank you for your cooperation with this study.

Sincerely,

Jeffrey Fryer
Comparison of 2011 and 2012 Subyearling Life-history and Migration Study Results

DCPUD
March 2013
2011 Seining Locations
More 2011 Seining Locations
Seining Location Added in 2012
Seining
Net Pens
# Summary of 2012 PIT Tagging by Week

## Tag File

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<tr>
<th>Tag File</th>
<th>Tag Date</th>
<th>Tag/Release Site</th>
<th># New Tagged Fish in File</th>
<th># Pre-Release Mortalities</th>
<th>Subsequent Mortality</th>
<th>% Mortality</th>
<th># Recaps</th>
<th>% Recaps</th>
<th># New Tagged Fish Released</th>
<th>Rejected Fish</th>
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## Week 1 Total

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## Project Total

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1 Subsequent Mortalities (SM) are fish that were recaptured at a later date and died prior to release. They are counted as a "SM" in the file in which they were tagged.

2 Recaptures are treated independently from mortalities. If a recaptured fish dies prior to release then the mortality is counted as a "subsequent mortality" in the original tag file.

*Fish in CSM12179.GL1 were remaining fish that were captured on 177 and not tagged on 178 due to lack of available tags. These fish were held for two nights, instead of one, prior to tagging.
## Summary of 2012 PIT Tagging by Location

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<th># Records in File</th>
<th># New Tagged Fish in File (# Records - (Recaps + Shorts))</th>
<th># Pre-Release Mortalities</th>
<th>Subsequent Mortality</th>
<th>% Mortality</th>
<th># Recaps</th>
<th>% Recaps</th>
<th># New Tagged Fish Released (# Records - (All Mortalities + Recaps + Shorts))</th>
<th>Rejected Fish Short (% Shorts)</th>
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<td>37</td>
</tr>
<tr>
<td></td>
<td>CSM12187.WB1</td>
<td>7/5/2012</td>
<td>266</td>
<td>240</td>
<td>4</td>
<td>0</td>
<td>1.7%</td>
<td>9</td>
<td>3.4%</td>
<td>236</td>
<td>17</td>
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<tr>
<td><strong>Washburn Slough Total</strong></td>
<td></td>
<td></td>
<td>1296</td>
<td>1163</td>
<td>23</td>
<td>0</td>
<td>2.0%</td>
<td>9</td>
<td>0.7%</td>
<td>1140</td>
<td>124</td>
</tr>
<tr>
<td><strong>Wells Pool (Forebay)</strong></td>
<td>CSM12192.WP1</td>
<td>7/10/2012</td>
<td>1878</td>
<td>1758</td>
<td>44</td>
<td>0</td>
<td>2.5%</td>
<td>13</td>
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<td>1714</td>
<td>107</td>
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<tr>
<td></td>
<td>CSM12193.WP1</td>
<td>7/11/2012</td>
<td>1597</td>
<td>1452</td>
<td>12</td>
<td>0</td>
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<td>5</td>
<td>0.3%</td>
<td>1440</td>
<td>140</td>
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<tr>
<td></td>
<td>CSM12194.WP1</td>
<td>7/12/2012</td>
<td>2014</td>
<td>1411</td>
<td>0</td>
<td>0.0%</td>
<td>476</td>
<td>23.6%</td>
<td>1411</td>
<td>127</td>
<td>6.3%</td>
</tr>
<tr>
<td><strong>Wells Pool (Forebay) Total</strong></td>
<td></td>
<td></td>
<td>5489</td>
<td>4621</td>
<td>56</td>
<td>0</td>
<td>1.2%</td>
<td>94</td>
<td>9.0%</td>
<td>4565</td>
<td>374</td>
</tr>
<tr>
<td><strong>Gebber's Point</strong></td>
<td>CSM12188.GP1</td>
<td>7/6/2012</td>
<td>270</td>
<td>161</td>
<td>3</td>
<td>0</td>
<td>1.9%</td>
<td>10</td>
<td>3.7%</td>
<td>158</td>
<td>99</td>
</tr>
<tr>
<td><strong>Gebber's Point Total</strong></td>
<td></td>
<td></td>
<td>270</td>
<td>161</td>
<td>3</td>
<td>0</td>
<td>1.9%</td>
<td>10</td>
<td>3.7%</td>
<td>158</td>
<td>99</td>
</tr>
<tr>
<td><strong>Project Total</strong></td>
<td></td>
<td></td>
<td>24779</td>
<td>20124</td>
<td>241</td>
<td>10</td>
<td>1.2%</td>
<td>1982</td>
<td>8.0%</td>
<td>19873</td>
<td>2673</td>
</tr>
</tbody>
</table>

1. Subsequent Mortalities (SM) are fish that were recaptured at a later date and died prior to release. They are counted as a "SM" in the file in which they were tagged.
2. Recaptures are treated independently from mortalities. If a recaptured fish dies prior to release then the mortality is counted as a "subsequent mortality" in the original tag file.
3. Fish in CSM12179.GL1 were remaining fish that were captured on 177 and not tagged on 178 due to lack of available tags. These fish were held for two nights, instead of one, prior to tagging.
## Summary Statistics

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>First Release Date</td>
<td>22-Jun</td>
<td>26-Jun</td>
<td></td>
</tr>
<tr>
<td>First Arrival to Rocky Reach Dam</td>
<td>25-Jun</td>
<td>30-Jun</td>
<td></td>
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<tr>
<td>Total Tagged and Released</td>
<td>13,223</td>
<td>19,876</td>
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</tr>
<tr>
<td>Total Detected at Rocky Reach Dam</td>
<td>1,200</td>
<td>1,157</td>
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</tr>
<tr>
<td>Total Detections at all Detection Sites</td>
<td>2,762</td>
<td>3,552</td>
<td></td>
</tr>
<tr>
<td>Unique Fish Detected at all Detection Sites</td>
<td>2,312</td>
<td>3,109</td>
<td></td>
</tr>
<tr>
<td>Percent Detected</td>
<td>17.5%</td>
<td>15.6%</td>
<td></td>
</tr>
<tr>
<td>Percent Detected at Rocky Reach Dam</td>
<td>9.1%</td>
<td>5.8%</td>
<td></td>
</tr>
</tbody>
</table>
Length Frequency of Captured Fish by Location

<table>
<thead>
<tr>
<th>Length Bin (mm)</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
<th>70-74</th>
<th>75-79</th>
<th>80-84</th>
<th>85-89</th>
<th>90-94</th>
<th>95-99</th>
<th>100-104</th>
<th>105-109</th>
<th>110-114</th>
<th>115-119</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gebber’s Landing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washburn Slough</td>
<td></td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0%</td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells Pool (Forebay)</td>
<td></td>
<td></td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gebber’s Point</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Length Frequency ofCaptured Fish by Week

![Graph showing length frequency of captured fish by week.](Attachment D)
Observed Changes in Fish Length Between Tagging and Recapture at RRJFB

Growth was slower in 2012, but not different statistically. The outcome of the statistical comparison was strongly influenced by high variability in the observed growth rates of fish recaptured from 2 – 11 days post-tagging.
McNary Detections

Count frequency

2011

Count frequency

2012
John Day Detections

2011

2012
Bonneville Detections

**2011**

Count frequency

- 6/25/2011
- 7/25/2011
- 8/25/2011
- 9/25/2011
- 10/25/2011
- 11/25/2011

**2012**

Count frequency

- 6/25/2012
- 7/25/2012
- 8/25/2012
- 9/25/2012
- 10/25/2012
- 11/25/2012
## Reach-specific Travel Times (d) and Rates (km/d) from Release in Wells to Downstream Projects

<table>
<thead>
<tr>
<th>Location (River km)</th>
<th>RRH (762)</th>
<th>MCN (470)</th>
<th>JDA (347)</th>
<th>BON (235)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
</tr>
<tr>
<td><strong>2011</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release (856)</td>
<td>19.7</td>
<td>4.8</td>
<td>20.1</td>
<td>14.5</td>
</tr>
<tr>
<td>(±0.48; n = 1185)</td>
<td></td>
<td></td>
<td>(±0.98; n = 188)</td>
<td></td>
</tr>
<tr>
<td>RRH (762)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCN (470)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDA (347)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2012</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release (856)</td>
<td>24.8</td>
<td>3.8</td>
<td>15.7</td>
<td>18.6</td>
</tr>
<tr>
<td>(±0.44; n = 1083)</td>
<td></td>
<td></td>
<td>(±1.04; n = 119)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The data includes travel times and rates in days (d) and kilometers per day (km/d) respectively, with standard errors and sample sizes (n) where applicable.*
## Travel Times and Rates *in 2011* for Different Size Classes

<table>
<thead>
<tr>
<th>Location (River km)</th>
<th>RRH (762)</th>
<th>MCN (470)</th>
<th>JDA (347)</th>
<th>BON (235)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
<td>Travel Time (d)</td>
</tr>
<tr>
<td><strong>≥87 mm</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release (856)</td>
<td>4.7 (±0.41; n = 121)</td>
<td>15.78 (±3.08; n = 17)</td>
<td>3.23 (±0.33; n = 6)</td>
<td>1.92 (±0.17; n = 7)</td>
</tr>
<tr>
<td>RRH (762)</td>
<td>20</td>
<td>18.5</td>
<td>38.1</td>
<td>58.3</td>
</tr>
<tr>
<td>MCN (470)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JDA (347)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>&lt;87 mm</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release (856)</td>
<td>21.17 (±0.5; n = 1080)</td>
<td>20.52 (±1.02; n = 173)</td>
<td>7.86 (±1.05; n = 93)</td>
<td>2.67 (±0.37; n = 26)</td>
</tr>
<tr>
<td>RRH (762)</td>
<td>4.4</td>
<td>14.2</td>
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<td>41.9</td>
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<tr>
<td>MCN (470)</td>
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<tr>
<td>JDA (347)</td>
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</table>
## Travel Times and Rates in 2012 for Size Classes Compared in 2011

<table>
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<tr>
<th>Location (River km)</th>
<th>RRH (762)</th>
<th>MCN (470)</th>
<th>JDA (347)</th>
<th>BON (235)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
<td>Travel Time (d)</td>
<td>Rate (km/d)</td>
</tr>
<tr>
<td>Release (856)</td>
<td>11.05 (±0.7; n = 166)</td>
<td>8.5</td>
<td>11.7 (±0.91; n = 15)</td>
<td>25.0</td>
</tr>
<tr>
<td>RRH (762)</td>
<td>27.24 (±0.46; n = 917)</td>
<td>3.5</td>
<td>16.22 (±1.18; n = 104)</td>
<td>18.0</td>
</tr>
<tr>
<td>≥87 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCN (470)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>JDA (347)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BON (235)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>&lt;87 mm</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RRH (762)</td>
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<tr>
<td>MCN (470)</td>
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</tr>
<tr>
<td>JDA (347)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BON (235)</td>
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</table>
Relationship Between Length at Tagging and Travel Time to RRJFB
## Comparison of Travel Times to Rocky Reach Dam and Detection Rates for Two Size Classes

<table>
<thead>
<tr>
<th>Size range (mm)</th>
<th>Number tagged</th>
<th>Number detected</th>
<th>% of size class detected at RRD</th>
<th>Mean travel time to RRD (days)</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2011</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;87</td>
<td>12192</td>
<td>1079</td>
<td>8.9%</td>
<td>21.2</td>
<td>16.6</td>
</tr>
<tr>
<td>≥87</td>
<td>1028</td>
<td>121</td>
<td>11.8%</td>
<td>4.7</td>
<td>4.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size range (mm)</th>
<th>Number tagged</th>
<th>Number detected</th>
<th>% of size class detected at RRD</th>
<th>Mean travel time to RRD (days)</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2012</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;87</td>
<td>16710</td>
<td>966</td>
<td>5.8%</td>
<td>27.2</td>
<td>14.1</td>
</tr>
<tr>
<td>≥87</td>
<td>2877</td>
<td>187</td>
<td>6.5%</td>
<td>11.5</td>
<td>8.9</td>
</tr>
</tbody>
</table>
Proportion of Tagged Fish Detected at any Downstream Project During Bypass Operations

<table>
<thead>
<tr>
<th>Size range (mm)</th>
<th>Number tagged</th>
<th>Number detected</th>
<th>Proportion detected (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;87</td>
<td>12192</td>
<td>2046</td>
<td>16.8</td>
</tr>
<tr>
<td>≥87</td>
<td>1028</td>
<td>271</td>
<td>26.4</td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;87</td>
<td>16970</td>
<td>2474</td>
<td>14.6</td>
</tr>
<tr>
<td>≥87</td>
<td>2877</td>
<td>621</td>
<td>21.6</td>
</tr>
</tbody>
</table>
0.34 mm/d in growth in first 11 days following tag.

0.77-1.18 mm/d growth of run at large
Cost of Capture, Tagging, Holding etc., 2012

0.68 mm/d for 12-17 days post-tagging

0.15 mm/d for 2-11 days post-tagging
Reduced Growth Following Tagging
Equally Affected all Size Classes

- Therefore, biological cost is associated with tagging procedure/capture/holding not tag burden
- If tag burden smaller fish would have greater cost

0.34 mm/d in growth in first 11 days following tag.

0.77-1.18 mm/d growth of run at large (untagged and tagged fish)
Similar Reduction in Growth for all Size Classes in 2012
In May, subyearlings were abundant and easy to catch, but nearly all were too small to tag.

By the end of July, all fish were large enough to tag, but difficult to find.
Size distribution of captured fish... by location

by study phase

A

<table>
<thead>
<tr>
<th>Location</th>
<th>Equation</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okanogan</td>
<td>y = 0.7171x - 29133</td>
<td>0.9842</td>
</tr>
<tr>
<td>Smuggler's</td>
<td>y = 0.7014x - 28493</td>
<td>0.9642</td>
</tr>
<tr>
<td>Washburn</td>
<td>y = 0.8634x - 35085</td>
<td>0.9923</td>
</tr>
<tr>
<td>Gebbers</td>
<td>y = 0.155x - 6237.9</td>
<td>0.0889</td>
</tr>
<tr>
<td>Dead Beaver</td>
<td>y = 0.6146x - 24963</td>
<td>0.9293</td>
</tr>
</tbody>
</table>

B

“Growth”

0.77-1.18 mm/day

y = 4E-198e^{0.0113x}  R² = 0.9433
## Probability of Detection for Two Size Classes

<table>
<thead>
<tr>
<th>Size range (mm)</th>
<th>Number tagged</th>
<th>Number detected</th>
<th>Proportion detected (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;87</td>
<td>12192</td>
<td>2448</td>
<td>20.1</td>
</tr>
<tr>
<td>≥87</td>
<td>1028</td>
<td>313</td>
<td>30.4</td>
</tr>
</tbody>
</table>

One explanation... **tag burden**: Mortal injury 20% higher on a 60 mm fish vs. a 90 mm fish carrying a 0.1 g PIT tag at the same LRP.
Length Frequency of Captured Fish by Week

![Graph showing length frequency of captured fish by week with different length bins and week categories.]

- Combined
- Week 1
- Week 2
- Week 3

Percent of Total Captured by Week

Length Bin (mm)

- 40-44
- 45-49
- 50-54
- 55-59
- 60-64
- 65-69
- 70-74
- 75-79
- 80-84
- 85-89
- 90-94
- 95-99
- 100-104
- 105-109
- 110-114
- 115-119

Attachment D
Life-history hypotheses

- $H_{1_{alt}}$: Ocean-type Chinook in Wells Reservoir represent multiple life-history strategies with variable migration timing including spring and summer subyearling, spring yearling, reservoir rearing, and intermediate migration types.

- $H_{2_{alt}}$: Subyearling Chinook tagged into the Wells Reservoir, of the size observed migrating through Wells Dam, do not actively migrate through the Wells Project.

- $H_{3_{alt}}$: Residence time in Wells Reservoir exceeds the battery life of current acoustic tags.

- $H_{4_{alt}}$: A portion of the study-fish population migrates during periods when downstream PIT-tag detection arrays are not operational.

- $H_{5_{alt}}$: Subyearling Chinook released above and below Wells Dam experience different river conditions, and different survival probabilities when migrating through the control reach (Rocky Reach Reservoir).
Tagging hypotheses

- $H_{6\text{alt}}$: The fish available for capture in the Wells Project at time $t_1$ are not of sufficient size for tagging with 12.5 mm tags.

- $H_{7\text{alt}}$: The fish available for capture in the Wells Project are not of sufficient size for tagging with an acoustic transmitter.

- Hypothesis $H_8$ from the 2011 Study Plan would require a lab component to the study, and we did not include a lab component. Following the finalization of the 2011 Study Plan we added the following hypothesis:

- $H_{9\text{alt}}$: The process of capture, holding, and tagging incurs a biological cost on subyearling Chinook.
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees
From: Michael Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the April 23, 2013 HCPs Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Hotel in SeaTac, Washington, on Tuesday, April 23, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Lance Keller will provide the literature review on predator abundance in the Rocky Reach/Rock Island reservoir prepared by BioAnalysts to Kristi Geris for distribution to the Coordinating Committees (Item III-D).
- Chelan PUD and Douglas PUD will develop a joint Statement of Agreement (SOA) indicating progress and a path forward for subyearling life history studies under the Wells, Rocky Reach, and Rock Island Hydroelectric Projects HCPs (Item III-D).
- Steve Hemstrom will provide Gantt charts summarizing juvenile trapping activities at Tumwater and Dryden dams to Geris for distribution to the Coordinating Committees (Item III-F).
- The next scheduled Coordinating Committees’ meeting is May 21, 2013 (formerly scheduled for May 28, 2013), and it will be held in eastern Washington, likely at Rocky Reach Dam (Item V-A).
- Steve Hemstrom will confirm a meeting room at Rocky Reach Dam for next month’s Coordinating Committees meeting scheduled for May 21, 2013 (Item V-A).
- Tom Kahler will coordinate with the Douglas PUD information technology staff regarding their file sharing presentation scheduled for next month’s Coordinating Committees meeting. Based on these discussions, Kahler will also coordinate with Jeff Fryer about possibly scheduling a presentation for the Coordinating Committees.
on the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) sockeye studies (Item V-A).

DECISION SUMMARY

- No SOAs were approved at this meeting.

AGREEMENTS

- Coordinating Committees representatives conditionally approved CRITFC’s annual request for tagging sockeye at Wells Dam, with the requirement that sockeye are also Floy-tagged (Item II-A).

REVIEW ITEMS

- The Spring Chinook Pilot Trapping Study Plan at Rocky Reach Dam was distributed to the Coordinating Committees by Kristi Geris on April 23, 2013, for review with comments and/or email approval due to Joe Miller (with copies to Geris and Mike Schiewe) no later than May 1, 2013.
- The draft 2013 Subyearling Study Plan was distributed to the Coordinating Committees by Kristi Geris on April 24, 2013, for a 30-day review with comments due to Tom Kahler no later than May 24, 2013.

REPORTS FINALIZED

- There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda.
• Steve Hemstrom added a discussion on the Spring Chinook Pilot at Rocky Reach, and a brief update on Chelan PUD’s action item from the Coordinating Committees March 26, 2013 meeting regarding trapping activities at Tumwater and Dryden dams.

A. Meeting Minutes Approval (Mike Schiewe)
The Coordinating Committees reviewed the revised draft March 26, 2013 meeting minutes. Regarding the final Rocky Reach and Rock Island fishway return-to-service information, Lance Keller confirmed that the Rock Island left fish ladder was back in service on March 8, 2013. Regarding Douglas PUD’s discussion on CRITFC’s annual request for sockeye tagging at Wells Dam, Tom Kahler requested that the minutes reflect that CRITFC’s 2013 request includes passive integrated transponder (PIT) tagging, as well as collecting scale samples from up to 800 sockeye. Kristi Geris said that all other comments and revisions received on the draft meeting minutes were incorporated, and the draft March 26, 2013 meeting minutes were approved, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Douglas PUD
A. DECISION: Annual CRITFC Request for Sockeye Tagging at Wells Dam (Tom Kahler)
Tom Kahler recalled that in discussing CRITFC’s annual request for sockeye tagging at Wells Dam at the Coordinating Committees March 26, 2013 meeting, questions arose regarding total number tagged and run size. Kahler contacted Jeff Fryer, and answers to these questions were distributed to the Coordinating Committees by Kristi Geris on March 29, 2013. Kahler summarized that the 200 temperature tags and 70 acoustic tags will be subsets of the total 800 PIT-tagged; and that Fryer’s latest escapement forecast over Wells Dam is about 72,000 sockeye. Coordinating Committees representatives confirmed that this information addressed the questions. Kahler said that he had concerns about what portion of the run would be handled for tagging, and Fryer indicated that he planned to tag up to 800 with collection spread throughout the entire run, and would probably end up tagging fewer than 800, depending on run size. Kahler said that this would mean that only about 1 percent of the run would be handled, with which Douglas PUD has no issues. Bryan Nordlund said that he had the same concern, but he is okay with 1 percent. Fryer also indicated that the total number of sockeye could/would be reduced if the run size is less than expected. Kirk
Truscott requested the use of Floy tags to indicate which fish had been exposed to the anesthetic MS-222. Kahler noted that, in approving a similar request last year, conditions regarding release location and receipt of additional study information were included, and added that the requirement for Floy tags can be included in this year’s request. Coordinating Committees representatives conditionally approved CRITFC’s annual request for tagging sockeye at Wells Dam, with the requirement that anesthetized sockeye are also Floy-tagged and release above the dam rather than back to the ladders.

B. **Douglas PUD 2013 10-year NNI Comprehensive Progress Report: Production (Tom Kahler)**
Tom Kahler said that he has received requests for hard copies of the final Douglas PUD 2013 10-year NNI Comprehensive Progress Report from most Coordinating Committee members, but want to confirm the total number needed. All representatives present confirmed their requests. Bob Rose indicated that the Yakama Nation wanted two copies. Kahler said that he would also provide all Coordinating Committees representatives with an electronic copy of the 2012 HCP Annual Report via compact disc at the May meeting.

III. Chelan PUD

A. **Rocky Reach Surface Collector Operations Update (Lance Keller)**
Lance Keller said that, as of April 22, 2013, turbine unit C1 at Rocky Reach Dam was back online after a 4-month outage for rotor crack repair, and that Rocky Reach Juvenile Fish Bypass Surface Collector (RRJFB SC) operations are now back to normal. To compensate for potential reduced attraction, Keller said that the RRJFB SC had been utilizing additional SC pumps to increase attraction flow from 6,000 to 6,660 cubic feet per second (cfs) into the SC entrances. He said that no issues were observed with the adjusted configuration, which ran for a total of 22 days, from April 1, 2013, through April 22, 2013.

Keller recalled Chelan PUD’s action item from the last Coordinating Committees meeting to provide details on the “top panel” of the Rocky Reach Dam intake screens. This action item stemmed from the results of preseason tests of the Rocky Reach bypass using marked fish released into turbine unit C2 via delivery pipes, when only 14 of 100 fish released were recaptured. Keller explained that the Rocky Reach intake screen system has three panels, and that during the off-season the top panel is left open so that passing juveniles do not get
trapped in the gate well. Keller said that during the preseason tests, the open panel was accidently overlooked, and this allowed the introduced fish to escape without entering the bypass system.

B. Rock Island Dam Fish Spill Operations Initiated (Steve Hemstrom)
Steve Hemstrom said that Rock Island Dam began spring fish spill at 00:00 hours on April 17, 2013, as planned at 10 percent spill. Tracy Hillman asked when fish are released from the hatcheries, and Lance Keller replied that volitional releases started April 15, 2013, and the rest were pushed out later that same week. Mike Schiewe noted that subyearling Chinook were released from Chelan Falls Hatchery early, on April 11, 2013, due to dissolved oxygen (DO) and disease concerns. Jim Craig noted (in an email dated May 8, 2013) that spring Chinook smolts were released from Winthrop NFH on April 15-16, 2013, summer Chinook smolts were released from Entiat NFH on April 16, 2013, and spring Chinook smolts were released at Leavenworth NFH on April 23-25, 2013. Hemstrom said that additional passage data are also available on the Data Access in Real Time (DART) website.

C. Chelan PUD 2013 10-year NNI Comprehensive Progress Report: Production (Steve Hemstrom)
Steve Hemstrom said that a couple of graphics are being finalized, and then the Chelan PUD 2013 10-year NNI Comprehensive Progress Report will be ready for production. He said that the final report should be distributed before the Coordinating Committees meeting on May 21, 2013.

D. PRESENTATION(S): Subyearling Chinook NNI Path Forward (Steve Hemstrom, Lance Keller, Jeff Osborn, Josh Murauskas, Tracy Hillman)
Joe Miller introduced this topic, noting that the Coordinating Committees had requested that the PUDs continue to collect and compile information on early life history of summer/fall Chinook in the Upper Columbia and periodically evaluate the status of technology and methods for estimating dam passage survival of subyearling Chinook. He said that the following presentations address this request. Steve Hemstrom said that he will first review technology in terms of survival study limitations, and then Lance Keller will discuss predator control in the reservoir; Jeff Osborn will then present on the Lake Chelan Hydroelectric
Project, and then Josh Murauskas will present on adult returns; and lastly, Tracy Hillman
will present on Monitoring and Evaluation (M&E) data used to identify factors that may be
affecting productivity of summer Chinook in the Wenatchee, Methow, and Okanogan
basins.

Technology
Hemstrom reviewed differences in tagging and detection technology between 2009 and the
present day, as summarized in A Review of Technology, Productivity, and Adult Returns to
the Mid-Columbia River (Attachment B), which was distributed to the Coordinating
Committees by Kristi Geris on April 22, 2013. Hemstrom said that the available technology
and methods are still inadequate for project-wide survival studies. He said that the mean size
of subyearling Chinook in the Rocky Reach/Rock Island reservoir is smaller than the
minimum recommended for tagging with available active tags. He said that although the fish
tags are getting smaller, as tags miniaturize, battery life also decreases. Kirk Truscott noted
that if the ping rate is reduced, battery life increases; and asked if reducing the ping rate and
installing additional arrays could possibly abate this issue. Hemstrom explained that,
typically, fish tags are configured to ping every 3 seconds. He said that if this configuration
is doubled to every 6 seconds, it reduces detection throughout key parts of the system (i.e.,
dam passage routes).

Predator Control
Keller said that at the 10-year check-in point with the HCPs, the predator control program
has removed 681,199 pikeminnow from the Rocky Reach/Rock Island reservoir (Attachment
B, page 5). He said that, based on estimates that one pikeminnow consumes two smolts per
week, more than 1.3 million smolts have been saved over the past 10 years. Craig pointed
out (in an email dated May 8, 2013) that this two smolt per week estimate is likely low,
however, based on observational information provided by Keller and Hemstrom. Keller and
Hemstrom both mentioned that while angling for Northern pikeminnow at the dams, they
observed pikeminnow puking up many smolts at a time, which implies that consumption is
probably higher than two per week. Keller said that, based on fish surveys conducted at 20
sites as part of a study to evaluate overwater structures’ effect on resident fish, there appears
to be an abundance of resident fish in the Rocky Reach/Rock Island reservoir (as shown in a
table on page 5 of Attachment B). Keller noted the inexplicable absence of smallmouth bass, and Hemstrom added that a separate resident fish study was also conducted that sampled 80 percent of the entire reservoir (i.e., including areas with no overwater structures), where only 11 smallmouth bass were captured. Keller and Hemstrom said that Chelan PUD is planning additional studies during different seasons of the year to obtain additional data. Hemstrom added that BioAnalysts also conducted a literature review on predator abundance in the Rocky Reach/Rock Island reservoir. Keller said that he will provide the literature review to Geris for distribution to the Coordinating Committees. Jeff Osborn also noted that Chelan PUD conducted creel census in different seasons and found that, in the salmon and steelhead offseason, there was very little fishing activity throughout the reservoir. Hillman noted that the most abundant fish observed during the dock study was redside shiner (as depicted in the table on page 5 of Attachment B), and he added that redside shiner use the same habitat as juvenile Chinook salmon.

Lake Chelan Hydroelectric Project
Osborn provided an overview of the Lake Chelan Hydroelectric Project (Attachment B, page 7). He explained that the project area was divided into four areas based on geomorphology, and that the Reach 4 Project was constructed to provide an additional 3 to 4 acres of spawning and rearing habitat. Spawning ground surveys from 2008 through 2012 indicate a steady increase in the number of redds in Reach 4, the Lake Chelan Hydroelectric Project tailrace, and at the confluence of the Chelan River and the Columbia River. Aerial photographs of Reach 4 after stream enhancement also show high densities of redds in the restored areas. Osborn said that Chelan PUD will continue monitoring the area throughout the life of the license.

Bryan Nordlund asked if the water is cooler in Chelan River versus the Columbia River, and Osborn replied that it depends on the season and releases from Lake Chelan. Nordlund also asked if there were any plans to provide additional vegetation cover beyond what is depicted in the photos. Osborn said that the photos in the presentation are slightly dated, and that the area now looks considerably different than in the photos. He said that five species of riparian vegetation were planted in the area, and the area is now highly vegetated. Mike Schiewe asked if many juveniles are observed rearing in the restored channel, and Osborn replied that
juveniles have been observed near the engineered logjams (ELJs) that were placed in the channel as part of the restoration. Osborn added that as the season progresses, however, the juveniles tend to leave the channel. Hillman noted that juvenile summer Chinook leave the Wenatchee River when they reach a size of about 80 millimeters (mm) and this may also be the case in the Chelan River.

**Adult Returns**

Murauskas first reviewed *Performance of Chinook Reared in Circular Re-Use and Raceway Systems* (Attachment C), which was distributed to the Coordinating Committees by Geris on April 22, 2013, and was also presented at the 2012 Northwest Fish Culture Conference (NWFCC) in December 2012. Murauskas reviewed the rearing vessel types, and noted that one advantage of the re-use vessels is the use of less water, and a reduction of the footprint on the region’s aquifer. He said that data from 2009 through 2011 indicate no statistical difference in survival to McNary Dam between smolts reared in raceways versus re-use tanks. However, re-use fish had significantly faster travel times to McNary than raceway fish did. Adult return rates of juveniles reared in re-use tanks were significantly greater and at older ages than for the raceway fish. Murauskas said that, overall, implementation of re-use vessels maximizes effectiveness at meeting mitigation goals and water quality standards. Nordlund asked if there was any explanation for the lower return rates for jacks and mini jacks from re-use rearing. Murauskas suggested it may be a related to the benefits of greater exercise and higher fitness. Tom Kahler said that one consistent predictor of residency of *Oncorhynchus mykiss* is high lipid content in juveniles, and perhaps the same is true of Chinook and the exercised fish from circular tanks have lower lipid levels than raceway fish.

Murauskas also presented *Trends in Mid-Columbia River Summer/Fall Chinook* (Attachment D), which was distributed to the Coordinating Committees by Geris on April 22, 2013. He reviewed a graph depicting summer Chinook returns at Rock Island Dam from 1933 to 2009, which showed that after implementation of the HCPs, there was an exponential increase in adult summer Chinook returns. Murauskas added that many of these fish are products of the HCP programs. Excerpts from historical fish surveys indicated that summer Chinook returns at Rock Island Dam were predicted to never be greater than those
observed in 1957 (i.e., 25,624). In 2002, with the PUD programs, summer Chinook returns reached 100,318.

Productivity

Hillman reviewed *Factors Affecting the Productivity of Summer Chinook Salmon* (Attachment E), which was distributed to the Coordinating Committees by Geris prior to the meeting on April 23, 2013. Hillman said that the purpose of this work was to evaluate the M&E data to identify factors that may be limiting the productivity of summer Chinook in the Wenatchee, Methow, and Okanogan basins. Hillman reviewed available data sets, and explained that “recruits,” for the purposes of this study, were defined as adults that return to spawn, fish that are harvested, plus fish collected for broodstock. He further explained that “productivity” is the ratio of recruits to spawners (R/S).

Hillman reviewed graphs for Wenatchee, Methow, Okanogan, and Hanford Reach summer Chinook populations, and noted that the black line on each graph represents R/S = 1.0. He said that if the geomean of the population is below that line, the population is not replacing itself. Conversely, if the productivity of the population is above that line, the population is growing. Hillman said that Endangered Species Act (ESA)-listed species have productivities generally below that line, and that is one reason why they are listed. The graphs indicated that the Wenatchee, Methow, and Okanogan summer Chinook populations were all highly productive with geomean productivities greater than 2.0. Hillman noted that the Hanford Reach fall Chinook population is considered to be one of the most productive populations along the Pacific Rim; and the Hanford Reach population has roughly the same average productivity as the Wenatchee, Methow, and Okanogan summer Chinook populations. He suggested that there were a few years of concern with the Wenatchee, Methow, and Okanogan summer Chinook population, but all still has R/S geomeans above 2.0.

Hillman said that because productivity among the three populations is synchronous and highly correlated, the same factors appear to be affecting each population. He investigated what variables may affect each of the populations. Hillman first analyzed density dependence in the Wenatchee, Methow, and Okanogan populations as a potential driver using three different stock-recruitment models. Models results indicated some evidence of density
dependence within all three populations; however, the amount of variability in recruitment explained by the models was small. Hillman then analyzed environmental variables as possible sources of variability, including hydrosystem and hatchery metrics. Results indicated that 50 percent of the variability in Wenatchee summer Chinook productivity, and 54 percent in Methow summer Chinook productivity were explained by low average air temperature, maximum snow depth, and spring Pacific decadal oscillation. For Okanogan summer Chinook, 60 percent of the variability in productivity was explained by maximum snow depth and the proportion of hatchery-origin spawners (pHOS). Hillman concluded that climatic and ocean conditions appear to be the biggest drivers of productivity.

Mike Schiewe asked what prevented the populations from becoming so large that density dependence constrained further growth; and Hillman said that harvest is a major controlling factor. He added that when there are too many fish, productivity will be reduced, as observed in some basins such as the Chiwawa. Bob Rose asked about the relationship between smolt-to-adult returns (SARs) and travel time during downstream migration. Hillman said that the two were not included in the analysis or presentation. He said that flows may have an effect; however, the models shown in the presentation only captured those metrics that were statistically significant. He said that the analysis determined that flow was not a significant predictor of productivity; however, flow was correlated with the maximum snow depth, which was a significant predictor of productivity. He added that he thinks that is because flow affects a relatively very short phase of the life cycle.

Schiewe asked if Hillman’s analyses considered variation in juvenile life history, such as yearling versus subyearling migration. Hillman replied that it did not and he did not believe enough empirical data existed, and added that he tried to address this issue by considering a 1-year and 2-year ocean metric, and yearling outmigration, but nothing significant resulted. Hillman said that there are also additional ocean indices available that could be evaluated. Based on these analyses, Murauskas asked Hillman if he thought there were any outstanding concerns about the status of summer Chinook in the Upper Columbia. Hillman said that, based on these results, there did not appear to be any.
Nordlund asked if spring Chinook productivity is related to or affected by the summer Chinook success that Hillman presented, and Hillman replied that while summer Chinook mainly spawn in the mainstem Wenatchee River, spring Chinook spawn earlier and in the headwaters. He said that, therefore, the two populations are segregated both in space and time. He further explained that summer Chinook emerge first and move immediately to the edges of the river. When juvenile spring Chinook begin coming into the Wenatchee, the summer Chinook are big enough to move into deeper and faster water, and the spring Chinook then fill the edges. In the fall, another pulse of spring Chinook arrive, and by then, the summer Chinook are mostly gone. Hillman said that there is little interaction between spring and summer Chinook. Kahler asked what happens in the Methow and Wenatchee basins, where there are zones of overlapping spring Chinook and summer Chinook habitats. Hillman replied that in those locations, there could be interactions; however, they may still be segregated based on emergence time. Hillman noted that sockeye salmon research has found that some fish are able to modify their development rate and emergence time. He suggested the same may be possible with Chinook.

Hemstrom asked, for the purposes of moving forward, whether there are other needs to be addressed in terms of subyearling survival. Miller said that the PUDs are currently in phase III additional juvenile studies, and Kahler noted that the only way to get out of this phase is to conduct a project-wide survival study. Nordlund said that, after today’s presentations, he is satisfied that the technology to conduct a subyearling survival study is currently not available, and that the status of the summer Chinook stock appears relatively healthy. Chelan PUD and Douglas PUD said that they will develop a joint SOA documenting: (1) the status of evolving methods and technology needed to conduct survival studies; (2) the healthy status of Upper Columbia subyearling stocks; and (3) the commitment to continue tracking and updating the Coordinating Committees on the opportunity to conduct subyearling survival studies under the Wells, Rocky Reach, and Rock Island Hydroelectric Project HCPs.

E. Spring Chinook Pilot at Rocky Reach (Joe Miller)

Joe Miller said that Chelan PUD is considering options for future implementation of their Methow spring Chinook program, and the Rocky Reach trap has been identified as a
potential option for broodstock collection. Miller said that the trap has been used historically to capture listed steelhead and bull trout without causing delays to non-target fish. He said that Chelan PUD is proposing a pilot study where the trap will be operated targeting adipose-clipped (ad-clipped) spring Chinook based on visual identification (Attachment F). The purpose of the study is to test the feasibility of visually identifying and selectively collecting spring Chinook to evaluate trap operation. Miller said that the study would be conducted over a 4-week period, with one trap event allowed per hour, a maximum of three trap events per day, and no more than five trap events per week. Passage will be monitored using existing PIT-tag arrays and PIT-tags already in the system.

As for review, Miller said that the HCP Hatchery Committees are evaluating the logistics of the trap as a collection location, and that Chelan PUD would like the Coordinating Committees’ approval of the pilot from a fish passage perspective.

Josh Murauskas added that the Rocky Reach trap is unique in that, unlike other trapping facilities, it has the ability to single out and trap specific fish, as opposed to trapping several fish and potentially affecting the run at large. Jim Craig asked how much the fish would be handled, and Miller explained that this pilot will only focus on trap efficacy and that fish will not be handled at all. Bryan Nordlund noted that, in order to trap a single fish, groups of fish that are passing the trap will need to be forgone. He asked, then, if this will be limiting to meeting program goals, and Murauskas replied that the program is for approximately 61,000 fish, which requires only about 35 adults. Steve Hemstrom added that the Rocky Reach trap has been used for several studies and has successfully trapped individual fish each time. Nordlund asked whether, if the pilot proves successful, Chelan PUD plans to install a handling facility at Rocky Reach Dam. Miller replied that there are a few options that can be explored but that those details have not yet been addressed at this point in the process.

Mike Schiewe noted that the pilot has already undergone a couple of revisions, as requested by the HCP Hatchery Committees, and suggested that the Coordinating Committees review the pilot and provide email approval within a week or two. The spring Chinook Pilot Trapping Study at Rocky Reach was distributed to the Coordinating Committees by Kristi
Geris following the meeting on April 23, 2013, for review with comments and/or email approval due to Miller (with copies to Geris and Schiewe) no later than May 1, 2013.

F. Trapping Activities—Gantt Chart (Steve Hemstrom)
Steve Hemstrom said that, per Chelan PUD’s action item from the Coordinating Committees meeting on March 26, 2013, a Gantt chart summarizing adult trapping activities at Tumwater and Dryden dams (Attachment G) was distributed to the Coordinating Committees by Kristi Geris on April 22, 2013. Hemstrom said that Alene Underwood also provided a Gantt chart for adult trapping activities at both dams, and Hemstrom said that he would provide electronic copies of that chart to Geris for distribution to the Coordinating Committees.

IV. Hatchery and Tributary Committees Update (Mike Schiewe)
Mike Schiewe reported that the HCP Tributary Committees did not meet in April due to lack of agenda items.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees’ meeting on April 17, 2013, which was hosted by Chelan PUD:

- Revised Analytical Framework 5-Year Update: After several months of revisions and fine-tuning of objectives (led by a smaller workgroup), the Hatchery Committees approved the Revised Analytical Framework 5-Year Update. With the revised update approved, the PUDs will now send out Requests for Proposals (RFPs) for contracting in 2014. An expert panel will be assembled to assist in the review of the proposals received.

- Carlton Acclimation Facility Capacity Utilization SOA: Chelan PUD received approval of the Carlton Acclimation Facility Capacity Utilization SOA for their Methow spring Chinook production. However, it is yet to be determined how far into the future Chelan PUD will use the facility for their Methow obligation.

- Spring Chinook Pilot Trapping Study at Rocky Reach: Hatchery Committees representatives will submit email approval of this pilot study to Chelan PUD no later than April 26, 2013.
• **Hatchery Genetic Management Plan (HMGP) Update:** National Marine Fisheries Service (NMFS) has committed to approving final permitting for the Wenatchee spring Chinook programs (Nason, White, and Chiwawa) by May 31, 2013, or June 7, 2013, at the latest. A commitment was also made to permit trapping of broodstock at Tumwater Dam no later than June 7, 2013, which also covers bull trout. The U.S. Fish and Wildlife Service (USFWS) is most concerned about the impact of a Wenatchee basin spring Chinook fishery on bull trout. These concerns are being addressed.

• **Methods for Estimating Likelihoods of Outcomes in Broodstock-Collection:** Greg Mackey conducted exploratory analysis on broodstock estimation and managing risk and expectations in broodstock collection, and now the Hatchery Committees are discussing use of this analysis in developing future broodstock protocols.

• **Dryden Update:** Alene Underwood updated the Hatchery Committees on progress made on Chelan PUD’s testing and planning for Dryden Total Maximum Daily Load (TMDL) compliance.

• **Chelan Falls Summer Chinook Update:** Chelan Falls summer Chinook were released 3 to 4 days earlier than planned due to DO and bacterial gill disease (BGD) concerns.

• **Wells Hatchery Master Plan:** Greg Mackey said that Douglas PUD anticipates that the draft plan will be complete by April 30, 2013, at which time he will provide the plan to the Hatchery Committees for review. The Hatchery Committees have also requested an additional review of the engineering plans, when available.

V. HCP Committees Administration (Mike Schiewe)

A. **Next Meetings**

The next scheduled Coordinating Committees meeting is on May 21, 2013 (formerly scheduled for May 28, 2013); it will be held in eastern Washington, likely at Rocky Reach Dam. Steve Hemstrom will confirm that a meeting room is available at Rocky Reach Dam for the meeting. Tom Kahler said that he will coordinate with the Douglas PUD information systems staff regarding their file-sharing presentation scheduled for this Coordinating Committees meeting on May 21, 2013. Based on these discussions, Kahler said that he will also coordinate with Jeff Fryer about possibly scheduling a presentation for the Coordinating Committees on CRITFC’s sockeye studies.
The June 25, 2013 and July 23, 2013 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

**List of Attachments**

- Attachment A  List of Attendees
- Attachment B  A Review of Technology, Productivity, and Adult Returns to the Mid-Columbia River
- Attachment C  Performance of Chinook Reared in Circular Re-Use and Raceway Systems
- Attachment D  Trends in Mid-Columbia River Summer/Fall Chinook
- Attachment E  Factors Affecting the Productivity of Summer Chinook Salmon
- Attachment F  Spring Chinook Pilot Trapping Study at Rocky Reach
- Attachment G  Gantt chart summarizing adult trapping activities at Tumwater and Dryden dams
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<th>Name</th>
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<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
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<td>Kirk Truscott**†</td>
<td>Colville Confederated Tribes</td>
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<td>Bob Rose*†</td>
<td>Yakama Nation</td>
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<tr>
<td>Bryan Nordlund*</td>
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<tr>
<td>Teresa Scott*</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
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Notes
* Denotes Coordinating Committees member or alternate
† Joined by phone
Chelan PUD
HCP Path Forward
Subyearling Chinook

A review of technology, productivity, and adult returns to the Mid-Columbia River
Acoustic Telemetry Equipment
Technology Then and Now
2009:2013

- Technology still not adequate for **Project** survival study in UCR
- Fish 100 mm are bulk of study fish at RR
- Tags miniaturizing, decreasing battery life (19 d @ 3sec PRI)
  - **2009**
    - 0.65g
    - 31d @ 1p 4-6 sec
  - **2013**
    - 0.5g
    - 19 d @ 1p 3 sec
# Acoustic Telemetry Equipment Technology Comparison

## Smallest Tag Size Presently Tested

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<td><strong>Size</strong></td>
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<td><strong>Battery life</strong></td>
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<td>19 d, 2 PRI</td>
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Survival Study Limitations
Subyearling Chinook

- Small subyearlings – RR mean 101.9 mm (FCRPS 110 mm @ tagging)
- RR/RI contain reservoir type fish
- Outmigration times long, ‘non-migrant’ fish present
- Long reservoirs increase potential for non-migrant bias
Predator Abundance

- Pikeminnow removed in first 10 years of HCP: 681,199
- Electrofishing data from dock investigation: 20 sites

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<td>0.06</td>
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</tr>
<tr>
<td>Bridgelip sucker</td>
<td>0.12</td>
<td>2</td>
</tr>
<tr>
<td>Chinook Salmon</td>
<td>0.53</td>
<td>9</td>
</tr>
<tr>
<td>Chiselmouth</td>
<td>25.31</td>
<td>427</td>
</tr>
<tr>
<td>Sculpin</td>
<td>1.72</td>
<td>29</td>
</tr>
<tr>
<td>Carp</td>
<td>0.12</td>
<td>2</td>
</tr>
<tr>
<td>Minnow Spp.</td>
<td>0.18</td>
<td>3</td>
</tr>
<tr>
<td>Largemouth Bass</td>
<td>0.24</td>
<td>4</td>
</tr>
<tr>
<td>Smallmouth Bass</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Longnose Sucker</td>
<td>0.41</td>
<td>7</td>
</tr>
<tr>
<td>Largescale Sucker</td>
<td>7.17</td>
<td>121</td>
</tr>
<tr>
<td>Northern Pikeminnow</td>
<td>21.75</td>
<td>367</td>
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<tr>
<td>Peamouth</td>
<td>10.49</td>
<td>177</td>
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<tr>
<td>Redside Shiner</td>
<td>28.99</td>
<td>489</td>
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<tr>
<td>Sucker Spp.</td>
<td>1.66</td>
<td>28</td>
</tr>
<tr>
<td>Tench</td>
<td>0.24</td>
<td>4</td>
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<tr>
<td>Threespine Stickleback</td>
<td>0.83</td>
<td>14</td>
</tr>
<tr>
<td>Walleye</td>
<td>0.06</td>
<td>1</td>
</tr>
<tr>
<td>Whitefish</td>
<td>0.06</td>
<td>1</td>
</tr>
<tr>
<td>Yellow Perch</td>
<td>0.06</td>
<td>1</td>
</tr>
</tbody>
</table>
Length Frequency of Captured Fish by Location  
(DPUD 2013)

FCRPS mean @ tagging 110 mm
Lake Chelan Hydroelectric Project

Why did we construct this Project?

- Instream flow modeling indicated peak habitat at 650 cfs
- Agencies proposed 650 cfs minimum instream flow
- Minimum flow proposal reduced generation by 33 percent
- Focused on amount of habitat (3 to 4 acres) versus flow
- Developed project to provide additional 3-4 acres of spawning and rearing habitat
Study-Technology Summary

- Tag life, life history remain impediments
- Smallest summer/fall Chinook subyearlings in UCR
- Wells study noted prolonged outmigration, size bias
- Tag Technology only slightly “better” than 2009

- Are other measures available/useable to assess survival?
Lake Chelan Hydroelectric Project
Chelan River (Reach 4) Habitat Channel
Lake Chelan Hydroelectric Project
Chelan River (Reach 4) – After Stream Enhancement
# Lake Chelan Hydroelectric Project

## The Production Story

Summer/fall Chinook spawning ground survey data  
(# of redds)

<table>
<thead>
<tr>
<th>Year</th>
<th>Reach 4</th>
<th>Tailrace</th>
<th>Columbia River</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>NA</td>
<td>153</td>
<td>In tailrace count</td>
<td>153</td>
</tr>
<tr>
<td>2009</td>
<td>79</td>
<td>129</td>
<td>58</td>
<td>266</td>
</tr>
<tr>
<td>2010</td>
<td>115</td>
<td>234</td>
<td>49</td>
<td>398</td>
</tr>
<tr>
<td>2011</td>
<td>178</td>
<td>192</td>
<td>48</td>
<td>418</td>
</tr>
<tr>
<td>2012</td>
<td>139</td>
<td>231</td>
<td>56</td>
<td>426</td>
</tr>
</tbody>
</table>
Performance of Chinook reared in circular re-use and raceway systems

Josh Murauskas, Sam Dilly, Ian Adams, Todd Pearsons
2012 NWFCC
December 12, 2012
(Presented to HCP-CC, April 23rd 2013)
Overview

- What vessels?
- What is performance?
- How’d they do?
- Implications...
Rearing vessels

- **Standard raceways**
  - 30.5 × 3.0 m
  - 102k, 14 FPP, 0.25 DI

- **Partial water re-use**
  - 9 m dual-drain Cornell
  - 150k, 14 FPP, 0.25 DI
  - > 85% less water use
Performance is...

- Fish health
- Post-release survival
- Travel time downstream
- Smolt-to-adult returns
- Age structure
Survival to McNary Dam

<table>
<thead>
<tr>
<th>Year</th>
<th>Raceway</th>
<th>Re-use</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>55%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>59%</td>
<td>62%</td>
</tr>
<tr>
<td>2011</td>
<td>70%</td>
<td>67%</td>
</tr>
</tbody>
</table>
Travel Time to McNary Dam

Survival to McNary

- Raceway
- Re-use

2009:
- Raceway: 25
- Re-use: 20

2010:
- Raceway: 25
- Re-use: 23

2011:
- Raceway: 15
- Re-use: 14
**Adult returns**

![Bar chart showing rate of return for different types of adult returns: 3-salt, 2-salt, 1-salt, and Mini-jacks. The chart compares Re-use and Raceway.](image)

**SAR = 0.78% vs. 1.58%**

*Murauskas et al. 2012 NWFCC*
Age structure vs. rear type

Ocean age

Raceway
$n = 107$

Re-use
$n = 175$

$p < 0.0001$
Conclusions

• Water re-use and circular vessels
  – Healthy fish, less water consumption

• Smolt performance
  – Faster travel times, potential survival benefit

• Adult returns
  – Significantly greater survival and older ages
Implications

• Hatchery footprint
  – Water use, brood collection, smolt production

• Harvest augmentation
  – More adults, bigger fish

• Conservation
  – Greater reproductive success
  – Greater similarity to wild-origin fish
Trends in Mid-Columbia River Summer/Fall Chinook

J. Murauskas

HCP-CC, April 23, 2013
Summer Chinook at Rock Island

**Chart:**
- **Y-axis:** Adult returns
- **X-axis:** Year (1933-2009)

- **Grand Coulee**
- **Rocky Reach**

- **Equation:** $R^2 = 0.6414$
Average returns

The bar chart presents the average returns across different periods:

- **Pre-GCL**: Represents the pre-GCL period with an average return of approximately 10,000.
- **Pre-RRH**: Represents the pre-RRH period with an average return of approximately 20,000.
- **Post-RRH**: Represents the post-RRH period with an average return of approximately 60,000.
- **Post-HCP**: Represents the post-HCP period with an average return of approximately 80,000.

The vertical axis indicates the mean return, while the horizontal axis represents the different periods.
Historical redd counts

• Bernie D. Leman, 1959:
  – Rocky Reach Spawning Ground Surveys
  – “Restitution would be made on the basis of pre-flooding population less the post-spawning population.”
Spawning Areas and Redd Counts

Peak redd counts on the spawning grounds of the upper Columbia River area are available for the years 1956, 1957, 1958, and 1959. However, 1957 could hardly be considered as a representative year as this was the first season for The Dalles Dam which flooded out Celilo Falls with the Indian and commercial fishery that had existed there for many years. During 1957, the Bonneville chinook salmon migration was good; but the numbers had been exceeded many times. However, the chinook escapement over McNary was nearly three times as great as the previous years of record. The impact of this increase was apparent in all spawning areas above Celilo Falls. Undoubtedly, the fishery will and probably already has adjusted for a greater harvest of these salmon below Bonneville Dam or at sea. A chinook run of the late summer-fall, 1957, magnitude might never occur in this area again. Because of the before-

Leman, B.D. 1959. Rocky Reach Project spawning ground surveys. Prepared for the Public Utility District No. 1 of Chelan County.
Peak Redd Counts. Peak redd counts for the period of record are presented in Figure 3.

<table>
<thead>
<tr>
<th>Segment</th>
<th>1956</th>
<th>1957</th>
<th>1958</th>
<th>District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Island Dam to Rocky Reach Dam</td>
<td>0</td>
<td>33</td>
<td>222</td>
<td>160</td>
</tr>
<tr>
<td>Rocky Reach Dam to Entiat</td>
<td>7</td>
<td>137</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Entiat to Beebe Bridge</td>
<td>3</td>
<td>6</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Beebe Bridge to Azwell</td>
<td>7</td>
<td>44</td>
<td>204</td>
<td>200</td>
</tr>
<tr>
<td>Azwell to Methow River</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Methow River to Okanogan River</td>
<td>32</td>
<td>197</td>
<td>285</td>
<td>0</td>
</tr>
<tr>
<td>Okanogan River to Chief Joseph Dam</td>
<td>196</td>
<td>329</td>
<td>437</td>
<td>126</td>
</tr>
</tbody>
</table>

Leman, B.D. 1959. Rocky Reach Project spawning ground surveys. Prepared for the Public Utility District No. 1 of Chelan County.
“...might never occur...”

- Maximum run pre-Rocky Reach
  - 25,624 (in 1957 after inundation of Celilo)
- Maximum run post-HCP programs
  - 100,318 (in 2002, with PUD programs)
Conclusions

- Summer/Fall Chinook returns at levels not witnessed in a century
- HCP programs a significant contributor
- Programs have exceeded expectations
- NNI: *Productivity* of salmon populations
Factors Affecting the Productivity of Summer Chinook Salmon
Purpose

The purpose of this work is to use monitoring and evaluation data to identify the factors that may be limiting the productivity of summer Chinook in the Wenatchee, Methow, and Okanogan basins.
Data


(2) Stock and Recruitment data were calculated using methods described in Miller et al. (2011). Appendix C in the Five-Year M&E Report.
# Stock-Recruitment Data

<table>
<thead>
<tr>
<th>Brood year</th>
<th>Wenatchee</th>
<th>Methow</th>
<th>Okanogan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stock</td>
<td>Recruits</td>
<td>R/S</td>
</tr>
<tr>
<td>1981</td>
<td>9,245</td>
<td>33,057</td>
<td>3.58</td>
</tr>
<tr>
<td>1982</td>
<td>8,964</td>
<td>38,461</td>
<td>4.29</td>
</tr>
<tr>
<td>1983</td>
<td>5,500</td>
<td>40,819</td>
<td>7.42</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>2005</td>
<td>8,703</td>
<td>14,093</td>
<td>1.62</td>
</tr>
<tr>
<td>Min</td>
<td>5,352</td>
<td>4,199</td>
<td>0.36</td>
</tr>
<tr>
<td>Max</td>
<td>15,723</td>
<td>72,740</td>
<td>9.76</td>
</tr>
<tr>
<td>Mean</td>
<td>9,378</td>
<td>26,483</td>
<td>3.26</td>
</tr>
<tr>
<td>Geomean</td>
<td>8,958</td>
<td>19,844</td>
<td>2.22</td>
</tr>
</tbody>
</table>
Wenatchee Population

**Wenatchee Summer Chinook**

- **Min** = 0.36
- **Max** = 9.76
- **GM** = 2.22

**Recruits per Spawner**


**12-Year Geomean (R/S)**

Methow Summer Chinook

Recruits per Spawner

Min = 0.18
Max = 10.45
GM = 2.05

Year Geomean (R/S)
Okanogan Population

Okanogan Summer Chinook

Min = 0.35
Max = 14.61
GM = 2.07

12-Year Geomean (R/S)

Year

Okanogan Summer Chinook
Density Dependence

(1) How much of the variation in the time series is related to the size of the spawning stock?

(2) Fit Ricker, Beverton-Holt, and Smooth Hockey Stick models to the stock and recruitment data.

(3) Ricker model assumes that spawning habitat is the primary factor limiting productivity.

(4) Beverton-Holt and Smooth Hockey Stick models assume that rearing habitat is the primary factor limiting productivity.
Wenatchee Population

Wenatchee Summer Chinook

**Wenatchee Summer Chinook**

- **B-H Model**
  - $IP = 11.46$
  - $K = 24,067$
  - $Sp_k = 5,708$

- **Ricker Model**
- **Hockey Stick**
Environmental Variables

- Hydrosystem metrics
- Hatchery metrics
- Climate/Ocean metrics
Hydrosystem Metrics

- RR and RI Mean Daily Flow (Apr-Aug)
- RR and RI CV Daily Flow (Apr-Aug)
- RR and RI Mean Daily Temp (Apr-Aug)
- RR and RI CV Daily Temp (Apr-Aug)
- RR and RI Mean Percent Spill (Apr-Aug)
- RR and RI CV Percent Spill (Apr-Aug)

- PR Mean Daily Flow (Apr-Sep)
- PR CV Daily Flow (Apr-Sep)
- PR Mean Daily Temp (Apr-Sep)
- PR CV Daily Temp (Apr-Sep)
- PR Mean Percent Spill (Apr-Sep)
- PR CV Percent Spill (Apr-Sep)
Hatchery Metrics

- Wenatchee pHOS
- Methow pHOS
- Okanogan pHOS
Environmental Metrics

- Maximum Snow Depth (MSD) during the year of spawning
- Maximum Snow Depth (MSD) during the year of freshwater rearing
- Columbia River Flows (CRF)
- Spring Pacific Decadal Oscillation (SPDO) during first year in ocean
- Spring Pacific Decadal Oscillation (SPDO) during second year in ocean
- Low Average Air Temp (LAAR) during the year of spawning
- Low Average Air Temp (LAAR) during the year of freshwater rearing
Multicollinearity

- Important to examine the correlation among the 28 predictor variables

- Flow, temperature, and spill metrics were highly correlated among the three projects. PR temperature metrics were weakly correlated with RR and RI temperatures

- At a given project, flow metrics were highly correlated with spill metrics, and most flow and spill metrics were correlated with temperature metrics

- CRF was highly correlated with flow and spill metrics at the three projects

- MSD was highly correlated with flow metrics at the projects

- LAAT was highly correlated with spill metrics
Final Array of Predictors

- pHOS metrics
- Mean and CV daily temperatures at PR
- MSD(S) and MSD(R)
- CRF
- SPDO(1) and SPDO(2)
- LAAT(S) and LAAT(R)
## Simple Linear Regression

### Wenatchee Population:

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predictor variable</th>
<th>$r^2$</th>
<th>Slope parameter</th>
<th>Slope SE</th>
<th>F-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>LAAT(R)</td>
<td>0.194</td>
<td>-0.439</td>
<td>0.177</td>
<td>5.547</td>
<td>0.027</td>
</tr>
<tr>
<td>Ricker residuals</td>
<td>LAAT(R)</td>
<td>0.235</td>
<td>-10,225.807</td>
<td>3,134.508</td>
<td>7.080</td>
<td>0.014</td>
</tr>
</tbody>
</table>
## Simple Linear Regression

### Methow Population:

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predicator variable</th>
<th>$r^2$</th>
<th>Slope parameter</th>
<th>Slope SE</th>
<th>$F$-value</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>MSD(S)</td>
<td>0.152</td>
<td>0.429</td>
<td>0.165</td>
<td>4.105</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td>LAAT(R)</td>
<td>0.293</td>
<td>-0.564</td>
<td>0.199</td>
<td>9.514</td>
<td>0.006</td>
</tr>
<tr>
<td>Ricker residuals</td>
<td>None</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
## Simple Linear Regression

### Okanagan Population:

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predictor variable</th>
<th>$r^2$</th>
<th>Slope parameter</th>
<th>Slope SE</th>
<th>$F$-value</th>
<th>$P$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>MSD(S)</td>
<td>0.146</td>
<td>0.468</td>
<td>0.268</td>
<td>3.920</td>
<td>0.059</td>
</tr>
<tr>
<td></td>
<td>MSD(R)</td>
<td>0.260</td>
<td>0.642</td>
<td>0.206</td>
<td>8.076</td>
<td>0.009</td>
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<tr>
<td></td>
<td>LAAT(R)</td>
<td>0.178</td>
<td>-0.489</td>
<td>0.197</td>
<td>4.982</td>
<td>0.036</td>
</tr>
<tr>
<td>Ricker residuals</td>
<td>MSD(R)</td>
<td>0.224</td>
<td>3,594.349</td>
<td>1,062.784</td>
<td>6.631</td>
<td>0.017</td>
</tr>
</tbody>
</table>
Multiple Regression

Wenatchee Population:

Productivity Model was significant \( (F = 6.974; P = 0.002; R^2 = 0.499) \)
Residual Model was significant \( (F = 7.080; P = 0.014; R^2 = 0.235) \)

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predictor variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>T-value</th>
<th>P-value</th>
<th>Bivariate ( r^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>Constant</td>
<td>1.431</td>
<td>0.205</td>
<td>6.968</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LAAT(R)</td>
<td>-0.534</td>
<td>0.159</td>
<td>-3.365</td>
<td>0.003</td>
<td>0.270</td>
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<tr>
<td></td>
<td>MSD(S)</td>
<td>0.442</td>
<td>0.163</td>
<td>2.704</td>
<td>0.013</td>
<td>0.175</td>
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<tr>
<td></td>
<td>SPDO(2)</td>
<td>-0.428</td>
<td>0.167</td>
<td>-2.569</td>
<td>0.018</td>
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<tr>
<td>Ricker residuals</td>
<td>Constant</td>
<td>11,769.099</td>
<td>4,068.976</td>
<td>2.892</td>
<td>0.008</td>
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<tr>
<td></td>
<td>LAAT(R)</td>
<td>-10,225.807</td>
<td>3,843.086</td>
<td>-2.661</td>
<td>0.014</td>
<td>0.235</td>
</tr>
<tr>
<td></td>
<td>MSD(R)</td>
<td>3,594.349</td>
<td>1,395.790</td>
<td>2.575</td>
<td>0.017</td>
<td>0.224</td>
</tr>
</tbody>
</table>
Multiple Regression

Methow Population:

Productivity Model was significant (F = 8.065; P = 0.001; R² = 0.535)
Residual Model was not significant

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predictor variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>T-value</th>
<th>P-value</th>
<th>Bivariate r²</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>Constant</td>
<td>1.371</td>
<td>0.207</td>
<td>6.619</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LAAT(R)</td>
<td>-0.641</td>
<td>0.160</td>
<td>-4.005</td>
<td>0.001</td>
<td>0.355</td>
</tr>
<tr>
<td></td>
<td>MSD(S)</td>
<td>0.453</td>
<td>0.165</td>
<td>2.747</td>
<td>0.012</td>
<td>0.167</td>
</tr>
<tr>
<td></td>
<td>SPDO(2)</td>
<td>-0.351</td>
<td>0.168</td>
<td>-2.088</td>
<td>0.049</td>
<td>0.097</td>
</tr>
<tr>
<td>Ricker residuals</td>
<td>None</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
Multiple Regression

Okanogan Population:

Productivity Model was significant (F = 10.577; P = 0.000; R² = 0.602)
Residual Model was significant (F = 6.631; P = 0.017; R² = 0.224)

<table>
<thead>
<tr>
<th>Response variable</th>
<th>Predictor variable</th>
<th>Coefficient</th>
<th>SE</th>
<th>T-value</th>
<th>P-value</th>
<th>Bivariate r²</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN (R/S)</td>
<td>Constant</td>
<td>1.372</td>
<td>0.209</td>
<td>6.577</td>
<td>0.000</td>
<td></td>
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<tr>
<td></td>
<td>MSD(R)</td>
<td>0.677</td>
<td>0.174</td>
<td>3.889</td>
<td>0.001</td>
<td>0.287</td>
</tr>
<tr>
<td></td>
<td>MSD(S)</td>
<td>0.546</td>
<td>0.169</td>
<td>3.219</td>
<td>0.004</td>
<td>0.197</td>
</tr>
<tr>
<td></td>
<td>pHOS</td>
<td>-1.433</td>
<td>0.496</td>
<td>-2.888</td>
<td>0.009</td>
<td>0.158</td>
</tr>
<tr>
<td>Ricker residuals</td>
<td>Constant</td>
<td>2,522.587</td>
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Summary

1. Productivities among the three populations are synchronous and highly correlated.

2. The three populations are highly productive with mean productivities greater than 2.0.

3. Productivities for the three populations were not significantly different from Hanford Reach fall Chinook, which are considered the most productive stock along the Pacific Rim.

4. The 12-Year GM productivities exceed the threshold of 1.2.
Summary

5. Although there is evidence of density dependence within the three populations, spawning stock size explained less than 10% of the variability in productivities.

6. Most of the variability in Wenatchee (50%) and Methow (54%) summer Chinook productivity was explained by low average air temperature, maximum snow depth, and spring Pacific decadal oscillation.

7. Low average air temperature explained most of the variability in Wenatchee residuals from the Ricker model. No predictors correlated with Methow residuals.
8. Most of the variability (60%) in Okanogan summer Chinook productivity was explained by maximum snow depth and the proportion of hatchery-origin spawners.

9. Maximum snow depth explained most of the variability in Okanogan residuals from the Ricker model.
Proposal to trap spring-run Chinook salmon at Rocky Reach Dam, 2013

**Purpose.** To pilot the use of the Rocky Reach Trap (RRT) to evaluate its efficacy for future broodstock collection or adult management efforts.

**Objectives.** The RRT has been used historically to capture listed steelhead and bull trout (Alexander et al. 2003; Stevenson et al. 2009) without causing delays to non-target fish. For the pilot, the RRT will be operated to target ad-clipped spring Chinook. The trap operator can target individual fish on the basis of visual identification of external marks observed at the counting window (i.e., ad clipped). There are three specific objectives of the pilot:

1) **Capture Time Quantification:** The primary objective is to measure the individual capture time of approximately 20 fish over a 4 week period (i.e., 5 fish /week for 4 weeks during the period of May – June (see Figure 1 for spring migration timing)) to generate basic descriptive statistics related to trap operation and passage effects for spring Chinook. Statistics will focus on “capture time” which reflects the amount of time necessary to close the pneumatic trap door to collect an individual fish and then return the door to the normal open position. Capture time statistics will include Range, Average, and Standard Deviation. These statistics will be used to evaluate the amount of time necessary to collect an individual fish, which is equivalent to the amount of time fish passage would be obstructed by the trap door for the run-at large. Based on previous trapping efforts, it is expected that an individual fish would have a capture time of less than 10 seconds, and therefore would have a minimal effect on passage at-large at Rocky Reach.

2) **Qualitative Evaluation of Capture Process:** Document operational procedures on video and provide access to the RRT for manager consideration. The purpose of this effort is to obtain input from managers on the best operational approach, and identify any concerns that would need to be addressed before a larger-scale pilot or implementation of adult management.

3) **Analysis of passage time:** Passage of spring Chinook will be monitored at Rocky Reach Dam during trap evaluation efforts using PIT tagged adult returns. The monitoring will occur using two PIT arrays within the fishway to determine fallback and/or delay, in combination with upstream detections. Passage and median travel time will be compared between trapping and non-trapping periods throughout the return.

**Risk reduction.** The following risk reduction measures will be implemented during the pilot:

1) Trapping will be active and a technician present at all times.

2) Individual trap events will require the visual identification of an isolated, adipose clipped Chinook in the viewing window. More specifically, the trap will only be operated when a single target fish is present and the trap will not be operated if more than one fish of the same or different species is present.
3) Only one trap event will be allowed per hour with a maximum of three trap events per day. No more than five trap events per week.

4) Fish collected in the trap will be released in the forebay of Rocky Reach, immediately adjacent to the top of the ladder. The release will not require transferring or lifting the fish. Instead, a weir door will be opened allowing the fish to exit volitionally (from the trap) out of the top of the ladder.

**General Overview of Trap Design**

Trap facilities at Rocky Reach are integrated with the existing fish-viewing structures within the ladder. Essentially, the fish-viewing guide wall extends upstream to the exit weir, where a pneumatically-activated gate guides fish into a collection area (Figure 2 and 3). On the other side of the pneumatic gate the collection area contains a removable capture vessel. As adult fish enter the viewing area, a technician activates the pneumatic gate, which blocks passage into the forebay and diverts the adult fish into the collection area. Using an underwater camera, the technician observes the adult fish enter the collection area, at which time the gate is closed, trapping the fish. Non-target species are allowed to exit the ladder by simply not activating the pneumatic gate. After an adult fish is contained within the collection area, either an electric or hand-operated winch raises the collection vessel from the collection area up to the work-surface platform. As the vessel emerges from the water, a wooden cover is placed on top of the vessel to reduce stress to the fish and eliminate the possibility of the fish jumping out of the vessel. Captured fish can then be anesthetized and transferred to a processing area. At the RRT, the collection vessel is moved laterally along an I-beam monorail close to the processing facility located under the roadway of the ladder.

![Figure 1](attachment:F)
Figure 2. Adult trapping facility at Rocky Reach Dam. The pneumatic arm (left and top right) activates a gate that guides fish into a holding vessel (bottom right, shown lifted). Trapped fish are either allowed to exit the holding vessel by opening the gate, or are lifted for processing.
Figure 3. Rocky Reach Trap Layout

References


### Activities Occurring at Tumwater Dam

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1 Type and duration of activities subject to change in any given year

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1 Type and duration of activities subject to change in any given year
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at Rocky Reach Dam in Wenatchee, Washington, on Tuesday, May 21, 2013, from 9:45 am to 1:00 pm. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Mike Schiewe will coordinate with Bob Rose to schedule a Comparative Survival Study (CSS) presentation for a future Coordinating Committees meeting (Item II-A).
- Steve Hemstrom will coordinate a meeting between Chelan PUD Information Technology (IT) staff and Douglas PUD Information Systems (IS) staff regarding file sharing options (Item III-A).
- Chelan PUD will revise the background language of the draft Statement of Agreement (SOA) on maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) at Rock Island and Rocky Reach, per the Coordinating Committees’ recommendations; and will redistribute the revised SOA that will be up for approval at the Coordinating Committees meeting on June 25, 2013 (Item IV-A).
- Mike Schiewe will brief Bob Rose on the revisions that were discussed for the draft SOA on maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) at Rock Island and Rocky Reach (Item IV-A).

**DECISION SUMMARY**

- No SOAs were approved at this meeting.
AGREEMENTS

- There were no agreements at today’s meeting.

REVIEW ITEMS

- The draft 2013 Subyearling Study Plan was distributed to the Coordinating Committees by Kristi Geris on April 24, 2013, for a 30-day review with comments due to Tom Kahler no later than May 24, 2013.

REPORTS FINALIZED

- The Douglas PUD 2012 Final Wells Post-Season Bypass Report that was approved at the Coordinating Committees meeting on March 26, 2013, was finalized and distributed to the Coordinating Committees on May 3, 2013.

I.  Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

- Bob Rose requested that discussion of a potential CSS presentation be added at the beginning of the agenda.
- Steve Hemstrom requested that a brief moment be added to distribute final hardcopies of the Chelan PUD 2013 10-year No Net Impact (NNI) Comprehensive Progress Report.

A.  Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft April 23, 2013 meeting minutes. Four outstanding comments were discussed as follows:

- Regarding the Columbia River Inter-Tribal Fish Commission (CRITFC) request to sample and tag sockeye at Wells Dam, it was clarified that Jeff Fryer indicated that the total number of sockeye tagged would be reduced if the run size is less than expected.
• Regarding the Rock Island Dam fish spill operations, Steve Hemstrom confirmed that subyearling Chinook were released from Chelan Falls Hatchery on April 11, 2013.
• Regarding trapping activities at Tumwater and Dryden dams, Hemstrom clarified that Alene Underwood provided a Gantt chart for adult—not juvenile—trapping activities at both dams.
• Regarding the Hatchery Committees update on the Spring Chinook Pilot Trapping Study at Rocky Reach, Kristi Geris clarified that the deadline for the Hatchery Committees to approve the study was purposely scheduled 5 days prior to the Coordinating Committees deadline (May 1, 2013) to approve the study.

Geris said that all other comments and revisions received on the draft meeting minutes were incorporated, and the draft April 23, 2013 meeting minutes were approved, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Yakama Nation
A. CSS Presentation/Workshop Proposal (Bob Rose)
Bob Rose said that the CSS Annual Meeting on April 30, 2013, in Vancouver, Washington, included presentations of several topics that may be of interest to the Coordinating Committees. He suggested having a CSS presentation at a future Coordinating Committees meeting—possibly in July 2013 or August 2013. A proposal for a CSS presentation/workshop was distributed to the Coordinating Committees by Emily Pizzichemi on May 17, 2013.

Teresa Scott said that she would be interested in a CSS presentation. She noted the importance of considering basin-wide issues, and establishing and maintaining dialogue with the larger scientific community. Scott also added that materials presented may facilitate discussions of how this information fits with adaptive management of the HCPs.

Bryan Nordlund said that after speaking with Michele DeHart from the Fish Passage Center (FPC), he thinks it would be useful for the Coordinating Committees to hear a CSS presentation, and then have a separate meeting to discuss how the information fits with the HCPs. He added that there are differences between the HCP goals and objectives, and the analytical approaches used in the CSS. Steve Hemstrom agreed with Nordlund about the
differences between the CSS and the HCPs. He added that the HCPs incorporate the use of objective performance standards that the CSS may not align with, and so he is cautious of some assertions put forward in the CSS. Hemstrom said, however, that the information from a CSS presentation could be beneficial.

Joe Miller said that with so much new, and sometimes conflicting, information, it is hard to know what ideas to bring to the Coordinating Committees for review. He cited, for example, a paper that was recently published in the Proceedings of the National Academy of Science (PNAS) titled, “Influence of multiple dam passage on survival of juvenile Chinook salmon in the Columbia River estuary and coastal ocean” by Rechisky, Welch, et al., on April 23, 2013, that directly contrasts with views held by the CSS investigators. Miller provided the Rechisky, Welch, et al. (2013) paper to Kristi Geris, and Geris distributed it to the Coordinating Committees on May 22, 2013. Scott also provided a FPC review of the Rechisky, Welch, et al. (2013) paper to Geris, which she distributed to the Coordinating Committees on May 23, 2013.

Jim Craig agreed that more information would be useful, and hearing a CSS presentation could contribute to a larger view and perspective. Kirk Truscott said that he is also interested in hearing a CSS presentation, and added that he thinks better science comes from seeing all views. Tom Kahler said that he is also interested in hearing about different interpretations of how the CSS and HCPs relate. He added that this is information that the Coordinating Committees should consider and understand before coming to any conclusions.

Scott said that the HCPs have a good process and that she shares the trepidation expressed by others, but she prefers addressing any questions about HCP survival studies and those reported by the CSS head on within the Coordinating Committees rather than reacting to outside questions. Mike Schiewe agreed that the HCP process has been very successful, and that a CSS presentation would be useful. He added that, like Nordlund suggested, it will be good to have a follow-up discussion, separate from the presentation, to discuss how the CSS fits with the HCPs. Scott suggested that Grant PUD be involved in the HCP discussions as well, and Schiewe replied that because Grant PUD operates under a separate (and unique) settlement agreement, they should plan to handle any follow-up separate from the
Coordinating Committees and specifically as it relates to their Settlement Agreement. Rose suggested compiling a list of related literature that is available for review, such as the Rechisky, Welch, et al. (2013) paper that Miller cited.

Nordlund said that, over the years, the National Marine Fisheries Service (NMFS) has provided Mid-Columbia PUD survival studies to DeHart upon her requests, but she has never provided any feedback. Hemstrom said that Chelan PUD has also provided a complete list of Chelan PUD’s HCP survival studies to staff involved with the CSS with no feedback, and Kahler added that Douglas PUD has provided their studies, as well. Schiewe said that he will coordinate with Rose to schedule a CSS presentation for a future Coordinating Committees meeting.

III. Douglas PUD

A. PRESENTATION: SharePoint HCP Document Repository and File-sharing Site (Brian Russell and Julene McGregor)

Tom Kahler said that this presentation is the culmination of a long-term discussion on how to replace the ftp site and document repository for all HCP committees. He recalled that, at one point, Douglas PUD suggested developing a Document Management Tool (DMT) site. However, after discussing this option with the Douglas PUD IS Department (Douglas PUD IS), the idea for using a SharePoint site arose. Kahler said that Douglas PUD IS started developing a SharePoint site that could be used by all HCP committees, and as requested by the Coordinating Committees, this presentation was arranged to demonstrate the site’s capabilities. Kahler introduced Brian Russell, Douglas PUD IS Supervisor, and Julene McGregor, Network Administer.

Russell said that he hoped this presentation would generate feedback on needs and expectations from the Coordinating Committees. He reviewed the main landing page for the site and said that the page contains the basic setup for any extranet site. As currently set up, the main landing page contains a list of recently modified documents, and also a HCP member contact list. Russell reminded the Coordinating Committees that the site, and therefore all information contained within the site, is password-protected. He said that different permissions can be given to different users. For example, Anchor QEA, as an
administrator, would have more permissions than other users. All HCP documents can be accessed via a “Documents” link located on the sidebar on the main landing page. Under this link, sub-categories are listed that organize documents into agendas, agreements, meeting minutes, reports, and so on. Each of these categories has filter capabilities for sorting the documents by different criteria.

Mike Schiewe asked if the agreements page is set up to differentiate between informal agreements and more formal SOAs, and Russell replied that a specific filter can be developed to sort those documents. Bryan Nordlund asked if modifications can be made to the site on an “as needed” basis, and Russell replied that modifications can be made, but recommended that the changes be by consensus and thoroughly vetted to minimize unnecessary changes and confusion. Nordlund also asked if hyperlinks can be embedded within documents that link to related documents that are located elsewhere on the SharePoint site. Russell replied that this is also possible; however, he warned that if a document changes locations on the SharePoint site, the hyperlink becomes inactive (i.e., broken). He suggested, instead, adding tags to documents which allows them to be linked without embedding hyperlinks.

Teresa Scott asked about differentiating between draft and final documents, and Russell explained that a “Current State” is attached to each document which indicates the document version. Scott also asked about viewing each reviewer’s tracked changes, and Schiewe replied that the current review process will stay the same; all edits received will be incorporated into the draft minutes by Kristi Geris, and only changes requiring additional discussion will be shown in tracked changes in the revised draft for approval. Scott said that she would also like to see the meeting minute attachments linked in some way to the minutes, and Russell replied that this can be achieved through tagging.

Russell explained that the SharePoint site has several methods available for searching documents, such as performing keyword searches, and filtering by author, file type, date, and so on. Documents can also be searched by the “Document editing work flow” and “version history,” where previous versions of a particular document can be accessed by searching the editing history of the document. Nordlund asked about potential compatibility issues, and Russell replied that the same compatibility requirements that are contained on a respective
personal computer (PC) apply to the SharePoint site. McGregor clarified that if a PC cannot 
open certain documents, the same documents will not be accessible via the SharePoint site 
on the same PC. She added that frequently used documents are typically compatible with 
the SharePoint site itself. Russell said that “help documents” are also saved to the SharePoint 
site for troubleshooting issues. Also, a keyword search manual is available that contains 
suggestions for different types of keyword and operator searches. Lastly, Russell explained 
the “document drop” where new documents can be uploaded to the SharePoint site. Scott 
asked if there were any historical documents (i.e., pre-HCPs) that the Coordinating 
Committees would like to upload to this site, and Schiewe replied that there may be a few. 
Kahler added that he has a few to upload to the site. Schiewe asked if documents can be 
associated with certain agenda items, and Russell replied that this could possibly be done 
through tagging.

Scott asked if Douglas PUD and Chelan PUD are both using this SharePoint system to house 
their respective HCP documents; and then Schiewe also asked how files will be kept 
separate, e.g., Douglas PUD and Chelan PUD filing requirements, Coordinating Committees’ 
and Hatchery Committees’ documents, etc. Kahler said that Douglas PUD currently keeps a 
separate filing system that is not shared, and Steve Hemstrom said that Chelan PUD 
currently does not keep a completely separate filing system. Schiewe asked Chelan PUD if 
they would be comfortable with keeping official records in this SharePoint system, and also 
asked Douglas PUD if SharePoint will be the official system for Wells Dam. Kahler replied 
that SharePoint will be the official system for Wells Dam, and added that, Douglas PUD will 
host the SharePoint extranet site for Wells Dam archiving and file-sharing purposes 
according to Douglas PUD license requirements—this is at no cost to any other entity. He 
said that currently, all HCP agendas and meeting minutes are saved to the site; however, 
only Douglas PUD—not Chelan PUD—agreements and SOAs are saved to the site. Joe 
Miller said that Chelan PUD will likely develop their own system in addition to the 
SharePoint site. Kahler also noted that, because the Coordinating Committees oversee the 
other HCP committees, the Coordinating Committees would have access to all HCP 
committees’ documents, but not the other way around. Lastly, Kahler noted that the screen 
layout, or view, can be customized without changing the basic functions of the site. Russell
demonstrated the different view options for the main landing page, and said that each view is unique to the user login.

Schiewe said that the next steps are for Chelan PUD to become engaged to see how they want to coordinate their filing process with this SharePoint site, and Hemstrom said that he will coordinate a meeting between Chelan PUD IT staff and Douglas PUD IS staff regarding file sharing options. Russell noted that the system is the newest version of the SharePoint software (SharePoint 2013).

**IV. Chelan PUD**

A. *Draft Sub-yearling Chinook SOA – Continue Three Years in Phase III (Additional Juvenile Studies) (Steve Hemstrom)*

Steve Hemstrom said that the draft SOA maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) at Rock Island and Rocky Reach was distributed to the Coordinating Committees by Emily Pizzichemi on May 17, 2013. Hemstrom said that the SOA summarizes discussions held at previous meetings; and he noted that this SOA only pertains to Rock Island and Rocky Reach, as opposed to a joint SOA including the Wells HCP, as discussed at the Coordinating Committees meeting on April 23, 2013. Hemstrom said that Douglas PUD decided to wait on a Wells SOA until after completion of their 3-year juvenile life history study.

Kirk Truscott suggested including current constraints to conducting a survival study in the background section of the SOA, such as size of tags relative to fish size, ability to tag fish sizes representative of the entire outmigrant population, life history variation affecting model assumptions, the high degree of variation of size of fish, and so on. Truscott said that including this type of information provides a basis for comparison three years from now when subyearling survival studies are re-evaluated. Hemstrom agreed with Truscott and added that this additional information is also useful for others who are not as involved in the process. Hemstrom said that Chelan PUD will revise the background language of the draft SOA and will redistribute the revised SOA to the Coordinating Committees. Schiewe said that he will brief Bob Rose on the discussed revisions. Chelan PUD will request approval of the revised SOA at the Coordinating Committees meeting on June 25, 2013.
B. *Chelan PUD 2013 10-year NNI Comprehensive Progress Report (Steve Hemstrom)*

Steve Hemstrom distributed hardcopies of the final Chelan PUD 2013 10-year NNI Comprehensive Progress Report.

C. *Visit Rocky Reach Right Bank Ladder Trap – Site of Rocky Reach Spring Chinook Broodstock Pilot Trapping Operation (Steve Hemstrom and Lance Keller)*

Steve Hemstrom and Lance Keller led a tour of the Rocky Reach right bank ladder trap. They provided an overview of the trap operation, including a demonstration of the trap in action; and they also discussed how the trap will be utilized for the Rocky Reach spring Chinook broodstock pilot study.

V. *Hatchery and Tributary Committees Update (Mike Schiewe)*

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees meeting on May 16, 2013:

- **Small Projects Program Applications**: The Tributary Committees reviewed two Small Projects Program Applications: *Beaver Creek Late Season Well Installation Project* and *Antoine Creek Feedlot Relocation Project*. The Tributary Committees were unable to make a funding decision for the Beaver Creek proposal due to insufficient information. Tom Kahler said that regarding the Antoine Creek proposal, the Tributary Committees decided to table the proposal because Chris Fisher (CCT) thought there was a possibility that the CCT would fund the entire project. Kahler said that Fisher planned to check into this and get back to the Tributary Committees.

- **Budget Amendment**: The Wells Tributary Committee received a budget amendment request from Cascade Columbia Fisheries Enhancement Group (CCFEG) on the Methow/Chewuch Shallow Groundwater Monitoring Project. Kahler said that the Wells Tributary Committee requested and received additional information and, since then, has approved the budget amendment request.

- **General Salmon Habitat Program Pre-proposals**: The Tributary Committees are in the process of reviewing pre-proposals. Nine site visits are planned for projects located in the Okanogan, Methow, Entiat, and Wenatchee basins. The Tributary Committees
will visit project sites in the Okanogan and Methow basins on May 29 and 30, 2013, and in the Wenatchee and Entiat basins on June 5 and 6, 2013.

- **Request from the Upper Columbia Salmon Recovery Board:** The Upper Columbia Salmon Recovery Board asked the Tributary Committees if they would be interested in funding the completion of the Monitoring Plan for the Methow Basin, which is part of the Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan. The Tributary Committees indicated that they were not interested.

- **Next Steps:** The next Tributary Committees meeting will be on June 13, 2013.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees’ meeting on May 15, 2013, which was hosted by Douglas PUD:

- **Hatchery Genetic Management Plan (HMG) Update:** NMFS is approaching resolution on permitting some programs, while other programs are still being evaluated because of conflicting analytical results and different interpretations. The Wenatchee programs, including the Chiwawa, Nason Creek, and White River, are on track to be completed by mid-June 2013. All three programs involve broodstock collection at Tumwater Dam (TWD), and NMFS estimates having permits ready no later than June 14, 2013. Trapping is planned to begin June 17, 2013. Regarding the Methow, NMFS is still working on issues related to the size of the steelhead programs with the fishery co-managers.

- **Wells Summer Chinook HGMP:** Douglas PUD recently completed a draft HGMP for the Wells summer Chinook program. The Hatcheries Committees reviewed the proposed incorporation of up to 10 percent natural origin recruits (NORs), and supported submission of the HGMP.

- **Wells Hatchery Master Plan:** The Wells Hatchery Master Plan is out for a 60-day review. Douglas PUD is consulting with HDR Engineering, Inc. (HDR) on the modernization plans, and a meeting with HDR is being arranged to discuss the engineering plans with the Hatchery Committees. Original construction of Wells Dam was completed in 1967.
- **Spring Chinook Pilot Trapping Study at Rocky Reach update**: Chelan PUD indicated that they plan to move forward with the Rocky Reach Pilot Study. Joe Miller said that the planned trap operations may be temporarily altered due to turbid water.

- **Suggestions for a Monitoring and Evaluation (M&E) Request for Proposal (RFP) Technical Review Panel**: The Hatchery Committees discussed Chelan PUD’s issuance of a M&E RFP. The Hatchery Committees discussed that they would like to be involved with ranking proposals; however, those agencies that also want to submit proposals will be conflicted out. Agencies that have no conflict of interest will be joined by recommended reviewers.

**VI. HCP Committees Administration (Mike Schiewe)**

**A. Next Meetings**

The next scheduled Coordinating Committees meeting is June 25, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington. The July 23, 2013 and August 27, 2013 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

**List of Attachments**

Attachment A  List of Attendees
## Attachment A
### List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>John Ferguson</td>
<td>Anchor QEA, LLC</td>
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<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Lance Keller*</td>
<td>Chelan PUD</td>
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<td>Joe Miller</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Brian Russell</td>
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<td>Julene McGregor</td>
<td>Douglas PUD</td>
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<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Bob Rose*†</td>
<td>Yakama Nation</td>
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<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Teresa Scott*</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
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**Notes**

* Denotes Coordinating Committees member or alternate
† Joined by phone
**FINAL MEMORANDUM**

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<tr>
<th>To:</th>
<th>Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees</th>
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<tr>
<td>From:</td>
<td>Michael Schiewe, Chair</td>
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<tr>
<td>Cc:</td>
<td>Kristi Geris</td>
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<tr>
<td>Re:</td>
<td>Final Minutes of the June 25, 2013 HCPs Coordinating Committees Meeting</td>
</tr>
<tr>
<td>Date:</td>
<td>July 30, 2013</td>
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The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Gateway Hotel, in SeaTac, Washington, on Tuesday, June 25, 2013, from 9:30 am to 11:30 am. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Chelan PUD will finalize the revised draft Statement of Agreement (SOA) on maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) at Rock Island and Rocky Reach, as approved at the Coordinating Committees meeting on June 25, 2013, and will provide the final SOA to Kristi Geris for distribution to the Coordinating Committees (Item II-A). *(Note: Steve Hemstrom provided the final SOA on July 2, 2013, and Geris distributed the SOA to the Coordinating Committees the same day.)*

- Steve Hemstrom will provide Chelan PUD’s final compiled comment letter on the Chelan County Noxious Weed Board Integrated Aquatic Vegetation Management Plan (IAVMP) to Kristi Geris for distribution to the Coordinating Committees (Item II-B). *(Note: Hemstrom provided the final comment letter on June 26, 2013, and Geris distributed the letter to the Coordinating Committees the same day.)*

- Steve Hemstrom will provide responses to Chelan PUD’s final compiled comment letter on the Chelan County Noxious Weed Board IAVMP to Kristi Geris for distribution to the Coordinating Committees (Item II-B).

- Mike Schiewe will contact Keith Truscott regarding Chelan PUD’s HCP file sharing options (Item II-C).
• Kirk Truscott will contact Keith Wolf regarding the feasibility of assisting Douglas PUD with their subyearling study tagging efforts (Item III-A).
• Bob Rose will finalize scheduling of a comparative survival study (CSS) presentation by the Fish Passage Center (FPC), tentatively scheduled for the Coordinating Committees meeting on August 27, 2013 (Item V-A).
• Teresa Scott and Bob Rose will develop a draft agenda for the CSS presentation by the FPC, tentatively scheduled for the Coordinating Committees meeting on August 27, 2013 (Item V-A).

DECISION SUMMARY

• The SOA maintaining Rock Island and Rocky Reach Subyearling Chinook in Phase III (Additional Juvenile Studies) for three years was approved by the Rock Island and Rocky Reach HCP Coordinating Committees representatives present (Item II-A). 
  (Note: Teresa Scott indicated Washington Department of Fish and Wildlife [WDFW] approval of the SOA via email on June 21, 2013.)
• The amendment to the final SOA for Wells Dam 2013 Pacific Lamprey Operations was approved by the Wells HCP Coordinating Committee representatives present. The Committee agreed that it would suffice to simply note in the meeting minutes the approved change in start date for lamprey operations, rather than amending the final SOA (Item III-C). (Note: Teresa Scott indicated WDFW approval of the amended SOA via email on June 21, 2013.)

AGREEMENTS

• Coordinating Committees representatives present agreed to review the Phase III (Additional Juvenile Studies) designation for subyearling Chinook under the Wells, Rocky Reach, and Rock Island Hydroelectric Projects HCPs in January 2015 (Item II-A).
• Coordinating Committees representatives present agreed to amend the start date for research identified in the final SOA for Wells Dam 2013 Pacific Lamprey Operations, from August 1, 2013, to no earlier than July 15, 2013 (Item III-C). (Note: Teresa Scott indicated WDFW approval to amend the SOA for Wells Dam 2013 Pacific Lamprey Operations via email on June 21, 2013.)
REVIEW ITEMS

- “Assessment of Factors Limiting the Productivity of Summer Chinook Salmon in the Mid-Columbia River” by Hillman, Murauskas, and Hemstrom (2013), which was distributed to the Coordinating Committees on June 26, 2013, is available for review, with comments due to Steve Hemstrom (Item II-A).

REPORTS FINALIZED

- There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

- Steve Hemstrom added: 1) a Rocky Reach Turbine Unit 2 (C2) outage update; and 2) a comparative survival study (CSS) presentation/workshop update.
- Bob Rose requested an update on Chelan PUD staffing.
- Kirk Truscott requested an update on the Spring Chinook Pilot Trapping Study at Rocky Reach.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft May 21, 2013 meeting minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. The draft May 21, 2013 meeting minutes were approved as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Chelan PUD

A. DECISION: Rocky Reach and Rock Island Sub-yearling Chinook SOA (Steve Hemstrom)

Steve Hemstrom said that the revised draft SOA maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) at Rock Island and Rocky Reach was distributed to the
Coordinating Committees by Kristi Geris on June 24, 2013. Hemstrom said that the revised SOA incorporates comments received from Kirk Truscott and Teresa Scott, including revising the background language to focus on tag technology and limiting factors to conducting a full Project survival study; and adding to the SOA that tag technology and study design will be assessed annually. Hemstrom explained that maintaining subyearling Chinook in Phase III (Additional Juvenile Studies) for up to three years, as stated in the revised SOA, assumes no further technological advances are available to conduct a survival study. He said that, with regards to assessing technology and study design on an annual basis, Chelan PUD will provide a brief update, as opposed to a full presentation with multiple experts. He added, however, that in three years, a more detailed presentation will be provided. Bryan Nordlund suggested that the first annual assessment also include an update on any new information for the proportion of summer/fall Chinook that migrate as subyearlings versus as yearlings or older. Hemstrom proposed January 2015 for the first annual assessment. Tom Kahler said that Douglas PUD plans to continue collecting summer/fall Chinook life history data through at least the end of this year, and that a report will be available early next year. Kahler suggested aligning the annual assessment with the release of Douglas PUD’s reports. Coordinating Committees representatives present agreed to revisit the Phase III (Additional Juvenile Studies) designation for subyearling Chinook under the Wells, Rocky Reach, and Rock Island Hydroelectric Projects HCPs in January 2015. The SOA maintaining Rock Island and Rocky Reach Subyearling Chinook in Phase III (Additional Juvenile Studies) for three years was approved by the Rock Island and Rocky Reach HCP Hatchery Committees representatives present. (Note: Scott indicated WDFW approval of the SOA via email on June 21, 2013.) Chelan PUD will finalize the revised draft SOA, as approved, and will provide the final SOA to Geris for distribution to the Coordinating Committees. (Note: Hemstrom provided the final SOA [Attachment B] on July 2, 2013, and Geris distributed the SOA to the Coordinating Committees the same day.)

Hemstrom said that the manuscript, “Assessment of Factors Limiting the Productivity of Summer Chinook Salmon in the Mid-Columbia River” by Hillman, Murauskas, and Hemstrom (2013), will soon be distributed to the Coordinating Committees and will be available for review. He said that Hillman requested that the Coordinating Committees review the report and provide comments if so inclined; however, official approval of the report by the Coordinating Committees is not being requested. Nordlund noted that this
report provides good background information for Chelan PUD’s subyearling SOA.  (Note: Hemstrom provided the draft report on June 26, 2013, and Geris distributed the report to the Coordinating Committees the same day.)

B. Comments on the Chelan County Noxious Weed Board Integrated Aquatic Vegetation Management Plan (Steve Hemstrom)

Steve Hemstrom said that Chelan PUD prepared a comment letter on the Chelan County Noxious Weed Board IAVMP. The Chelan County Noxious Weed Board IAVMP and Chelan PUD’s draft comments on the plan were distributed to the Coordinating Committees by Kristi Geris on June 3, 2013. National Marine Fisheries Service (NMFS) comments on Chelan PUD’s draft comment letter were distributed to the Coordinating Committees by Geris on June 13, 2013. Hemstrom said that he will provide Chelan PUD’s final compiled comment letter on the Chelan County Noxious Weed Board IAVMP to Geris for distribution to the Coordinating Committees. (Note: Hemstrom provided the final comment letter [Attachment C] on June 26, 2013 following the meeting, and Geris distributed the letter to the Coordinating Committees the same day.) Hemstrom said that the main concerns noted in the comment letter included: 1) the use of Triclopyr triethylamine (TEA); and 2) the potential effects to bull trout, sturgeon, juvenile lamprey, and other sensitive and listed species that reside in close proximity to the application area. He added that the IAVMP cited a NMFS Biological Opinion (BiOp) that addressed Triclopyr butoxyethyl ester (BEE)—not Triclopyr TEA. Bob Rose asked if Triclopyr TEA eradicates plants after one application, and Bryan Nordlund recalled that this same discussion came up not too long ago; therefore, he presumed that Triclopyr TEA requires reapplication. Hemstrom said that, if and when received, he will provide responses to Chelan PUD’s comment letter to Geris for distribution to the Coordinating Committees.

C. Chelan PUD Information Technology (IT) Discussion Regarding HCP Document Repository (Steve Hemstrom)

Steve Hemstrom said that Chelan PUD is still considering HCP file sharing options. Tom Kahler said that Douglas PUD is forging ahead and populating the SharePoint site with Douglas PUD HCP documents, and Mike Schiewe said that he will contact Keith Truscott to further discuss Chelan PUD’s HCP file sharing options.
D. Rocky Reach C2 Outage Update (Lance Keller)

Lance Keller recalled that at the Coordinating Committees meeting on December 11, 2012, the representatives agreed to Chelan PUD’s request for a C2 outage at Rocky Reach Dam during the last week of August 2013 for the mandatory repair of the cracked rotor in the C2 unit. It was agreed that the same alternative Rocky Reach Surface Collector Operation would be employed as was approved for the Turbine Unit 1 (C1) outage in April 2013. Keller said that Turbine Unit 5 (C5) is now planned to be taken offline at the end of August 2013, and that Turbine Unit 10 (C10) is already offline, with no set return date. He said, therefore, that C2 is now scheduled to be offline January through mid-May 2014; and he added that the outage is scheduled for two weeks longer than the C1 outage earlier this year. Keller said that because no negative effects, such as impingement, descaling, or other impacts due to increased velocity, resulted from implementation of the Rocky Reach Juvenile Bypass Final Operating Plan for April 2013, Chelan PUD plans to implement the same plan, as agreed upon in December 2012.

Bryan Nordlund asked what efforts had been made to adjust the dates of the C2 outage to avoid outmigration dates, as opposed to finding ways to minimize potential effects. Steve Hemstrom said that Chelan PUD always attempts to conduct maintenance during the offseason, and that the C1 and C2 outages are anomalies. Nordlund also noted that fish size will be different in mid-May than it was during the C1 outage. Kirk Truscott asked if Chelan PUD plans to conduct similar pre-season testing of increased C1 flow with marked fish releases, and Keller replied that pre-season testing is planned and will be further discussed with the Coordinating Committees as the outage approaches.

E. Chelan PUD Staffing Update (Steve Hemstrom)

Steve Hemstrom reviewed current Chelan PUD staffing, as shown in the following table.
Hemstrom said that the former Chelan PUD Fisheries Manager, Joe Miller, and a former Chelan PUD Senior Fish Biologist, Josh Murauskas, are now both at Anchor QEA. Lance Keller explained that Ian Adams is a new hire scheduled to start July 8, 2013, to support Alene Underwood. Keller said that Adams has been Chelan PUD’s contractual manager, and so he is already cognizant of Chelan PUD hatchery operations. Hemstrom said that Chelan PUD is currently recruiting additional staff; however, a Fisheries Manager position has not yet been posted. Keller added that the open Senior Biologist position closes on July 18, 2013.

F. *Spring Chinook Pilot Trapping Study at Rocky Reach Update (Lance Keller)*

Lance Keller reported that the Spring Chinook Pilot Trapping Study at Rocky Reach Dam was conducted for a total of 59 trapping hours over the course of 15 days. He said that 8 targeted fish were trapped out of 34 total trapping opportunities (i.e., identified adipose fin-clipped, singled-out fish). Steve Hemstrom added that there was no bycatch or incidentals. Keller said that, at the beginning of the study, issues with turbidity limited visibility from the viewing window. He said that Chelan PUD tracked observations with turbidity, camera location, and other notes regarding trapping logistics that may help improve trapping efficacy. Keller said that Chelan PUD plans to provide a summary of these findings, including documented trap times and holding times prior to release. Mike Schiewe asked whether a “non-trap” was defined as a trapping opportunity where the fish was not captured. Keller replied yes, and clarified that the fish was identified and the trap and bubbler were
activated, but the fish was not captured. Bryan Nordlund asked if feedback had been received on what may have prevented trapping targeted fish. Hemstrom replied that preliminary thoughts include limited visibility—and that perhaps additional cameras could improve trapping efficacy. He added that, also, the trap door operates rather slowly. Keller also added that the closing door may cause a change in water velocity, which might startle the fish; so altering the trap door to be more porous is another option being considered.

III. Douglas PUD

A. Subyearling Study Field Work (Tom Kahler)

Tom Kahler said that over the past two years of the Wells Project Subyearling Chinook Life History Study sample dates have been selected based on pre-tagging sampling efforts that estimate when sufficient fish at a minimum fork length are present (“size scoping”). Kahler said that, typically, sampling starts in late-May, but this year, sampling started on May 10, 2013. Sampling sites included: 1) Gebber’s Landing, located downstream of the confluence of the Okanogan and Columbia rivers; 2) Washburn, located near the upstream end of Cassimer Bar (also known as “Washburn Island”); and 3) Wells Dam Forebay. Kahler said that the minimum fish size for passive integrated transponder (PIT) tagging is typically about 58 to 60 millimeters (mm). He said that, on May 10, 2013, subyearling Chinook sampled at Gebber’s Landing had a mean fish size of 52 mm, and only 16 percent were taggable. At the Washburn site, mean fish size was smaller at 46 mm, and 0 percent were taggable. Sampling was repeated on May 17, 2013. At Gebber’s Landing, mean fish size was the same at 52 mm, but this time 26 percent were taggable. At the Washburn site, 1 percent was taggable. In the Wells Dam Forebay, mean fish size was 44 mm, and 5 percent were taggable. Kahler said that, after 11 days, subyearling Chinook sampled at Gebber’s Landing had a mean fish size of 56 mm, and at that point 33 percent were taggable. At the Washburn site, mean fish size was then 55 mm, and 26 percent were taggable. Kahler said that sampling continued again on June 11 and 14, 2013. He said that, this year, there was notably high variability in fish size at sampling sites. For example, at Gebber’s Landing, the percent of fish that were taggable went from 44 percent to 6 percent and then back up to 49 percent over three consecutive weeks. In the Wells Dam Forebay, there were three weeks of increasing fish size, and then a decrease. He said that Douglas PUD is interested in sampling another year to better understand the variability observed this year. Bryan Nordlund asked if fish body width and
depth measurements were also collected, and Kahler replied that only length measurements have been recorded. Kahler noted that tagging could have been conducted every week that crews sampled because some fish of taggable size were collected each week—at least at the Gebber’s site; however, Biomark, the company that Douglas PUD contracts for tagging, is not on standby the entire scoping period but is only under contract for a set period commencing on a date determined each year from the size scoping trips. When asked about the seining operations, Kahler said that one sampling crew typically consists of five staff with at least one boat; but he noted that the job can be accomplished with as few as four people, while six is ideal. The net pen is near the sample site, and the PIT tag crew works from a barge that is moved between tagging sites. Crews seine for three days straight each week, and then the tagging crew tags for three days straight starting the day after the first seining day. Bob Rose asked about recaptures, and Kahler replied that, typically, some recaptures are desirable for obtaining growth and location data; however, last year, there were more recaptures than preferred and so changes were made to the schedule to reduce recapture numbers. He added that he was unsure of the exact number of recaptures this year. Kirk Truscott said that Keith Wolf and his crew are tagging in the Okanogan River, and indicated that they may be available to assist Douglas PUD with their tagging effort. Kahler replied that if the Colville Confederated Tribes (CCT) is available and has mobile equipment for tagging on-site, that would be helpful; he said that a limiting factor has been the size of the tagging crew and rate of tagging. Truscott said that he will contact Wolf regarding the feasibility of assisting Douglas PUD with their subyearling study tagging efforts. Nordlund asked if the CCT still operated screw traps on the Okanogan River, and Truscott replied that, due to high water levels and debris, the CCT has not been actively tagging at the two screw traps located on the Okanogan River.

B. **Wells Dam Bypass Operations (Tom Kahler)**

Tom Kahler said that, compared to last year, the Wells Dam 2013 spill season has been routine. He said that barriers were pulled from Spillway Number 6 on May 23, 2013, and reinstalled on May 30, 2013, as described in an email distributed to the Coordinating Committees by Kristi Geris on May 30, 2013. Kahler said that barriers may need to be pulled again soon due to heavy rain last week; and he added that flows past Wells Dam increased from 141 thousand cubic feet per second (kcf/s) on June 17, 2013, to 192 kcf/s on June 23, 2013. He said that flows in the range of 180 kcf/s are expected all week, with side flows of
about 15 kcfs. Kahler added, as a side note, that 89 bull trout have passed Wells Dam this season, which is higher than average.

Bryan Nordlund asked if Wells Dam has experienced total dissolved gas (TDG) compliance issues this year after installing the new TDG monitoring station at Washburn Island, and Kahler replied that there have been some issues, but not during the 2012 spill season.

C. 2013 Adult Lamprey Passage and Enumeration Study (Tom Kahler)
Tom Kahler recalled that, at the Coordinating Committees meeting on February 26, 2013, the Coordinating Committees approved the SOA for Wells Dam 2013 Pacific Lamprey Operations scheduled to commence on August 1, 2013. Kahler said that Douglas PUD is now requesting that lamprey operations commence the week of July 15, 2013. An amended final SOA for Wells Dam 2013 Pacific Lamprey Operations, indicating this new proposed start date, was distributed to the Coordinating Committees by Kristi Geris on June 18, 2013. Coordinating Committees representatives present agreed to amend the start time in the final SOA for Wells Dam 2013 Pacific Lamprey Operations, from August 1, 2013, to no earlier than July 15, 2013. The Committee also agreed that it would suffice to simply note in the meeting minutes the approved change in start date for lamprey operations, rather than amending the final SOA. (Note: Teresa Scott indicated WDFW approval to amend the SOA for Wells Dam 2013 Pacific Lamprey Operations via email on June 21, 2013.)

D. Wells Dam Trapping Activities (Tom Kahler)
Tom Kahler said that June 26, 2013, is the last day of spring Chinook trapping at Wells Dam, and then trapping will shift to the Methow Hatchery outfall. He said that, in the meantime, trapping will continue at the Twisp weir; and added that 54 met-comps have been collected at Wells Dam, and 5 Twisp-origin adults have been collected at the Twisp Weir. Summer Chinook trapping in the Wells Dam west fish ladder for Grant PUD begins July 1, 2013. Sockeye trapping for the tagging effort by the Columbia River Inter-Tribal Fish Commission (CRITFC) also begins July 1, 2013. Summer Chinook trapping in the Wells Hatchery volunteer channel for Douglas PUD begins July 8, 2013. Kahler said that Wells Hatchery is also the Eastbank outfall’s (EBO’s) contingency trapping location in the event that broodstock cannot be collected at the EBO.
Kirk Truscott asked if Douglas PUD had a contingency plan in place in case the Washington State budget is not settled and WDFW is unable to start broodstock collection on July 1, 2013. Kahler replied that Douglas PUD does not have one in place, but have been strategizing with Wells Hatchery staff and are confident sufficient summer Chinook will be collected for their programs.

IV. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees meeting on June 13, 2013:

- **Small Projects Program Applications:** The Tributary Committees reviewed two Small Projects Program Applications, both from Trout Unlimited-Washington Water Projects. They elected not to fund the Beaver Creek Late Season Well Installation Project, and based on review of the application and the sponsor’s response to additional questions, the Tributary Committees believed that the greatest benefit would occur if the ditch was completely shut down and the point-of-diversion removed, as described in an email from Tracy Hillman distributed to the Coordinating Committees by Kristi Geris on June 21, 2013. The Antoine Creek Feedlot Relocation Project was reviewed and tabled in May 2013 because there was a possibility that the CCT would fund the entire project. Based on benefits resulting from the proposed project, the CCT elected to fund the entire project.

- **Budget Amendments:** In May 2013, the Wells Tributary Committee was unable to approve an amendment request from Cascade Columbia Fisheries Enhancement Group (CCFEG) on the Methow/Chewuch Shallow Groundwater Monitoring Project without additional information. Following the May meeting, the Committee received the information they requested and approved the budget amendment. The Rocky Reach Tributary Committee approved an unexpected cost increase for Chelan-Douglas Land Trust on the Nason Creek Lower White Pine Alcove Acquisition Project.

- **Contract Extensions:** The Tributary Committees approved contract extensions for Trout Unlimited on the Chewuch River Instream Passage Project and on the Twisp River Well Conversion Project.
• **General Salmon Habitat Program Pre-proposals:** The Tributary Committees received 13 draft proposals for the 2013 round of the General Salmon Habitat Program, and nine were chosen for further consideration. Four projects were removed because they were either inconsistent with the intent of the Tributary Fund or did not have strong technical merit. The proposed projects are located in the Okanogan, Methow, Entiat, and Wenatchee basins.

• **Meeting Schedule Changes:** The Tributary Committees will meet on August 15, 2013, instead of August 8, 2013. Also, due to an Upper Columbia Salmon Recovery Board Science Conference on November 13-14, 2013, the Tributary Committees will meet November 15, 2013, instead of November 14, 2013.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees’ meeting on June 19, 2013, which was hosted by Chelan PUD. He said that members of the Priest Rapids Coordinating Committees (PRCC) were invited to the meeting to participate in discussions of shared interest.

• **Hatchery Genetic Management Plan (HMGP) Update:** NMFS provided an update on processing HGMPs, completing National Environmental Policy Act (NEPA) requirements and BiOps, and permitting for mid-Columbia hatchery programs:
  
  – **Okanogan:** Moving forward on designation of spring Chinook to be transferred from Winthrop to Chief Joseph Fish Hatchery (CJFH) for release in the Okanagan as a Section 10(j) “experimental population.” Also noted that they are waiting on a steelhead HGMP from the CCT.
  
  – **Methow:** Reported that there is an emerging agreement under *U.S. v. Oregon* for steelhead and spring Chinook programs. Some confusion remains over whether the 61,000 Methow spring Chinook that Chelan PUD previously produced at Methow Hatchery (now proposed for collection at Rocky Reach; rearing at Eastbank and Carlton; and distributed acclimation) will be included in a single BiOp for the Methow programs.
  
  – **Wenatchee:** At Nason, White, and Chiwawa, the big issue is a permit for collection of broodstock at Tumwater Dam (TWD), which is already well behind schedule. The run is early this year (expect 40 percent passage by June 22, 2013). Although existing permits cover collection, returning unassigned fish to the river is not covered. NMFS promised permits by June 28, 2013, which allows trapping
and transfer to holding at Eastbank to begin June 20, 2013. A conference call check-in is scheduled for June 27, 2013.

- **CRITFC Request to Conduct Genetic Sampling for Parentage-based Tagging of Columbia River Hatchery Programs**: WDFW introduced and sponsored a proposal by CRITFC to collect and archive tissue samples from all mid-Columbia hatchery broodstock for future use in a proposed long-term parentage analyses. Uses, for example, might include determining hatchery contribution to harvest. Although many details, including who maintains the database and who has access to it, remain to be worked out, the collection was agreed to by all members of the Hatchery Committees, including the CCT. However, the CCT deferred participation until after CJFH’s first few broodstock collections.

- **Wells Hatchery Master Plan Workshop**: Douglas PUD, with their contractor HDR Engineering, Inc. (HDR), is scheduling a workshop for the Hatchery Committees on the Wells Hatchery modernization master plan. This is being planned to facilitate input from the Hatchery Committees.

- **Hatchery Monitoring and Evaluation (M&E) Plan Assessment Targets**: Douglas PUD, along with Chelan and Grant PUDs, are convening a Hatchery Committees workgroup to complete development of M&E assessment targets.

- **Hatchery M&E Request for Proposal (RFP) Technical Review Panel**: Chelan PUD reviewed the schedule for submitting responses to their RFP for the Hatchery M&E program. Their program is for the Wenatchee, for which they share responsibility with Grant PUD. Proposals are due July 8, 2013, and Chelan PUD is currently taking recommendations for external scientists to provide peer review of submitted proposals.

V. **HCP Committees Administration (Mike Schiewe)**

A. **CSS Presentation/Workshop Update**

Mike Schiewe said that, in brief conversations with Bob Rose and Denny Rohr (on behalf of the PRCC), the tentative plan is to have a CSS presentation at the Coordinating Committees’ meeting on August 27, 2013. Schiewe said that the Coordinating Committees will hold their regular meeting in the morning; FPC will present in the afternoon to a combined gathering of the Coordinating Committees and PRCC; and the PRCC will hold their meeting the next
day (August 28, 2013), as usual. He added that, as previously discussed, follow-up discussions will be held separately as they relate to the respective HCPs and Settlement Agreement.

Schiewe recalled that the FPC requested the opportunity to talk to the Coordinating Committees, and that Teresa Scott was instrumental in making the connection. Rose said that he thinks the FPC would be interested in discussing the potential for expanding their database. Tom Kahler asked if the FPC had specified what they wanted to present, and Rose replied that he believes that the Coordinating Committees can draft the agenda. Schiewe said that the purpose of this CSS meeting is more for the FPC to present information. Rose said that he will finalize scheduling of the CSS presentation for the Coordinating Committees’ meeting on August 27, 2013; and that he will coordinate with Scott to develop a draft agenda for the CSS presentation by the FPC.

B. Next Meetings

The next scheduled Coordinating Committees meeting is July 23, 2013, to be held by conference call. The meetings on August 27, 2013, and September 24, 2013, will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

List of Attachments

<p>| Attachment A | List of Attendees |
| Attachment B | Final SOA maintaining Rock Island and Rocky Reach Subyearling Chinook in Phase III (Additional Juvenile Studies) |
| Attachment C | Chelan PUD’s final compiled comment letter on the Chelan County Noxious Weed Board Integrated Aquatic Vegetation Management Plan |</p>
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<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Lance Keller*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<tr>
<td>Kirk Truscott**†</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bob Rose*</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Bryan Nordlund**†</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
</tbody>
</table>

Notes:
* Denotes Coordinating Committees member or alternate
† Joined by phone
Statement of Agreement

Maintain Rock Island and Rocky Reach Subyearling Chinook in Phase III (Additional Juvenile Studies) for up to three years

(Approved June 25, 2013)

Agreement Statement

The Rock Island and Rocky Reach HCP Coordinating Committees (CC) were presented data regarding the status of tag technology and life-history attributes for subyearling summer Chinook in the Mid-Columbia and agree that juvenile project survival measurements are not currently feasible. The CC agrees to maintain subyearling Chinook in Phase III (Additional Juvenile Studies) for up to three years (June 2016) at Rock Island and Rocky Reach and to annually assess improvements in tag technology and study design to evaluate survival study feasibility by 2016.

Background

In April, 2013, the HCP CCs were presented key information on subyearling summer Chinook including applicable advancements in active-tag technology since 2009.

Acoustic tag technology remains insufficient to conduct Project survival studies required by the HCPs. Tag miniaturization resulting in smaller batteries and reduced battery life are insufficient for full project survival estimations, with tags still too large for small run of river subyearling Chinook originating from the Mid-Columbia. These factors, in combination with yet unknown proportions of migrant vs. non-migrant juvenile fish in the population remain impediments to project survival estimations for subyearling Chinook.
June 14, 2013

Mike Mackey, Coordinator
Chelan County Noxious Weed Board
400 Washington Street
Wenatchee, WA 98801

Dear Mr. Mackey,

Thank you for the opportunity to provide comments on the Integrated Aquatic Vegetation Management Plan (IAVMP or Plan) prepared by the Chelan County Noxious Weed Board.

Chelan PUD owns and operates two hydroelectric projects on the Columbia River, the Rock Island Project and Rocky Reach Project. Chelan PUD has a vested interest in the Plan as a result of the proposed use of an aquatic herbicide along the shoreline of Entiat Park within the Columbia River since the area is within the Rocky Reach Project Boundary licensed by the Federal Energy Regulatory Commission (FERC). Chelan PUD, License Forums¹, and Habitat Conservation Plan (HCP) Committee members² have reviewed the Plan to ensure the herbicide application pilot project is not inconsistent with resource management plans, the Habitat Conservation Plans, and other license requirements of the FERC license. Forum and HCP Committee member comments are enclosed with this letter.

Priority Considerations

- The Plan cites a NMFS Biological Opinion stating that “data suggest that Triclopyr, in the triethylamine formulation is unlikely (emphasis added) to cause significant effects to the salmonid prey base if used according to recommended application rates.” Chelan PUD is concerned with the inference Triclopyr is “safe” for salmonids or “unlikely” to have a negative impact on salmonids or their prey base is concluded from data stemming from an evaluation of the ester formulation of the herbicide for terrestrial applications. The same NMFS document states that Triclopyr harms embryonic zebra fish (a common laboratory species used to evaluate survival and developmental effects on fish) at 1 mg/l concentration. The chemical proposed is Triclopyr TEA. It appears the NMFS Biological Opinion was for Triclopyr BEE. Chelan PUD would like to be assured that

¹ Rocky Reach Fish Forum (NPS, Ecology, USFWS, Confederated Tribes of the Colville Reservation, Confederated Tribes and Bands of the Yakama Nation, WDFW, Alcoa, City of Entiat, Chelan PUD); Rocky Reach Recreation Forum (WA State Parks, Alcoa, Ecology, USFWS, BLM, NPS, City of Entiat, Chelan PUD), Rocky Reach Wildlife Forum (BLM, WA State Parks, Confederated Tribes and Bands of the Yakama Nation, Alcoa, Ecology, NPS, USFWS, Confederated Tribes of the Colville Reservation, WDFW, City of Entiat, Chelan PUD).

² Members of the HCP Committee include USFWS, NOAA Fisheries, Confederated Tribes of the Colville Reservation, Confederated Tribes and Bands of the Yakama Nation, WDFW, Douglas PUD, and Chelan PUD.
consultation was conducted on Triclopyr TEA. If consultation hasn’t been conducted on Triclopyr TEA, we would like documentation that NMFS and USFWS have approved this form of Triclopyr.

- Evaluating the adverse effects to vertebrate and invertebrate species based on acute toxicity data using a LC50 endpoint (50% mortality of a test population) is not appropriate when considering sensitive and listed species and overall ecosystem effects. Chelan PUD agrees with the Plan’s recommendation to consider toxicity endpoints that represent lowest observed effect levels or no observed effect levels. To achieve the goal of protecting sensitive and listed species, the Plan recommends a “more in-depth review of behavioral and other chronic endpoints associated with Triclopyr should be undertaken prior to conducting the study.” Chelan agrees with the recommendation and further suggests the data and report be made available for consultation with those parties (NOAA, USFWS, DOE, WDFW, Tribes, and Chelan PUD) engaged in the proposed Plan.

- It appears the Plan only considers potential effects to adult migrating Pacific Lamprey, but not potential effects on juvenile lamprey rearing in RR reservoir sediments – especially probable in and around the mouth of the Entiat given that a good number of adult lamprey appear to spawn in the Entiat River (USFWS, RD Nelle). Juvenile lamprey (ammocoetes) can rear in the mud and sand of reservoirs (usually shallower areas) for 4-5 years, prior to out-migrating to the ocean. While in the mud, ammocoetes filter feed detritus (organic material) from the water column. Chelan PUD recommends the effects Triclopyr has on juvenile lamprey be evaluated prior to any field application of Triclopyr.

**General Comments**

- Entiat Park is scheduled for closure during 2014 to complete expansive park improvements and a trail project. The timing of the park closure could be beneficial to the County for application of the herbicide pilot study. However, Chelan PUD requests that the County be in close communication during planning due to potential impacts to newly vegetated shoreline areas as part of the park and trail projects.

- An irrigation pump house (intake from the Columbia River) is located at Entiat Park that provides water to a large number of users (park and orchardists). Chelan PUD requests careful consideration and evaluation of any potential impacts to this water source prior to any herbicide application.

- 2009-2012 Rocky Reach hourly flow data for the periods August and September demonstrate that the County may achieve their intent to apply and contain the herbicide in the target location during September as flows typically taper off. This data was emailed by Michelle Smith to Mike Mackey on May 30.

- In six years of Chelan PUD’s radio-telemetry studies on adult bull trout entering the tributaries to spawn, all adult tagged bull trout left the main Columbia and entered the Entiat River by July 1. None spawned and exited back to the mainstem prior to October 25th. This is the best available data. If the herbicide is equally effective on the plants in the later period of the USFWS “work window”, then it may make sense to take advantage of the later period to reduce effects on fish and greatly reduce unwanted dispersion (increase containment) of the chemical beyond the treatment area compared with the earlier period.

- Curly leaf pondweed is also a dominant noxious weed species found in the Columbia River that is a nuisance to boaters and swimmers. It appears Triclopyr is not selective for that species. It should be considered that even if milfoil is controlled, curly leaf pondweed may fill that space and boaters
and park users will not notice much benefit from the program. Chelan PUD noted that in Appendix B of the Plan, pg 38, it is mentioned that one of the downsides of using Triclopyr is that it is only effective against milfoil and other dicots and because it can then give other aquatic weeds an opportunity to invade the area once occupied by milfoil, it should not be a sole control strategy.

Specific Plan Comments

- Pg 3. Problem Statement, first paragraph. Chelan PUD disagrees with the statement that Eurasian milfoil is an “imminent” threat to native fish and water quality. Often a generality based on literature from lakes and other areas, aquatic macrophyte beds have not been shown to lower dissolved oxygen to levels that could have adverse effects on aquatic species in the Columbia River. A recent study completed by Chelan PUD of water quality impacts in dense aquatic vegetation showed no significant problems with dissolved oxygen.
- Pg 4. Physical Characteristics. This paragraph references a winter draw down period. The Rocky Reach reservoir is considered a “run-of-river” project and does not experience winter draw downs typically encountered with “storage” projects.
- Pg. 4 Geology and Hydrology. The following information should be corrected to read:

  The regulated hourly flow of the Columbia River at the Rocky Reach Dam historically has varied between 12,000 cubic feet per second (cfs) and 390,000 cfs, after the Canadian storage projects were completed in 1973. The Rocky Reach pool, known as Lake Entiat, extends upriver 43 miles and has a surface area of approximately 8,235 acres. The pool contains 36,400 acre feet of usable storage with a maximum 4 foot drawdown.

Citation Correction

- Project Overview, first paragraph. Correct citation should be the June 1, 2001 Aquatic Habitat Mapping Study Report which is where the information shown is actually reported. The 1999 document is only the study plan.

We appreciate the opportunity to provide comments on the Integrated Aquatic Vegetation Management Plan prepared by the Chelan County Noxious Weed Board and the County’s efforts to keep Chelan PUD consulted during the development and implementation of this herbicide pilot project.

Sincerely,

Michelle Smith
License and Compliance Manager
Chelan County PUD
(509) 661-4180

cc: HCP Committee and License Forum members

Enclosures: Rocky Reach License Forum and HCP Committee Comments
<table>
<thead>
<tr>
<th>Agency</th>
<th>Name</th>
<th>Representing</th>
<th>Date</th>
<th>Comment Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAA Fisheries</td>
<td>Bryan Nordlund, Scott Hecht</td>
<td>HCP Committee</td>
<td>June 13, 2013</td>
<td>An aquatic use of pesticides in salmonid habitats is considered high risk and should be carefully evaluated. The use of the herbicide 2,4,D contributed to a jeopardy conclusion for T/E salmonids. NMFS has consulted nationally on Triclopyr BEE formulations only, not the Triclopyr TEA formulations. BEE is not registered for aquatic uses. At the national level, NMFS has not consulted on EPA’s registration of Triclopyr TEA.</td>
</tr>
<tr>
<td>Bioanalyst</td>
<td>Tracy Hillman</td>
<td>HCP Committee</td>
<td>June 13, 2013</td>
<td>Agree with Chelan PUD’s comments.</td>
</tr>
<tr>
<td>Confederated Tribes of the Colville Reservation</td>
<td>Kirk Truscott</td>
<td>HCP Committee</td>
<td>June 5, 2013</td>
<td>(1) Degradation products associated with Triclopyr (Pyridine and Pyridinol) were identified as having LC50 concentrations for Chinook and rainbow trout at 2.1-4.6 mg/L and 1.5-2.1 mg/L, respectively. The Plan made no mention of sub-lethal effect concentrations for either compound, nor was the expected concentrations of these compounds at the anticipated application rate of Triclopyr included in the evaluation. These degradation products are considerably more toxic than the actual herbicide, so it would make sense that some information be provided relative to the expected concentration of these compounds at the proposed application rate of the herbicide. (2) Because Triclopyr does not bind to soils, containment could be an issue. As such, will it be</td>
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</table>

Attachment C
expected that the treatment area will have an increasing concentration of the herbicide from upstream to downstream? Is so, what is the expected concentration at the lowest portion of the treatment area? This could be important relative to the potential effect to juvenile lamprey near the confluence of the Entiat River.

<table>
<thead>
<tr>
<th>US Fish &amp; Wildlife Service</th>
<th>Jim Craig</th>
<th>HCP Committee</th>
<th>June 3, 2013</th>
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<tbody>
<tr>
<td>Steve Lewis has been working with Chelan County on their IAVMP throughout this process. That combined with Chelan PUD’s comment letter will suffice and no further comment.</td>
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<thead>
<tr>
<th>WDFW</th>
<th>Teresa Scott</th>
<th>HCP Committee</th>
<th>June 3, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDFW would like to seek internal technical review. Requested names of those participating on the review team related to the IAVMP (Chelan PUD responded to this request on June 4, 2013)</td>
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<table>
<thead>
<tr>
<th>WDFW</th>
<th>Erin Wehland</th>
<th>Wildlife Forum</th>
<th>June 12, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note that herbicidal control curlyleaf pondweed and milfoil can impact waterfowl use of the area. Parts of these aquatic plants are consumed by waterfowl. Also, submerged aquatic vegetation support aquatic invertebrate communities which are consumed by waterfowl.</td>
<td></td>
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<table>
<thead>
<tr>
<th>WDFW</th>
<th>Patrick Verhey</th>
<th>Fish and Recreation Forums</th>
<th>June 13, 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDFW has not been engaged in the proposed plan to date. We recommend Chelan County include WDFW in the Planning Team for future consultation on the Plan. We recommend Carmen Andonaegui, WDFW Region 2 Habitat Program Manager be included on the Planning Team.</td>
<td></td>
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</tbody>
</table>
Hi Steve - I asked our resident fish toxicologist to have a look at your letter, and here is his reply:

"Attached are brief comments. Aquatic uses of pesticides in salmonid habitats are a big deal that requires careful and extensive analyses. We have several jeopardy biological opinions where aquatic uses of pesticides weighed heavily on the overall conclusion, e.g. 2,4-D.

NMFS has consulted nationally on Triclopyr BEE formulations only, not the Triclopyr TEA formulations. It appears that the proposal is for Triclopyr TEA as Triclopyr BEE is not registered for aquatic uses. NMFS has yet to consult on these formulations nationally."

Hope that these are helpful, and thanks to CPUD for staying on top of this issue. See the attached.
Bn

Bryan Nordlund, P.E.
360-534-9338
National Marine Fisheries Service
510 Desmond Drive, Suite 103
Lacey, WA 98503

(attachment is included on next page)
Draft – Comment letter to Chelan County Noxious Weed Board regarding Integrated Aquatic Vegetation Management Plan (herbicide application in Columbia River near Entiat Park)

Draft – May 28, 2013

Chelan PUD letterhead

Mike Mackey, Coordinator
Chelan County Noxious Weed Board
400 Washington Street
Wenatchee, WA 98801

Dear Mr. Mackey,

Thank you for the opportunity to provide comments on the Integrated Aquatic Vegetation Management Plan (Plan) prepared by the Chelan County Noxious Weed Board.

Chelan PUD owns and operates two hydroelectric projects on the Columbia River, the Rock Island Project and Rocky Reach Project. Chelan PUD has a vested interest in the Plan as a result of the proposed use of an aquatic herbicide along the shoreline of Entiat Park within the Columbia River since the area is within the Rocky Reach Project Boundary licensed by the Federal Energy Regulatory Commission (FERC). Chelan PUD, License Forums, and Habitat Conservation Plan Committee members have reviewed the Plan to ensure the herbicide application pilot project is not inconsistent with resource management plans, the Habitat Conservation Plans, and other license requirements of the FERC license.

**Priority Considerations**

- The Plan cites a NMFS Biological Opinion stating that “data suggest that triclopyr, in the triethylamine formulation is unlikely (emphasis added) to cause significant effects to the salmonid prey base if used according to recommended application rates.” Chelan PUD is concerned with the inference triclopyr is “safe” for salmonids or “unlikely” to have a negative impact on salmonids or their prey base is concluded from data stemming from an evaluation of the ester formulation of the herbicide for terrestrial applications. The same NMFS document states that triclopyr harms embryonic zebra fish (a common laboratory species used to evaluate survival and developmental effects on fish) at 1 mg/l concentration. The chemical proposed is triclopyr TEA. It appears the NMFS Biological Opinion was for triclopyr BEF. Chelan PUD would like to be assured that consultation was conducted on triclopyr TEA. If consultation hasn’t been conducted on triclopyr TEA, we would like documentation that NMFS and USFWS have approved this form of triclopyr.

- Evaluating the adverse effects to vertebrate and invertebrate species based on acute toxicity data using a LC50 endpoint (50% mortality of a test population) is not appropriate when considering sensitive and listed species and overall ecosystem effects. Chelan PUD agrees with the Plan’s recommendation to consider toxicity endpoints that represent lowest observed effect levels or no observed effect levels.

---

1 Rocky Reach License Forums consist of the Rocky Reach Fish Forum, Rocky Reach Recreation Forum, Rocky Reach Wildlife Forum. Members include: list members.

2 Members of the Habitat Conservation Plan Committee include: list members.
Hi HCP-CC: please see the email below from Bryan and the attached comments from NMFS on Chelan PUD’s comment letter to Chelan County Noxious Weed Board regarding Integrated Aquatic Vegetation Management Plan (herbicide application in Columbia River near Entiat Park).

Thanks!
Kristi 😊

Kristi Geris
ANCHOR QEA, LLC
kgeris@anchorqea.com

---

From: Tracy Hillman [mailto:tracy.hillman@bioanalysts.net]
Sent: Thursday, June 13, 2013 7:50 AM
To: Hemstrom, Steven
Subject: Integrated Aquatic Vegetation Management Plan

Hi Steve,

I read through the County’s Integrated Aquatic Vegetation Management Plan and your comments. You nailed it. Excellent comments, especially those related to the lack of coverage on ammocoetes. I have nothing to add.

Cheers,
Tracy

---

Tracy W. Hillman, Ph.D.
Senior Ecologist
BioAnalysts, Inc.
4725 N. Cloverdale Rd, Suite 102
Boise, ID 83713 USA
Tel: 208-321-0363
Cell: 208-867-2889
Fax: 208-321-0364
tracy.hillman@bioanalysts.net
www.bioanalysts.net
Steve,

I think that the CPUD letter covers the issues pretty well. A couple of additional comments are included below.

(1) Degradation products associated with Triclopyr (Pyridine and Pyridinol) were identified as having LC50 concentrations for Chinook and rainbow trout at 2.1-4.6 mg/L and 1.5-2.1 mg/L, respectively. The Plan made no mention of sub-lethal effect concentrations for either compound, nor was the expected concentrations of these compounds at the anticipated application rate of Triclopyr included in the evaluation. I'm no herbicide guru, but these degradation products are considerably more toxic than the actual herbicide, so it would make sense that some information be provided relative to the expected concentration of these compounds at the proposed application rate of the herbicide.

(2) Because Triclopyr does not bind to soils, containment could be an issue. As such, will it be expected that the treatment area will have an increasing concentration of the herbicide from upstream to downstream? Is so, what is the expected concentration at the lowest portion of the treatment area? This could be important relative to the potential effect to juvenile lamprey near the confluence of the Entiat River.

Kirk

From: Craig, Jim [mailto:Jim_L_Craig@fws.gov]
Sent: Monday, June 03, 2013 2:37 PM
To: Hemstrom, Steven
Subject: Fwd: FW: Chelan County Weed Board Plan for milfoil control in Rocky Reach Reservoir

Hi Steve,

The USFWS (Steve Lewis) has been working with Chelan County on their IAVMP throughout this process. That combined with what I thought was an excellent comment letter from the PUD's Michelle Smith should suffice - we have no further comment.

Jim
From: Scott, Teresa L (DFW) [mailto:Teresa.Scott@dfw.wa.gov]
Sent: Monday, June 03, 2013 11:46 AM
To: Kristi Geris; Andrew Gingerich (andrewg@dcpud.org); Tweit, William M (DFW); Bob Rose (rosb@yakamafish-nsn.gov); 'Bryan Nordlund (bryan.nordlund@noaa.gov)'; Jim Craig (jim_l_craig@fws.gov); kirk.truscott@colvilletribes.com; Mike Schiewe; Hemstrom, Steven; Steve Parker (pars@yakamafish-nsn.gov); 'Tom Kahler (tkahler@dcpud.org)'
Cc: Gallaher, Becky; Keith Kirkendall (Keith.Kirkendall@noaa.gov); Truscott, Keith; Keller, Lance; Lee Carlson (carl@yakamafish-nsn.gov); Shane Bickford (sbickford@dcpud.org)
Subject: RE: Chelan County Weed Board Plan for milfoil control in Rocky Reach Reservoir

Steve,

The comment letter looks good from my viewpoint. However, I would like to be able to seek review from someone at WDFW having the actual technical expertise to provide a rigorous review. Is it OK for me to send this along to someone else at WDFW? Is anyone from WDFW participating in the review of the IAVMP?

T-

TERESA SCOTT
WATER RESOURCE POLICY COORDINATOR
WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
360-902-2713 TERESA.SCOTT@DFW.WA.GOV

Von,

Just wanted to note that herbicidal control curlyleaf pondweed and milfoil can impact waterfowl use of the area. Parts of these aquatic plants are consumed by waterfowl. Also, submerged aquatic vegetation support aquatic invertebrate communities which are consumed by waterfowl.

Erin Wehland
WDFW Waterfowl Specialist
1550 Alder St. NW
Ephrata, WA 98823
O: (509) 754-4624 x237
C: (509)237-4860
Erin.Wehland@dfw.wa.gov

From: Verhey, Patrick M (DFW) [mailto:Patrick.Verhey@dfw.wa.gov]
Sent: Thursday, June 13, 2013 9:53 AM
To: Pomianek, Kris
Cc: Hemstrom, Steven; Andonaegui, Carmen (DFW)
Subject: RE: Chelan County Milfoil control proposal

Kris and Steve, thanks for the opportunity to provide comments on Chelan PUDs comment letter and the Chelan Noxious Weed Board’s Chelan County Milfoil control proposal. WDFW supports Chelan PUD’s comments on the proposal. We offer one edit to the letter. In the second bullet item of the priority consideration section of your comment letter you note: “To achieve the goal of protecting sensitive and listed species, the Plan recommends a “more in-depth review of behavioral and other chronic endpoints associated with Triclopyr should be undertaken prior to conducting the study.” Chelan agrees with the recommendation and further suggests the data and report be made available for consultation with those parties (NOAA, USFWS, DOE, WDFW,
Tribes, and Chelan PUD) engaged in the proposed Plan.” WDFW is in agreement with this comment; however, WDFW has not been engaged in the proposed Plan to date. We recommend Chelan County include WDFW in the Planning Team for future consultation on the Plan. If you are amenable to the idea. We recommend Chelan PUD recommend Carmen Andonaegui, WDFW Region 2 Habitat Program Manager, be included on the Planning Team in your comment letter. Carmen’s e-mail address is: Carmen.Andonaegui@dfw.wa.gov

Thank you for considering WDFW’s comments.

Patrick Verhey
Renewable Energy Biologist
WDFW Habitat Program
Renewable Energy Section
1550 Alder St N.W.
Ephrata, WA 98823
(509) 754-4624 ex. 213
Patrick.Verhey@dfw.wa.gov

###
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met by conference call, on Tuesday, July 23, 2013, from 9:30 am to 10:30 am. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Tom Kahler will provide an update on the 2013 Adult Lamprey Passage and Enumeration Study to Kristi Geris for distribution to the Coordinating Committees (Item II-B).
- Steve Hemstrom will provide an updated flow duration curve for valid survival studies using the historical 1929-1978 and 1983-2001 data sets to which the new 2002-2012 dataset is added, and for comparison, also using only the 1983-2012 dataset, to Kristi Geris for distribution to the Coordinating Committees (Item III-A).
- Hemstrom will include data from the month of June in the summer study period in both updated flow duration curves (i.e., 1929-1978 dataset and 1983-2012 dataset) for valid survival studies (Item III-A).
- **The next scheduled Coordinating Committees meeting on August 27, 2013, will be held at the Radisson Hotel in SeaTac, Washington, from 9:30 am to no later than 4:00 pm** (Item V-A).

**DECISION SUMMARY**

- No Statements of Agreement (SOAs) were approved at today’s meeting.
AGREEMENTS

- Coordinating Committees representatives present agreed to include data from the month of June in the summer study period in the updated flow duration curves for valid survival studies (Item III-A).
- Coordinating Committees representatives present agreed that questions or issues arising from the Fish Passage Center’s (FPC’s) Comparative Survival Study (CSS) Presentation scheduled for the Coordinating Committee’s meeting on August 27, 2013, will be addressed during the September 24, 2013 meeting (Item III-B).

REVIEW ITEMS

- “Assessment of Factors Limiting the Productivity of Summer Chinook Salmon in the Mid-Columbia River” by Hillman, Murauskas, and Hemstrom (2013), which was distributed to the Coordinating Committees on June 26, 2013, is available for review, with comments due to Steve Hemstrom (Item II-A from Coordinating Committees meeting on June 25, 2013).

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. No additions or changes were requested.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft June 25, 2013 meeting minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. The Coordinating Committees members present approved the draft June 25, 2013 meeting minutes as revised. Geris will finalize the meeting minutes and distribute them to the Committees.
II. Douglas PUD

A. Wells Dam Bypass Operations Update (Tom Kahler)
Tom Kahler said that Wells Dam has been operating under normal bypass operations after reinstalling barriers in bypass bay number 6 on July 11, 2013, as described in an email distributed to the Coordinating Committees by Kristi Geris that same day. He said that the flow barriers were removed from bypass bay number 6 on July 1, 2013, due to high discharge at Grand Coulee Dam, above-average discharge from the Okanogan and Methow, and a period of heavy rainfall and high temperatures.

B. 2013 Adult Lamprey Passage and Enumeration Study Update (Tom Kahler)
Tom Kahler said that modified fishway operations at Wells Dam started the week of July 15, 2013, for the 2013 Adult Lamprey Passage and Enumeration Study, and that staff have started releasing tagged lamprey downstream of Wells Dam. He has not heard whether any lamprey have been detected to date, and he added that he will provide a comprehensive update on the 2013 Adult Lamprey Passage and Enumeration Study to Kristi Geris for distribution to the Coordinating Committees.

Kahler said Wells Dam counts are running about 8 to 9 days behind. Kahler explained that since April 2013, Wells Dam has been without a relief counter, and he added that a new relief counter is scheduled to start tomorrow. He said that Douglas PUD information officers that are responding to inquiries about the delay are recommending subtracting two days from Rocky Reach Dam counts until the counts at Wells Dam are up to date. Kirk Truscott asked when Douglas PUD anticipates that counts will be up to date. Kahler replied that it depends on a number of factors, such as the numbers of fish that have recently passed Wells Dam and the learning curve of the new counter. Truscott said that the delay affects the Colville Confederated Tribes (CCT) and their Chief Joseph programs, and that subtracting two days from Rocky Reach Dam counts does not account for all runs. He asked if personnel are able to work longer hours to get caught up, and Kahler replied that staff are already working 12-hour days, which is the limit for union workers. He said that staff are counting every day, and that the relief counter starting tomorrow should help, too. Bryan Nordlund asked about the possibility of Douglas PUD providing the CCT with the raw counts, and Kahler replied that a hard drive with about a month of count-window recordings is provided...
to Washington Department of Fish and Wildlife (WDFW) near the end of each season for their use in differentiating between summer and spring Chinook during the period when those runs overlap (mid-June to mid-July). He said, however, that even if the raw recordings were provided to the CCT, someone would still need to view them to obtain the counts. Truscott said that obtaining the recordings at this time would not be particularly helpful.

Kahler added that he and the lead Wells Dam fish counter, along with Douglas PUD technicians and engineers, met with the chief counter at Rocky Reach Dam to tour the Chelan PUD’s counting system, including the lighting and count window configuration and video system. Kahler said that Douglas PUD is planning to modify the Wells Dam count system, including the recording system and count window background and lighting. He said that some modifications can be completed now, such as the lighting; however, the other changes will likely be completed during the annual winter maintenance period. Kahler said that the lessons learned at Rocky Reach and Rock Island dams will inform future improvements to the Wells Dam count system.

C. Subyearling Study Update (Tom Kahler)

Tom Kahler said that final seining efforts took place July 8-10, 2013, and that tagging operations were completed on July 11, 2013. He said that, during the final week of seining, fish were sparse and crews struggled to locate them. On the last two days of seining, crews resorted to visually scanning the water to locate schools of fish, or “sight fishing.” Only 557 fish were obtained during the last full day of seining. Kahler said that the tagging phase is now complete, and that Douglas PUD is focusing on monitoring detections.

Kahler said that there has been some internal Douglas PUD discussion about conducting an additional year of tagging; however, the design and methods have yet to be determined. Based on the availability of fish this year, there has been discussion about conducting weekly tagging of smaller groups of fish, as opposed to contracting tagging efforts for pre-selected tagging dates. Kirk Truscott asked when Douglas PUD might know if they will continue tagging for another year. Kahler replied that there are still several things that need to be internally vetted in order to make this decision, including discussions about the tagging window, the intent of an additional year of tagging, what direction to take with subyearling Chinook considering the difficulties in conducting a survival study (as revealed by the study
to date), whether additional data of the sort collected over the last three years are necessary, and costs associated with different types of tagging operations. Kahler said that none of these discussions have formally occurred, but that they need to soon in order to obtain equipment for mobile tagging, if necessary; and also to allow for enough time to get the logistics worked out prior to the next tagging season. However, since the 2013 study efforts wrapped up less than two weeks ago, an internal discussion on the direction of any future study will not likely occur until the fall, after preliminary review of data from this year. Truscott said that it would also be helpful for the CCT to know Douglas PUD’s plans for additional tagging because it would help shape their 2014 Monitoring and Evaluation (M&E) activities. Truscott added that the CCT would not want to duplicate efforts.

Kahler said that Biomark sells a mobile tagging system that can be placed on a workboat, and could be used to tag thousands of fish over multiple weeks. Teresa Scott asked if Douglas PUD has considered Andrew Murdoch’s team (WDFW staff out of the Twisp office under contract to Douglas PUD for Hatchery M&E) for assisting with tagging efforts, and Kahler replied that, yes, Douglas PUD has considered Murdoch’s team each year that they have been tagging for the Subyearling Study. He added that Murdoch’s team has helped Douglas PUD with collection in the past, but not with tagging. Scott asked if Douglas PUD is in touch with experts regarding sample size, and Kahler again replied that Douglas PUD engages statistical expertise as needed. He said that he appreciates these thoughts and asked that Coordinating Committees members contact him with further comments or questions.

III. Chelan PUD

A. Valid Study Flow Duration Curve Update (Steve Hemstrom)

Steve Hemstrom said that, with the recent completion of the 10-year No Net Impact (NNI) Comprehensive Check-in Report, the Rock Island and Rocky Reach HCPs require that the spring and summer period flow duration curves used to define valid survival studies must also be updated for use during the next 10 years. He recalled that, as discussed at the Coordinating Committees meeting on March 26, 2013, he was unable to locate the 1929-1978 Bonneville Power Administration (BPA) model dataset that was used to develop the existing curve, and he added that if the historical data could not be found, the Committees suggested using current flow data to calculate a new curve using a 1983-2012 dataset. Hemstrom said
that, however, he had recently discovered that the National Oceanic and Atmospheric Administration (NOAA) has the 1929-1978 BPA model dataset, and it is now being sent to him. He said that once these data are received, he can incorporate an additional 10 years of data, per the HCPs, to calculate an updated flow duration curve. Teresa Scott suggested also calculating a new curve using only the most recent data, and then calculating another curve that still incorporates the older data, for comparison. Bryan Nordlund agreed that he would also like to see that comparison, as well. Hemstrom said that he will provide an updated flow duration curve for valid survival studies using the historical dataset to which the new 2002-2012 dataset is added, and for comparison, also using only the 1983-2012 dataset, to Kristi Geris for distribution to the Coordinating Committees.

Hemstrom said that he would like to revise the definition of “summer period,” to include the month of June. He said that, instead of July 1 through August 15, the summer dataset would include June 1 through August 15. He noted that June is often a high flow period, and that there are typically high counts of subyearling Chinook passing Rocky Reach Dam in June. Nordlund said the key is to make sure that the curve is inclusive of 95 percent of the summer outmigration window, and Hemstrom agreed, but said studies would be difficult for summer Chinook because they migrate over a 90-day period. Scott added that even 90 days may be a conservative figure because summer Chinook may migrate during the winter. She said that, at some point, we need to determine where 95 percent ends on this long tail. She added that she agrees that including June in the summer dataset is important, and she also recommended re-evaluating the August 15 date at some point. Hemstrom said that the summer spill window typically starts the first week of June, and he added that, last year, summer spill started May 27, 2012. He added that June is almost always included in the spill season at Rocky Reach and Rock Island dams. Nordlund agreed that including June in the summer period makes sense. The Coordinating Committees representatives present agreed to include data from the month of June in the summer study period in the updated flow duration curves for valid survival studies; and Hemstrom said that he will follow up and include data from the month of June in the summer study period in both updated flow duration curves (i.e., datasets of 1929-1978 and 1983-2001 originally used, and the updated 1983-2012 dataset alone).
B. Fish Passage Center’s Comparative Survival Study Presentation – Coordinating Committee’s August 27, 2013 meeting (Steve Hemstrom)

Mike Schiewe said that Bob Rose and Teresa Scott have arranged for the FPC to present a CSS Presentation the afternoon of the Coordinating Committees’ meeting on August 27, 2013, in SeaTac, Washington. A draft agenda was distributed to the Coordinating Committees by Kristi Geris on July 18, 2013. The agenda included: 1) an overview of the CSS (background and findings); 2) an overview of Upper Columbia findings; and 3) an overview of the potential to improve Upper Columbia data. Schiewe said that the FPC will present to a combined gathering of the Coordinating Committees and the Priest Rapids Coordinating Committee (PRCC), with subsequent discussions held separately as they relate to the respective HCPs and Settlement Agreement. The Coordinating Committees will have this subsequent discussion during their September 24, 2013 meeting.

Steve Hemstrom reminded the Coordinating Committees about their previous discussions regarding addressing their questions or concerns in response to the presentation during the regular September Coordinating Committees meeting. He asked if the PRCC had the same approach. Schiewe said that he cannot speak for the PRCC; however, based on conversations with Denny Rohr, the PRCC also plans to hold subsequent discussions following the meeting. Schiewe also said that he encourages the Coordinating Committees members to ask questions for clarification, and that ultimately, based on subsequent discussions in September, the Committees can then decide if and how to respond.

Hemstrom expressed concern that discussions about the potential to improve Upper Columbia data may propose actions that would ultimately become the responsibilities of the PUDs, and Schiewe replied that, if that is the case, the PUDs would still need to agree to the proposed actions. Scott noted the potential for meaningful and helpful discussions about improving Upper Columbia data, so long as the discussions remain about the technical points, and not about funding.

Coordinating Committees representatives present agreed that questions or issues arising from the FPC’s CSS Presentation will be addressed during the September 24, 2013 meeting of the Coordinating Committees.
IV. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe reported that the HCP Tributary Committees did not meet in July due to lack of agenda items. The next meeting will be on August 15, 2013, when final proposals submitted for the General Salmon Habitat Program will be evaluated.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Hatchery Committees' meeting on July 17, 2013, which was held by conference call:

- **Hatchery M&E Request for Proposal (RFP) Update and 2014 Hatchery M&E Implementation Plan Schedule**: Alene Underwood, the Chelan PUD Hatchery Program Manager, provided an update on the Chelan PUD Hatchery M&E RFP process for obtaining a new contractor for their 2014 and beyond Hatchery M&E Program. Chelan PUD and Grant PUD share responsibilities in the Wenatchee River basin; and therefore, both PUDs are involved in the decision-making. The RFP closed in early July 2013. Three proposals were received, which are currently being internally evaluated to determine a path forward. The proposals that are determined to be complete will be reviewed by a panel consisting of Hatchery Committees members without a conflict of interest, along with outside experts that were recommended by the Hatchery Committees. In consideration of the current status of the RFP process, Chelan PUD discussed that their 2014 M&E Implementation Plan could be delayed slightly until September or October 2013.

- **Methow Spring Chinook Hatchery Genetic Management Plan (HGMP) Update**: Chelan PUD said that they are within about a week of completing their draft Methow Spring Chinook HGMP for their 61,000 obligation in the Methow. A shortened 14-day review period was approved by the Hatchery Committees in efforts to meet the October 2013 deadline.

- **Wells Hatchery Master Plan Workshop**: Douglas PUD, with their contractor HDR Engineering, Inc. (HDR), scheduled a workshop on August 21, 2013, to facilitate input from the Hatchery Committees on the Wells Hatchery modernization master plan.

- **Potential Acclimation Locations for Chelan PUD Methow Spring Chinook (specifically as it relates to the Chewuch River)**: The Yakama Nation (YN) introduced the potential to acclimate Chelan PUD's Methow spring Chinook in the
Chewuch Pond. This process would involve either co-acclimation, or net-divided acclimation, along with the YN’s coho salmon acclimation. The Hatchery Committees supported the YN’s request to continue planning for this arrangement in 2015.

- Next Meetings: The next Hatchery Committees meeting is scheduled for August 21, 2013, and will include the Wells Hatchery Master Plan Workshop in the afternoon. Dr. Kim Hyatt of British Columbia Fisheries and Oceans, Canada (DFO), may also provide an annual update on the Sockeye Reintroduction Program.

V. HCP Committees Administration (Mike Schiewe)

A. Next Meetings

Mike Schiewe said that the next scheduled Coordinating Committees meeting on August 27, 2013, will be held at the Radisson Hotel in SeaTac, Washington, from 9:30 am to no later than 4:00 pm. He said that the FPC allocated up to 3 hours for their CSS presentation (scheduled to start at 1:00 pm); however, they did not anticipate needing the entire 3 hours.

The meetings thereafter are scheduled for September 24, 2013, and October 22, 2013, and will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

List of Attachments

Attachment A List of Attendees
## Attachment A
### List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Lance Keller*</td>
<td>Chelan PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Teresa Scott*</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**
* Denotes Coordinating Committees member or alternate
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Gateway Hotel, in SeaTac, Washington, on Tuesday, August 27, 2013, from 10:00 am to 4:00 pm. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Chelan PUD will summarize available data on fish passage at Rocky Reach Dam during the “off-season” winter months, and provide these data to Kristi Geris for distribution to the Coordinating Committees (Item II-B).
- Chelan PUD will evaluate the potential to extend fish counts at Rocky Reach Dam into the “off-season” winter months, starting winter 2014/2015 (Item II-B).
- Chelan PUD will evaluate the potential to complete the 2013/2014 winter maintenance on the Rocky Reach Right Fishway Ladder prior to the usual March 1 deadline (Item II-B).
- Chelan PUD will finalize the Rock Island and Rocky Reach Draft 2013 Fish Spill Report, and provide the final report to Kristi Geris for distribution to the Coordinating Committees (Item II-C).
- Steve Hemstrom will provide an updated flow duration curve for valid survival studies using the 1929-1977 dataset to which the 1983-2012 dataset is added, and for comparison, also using only the 1983-2012 dataset, to Kristi Geris for distribution to the Coordinating Committees no later than the September 24, 2013 meeting (Item II-D). *(Note: Hemstrom will also include data from the month of June in the summer study period in both updated flow duration curves, as agreed to at the Coordinating Committees conference call on July 23, 2013.)*
DECISION SUMMARY

- No Statements of Agreement (SOAs) were approved at today’s meeting.

AGREEMENTS

- Coordinating Committees representatives present agreed to extend the 2013/2014 winter maintenance work period at Rocky Reach Dam by one month; rather than beginning January 2, 2014, the new start will be December 2, 2013, to allow more time to complete required work (Item II-B).

REVIEW ITEMS

- “Assessment of Factors Limiting the Productivity of Summer Chinook Salmon in the Mid-Columbia River” by Hillman, Murauskas, and Hemstrom (2013), which was distributed to the Coordinating Committees on June 26, 2013, is available for review, with comments due to Steve Hemstrom (as discussed at the Coordinating Committees meeting on June 25, 2013).

REPORTS FINALIZED

- There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. Tom Kahler added an update on the Douglas PUD 2013 Adult Lamprey Passage and Enumeration Study, and also a review of the HCP Coordinating Committees’ Chairperson.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft July 23, 2013 conference call minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding
edits or questions to discuss. The Coordinating Committees members present approved the draft July 23, 2013 conference call minutes as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Chelan PUD

A. Rock Island Right Bank Fishway Outage, Auxiliary Water System Pump Repair, Off-season Upgrades (Steve Hemstrom and Lance Keller)

Lance Keller recalled that in 2010, a fish attendant discovered fish entering the large attraction water reservoir adjacent to the right bank fishway via a missing metal vertical vane in the auxiliary water system (AWS) picket-barrier that separates the two areas at Rock Island Dam. He said that since that time, annual inspections included a "ping" test to detect damaged infrastructure. Despite not detecting any obvious damage to the vanes, a fish attendant again found sockeye in the same location as they were detected in 2010, as described in an email that was distributed to the Coordinating Committees by Kristi Geris on July 23, 2013.

Keller said the sockeye salmon were all small, and similar in size. He said that a recent analysis by Jeff Fryer (Columbia River Inter-Tribal Fish Commission [CRITFC]) indicated a 42% jack rate of sockeye detected at Bonneville for 2013 (also described in an email that was distributed to the Coordinating Committees by Geris on July 25, 2013). Keller said that Fryer’s analysis was consistent with staff observing smaller fish in the AWS space—entering through a space too small for larger sockeye and summer Chinook. He added that, because mainly smaller sockeye appeared to have entered the space, fishway staff expected to find a “bow” in the metal vertical vanes that make up the picket-barrier instead of a complete vane missing, as was the case in 2010.

Keller said that the right bank fishway was taken offline July 24 to 25, 2013, and staff identified a bowed vane in the picket-barrier, as suspected. Rock Island Dam engineers and fishway crews riveted a bracket to the bowed picket-vane where the sockeye entered, as seen in a photograph (Attachment B) that was distributed to the Coordinating Committees by Geris on August 5, 2013. Keller said that the picket vanes are made of aluminum, and are not apparently rigid enough under high flow conditions. He added that, while they are firm
now, they are fatiguing over time allowing excessive flex during periods of warmer water temperatures. He said that Rock Island Dam engineers are working on a long-term fix in the form of a top-to-bottom replacement of the picket-barrier panels and vanes.

Keller reminded the Coordinating Committees that each year at Rock Island Dam, a comprehensive inspection and overhaul is performed on one of the three fish ladders. He said that, coincidently, this year the overhaul is planned for the right ladder; however, due to the size and scale of the repair, Rock Island Dam engineers say that engineering the fix will take an additional year to plan and install. He said that, this year, Rock Island Dam engineers plan to reinforce the weaker areas, and that the permanent replacement will be implemented during the 2014/2015 winter maintenance outage. Keller noted that the structure to be replaced has multiple panels, and is about 25 feet tall, and in one section, 15 feet wide. He also noted that on July 24, 2013, during the initial dewatering, three adult summer Chinook (two wild and one adipose [ad] fin-clipped) and one adult steelhead were rescued from the upper portion of the adult fishway. He said that, in total, 251 sockeye salmon, 16 summer Chinook, 3 rainbow trout, and a number of resident fish were rescued; and that a total of 31 sockeye mortalities were recovered from the AWS space.

Bryan Nordlund said that, based on a video of the inspection that Chelan PUD provided to the National Marine Fisheries Service (NMFS), it appeared that the picketed panels included steel cross-members and aluminum vanes, which, Nordlund said, differentially expand because of the dissimilar metals, creating tension in the aluminum vanes. He further offered his opinion that a cyclic tension over the years would weaken the softer aluminum vanes. Therefore, Nordlund recommended that Rock Island Dam engineers consider all stainless steel vanes and support structure for the replacement. Nordlund also recommended considering replacing the 1-inch spacing with 5/8-inch spacing that will also prevent lamprey from passing into the AWS space. Steve Hemstrom said that smaller spacing is being considered to the extent that it will not cause hydraulic changes. Nordlund said that the key is keeping the percent open area in the replacement structure nearly the same as the percent open area in the existing structure—then the hydraulics should not change much. He also suggested that a perforated plate would be worth considering as a replacement for the existing system, since it can serve the same purpose as the vanes and still maintain the same surface area. Perforated plate is available in a wide variety of percentage open area,
thicknesses, and hole dimensions and geometry. Nordlund offered his assistance to Chelan PUD with the re-design of the AWS diffuser system.

Keller said that directly following the picket vane repair, a failing output bearing was detected on the main shaft of one of three attraction water pumps, also in the right bank adult fishway at Rock Island Dam, as described in an email that was distributed to the Coordinating Committees by Mike Schiewe on August 8, 2013. Keller said that the pump was taken out of service for repair on August 6, 2013, and replacement bearings were ordered. He said that, in the interim, in order to achieve the differential criteria at the right adult fishway entrances with only two pumps operating, one of the right bank tailrace entrances was closed. Keller explained that this entrance is located at the end of the tailrace training wall where the spillway and powerhouse meet. Repairs were complete and the right bank adult fishway returned to normal operation and criteria on August 12, 2013, as described in an email that was distributed to the Coordinating Committees by Geris that same day. Keller said that replacement bearings will now be stocked at the facility in case similar repairs are needed.

B. Rocky Reach Adult Fishway – Request for Earlier End-of-season Outage For Maintenance (December 2013) (Lance Keller)

Lance Keller recalled that last year, Chelan PUD requested an earlier than usual winter maintenance outage date at Rocky Reach Dam in order to repair a cracked rotor in Turbine Unit 1 (C1). The purpose of the change was to ensure Chelan PUD could return the unit back to service prior to the 2013 spring outmigration. Keller said that this year, Turbine Unit 2 (C2) is in need of the same repair. Additionally, he said that Turbine Unit 10 (C10) is completely offline due to internal hydraulic issues that caused an adjustment of the blade, which in turn resulted in the unit shutting down because it could not stay in sync. Turbine Unit 6 (C6) is also down for rotor repair, which followed the Turbine Unit 5 (C5) outage. Keller said that once C6 is back online, work can start on C2. He said that work on C2 should be complete by the end of April 2014; however, in order to allow enough time to complete this work, Rocky Reach staff have requested starting the winter maintenance period on December 2, 2013, instead of the usual January 2 start date. Keller reminded the Committees that the C1 outage performed in the last maintenance period, for the same repairs, lasted from the beginning of the year until April 22, 2013. He added that the
maintenance period for fishways typically ends March 1—so, the requested 2013/2014 fishway maintenance period for C2 would start December 2, 2013, and end March 1, 2014.

Steve Hemstrom indicated that there tend to be few adult fish passing the dam during the winter months because the water is so cold, but acknowledged that empirical data is lacking. Jim Craig said that most coho and steelhead numbers decrease by mid-November. Bryan Nordlund said that he is less concerned about passage in December, but suggested that there may be a benefit to re-opening the ladder by early February because listed steelhead may be migrating to tributary streams after wintering in reservoirs. Hemstrom said that routine ladder maintenance also needs to occur, which typically takes until March 1. He said, however, that he will evaluate the potential to complete the 2013/2014 winter maintenance on the Rocky Reach Right Fishway Ladder prior to the usual March 1 deadline. He also said that he will compile any existing data on fish passage at Rocky Reach Dam during the “off-season” winter months, and he will evaluate the potential to extend fish counts at Rocky Reach Dam into the off-season winter months, starting winter 2014/2015.

Coordinating Committees representatives present agreed to Chelan PUD’s proposal to extend the Rocky Reach Dam 2013/2014 winter maintenance work outage by one month, changing from a beginning date of January 2, 2014, to a beginning date of December 2, 2013, to allow more time to complete required work.

C. Rock Island and Rocky Reach Draft 2013 Fish Spill Report (Steve Hemstrom)

Steve Hemstrom reviewed Chelan PUD’s 2013 HCP Preliminary Rocky Reach and Rock Island Fish Spill Report (Attachment C) that was distributed to the Coordinating Committees by Kristi Geris on August 26, 2013. Teresa Scott asked how the cumulative index count is calculated, and Hemstrom explained that the count starts when the first subyearling Chinook is identified passing the dam, and ends on August 31 when the bypass operation ends. He noted spill ends when 95% of the run is estimated to have passed. Scott asked about involuntary spill at Rock Island and Rocky Reach, and also if spill records differentiate between types of spill (i.e., required spill, voluntary spill, involuntary spill, etc.). Hemstrom said that spill types can be differentiated using the known spill percentage (i.e., 9% at Rocky Reach for summer spill) the day-average total river flow and the day-average total spill flow shown on the Data Access in Real Time (DART) website.
Hemstrom reviewed Tables 1 and 2 on page 2 of Attachment C. Bob Rose asked if there were any correlations between adult returns and smolt monitoring index numbers, and Hemstrom replied that he was unaware of any such relationship. He added that Chelan PUD has not calculated predictive smolt to adult survival ratios (SARs) based on fish sampled. Bryan Nordlund noted the almost 50% reduction in juvenile steelhead counts from the Rocky Reach bypass, and asked if the recalculation of hatchery program sizes might be the cause. Mike Schiewe replied that the recalculated release numbers will be in effect starting in 2014, and added that 2013 was the first year of brood collection for the recalculated programs. Nordlund asked if the Rocky Reach Juvenile Fish Bypass Surface Collector (RRJFB SC) was operating regularly throughout the entire 2013 spill season. Hemstrom said that the bypass started April 1, 2013, and that the RRJFB SC was not fully operational until April 21, 2013; he added that this fact may have affected the counts as well. Keller said that, according to DART, the first steelhead was detected at Rocky Reach on April 3, 2013, and double-digit numbers were not detected until late-April, which implies that the RRJFB SC outage was likely not a major driver for the lower steelhead counts.

Hemstrom said that Chelan PUD will finalize the Rock Island and Rocky Reach Draft 2013 Fish Spill Report, and provide the final report to Geris for distribution to the Coordinating Committees.

D. Valid Study Flow Duration Curve Preparation (Steve Hemstrom)

Steve Hemstrom said that he recently received the 1929-1978 Bonneville Power Administration (BPA) model dataset from NMFS that was used to develop the existing Valid Study Flow Duration Curve. Hemstrom reminded the Coordinating Committees that the existing curve was calculated using both the 1929-1978 BPA model dataset and empirical data from 1983 to 2001. He said that he has not yet updated the curve, but plans to provide an updated flow duration curve for valid survival studies using the 1929-1978 dataset to which the 1983-2012 dataset is added, and for comparison, also using only the 1983-2012 dataset. He noted, however, the uncertainty surrounding potential changes in Canadian water storage and the Columbia River Treaty. Bryan Nordlund suggested the value of recalculating the curve after terms of the Columbia River Treaty are settled. Hemstrom said that the curve only needs updating every 10 years; and Nordlund replied that it was his
understanding that the curve could be adjusted at any time in the event that existing conditions change. Teresa Scott asked about data from 1979 to 1982, and Hemstrom replied that data were not recorded for those years. He said that this absence of data was also noted in the HCPs.

Hemstrom said that he will provide the updated flow duration curves to Kristi Geris for distribution to the Coordinating Committees no later than the September 24, 2013 meeting. *(Note: Hemstrom will also include data from the month of June in the summer study period in both updated flow duration curves, as agreed to at the Coordinating Committees conference call on July 23, 2013.)*

**E. Chelan County Noxious Weed Board Plan for Application of Milfoil Control Chemical in Rocky Reach (Steve Hemstrom)**

Steve Hemstrom said that, as discussed at the Coordinating Committees’ meeting on June 25, 2013, Chelan PUD submitted a comment letter to the Chelan County Noxious Weed Board (the Weed Board) regarding their Integrated Aquatic Vegetation Management Plan (IAVMP) and, specifically, regarding the proposed pilot application of Triclopyr triethylamine (TEA) near the mouth of the Entiat River. Hemstrom said that the purpose of Chelan PUD’s letter was to relay concerns from Chelan PUD and the HCP Coordinating Committees, and facilitate continuing discussion regarding the possible effects of Triclopyr TEA. He reminded the Coordinating Committees that the IAVMP cited a NMFS Biological Opinion (BiOp) that addressed Triclopyr butoxyethyl ester (BEE)—not Triclopyr TEA; and that Chelan PUD is recommending due diligence for the application of Triclopyr TEA. Hemstrom said that during a joint call attended by Chelan PUD, Washington State Department of Ecology (Ecology), and the Weed Board regarding Chelan PUD’s comment letter, the Weed Board showed lack of interest to address additional questions or comments on the IAVMP, or on the proposed use of Triclopyr TEA. Hemstrom said that the proposed application date for the herbicide is fall 2014. He said that Chelan PUD is concerned by the Weed Board’s lack of response to their concerns.

Teresa Scott asked if consultation with NMFS and the U.S. Fish and Wildlife Service (USFWS) is required, and Bryan Nordlund replied that he is looking into that. He explained that with herbicides, there are nationwide consultations; and added that the U.S.
Environmental Protection Agency (USEPA) and NMFS have been in disagreement regarding the regulation of pesticides. Nordlund said that he agrees there needs to be consultation, but how it gets done is another question. He added that he would discuss an “advisement letter,” with a NMFS fish toxicologist stationed in his office (but assigned to NMFS nationally) as an interim measure preceding completion of consultation with USEPA, but ultimately the decisions on pesticide consultation will be made at the national level. Scott said that she contacted regional staff at the Washington Department of Fish and Wildlife (WDFW), and was told that whatever they had the power to do has been done. Mike Schiewe said that there must be a federal nexus for a Section 7 consultation to be required, and that Chelan County apparently does not have that nexus. He suggested that USEPA probably approved the use of Triclopyr TEA, and he is unsure that there is anything further that the Coordinating Committees can do at the Chelan County level.

III. Douglas PUD

A. Wells Dam Fish Counts Update (Tom Kahler)

Tom Kahler said that Wells Dam fish counts are still behind. He said that it is impractical to hire another counter since a new relief counter is currently being trained, and the 2012 relief counter is now full time. He said that the number of fish passing the dam has decreased, so counts are catching up. He said that there have been issues with similar sized fish of multiple species (minijack Chinook, jack sockeye, and resident species) repeatedly passing back and forth through the count window, which requires additional time to sort through which fish need to be counted and which can be ignored. Bryan Nordlund suggested that this behavior might be related to passage conditions caused by the recent count window diffuser modifications. Kahler said he did not know, and that next year Douglas PUD plans to have two relief counters, as well as different video and lighting systems. Lance Keller noted that Chelan PUD is also slightly behind on fish counts due to restrictions on overtime.

B. Wells Dam Bypass Operations Update (Tom Kahler)

Tom Kahler said that Wells Dam bypass operations concluded on August 19, 2013, at midnight, as described in an email distributed to the Coordinating Committees by Kristi Geris that same day.
C. **Subyearling Study Update (Tom Kahler)**

Tom Kahler said that there have been 3,280 detections of subyearling Chinook so far this year. He said that the total tagged this year was about 17,000 fish. Kahler reviewed counts at different detection locations, and noted that subyearlings are still being detected at Rocky Reach, with 1,975 detections to date. Kahler said that monitoring will continue, and he added that he has not yet had a chance to begin analyzing these data. Steve Hemstrom asked about mean travel times, and Kahler replied that he will distribute details on mean travel times following the meeting. *(Note: Kahler provided a brief summary of mean travel times to Kristi Geris on August 28, 2013, which she distributed to the Coordinating Committees the same day.)*

D. **Fisheries and Oceans Canada Report – Effectiveness of the Fish Water Management Tool as No Net Impact Compensation Vehicle (Tom Kahler)**

Tom Kahler said that Dr. Kim Hyatt is planning to develop his report on the Fish Water Management Tool (FWMT) into three peer-reviewed journal articles. Kahler said that the first article, which he has already reviewed, focuses on the modeling and how it addresses noncompliance with the Okanagan Basin Agreement, and the next two articles will describe the weight of evidence supporting the benefits of the FWMT, as Hyatt presented to the Priest Rapids Coordinating Committee Hatchery Subcommittee (PRCC HSC) and HCP Hatchery Committees at their combined session on August 22, 2013. Kahler said that preparations of the papers are behind schedule, and they will not likely be available until the end year.

E. **2013 Adult Lamprey Passage and Enumeration Study Update (Tom Kahler)**

Tom Kahler said that the Yakama Nation (YN) provided lamprey for the study, and that 101 lamprey were passive integrated transponder (PIT)-tagged and radio-tagged, and an additional 5 lamprey were PIT-tagged only. He said that 9 PIT-tagged and radio-tagged lamprey were released directly into each ladder (18 total), and he added that fish released in the ladders have all been detected by the upper ladder detection arrays. He said that, due to delays in reporting counts (see Item III-A), up-to-date total lamprey counts are not available; but he did report that 17 lamprey have been counted at the window as of August 17, 2013. Kahler said that the fish released below the dam do not appear to be approaching the dam, and they appear to be dropping further downstream of the release location. He said that, to
date, there are insufficient data collected to determine fishway entrance efficiency. Lance Keller asked where lamprey were released downstream of the dam, and Kahler replied that 83 lamprey were released at the downstream end of Carpenter Island, about 1.5 miles downstream of the dam. Mike Schiewe said that Douglas PUD plans to have preliminary results available by fall 2013, and that a final report, prepared with LGL Limited Environmental Research Associates, will be available by spring 2014.

**F. Review of the HCP Coordinating Committees’ Chairperson (Tom Kahler)**

Tom Kahler said that the review of the HCP Coordinating Committees’ Chairperson, Mike Schiewe, and supporting staff, Kristi Geris, was positive. He added that the Coordinating Committees also acknowledged other Anchor QEA staff who have helped support the HCP Coordinating Committees throughout the years. He said that the only suggestion was to coordinate more with Denny Rohr and the PRCC HSC to synchronize discussion items of mutual interest.

**IV. Hatchery and Tributary Committees Update (Mike Schiewe)**

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees’ meeting on August 20, 2013:

- **2013 General Salmon Habitat Program Proposals:** The Tributary Committees completed their review of proposals received for the General Salmon Habitat Program, and tentatively approved funding for seven projects; all of which were partial funding requests. The Cascade Columbia Fisheries Enhancement Group (CCFEG) submitted four of nine proposals received—three were funded. The Chelan County Natural Resource Department (CCNRD) submitted two of nine proposals received—one was funded. The remaining proposals received and funded were from Chelan-Douglas Land Trust (CDLT), Okanogan Conservation District (OCD), and Trout Unlimited – Washington Water Project (TU-WWP). Total Tributary Committees contributions equaled $1.12 million. Current Tributary Committees balances include $4 million in the Rock Island fund, $1.6 million in the Rocky Reach fund, and $1.5 million in the Wells fund. Bryan Nordlund asked why CCNRD’s Icicle-Peshastin Irrigation District Pump Exchange was not funded, and Tom Kahler replied that there were numerous issues, including a lower-cost competing proposal.
• **Contract Extension Request:** The Rock Island Tributary Committee approved a contract extension request from the CCNRD on the Wenatchee Levee Removal and Riparian Restoration Project.

• **Review of the Tributary Committees Chairperson:** The Tributary Committees agreed unanimously to retain Tracy Hillman as the Chairperson for the next 3-year period.

• **Upper Columbia Salmon Recovery Board Request:** The Tributary Committees elected to contribute $3,000 ($1,000 from each of the administrative allowances) of the Plan Species Accounts to help sponsor the 2013 Upper Columbia Science Conference on November 13 and 14, 2013.

Schiewe said that, this month, the Hatchery Committees held a three-part meeting beginning with their regular monthly meeting on the morning of August 21, 2013, which was held at Douglas PUD. He said that the afternoon was dedicated to a presentation by Douglas PUD and HDR Engineering, Inc. (HDR) on the modernization of Wells Hatchery. Schiewe said that the Hatchery Committees reviewed the Wells Hatchery Modernization Master Plan, and had requested a presentation by HDR. He said that, in general, discussions were well-received, and that another opportunity for the Hatchery Committees to provide input will be at the 30% design stage. Lastly, on the morning of August 22, 2013, the Hatchery Committees met in a joint session with the PRCC HSC to receive an update on sockeye programs presented by the Okanagan Nations Alliance (ONA) and Fisheries and Oceans Canada (DFO). Schiewe said that Dr. Kim Hyatt’s presentation was similar to what was presented to the Coordinating Committees at their meeting on August 28, 2012. He said ONA staff reported that construction has started on the new Kl cp’elk’ stim Fish Hatchery in Penticton, British Columbia; the plan is to begin rearing sockeye in fall 2014. He added that production is expected to be about 5 million fry at the facility. Schiewe then updated the Coordinating Committees on the following actions and discussions that occurred at the Hatchery Committees’ meeting on the morning of August 21, 2013:

• **Hatchery Genetic and Management Plan (HGMP) Update:** NMFS is now focusing on processing all permits for the Mid- and Upper-Columbia. In the Okanogan, designation of spring Chinook as a Section 10(j) experimental population has been delayed. The goal after designation is to move juveniles from Winthrop to Chief Joseph Hatchery (CJH) for grow out and for release in the Okanogan. This
designation was expected to be completed this year, but the deadline was not met. As a result, Winthrop National Fish Hatchery (NFH) will release 100,000 to 150,000 subyearling spring Chinook in the Methow this fall to get under capacity. The permitting for the 10(j) designation is now expected to be completed by mid-March 2014. The Okanogan steelhead HGMP and Biological Assessment (BA) for the Section 10 permits are expected to be completed by January 20, 2014. In the Methow, most issues have been settled among *U.S. v. Oregon* parties. They are moving forward with a single BiOp for spring Chinook and steelhead, which is expected to be complete in January 2014. Douglas PUD noted that the current Methow steelhead Section 10 permit expires October 2, 2013, and expressed concern that they will endure a period of not being permitted. It was suggested that if formal consultation is already underway, the program is still covered under the existing permit. NMFS is being asked to provide a letter confirming that this is true. In the Wenatchee, everything is on track to finish by October 22, 2013. A single BiOp will be submitted for steelhead and Chinook, and bull trout consultations are on schedule with USFWS.

- **Hatchery Monitoring and Evaluation (M&E) Appendices – Meeting of the PUDs:**
  Greg Mackey agreed to develop draft tables for inclusion in the Hatchery M&E Plan Appendices, for Hatchery Committee review.

- **Hatchery M&E Update:** Chelan PUD announced that they received one full proposal in response to the Chelan PUD Hatchery M&E RFP. It is unlikely that they will convene a review panel, as previously discussed. They plan to have an Implementation Plan ready for Hatchery Committees’ review no later than October 2013.

- **Methow Spring Chinook HGMP Update:** Chelan PUD’s 2015 release plan includes collecting 2013 broodstock at Winthrop, rearing at Eastbank, overwintering at Carlton, and likely co-acclimating with coho at Chewuch Pond. Chelan PUD is developing a HGMP for that program, which will soon be available for Hatchery Committees’ review.

- **Live Spawning Twisp River Steelhead Broodstock:** The YN provided an update on their Steelhead Kelt Reconditioning Program. They are working through fish health concerns, and are discussing potentially moving the program from Winthrop NFH to the Methow Fish Hatchery, or possibility to Wells Hatchery. Current funding ends in
2017, and Keely Murdoch indicated that continued funding will likely depend on the success of the program.

- *Chief Joseph Hatchery Brood Collection:* The Colville Confederated Tribes (CCT) reported that spring Chinook broodstock was successfully transferred from Leavenworth NFH to CJH, and that they anticipate meeting full summer Chinook brood for natural and hatchery stocks (i.e., 60% of 700,000). The CCT also reported security issues at CJH which resulted in the theft of 42 brood; purse seine collections in the following days were successful in collecting replacement fish.

V. HCP Committees Administration (Mike Schiewe)

A. *Next Meetings*

The next scheduled Coordinating Committees meeting is September 24, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington. The meetings on October 22, 2013, and November 26, 2013, will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

VI. Fish Passage Center

A. *Comparative Survival Study: Introduction and Snake River Basin Results (Jack Tuomikoski)*

Mike Schiewe welcomed the Fish Passage Center (FPC) and PRCC HSC. Jack Tuomikoski (FPC) presented an introduction to the Comparative Survival Study (CSS), reviewed Snake River Basin Results, as included in the 2012 CSS Report, and provided an overview of recent CSS workshops. Tuomikoski’s presentation (Attachment D) was distributed to the Coordinating Committees by Kristi Geris on August 28, 2013.

Introduction

Tuomikoski said that the CSS was initiated in 1996 by states, tribes, and USFWS to estimate survival of selected life stages of Chinook salmon and steelhead in the Snake and Columbia rivers. He said that the study uses PIT-tag detection data, and that data used are from fish tagged specifically for the CSS, and also from other studies. Tuomikoski said that, since its inception, the CSS project has been independently reviewed and modified a number of times, including reviews by the Independent Scientific Advisory Board (ISAB) and the Independent Scientific Review Panel (ISRP). Tuomikoski reviewed the temporal and spatial coverage of
the CSS, noting that the Snake River Basin has been monitored for more than 18 years and has many more CSS tag and release sites than the Mid- and Upper Columbia; and, therefore, much more is known about stocks in the Snake River Basin than in the Columbia basins (in terms of the CSS). Tuomikoski said that smolt survival estimates developed under the CSS inform understanding of the effectiveness of rearing habitat actions and hydrosystem actions; and adult success in the CSS informs understanding of harvest management, hydrosystem actions, estuary habitat actions, and transportation effects. He said that Snake River SARs in the CSS are calculated from Lower Granite Dam while Mid- and Upper Columbia SARs are calculated from McNary Dam. Tuomikoski said that the CSS provides the region with long-term indices and comparisons of SARs, as well as addressing management questions related to hydropower operations, and hatchery and habitat evaluations.

Snake River Basin 2012 CSS Report
Tuomikoski reviewed Snake River Chinook and steelhead SARs. He noted the high correlation between hatchery and wild Chinook SARs, which, he said, indicated that hatchery and wild Chinook seem to be responding similarly. He reviewed juvenile survival results, including the results of finer-scale analyses, as requested by ISAB. Consistencies included faster emigration and lower mortality when water transit time is reduced and spill levels are high; for steelhead, a correlation between increased surface passage structures and decreased fish travel times; and increases in mortality rates over the season. Tuomikoski reviewed Snake River transport-to-in-river survival ratios (TIR), which, he said, were used to evaluate transportation programs for Snake River stocks. He said that results indicate that as in-river survival increases, TIR decreases, and he added that, on average, the success rate for transported fish was 90% of that for their in-river counter parts. Steve Parker asked how the CSS defines “straying,” and Tuomikoski replied that because the CSS is based on PIT-tag data within each sub-basin, a stray is considered any fish that enters and does not leave the system. He said, however, that this does not account for such factors as recreational harvest. Tuomikoski said that data regarding age at maturity for spring and summer Chinook were developed as monitoring tools and to inform harvest management. He said that results indicated that age at maturity and jack percentage of Chinook in the Snake River and Mid- and Upper Columbia basins were influenced by both stock and year factors.

Recent Workshops
Tuomikoski summarized discussions from CSS workshops that were held in 2011 and 2013. He said that, in 2011, the workshop focused on determining the relative importance of various factors in determining salmon and steelhead survival rates. Factors discussed included Federal Columbia River Power System (FCRPS) operations, freshwater and ocean conditions, and fish attributes. The workshop also focused on building tools that evaluate and optimize FCRPS operations to meet Northwest Power and Conservation Council (NPCC) SAR objectives. Key findings included multiple lines of evidence indicating the existence of delayed hydrosystem mortality; freshwater and marine survival increases with increased water velocity, increased spill, and lower percent transported; and the fact that the current FCRPS configuration results in a limited ability to increase water velocity. Notwithstanding this latter limitation, there is the opportunity to further manage spill combined with surface passage to reduce powerhouse passages.

Tuomikoski said that the 2013 CSS Workshop focused on the review of a draft design for a management experiment to increase the amount of voluntary spill at FCRPS projects, as well as on recommendations to strengthen the proposed experiment. Tuomikoski reviewed the experimental design, spill scenarios and objectives, and prospective tools. He said that models that have been fit to the empirical data will be used to generate the distribution of SARs for a range of river and ocean conditions and two spill scenarios; and then distributions will be summarized relative to desired goals. He said that the projections suggest that spill of 115/120% total dissolved gas (TDG), or higher, would reduce the risk of very low SARs (less than 1.0%), and increase the likelihood of SARs greater than 2.0%.

Russell Langshaw questioned only using increased spill amounts in the experimental design, and suggested also including reduced spill amounts in order to refine the models. Michele DeHart replied that, in recent years, there have not been many low spill years, and that the purpose of the experiment would be to reflect what is currently happening. She added that this is a monitoring program for a lifecycle study, and it is not meant to be a study about flows.
B. *Comparative Survival Study: SARs and Juvenile Metrics of Upper Columbia Stocks (Robin Ehlke)*

Robin Ehlke (WDFW) reviewed SARs and Juvenile Metrics of Upper Columbia Stocks, as included in the 2012 CSS Report. Ehlke’s presentation (Attachment E) was distributed to the Coordinating Committees by Kristi Geris on August 28, 2013. Ehlke reviewed the CSS objectives for Upper Columbia stocks, and noted their similarity to CSS objectives for Snake River stocks. She described the Upper Columbia mark groups, which include a Wenatchee Basin group, an Entiat-Methow aggregate, a Wenatchee-Entiat-Methow aggregate, and three groups marked at Rock Island Dam. She also reviewed a map depicting CSS tag and release sites in the Upper Columbia River Basin. Ehlke reviewed Upper Columbia juvenile and adult metrics. She noted that Upper Columbia McNary to Bonneville SARs, as calculated for the CSS, do not include or account for juvenile mortality occurring through the Upper Columbia to McNary Dam; and therefore, these SARs are biased high. She reviewed Rock Island to McNary juvenile survival, noting that survival for steelhead was slightly higher than for Chinook. She also reviewed Rock Island to McNary juvenile passage metrics and environmental conditions, again noting the similarities to Snake River stocks. Findings included decreased fish travel time with increased flow and with Julian date; decreased instantaneous mortality for Chinook with increased spill levels at Wanapum and Priest Rapids, and increased instantaneous mortality for steelhead with increase in Julian date; and increased reach survival with increased flow and spill. Ehlke reviewed graphs depicting wild and hatchery Chinook McNary to Bonneville SARs, wild and hatchery steelhead McNary to Bonneville SARs, and wild and hatchery Chinook and steelhead Rock Island to Bonneville SARs. Results indicated that overall Upper Columbia McNary to Bonneville SARs for 2000 to 2010 Chinook were highly correlated with spring Chinook SARs from the Mid-Columbia and with spring/summer Chinook SARs from the Snake River. Steve Parker noted that in the graphs depicting wild and hatchery Chinook and steelhead McNary to Bonneville SARs, the average SARs for wild and hatchery stocks are not on the same time series, which gives the impression that hatchery stocks are not faring as well. Ehlke said that, over time, the averages are still similar. She added, however, that the graphs will be revised to be on the same time series to avoid confusion. Ehlke reviewed graphs comparing Upper Columbia stocks with Snake River stocks, and she noted that those data indicate that SARs in the Upper Columbia are generally lower than in the Snake. Lastly, Ehlke reviewed conclusions,
specifically noting that increases in the numbers of mark groups and detection sites would strengthen the data.

C. **Comparative Survival Study: Discussion (All)**

Jack Tuomikoski said that data for the Mid- and Upper Columbia Basins are based on about 4,000 to 5,000 PIT tags, which, Robin Ehlke added, is a small sample size compared to the Snake River Basin. Michele DeHart also added that any increase in PIT tag data in the Mid- and Upper Columbia Basins would help analyses in those basins.

Tom Kahler questioned the way stocks with different SARs were compared in the Mid- and Upper Columbia River and Snake River basins, and Ehlke replied that increased marked groups will improve the accuracy of those comparisons. Kahler asked which release group was numerically dominant in the SARs calculations, and Tuomikoski replied that Leavenworth was, with 15,000 detections per year. Russell Langshaw questioned the accuracy of the reported hatchery M&E SARs, noting that he believes those values should be higher. DeHart said that those values can always be re-evaluated. She said that the analyses are based on PIT tag data that were retrieved from the PIT Tag Information System (PTAGIS), and she added that additional data can be folded into the analyses, if available. Kahler noted that SARs for USFWS hatchery fish are already inherently low, and that increasing the mark rate of those fish will only exacerbate lower SARs. DeHart reminded Kahler that the CSS is a monitoring program, and that the purpose is to reflect what is actually happening. She said that if Leavenworth plays a significant role in low SARS, then that needs to be reflected. Mike Schiewe suggested developing Leavenworth-only SARs. DeHart said that, ultimately, she hopes to have enough data to separate all stocks. She said that the only reason for aggregate stocks is because, currently, there are not enough PIT tags.

Steve Parker noted the similarities in increased SARs for Columbia River and Snake River steelhead in 2008; and DeHart recalled that 2008 was a high flow and high spill year, as well as a good ocean year. Parker then noted the distinct split in reach survival for Columbia River and Snake River steelhead in 2008, which, he noted, did not make sense when considered with the similar increased SARs in 2008. DeHart explained that the information in the Snake River Basin is more developed compared to that in the Columbia River Basin, largely due to the low number of tags in the Columbia River Basin.
Steve Hemstrom noted that high uncontrolled spill years, notably 2008, 2011, and 2012, were not consistently reflected in all graphs. DeHart said that this discrepancy could be due to other factors such as high TDG years and wind power-related issues. Kirk Dodson said that high TDG years also did not seem to be consistently reflected in the graphs. DeHart said that the focus in the Upper Columbia has been on the past 3 years, and that those data may not have been incorporated yet.

DeHart reminded everyone that survival data can be found on the FPC website, and that those data can be used to see how hatchery SARs are calculated.

Bob Rose asked what it would take to go from a monitoring program to the proposed experiment to test increased spill levels, and he asked what the ideal number of fish would be to test these variables. DeHart said that the FPC is currently working with ESSA Technologies Ltd. to assess how large the mark group would have to be. She said that the experiment is a work in progress, and that elements such as representative mark group sizes and duration are yet to be determined.

Bill Tweit said that the CSS appears to evaluate project survival differently than the HCPs, and he asked if there were plans to compare the seemingly different assessments. Hemstrom said that, in terms of a tagging comparison, because the CSS is based on PIT-tag data only, and the HCPs are based on both PIT-tag and acoustic tag data, the two are not comparable due to the substantial differences in tagging methods. Erin Cooper suggested that, because the rejection rate for acoustic tags is much higher for reasons such as size and disease, only the largest, healthiest fish are tagged. She said that PIT-tagged fish are more representative of the run, and also include fish that would be included in an acoustic study, while the reverse is not true. Tweit said that the limitations of acoustic tag studies have been recognized, and that a lot of work has been done to account for those biases. Cooper noted that acoustic tag studies are also limited range studies, and therefore, are not representative of the ocean. DeHart said that acoustic tags are used for project survival, and the CSS informs the entire life cycle, so they cannot be readily compared. She added that, initially, performance standards at projects were based on the premise that ocean survival and project survival were independent of each other; however, she said, this premise has been found to
be untrue. She said that, for this reason, the entire life cycle needs to be considered. Kahler noted that HCP survival studies are paired-release studies, and the CSS releases are not; additionally, Douglas PUD’s PIT-tag-based survival studies account for tag shed and tagging mortalities, whereas for most of the fish used in the CSS analyses, tag shed and tagging mortalities are not accounted for. Participants acknowledged the inappropriateness of comparisons between HCP survival study results and CSS reach survival results.

Langshaw asked how hydrosystem-related mortalities are separated from freshwater conditions. Tuomikoski said that several factors affect juvenile survival, which are evaluated when they come back as adults. He said that often the factors are spill and flow. DeHart said that those analyses have been run on Snake River fish, as described in the 2012 CSS Report. Langshaw said that he read the 2012 CSS Report but did not see how the two were separated out. DeHart said that analyses are different, year to year, based on specific requests; and Langshaw suggested that these types of details should be a regular feature included in the annual reports.

Langshaw noted that the CSS emphasizes the importance of spill and water transit time; however, transport results are not very strong. He also asked why survival is so low, if the relationship between freshwater and the ocean is strong. DeHart said that low survival is due to delayed mortality with transported fish. She added that a recent analysis indicates delayed mortality through hydro passage. Tweit suggested that transport still makes sense when in-river conditions are poor.

Patrick Wyena Sr. asked if predation was accounted for in the CSS when calculating powerhouse mortalities, and DeHart replied that all reach analyses incorporate mortalities by predation. Tuomikoski said that, because the CSS evaluates overall survival, predation is not individually parsed out. DeHart added that individual predation data can be incorporated into CSS models if there is interest in looking at those data. Hemstrom suggested incorporating the Rock Island avian data.

Bryan Nordlund asked how well the CSS reflects the run at large. DeHart said that she believes there are sufficient data for the Snake River, but suggested that data could be greatly improved in the Mid- and Upper Columbia River basins. Nordlund replied that he was
thinking more in terms of, incrementally, how hatchery and wild stocks are evaluated, and he added that he believes evaluations can be fine-tuned. He said that, for example, if Leavenworth production affects the run at large, but only 1 or 2 Leavenworth fish are detected at Rock Island, and the other fish are coming from other tributaries, they are not equally weighted. DeHart said that the only way to improve that is to increase marking.

Parker said that a comparison of SARs in the Snake and Upper Columbia may just reflect differences in SARs in hatchery and wild fish, as Kahler noted earlier. He added that these differences may incorrectly imply differences in hydropower systems or in hatchery versus wild fish. DeHart said that obtaining wild fish data is a more difficult process, and she added that the FPC worked with Idaho Fish and Game to improve wild data in the Snake River Basin by installing several traps in the area.

Parker asked if there are enough wild fish in the Upper Columbia to estimate reach-specific survival of populations. Tuomikoski said that smolt SARs to the first dam can be obtained; however, there are not enough fish to obtain subsequent survivals. Parker expressed doubt that people will be convinced that hatchery and wild SARs are comparable. He said that the concern is that low SARs in hatchery fish will decrease SARs in aggregate Upper Columbia populations, and he added that he would like to determine if there is a way to calculate SARs without wild fish. DeHart said that the only wild fish marking takes place in the Wenatchee, and she added that there are also some PIT-tagged wild fish in the Entiat and Methow.

Teresa Scott asked if the FPC is asking the PUDs if there is a way to increase tagging; and DeHart replied that the FPC believes that the PUDs know best what is available and what the options are. She added that Parker brought up a good point—is it feasible to tag a large number of wild fish? Tweit suggested combining tag technologies. Parker suggested PIT-tagging enough wild fish to at least calculate reach-specific survivals. He said that this may show a ratio of wild-to-hatchery performance through the system. DeHart said that tagging wild populations in the Snake River would be a huge effort, and that it only gets harder to obtain juvenile survival downstream because of fish mortalities.
Nordlund said that since the inception of the HCPs, he has carefully tracked counts in the Upper Columbia, and adult counts for every species at Priest Rapids Dam, and likely Rock Island, Rocky Reach, and Wells dams as well, have markedly increased; and wondered how those counts reconcile with poor SARs calculated by the CSS study. He said it seems apparent that there are holes somewhere in the SAR estimates. Hemstrom also noted the high sockeye SARs based on Dr. Kim Hyatt’s work, and he added that sockeye are the farthest migrating fish in the Upper Columbia.

Kahler asked if a power analysis has been run to determine what sample size is needed for a good SAR estimate, and Tuomikoski replied that 50,000 typically is enough for a robust estimate. Tuomikoski added that what was presented today represented smaller marked sizes, and that 50,000 would provide stronger transport and in-river data.

Denny Rohr thanked the HCP Coordinating Committees for hosting the FPC presentation, and thanked everyone for participating.

**List of Attachments**

- Attachment A  List of Attendees
- Attachment B  Photograph of the Repaired Rock Island Dam Right Bank Auxiliary Water System and Fishway
- Attachment C  Chelan PUD’s 2013 HCP Preliminary Rocky Reach and Rock Island Fish Spill Report
- Attachment D  Comparative Survival Study: Introduction and Snake River Basin Results
- Attachment E  SARs and Juvenile Metrics of Upper Columbia Stocks
## Attachment A
### List of Attendees

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<th>Name</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Denny Rohr†</td>
<td>D. Rohr &amp; Associates, Inc.</td>
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<td>Michele DeHart†</td>
<td>Fish Passage Center</td>
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<td>Jack Tuomikoski†</td>
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<td>Erin Cooper†</td>
<td>Fish Passage Center</td>
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<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Lance Keller*</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Curt Dotson†</td>
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<td>Russell Langshaw†</td>
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<td>Tom Dresser†</td>
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<td>Bob Rose*</td>
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<td>Steve Parker†</td>
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<td>Patrick Wyena Sr.†</td>
<td>Wanapum Elder</td>
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<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
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<td>Scott Carlon†</td>
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<td>Jim Craig*</td>
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<td>Teresa Scott*</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Robin Ehlke†</td>
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<td>Bill Tweit†</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**
- * Denotes Coordinating Committees member or alternate
- † Joined for the Fish Passage Center Comparative Survival Study Presentation
2013 ROCKY REACH

Rocky Reach Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 9% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 21 August, 2400 hrs
Percent of run with spill: 97.1% (est. on 8/26 for 8/21)
Cumulative index count: 22,034 subyearling Chinook (as of 8/26)
Summer spill percentage: 11.73% (9% plus 2.74% forced spill 5 June – 21 August)
Avg river flow at RR: 153,805 cfs (5 June - 21 August)
Avg spill rate at RR: 18,044 cfs (5 June - 21 August)
Number of spill days: 78

2013 ROCK ISLAND

Rock Island Spring Spill
Target species: Yearling Chinook, steelhead, sockeye
Spill target percentage: 10% of day average river flow
Spill start date: 17 April, 0001 hrs
Spill stop date: 4 June, 2400 hrs (immediate increase to 20% summer spill)
Percent of run with spill: Yearling Chin 98.25%; steelhead 98.23%; sockeye 98.81%
Cumulative index count: 28,324 Yearling Chins; 15,099 Steelhead; 25,111 sockeye
Spring spill percentage: 12.51% (10% plus 2.51% forced spill 17 April – 4 June)
Avg river flow at RI: 175,634 cfs (17 April - 4 June)
Avg spill flow at RI: 21,977 cfs (17 April - 4 June)
Total spill days: 49

Rock Island Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 20% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 18 August, 2400 hrs
Percent of run with spill: Subyearling Chinook 97.21% (est. on 8/26 for 8/18)
Cumulative index count: 17,107 subyearling Chinook (as of 8/26)
Summer spill percentage: 20.0% (5 June- 18 August)
Avg river flow at RI: 158,962 cfs (5 June - 18 August)
Avg spill flow at RI: 31,734 cfs (5 June - 18 August)
Total spill days: 75
Juvenile Index Counts 2003-2013 from the Rocky Reach Juvenile Fish Bypass and Rock Island Bypass Trap, Smolt Monitoring Program (SMP)  
1 April – 31 August.

Table 1. Rocky Reach Juvenile Bypass index sample counts, 2003-2013

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<td>17,246</td>
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* Count Not Complete

Table 2. Rock Island Smolt Monitoring Program index sample counts, 2003-2013

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<td>27,298</td>
<td>17,107*</td>
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</table>

* Count Not Complete

26 August, 2013 Chelan PUD Fish Spill Programs
Comparative Survival Study

Introduction and Snake River Basin Results

Jack Tuomikoski

27th Aug, 2013
• Introduction to CSS

• Snake River Basin Results
  • 2012 report
  • Recent Workshops Summary

• Upper Columbia Results (Robin)
  • 2012 report
Background

- Initiated in 1996 by states, tribes & USFWS to estimate survival rates at various life stages
  - Designed to assess hydrosystem operations on state, tribal, and federal fish hatcheries and LSRCP
  - PATH: “can transportation . . . compensate for the effect of the hydrosystem?”
  - NPCC has established the need to collect annual migration characteristics including survival
  - NOAA biological opinions require research, monitoring and evaluation
Background

- Management-oriented large scale monitoring
  - Observational study
  - Aligned with basin wide monitoring needs (RME)

GOALS

1. Quantify the efficacy of transportation
   *Develop a more representative control group*
2. Compare survival rates within and across species
3. Establish long term data set
Background

CSS data is derived from PIT tags

- Tagged specifically for CSS
- Cooperative marking
  *reduce costs/handling, eliminate duplication
- Groups marked specifically for other studies
Background

- Collaborative scientific process was implemented for study design and to perform analyses

- CSS project independently reviewed and modified a number of times
  - Draft report posted – Aug 31st
  - ISAB, ISRP and other entities
History of ISAB/ISRP Reviews of CSS

1997 – ISAB First review

1998 – ISAB Extend to other species & life history types (Steelhead) nonparametric bootstrap approach

2002 – ISRP Additional evaluate bootstrap, compare with likelihood methods, Monte Carlo simulator evaluation
History of ISAB/ISRP Reviews of CSS

2003 – ISAB Review of flow augmentation
“understanding of the relation between reach survival, instantaneous mortality, migration speed, and flow”

2006 – ISAB Review of 2005 CSS report
1) “finer scale analyses of the relationships between survival and specific operational actions or environmental features”
2) Develop a ten year summary report
History of ISAB/ISRP Reviews of CSS

2007 – ISAB/ISRP Review CSS “10-year” report

1) continue coordination
   cost savings/ avoid redundancy

2) Evaluate if PIT tag SARs are less than run reconstruction SARs

2009 – ISAB Tagging Report

Compare CSS SARs with Run Reconstruction SARs

>2009 ISAB annually reviews CSS reports
The CSS is a joint project of the state & tribal fishery managers and the USFWS

**DESIGN**
- WDFW, CRITFC, USFWS, ODFW, IDFG

**IMPLEMENTATION & TAGGING**
- FPC: Logistics, coordination
- PTAGIS: Raw Data; FPC: Reports, Estimates

**DATA PREPARATION & ANALYSIS**
- CSS Oversight Committee
- Fish Passage Center

**REGIONAL REVIEW**
- Draft on BPA & FPC websites
- Regional Public Review; ISAB, ISRP, FPAC, NMFS, etc.

**FINAL REPORT**
- Posted on BPA & FPC websites
TEMPORAL COVERAGE

• **Snake River**
  ~20 stocks over 18 yrs
  sp/su/fall Chinook, steelhead, sockeye

• **Middle Columbia River**
  Begin in 2000 [BOA detect]
  ~ 9 stocks

• **Upper Columbia River**
  Begin in 2000 [BOA detect]
  ~8 stocks
Spatial Coverage: Snake River Hatchery Steelhead
Spatial Coverage: Wild steelhead

CSS PIT-Tag & Release Sites 2011

Wild Steelhead

CSS Release Sites
Dams
Water
Smolt Survival

FRESHWATER

ESTUARY

OCEAN

Rearing Habitat Actions

Attachment D
Adult Success

FRESHWATER

Hatchery

Wild

LGR

IHR

MCN

BON

ESTUARY

Transportation Effects

Hydro-system Actions

Estuary Habitat Actions

Harvest Management
SNake River Sars

FRESHWATER

Transportation
Or Bypass
effects

Hydro-
system
Actions

Estuary
Habitat
Actions

Harvest Management

ESTUARY

OCEAN

LGR

BON
What does CSS provide for the region?

- Information easily accessible and transparent
  - CSS PIT-tags accessed by any PTAGIS users, including fisheries managers, researchers, and academics

- Long term indices (identify bottlenecks)
  - Travel Times
  - In-river Survival Rates
  - In-river SARs by route of passage
  - Transport SARs
  - Adult success, conversion

- Comparisons of SARs
  - Transport to In-River
  - NPCC Regional SAR goal
  - By geographic location
  - By hatchery group
  - Hatchery to Wild
  - Chinook to Steelhead
What does CSS provide for the region?

- Long term consistent information collaboratively designed and implemented

- Management questions
  - hydropower operations
  - hatchery evaluations
  - habitat evaluations
Snake River Basin
2012 CSS Report
Snake River Chinook SARs

- Hatchery Chinook
  - 5 spring
  - 3 summer
- Summer > Spring
- Highly correlated
- 1999, 2000, 2008 > 2%

OVERALL SARs (with jacks)
Snake River Chinook SARs

- Hatchery Chinook
  - 5 spring
  - 3 summer
- Summer > Spring
- Highly correlated
- 1999, 2000, 2008 > 2%
- Wild Chinook
  - similar results
CSS Results: Chinook SARs

11.5% SARs > 2

77% SARs < 2

11.5% SARs = NS
Snake River Steelhead SARs

- Less correlated than Chinook stocks

- 2008* Highest in time series
Snake River Steelhead SARs

15% SARs > 2

50 % SARs < 2

35% SARs = NS
Juvenile Survival

- Component of RM&E
- Long Term dataset of annual juvenile metrics
  - Emigration rate
  - Arrival time at dams
  - Juvenile survival
- Finer scale analyses: response to ISAB comment
Juvenile Survival: Finer-Scale Analyses

- Simultaneous processes:
  - Migration (FTT) & Mortality
  - If we can predict these, we can predict survival
  - GOAL: evaluate effects of operational and environmental features
Juvenile Survival: Finer-Scale Analyses

- Multiple regression model factors
  - Seasonality (Julian Day)
  - Temperature
  - Turbidity
  - Average Percent Spill
  - Surface Passage Structures (TSW, RSW)
  - Water Transit Time (WTT, days)
  - Hatchery Composition
Juvenile Survival: Finer-Scale Analyses

Consistent Patterns:

- Fish emigrate faster and mortality is lowest when Water Transit Time is reduced and spill levels are high.

- For steelhead, as surface passage structures have increased in number, fish travel times have decreased.

- Mortality rates tend to increase over the season.
Snake River TIR

- Used to evaluate transportation program for Snake River stocks
- TIR is a Ratio of SARs: Transported ÷ Inriver
Relative effectiveness of transport is related to in-river survival

As in-river survival increases, TIR decreases

When in-river surv $\sim 57\%$, transport will not be beneficial (for wild stocks)

There is room to improve in-river survival
- increased spill or water velocity
- limited potential to improve transport
The success rate for transported was 90% of that for their in-river counter parts (on average).

Transported steelhead strayed about 4.5% and in-river strayed at 0.4% (11:1)

- Deschutes and John Day
- This is a large out-of-basin population as compared to total natural spawner abundance
  - Hatchery strays identified as limiting factor to recovery of John Day and Deschutes River stocks (NOAA 2009 Mid C. St. Recovery Plan)

Transported hatchery Chinook strayed about 0.7% and in-river strayed 0.03% (23:1)

- Columbia above SR confluence
Age at Maturity for sp/ su Chinook

- Developed as monitoring tool and to inform harvest management
  - Update in 2012 report, 7 additional stocks (16 total) and one more year of data

- Age at maturity and jack percentage of Chinook in Snake River and Middle/Upper Columbia were influenced by both stock and year factors
  - A common sibling model across all stocks may not perform well

- No strong association between age at maturity and transport history for Snake River stocks
Recent Workshops
Recent Workshops

• Workshop (July 26\(^{th}\)-28\(^{th}\), 2011)
  • GOALS:
    ➢ Relative importance of various factors in determining salmon & steelhead survival rates? FCRPS operations, freshwater/ocean conditions, fish attributes
    ➢ Build tools that evaluate & optimize FCRPS operations to meet NPCC SAR objectives?
    ➢ Opportunity for leading researchers and professionals to compare results which broadens scope of review of CSS work
  • 27 scientists, US & Canada, 9 agencies, 3 universities & ESSA
  • Facilitated by ESSA Technologies Ltd.
Weight of evidence

Multiple lines of evidence for relative importance of major factors influencing survival rates

- Spawner:recruit residuals (Snake & John Day R. Chin)
- SARs (run rec. - Snake R. Chin & Sthd)
- CSS SARs (Chin & Sthd)

Environmental Contrast

Precision & Specificity

3 4 5 6 7 8 dams

Key Concepts:
Is there evidence linking estuary and early-ocean mortality to the migration experience through the hydrosystem?

DELAYED Hydrosystem MORTALITY
• Similar concept to smoking/lung cancer

Potentially 8 Dams
Multiple lines of evidence-

- 3 fold decline in marine survival rate for Chinook
- 2 fold decline in marine survival rate for Steelhead

CSS Workshop 2011

- “The evidence presented for ... delayed mortality arising from earlier experience in the hydrosystem is strong and convincing.”
- “It is difficult to imagine how [other factors] would align so well both in time and space with the establishment of the hydro system.”
Summary Workshop 2011

• Survival (in freshwater and marine) increases:
  • faster water velocity
  • increased spill
  • lower % transported

• Current FCRPS configuration:
  • Little ability to speed water velocity
  • Opportunity to further manage spill combined with surface passage to reduce powerhouse passages

• Promising conservative approach - management experiment to evaluate improvements to SARs by increasing managed spill
Recent Workshops

Workshop (March 7th-8th, 2013)

- GOALS:
  - Review a draft design for a management experiment to increase the amount of voluntary spill at FCRPS projects
  - Provide recommendations to strengthen the proposed experiment
  - Opportunity for leading researchers and professionals to share and compare recent results

- 20 attendees from agencies and universities
- Facilitated by ESSA Technologies Ltd.
What is experimental design?

Plan for measuring response to a treatment

- **Treatment** = increase in spill for fish passage
- **Response** = change in survival
- **Monitoring Plan** = implement CSS methods
Elements of “good” experimental design

- Large change (perturbation)
- High precision of measured response variable
- High degree of replication
- Minimize and account for confounding factors
Spill Scenarios Objectives

- Identify physical or biological limitations at each project.
- Describe the spill caps for various scenarios in terms of total dissolved gas.
Spill Scenarios

1. 2008 BiOp spill

2. Spill to present TDG standards:
   115% Forebay and 120% Tailrace

3. Spill to 120% Tailrace

4. Spill to 125% Tailrace
Prospective Tools

Used models that have been fit to the empirical data

And project SARs with potential management changes

- Across four release cohorts
- Three flow levels (low, medium, high)
- Four operations (BIOP, 115/120, 120, 125)
- Variable Ocean conditions (PDO from 1900-2012)
Prospective tools

- Generate distribution of SARs for range of river and ocean conditions and two spill scenarios
Prospective tools

Summarize distributions relative to desired goals:

- **Avoid undesirable** SARs < 1%
  - (linked to viability)
- **Achieve desirable** SARs > 2%
  - (NPCC goal)
Chinook - Undesirable (< 1% SAR)

Probability

Spill Treatment

- BiOp
- 115/120
- 120
- 125

60%
Chinook - Desirable (> 2% SAR)

Probability

Spill Treatment

- BiOp: 14%
- 115/120:
- 120:
- 125:

Attachment D
Workshop Comments and Recommendations

1) SARs were most critical response to consider

- Compare new SAR with simulations
- Compare new SAR against model predictions
- Compare new SARs against previous ‘analog’ year with similar flow, spill and/or PDO conditions?
- Use all available SAR comparisons to evaluate change
Workshop Comments and Recommendations

1) SARs were most critical response to consider

2) Use multiple sources of data to evaluate change
   fish travel time
   juvenile survival
   ocean survival
   stock-recruit residuals
   run-reconstruction SARs
Workshop Comments and Recommendations

1) SARs were most critical response to consider
2) Use multiple sources of data to evaluate change

3) Update and refine model parameters over time to determine whether associations are changing
Workshop Comments and Recommendations

1) SARs were most critical response to consider
2) Use multiple sources of data to evaluate change
3) Update and refine model parameters

4) Assess how increased spill will affect detection efficiency and the precision of SARs
   - New spillway detectors will increase detections
Workshop Comments and Recommendations

1) SARs were most critical response to consider
2) Use multiple sources of data to evaluate change
3) Update and refine model parameters
4) How increased spill will affect detection eff. & SAR

5) Improve communication of differences between spill scenarios and terminology for different audiences
Workshop Comments and Recommendations

1) SARs were most critical response to consider
2) Use multiple sources of data to evaluate change
3) Update and refine model parameters
4) How increased spill will affect detection eff. & SAR
5) Improve communication for different audiences

6) Given variability in ocean and flow conditions, probably need > five years to achieve desired learning
Summary:

- Experimental design = a work in progress
  - CSS Workshop final report with independent reviewer comments ~ Summer 2013

- Definition of spill scenarios for simulations based on what appears technically possible with current FCRPS configuration

- Not part of any existing implementation plan or current BiOp consultation
Summary:

- Projections suggest spill to 115/120 or higher would:
  - reduce risk of very low SARs (<1.0%)
  - increase likelihood of SARs >2% (lower end of NPCC goal)
Summary:

- Simulations are encouraging in terms of:
  - expected response (conservation benefit)
  - likelihood of detecting response (learning)
SARs and Juvenile Metrics of Upper Columbia Stocks

Robin Ehlke

Aug 27th 2013
CSS Objectives
Upper Columbia

- Establish long term survival estimates over the full life-cycle of upper Columbia stocks
- Develop Smolt to Adult Return rates (SARs) from the upper-most dam
- Develop estimates of ocean survival rates
- Use additional mark groups as they come available
Upper Columbia Mark Groups

- Five Basin-Specific Groups
  - Wenatchee Basin
    - Hatchery spring Chinook (Leavenworth)
    - Wild Chinook
    - Steelhead (hatchery/wild Cross)
  - Entiat-Methow aggregate
    - Wild Chinook
  - Wenatchee-Entiat-Methow aggregate
    - Wild Steelhead
- Three Groups marked at Rock Island Dam
  - Yearling Chinook, subyearling Chinook, steelhead
  - All three are hatchery/wild aggregates
1 - Twisp River
2 - Methow Smolt Trap at McFarland Creek Road Bridge
3 - Entiat River
4 - Chiwawa River Hatchery
5 - Nason Creek (tributary to Wenatchee River)
6 - Upper Wenatchee smolt trap just below Lake Wenatchee
7 - Chiwawa River Trap 0.5 km below CHIP acclimation pond
8 - Leavenworth National Fish Hatchery
9 - Wenatchee River trap at West Monitor Bridge
Upper Columbia Juvenile and Adult Metrics

- Juvenile passage metrics, travel time, instantaneous mortality and survival from Rock Island to McNary Dam
- Smolt to Adult Return rates
- Incorporated detection capability at Rocky Reach Dam
- Report analyses of passage metrics and SARs relative to environmental variables
Smolt to Adult Return

Upper Columbia Smolts from McNary Dam to Bonneville Dam

- MCN to BON SARs do not include or account for juvenile mortality occurring through the Upper Columbia to McNary Dam
- For this reason the MCN to BON reported SARs are biased high
- As an example, for Wenatchee the SARs would be ~ 58% of reported if RIS to MCN juvenile survival were taken into account
Steelhead survive slightly better than Chinook.

Typically both species’ survival is less than 60%.

A large component of life-cycle is not represented in MCN to BON SARs.

Weighted average of 2004-2011 survival estimates with 95%CI.
Juvenile Passage RI S-MCN Metrics/ Environmental conditions

- **Fish Travel Time**
  - Faster with higher flow and with Julian date

- **Instantaneous Mortality**
  - Decreased for Chinook as spill levels increased at Wanapum and Priest Rapids
  - Increased for steelhead with increase in Julian date

- **Reach Survival**
  - Increased with higher flow and spill
Wild and Hatchery Chinook
SAR MCN to BON

Entiat/ Methow R. Wild Chinook
- SARs averaged 1.35% (0.5%-3%)
- Enter Columbia River upstream of Rocky Reach Dam

Wenatchee River Wild Chinook
- SARs averaged 1.62% (0.8%-3%)
- Enter the Columbia River upstream of Rock Island Dam

Leavenworth Hatchery Chinook
- SARs averaged 0.58%
- Enter the Columbia River upstream of Rock Island Dam

All Groups
- Exceeded 2% in 2008
- Do not include Upper Columbia reach
- 2010 data does not include 3-salt fish
Wild and Hatchery Chinook SAR MCN to BON

Entiat/ Methow R. Wild Chinook
- SARs averaged 1.35% (0.5%-3%)
- SARs less when calculate from Rocky Reach back to Bonneville Dam

Wenatchee River Wild Chinook
- SARs averaged 1.62% (0.8%-3%)
- Enter the Columbia River upstream of Rock Island Dam

Leavenworth Hatchery Chinook
- SARs averaged 0.58%
- Enter the Columbia River upstream of Rock Island Dam

All Groups
- Exceeded 2% in 2008
- Do not include Upper Columbia reach
- 2010 data does not include 3-salt fish
Wild and Hatchery steelhead
SAR MCN to BON

Wild Steelhead
- SARs averaged 3.97%
- Aggregate mark group - Wenatchee, Entiat and Methow stocks
- Upper Columbia reach not included

Hatchery Steelhead
- SARs averaged 2.16%
- Wenatchee basin
- Upper Columbia reach not included
Wild and Hatchery steelhead
SAR MCN to BON

Wild Steelhead
- SARs averaged 3.97%
- SARs less when calculate from Rocky Reach back to Bonneville Dam (Entiat and Methow stocks)

Hatchery Steelhead
- SARs averaged 2.16%
- Wenatchee basin
- Upper Columbia reach not included
Chinook and Steelhead SAR RIS to BON

**Hatchery/Wild Yearling Chinook**
- SARs averaged 0.3%
- Bypass inoperable during spring of 2003 – no data

**Hatchery/Wild Subyearling Chinook**
- SARs averaged 0.6%

**Hatchery/Wild Steelhead**
- SARs averaged 1.17%
- Bypass inoperable during spring of 2003 – no data
Chinook SARs by Basin

- SR Wild Chinook [LGR to BOA]
- SR Hatchery Chinook [LGR to BOA]
- CR Yearling Chinook (ALL) [RIS to BOA]

* SR hatchery Chinook 2000-2010 are averages of all hatchery specific estimates that year
LGR to BOA is ~286 miles [7 dams]
RIS to BOA is ~ 308 miles [6 dams]
Steelhead SARs by Basin

- SR Wild Steelhead [LGR to BOA]
- SR Hatchery Steelhead [LGR to BOA]
- CR Steelhead (ALL) [RIS to BOA]

* SR hatchery steelhead 2000-2009 are averages of all basin specific estimates that year
LGR to BOA is ~286 miles [7 dams]
RIS to BOA is ~ 308 miles [6 dams]
Reach Survival Comparison of Juvenile Salmon: Snake River to Upper Columbia Stocks (FPC report)

Yearling Chinook

Steelhead
Average Percent Spill at Wanapum and Priest Rapids Dams

![Graph showing average percent spill over years](Attachment E)
Conclusion

- The Overall Upper Columbia MCN-BON SARs for 2000-2010 Chinook were highly correlated with spring Chinook SARs from the Middle Columbia and with spring/summer Chinook SARs from the Snake River.

- Indication that upper Columbia stocks have similar responses to shared in-river and ocean life-cycle experiences.

- Upper Columbia stocks also showed similar patterns of response to environmental variables when compared to mid Columbia and Snake River Stocks.
Conclusion

- Collaboration and coordination with other Upper Columbia specific marking efforts increases cost effectiveness and the benefits to the region.

- Monitoring the effect of hydro system passage on Upper Columbia groups from existing marking is value added for managers.

- Increase in the number of mark groups/tags and the number of detection sites would strengthen the data.

- Recent increase in USFWS marked hatchery steelhead and Chinook will be available for future years (Winthrop, Entiat).
The End
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Coordinating Committees
From: Michael Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the September 24, 2013 HCPs Coordinating Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Gateway Hotel, in SeaTac, Washington, on Tuesday, August 27, 2013, from 9:30 am to 12:00 pm. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Chelan PUD will incorporate average spill levels (i.e., a “spill line”) in the graphs included in the draft Rock Island and Rocky Reach 2013 Fish Spill Report, and provide the revised draft report to Kristi Geris for distribution to the Coordinating Committees. Chelan PUD will be requesting approval of the revised draft report at the Coordinating Committees’ conference call on October 22, 2013 (Item II-A).
- Steve Hemstrom will provide an updated flow duration curve for valid survival studies, using the 1929 to 1977 dataset to which the 1983 to 2012 dataset is added, and for comparison, also using only the 1983 to 2012 dataset, to Kristi Geris for distribution to the Coordinating Committees (Item II-C). *(Note: Hemstrom will also include data from the month of June in the summer study period in both updated flow duration curves, as agreed to at the Coordinating Committees’ July 23, 2013, conference call.)*
- Coordinating Committees representatives will provide comments and/or approval of the Wells Dam Water Quality Attainment Plan (WQAP) via email to Tom Kahler (with copy to Kristi Geris) no later than October 9, 2013 (Item III-A). *(Note: Coordinating Committees members provided no specific comments on the WQAP by the comment deadline, nor did they request additional time for review.)*
• Tom Kahler will investigate options to streamline the Coordinating Committees’ review and approval process of Douglas PUD non-HCP documents that require Coordinating Committees consultation by the Federal Energy Regulatory Commission (FERC) under the new Wells license (Item III-A).

• Tom Kahler will revise the draft 2013 Wells Dam Post-Season Bypass Report, as requested by the National Marine Fisheries Service (NMFS), and will provide the revised draft report to Kristi Geris for distribution to the Coordinating Committees. Douglas PUD will request approval of the revised draft report at the Coordinating Committees’ conference call on October 22, 2013 (Item III-B).

• The Coordinating Committees’ meeting on October 22, 2013, will be held via conference call (Item V-C).

• The Coordinating Committees’ meeting on November 26, 2013, is rescheduled to November 19, 2013, and will be held in person at the Radisson Hotel in SeaTac, Washington (Item V-C).

• The Coordinating Committees’ meeting on December 24, 2013, is rescheduled to December 17, 2013, and will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined (Item V-C).

• Tom Kahler will contact Jeff Fryer about providing a presentation to the Coordinating Committees on the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) sockeye studies at the Coordinating Committees’ meeting on November 19, 2013 (Item V-C).

• Mike Schiewe will contact Denny Rohr regarding the Coordinating Committees’ remaining 2013 meetings arrangements (Item V-C).

DECISION SUMMARY

• No Statements of Agreement were approved at today’s meeting.

AGREEMENTS

• Chelan PUD agreed to extend fish counts at Rocky Reach Dam into the “off-season” winter months in 2014/2015 (Item I-A).

• Coordinating Committees representatives present agreed to hold their meeting on October 22, 2013, by conference call (Item V-C).
Coordinating Committees representatives present agreed to reschedule their meeting from November 26, 2013, to November 19, 2013, which will be held in person at the Radisson Hotel in SeaTac, Washington (Item V-C).

Coordinating Committees representatives present agreed to reschedule their meeting from December 24, 2013, to December 17, 2013, which will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined (Item V-C).

REVIEW ITEMS

“Assessment of Factors Limiting the Productivity of Summer Chinook Salmon in the Mid-Columbia River” by Hillman, Murauskas, and Hemstrom (2013), which was distributed to the Coordinating Committees on June 26, 2013, is available for review, with comments due to Steve Hemstrom (as discussed at the Coordinating Committees meeting on June 25, 2013).

Kristi Geris sent an email to the Coordinating Committees on August 28, 2013, notifying them that the draft Wells Dam WQAP is available for review. As discussed at today’s meeting, comments and/or approval of the draft plan are due to Tom Kahler (with copy to Geris) no later than October 9, 2013 (Item III-A). (Note: Coordinating Committees members provided no specific comments on the WQAP by the comment deadline, nor did they request additional time for review.)

REPORTS FINALIZED

There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

- Steve Hemstrom added updates on two Chelan PUD action items from the last Coordinating Committees meeting on August 27, 2013; and also an update on Chelan PUD staffing.
Mike Schiewe added a follow-up discussion on the Fish Passage Center’s (FPC’s) Comparative Survival Study (CSS) Presentation.

A. Meeting Minutes Approval (Mike Schiewe)
The Coordinating Committees reviewed the revised draft August 27, 2013 conference call minutes. Kristi Geris said there was one outstanding comment remaining to be discussed regarding the discussion following the FPC’s CSS Presentation. Steve Hemstrom had noted the high sockeye smolt-to-adult ratios (SARs) based on Dr. Kim Hyatt’s work, and added that sockeye are the highest migrating fish in the Upper Columbia. Hemstrom clarified sockeye are the farthest migrating fish in the Upper Columbia. The Coordinating Committees members present approved the draft August 27, 2013, conference call minutes as revised. Kirk Truscott approved the revised draft minutes via email on September 23, 2013. Geris will finalize the meeting minutes and distribute them to the Committees.

B. Action Items Review (Mike Schiewe)
Action items from the last Coordinating Committees meeting on August 27, 2013, and follow-up discussions were as follows: (Note: italicized item numbers below correspond to agenda items from the August 27, 2013 meeting.)

- **Chelan PUD will summarize available data on fish passage at Rocky Reach Dam during the “off-season” winter months, and provide these data to Kristi Geris for distribution to the Coordinating Committees (Item II-B).**
  Steve Hemstrom said that he spoke with Rocky Reach Dam staff and found that little “off-season” work has been conducted, and only specific to bull trout; and that other species were not tabulated. He spoke with the only remaining counter from the bull trout work, but the counter could not specifically recall observing other fish.

- **Chelan PUD will evaluate the potential to extend fish counts at Rocky Reach Dam into the “off-season” winter months, starting winter 2014/2015 (Item II-B).**
  Steve Hemstrom said that Chelan PUD will extend fish counts at Rocky Reach Dam into the “off-season” winter months in 2014/2015.
II. Chelan PUD

A. 2013 Rock Island and Rocky Reach Fish Spill Report (Steve Hemstrom)

Steve Hemstrom said that the final draft 2013 Rock Island and Rocky Reach Fish Spill Report (Attachment B) was distributed to the Coordinating Committees by Kristi Geris on September 20, 2013. He said that charts were added to provide a visual depiction of daily passage and index counts, including when spill started and ended; and he added that these charts will be included in spill reports from this point forward. He reviewed 2013 Rocky Reach summer spill, and noted that the Data Access in Real Time (DART) database can be queried to obtain daily spill averages in cubic feet per second. Bryan Nordlund suggested incorporating a range of collection efficiencies, or bypass efficiencies, into the report, which could then be used to calculate outmigration data. Lance Keller noted that the index counts are based on 2-hour daily sampling events, where collection is representative of the entire day. Therefore, to incorporate such data, the entire index would need to be expanded. Nordlund said he had hoped that some form of a juvenile index would provide some estimation of whether the adult returns are as expected. He said, however, that it now appears impractical to include these data.

Schiewe noted the Rocky Reach summer spill percentage (i.e., 11.73%) is off target (i.e., 9%), and suggested incorporating a “spill line” into the charts to convey forced spill. Hemstrom agreed a spill line would help clarify certain data, and said that he would incorporate average spill levels (i.e., a “spill line”) in the graphs included in the draft Rock Island and Rocky Reach 2013 Fish Spill Report, and provide the revised draft report to Geris for distribution to the Coordinating Committees.

Nordlund noted the spike in subyearling Chinook outmigration in June followed by a larger outmigration in July, and asked if this is normal. Hemstrom replied that it is, and Keller added that the initial pulse was likely attributed to hatchery releases; and noted that DART is a good resource to look more closely at those numbers. Schiewe also added that it seems these data should align with Douglas PUD’s data from their subyearling study as well, and Tom Kahler confirmed that they do.
Hemstrom reviewed 2013 Rock Island spring and summer spill, and noted that spring spill continued directly into summer spill, with no interruption in spill. He also noted the 2-day flatline in juvenile index counts in August when the Rock Island Right Adult Ladder was dewatered to repair the bowed vane in the picket-barrier leading to the auxiliary water system space. Keller also noted the dip around July 4, and explained that it was due to trap complications. Hemstrom said that Chelan PUD is planning to run the bypass longer next year, but the exact duration is yet to be determined.

Chelan PUD will request approval of the revised draft 2013 Rock Island and Rocky Reach Fish Spill Report at the Coordinating Committees’ conference call on October 22, 2013.

B. Chelan County Noxious Weed Board Plan for Application of Milfoil Control Chemical in Rocky Reach Reservoir, 2014 (Steve Hemstrom)

Steve Hemstrom said that Chelan PUD and the Washington State Department of Ecology (Ecology) met by conference call to discuss concerns about the Chelan County Noxious Weed Board’s proposed pilot application of Triclopyr triethylamine (TEA) near the mouth of the Entiat River. Hemstrom said that Ecology shares the same concerns regarding potential impacts to summer and fall Chinook salmon and lamprey. He said that Chelan County does not yet have approval to carry out the pilot application of TEA, and explained that the County has been operating under a feasibility grant, but application requires a separate grant. He said the Ecology indicated that if there are too many issues surrounding the application of TEA, then the permit would not be granted. Hemstrom added that he believes Ecology would be the agency to award the grant. Hemstrom said that he will keep the Coordinating Committees updated as more develops.

C. Valid Study Flow Duration Curve Preparation (Steve Hemstrom)

Steve Hemstrom said that the updated flow duration curve for valid survival studies is almost complete. He requested to carry forward his action item to provide an updated flow duration curve for valid survival studies, using the 1929 to 1977 dataset to which the 1983 to 2012 dataset is added, and for comparison, also using only the 1983 to 2012 dataset, to Kristi Geris for distribution to the Coordinating Committees. (Note: Hemstrom will also include data from the month of June in the summer study period in both updated flow duration curves, as agreed to at the Coordinating Committees’ July 23, 2013, conference call.)
D. Chelan PUD Staffing Update (Steve Hemstrom)
Steve Hemstrom announced that Chelan PUD has selected a replacement biologist to fill the position formerly held by Josh Murauskas. Hemstrom said that Catherine Willard, previously with the U.S. Forest Service Entiat Ranger District, will start September 30, 2013. He said that Willard will also support Alene Underwood with HCP Hatchery Committees’ project work.

III. Douglas PUD
A. DECISION: Wells Dam Water Quality Attainment Plan (Tom Kahler)
Tom Kahler said that the draft Wells Dam WQAP was distributed to the Coordinating Committees by Kristi Geris on August 28, 2013. He said the WQAP is one of several non-HCP documents drafted and reviewed by Andrew Gingerich and the Aquatic Settlement Workgroup (SWG), but that now also require Coordinating Committees consultation under the new FERC license. Kahler said historically, these types of documents have not required Coordinating Committees’ review and added that this one in particular addresses meeting water quality standards for Washington State. He said the WQAP needs to be reviewed and approved, and finalized in the meeting minutes prior to submitting the final document to FERC by the end of October 2013. Mike Schiewe noted that this document has been reviewed by the Aquatic SWG and is up for approval at the October 9, 2013, meeting. He added that Pat Irle, the Aquatic SWG Technical Representative for Ecology, did not flag any issues while discussing the draft plan at the last Aquatic SWG meeting.

Kahler reviewed key components of the plan, including measures to improve total dissolved gas (TDG) models, alternatives analyses, and TDG management strategies. Schiewe noted the ongoing issues in the Wells Forebay due to incoming TDG, which Ecology has been forthright in recognizing that Douglas PUD has limited ability to control. Schiewe said that, although not written in a Washington Administrative Code, it has been verbally agreed to by Ecology that if the forebay TDG is out of compliance, as long as the project does not add TDG, the project is still considered in compliance. He also noted that additional TDG monitoring stations were recently installed that will hopefully provide more representative readings of incoming TDG.
Bryan Nordlund suggested streamlining the Coordinating Committees’ review and approval process of all of these FERC-required non-HCP documents, as opposed to reviewing and approving each individually. Schiewe agreed and suggested that Douglas PUD put together PowerPoint presentations to review the key components of each document. Kahler said that the FERC license does not specifically state that Coordinating Committees’ approval is required; rather, the opportunity to review is required. Schiewe said that, except for NMFS, Coordinating Committees members can always defer to their Aquatic SWG Technical Representative counterpart. Jim Craig suggested approving the draft WQAP by email, and dovetailing the Coordinating Committees’ approval with the Aquatic SWG’s next meeting. Coordinating Committees representatives agreed to provide comments and/or approval of the Wells Dam WQAP via email to Kahler (with copy to Geris) no later than October 9, 2013; and Kahler said that he will investigate options to streamline the Coordinating Committees’ review and approval process of Douglas PUD non-HCP documents that require Coordinating Committees consultation according to the FERC license.

B. Draft 2013 Wells Dam Post-Season Bypass Report (Tom Kahler)

Tom Kahler said that the draft 2013 Wells Dam Post-Season Bypass Report (Attachment C) was distributed to the Coordinating Committees by Kristi Geris on September 23, 2013. He recalled that in 2011, John Skalski and Richard Townsend of Columbia Basin Research conducted analyses on bypass migration at Wells Dam. Based on those analyses, the Coordinating Committees agreed that beginning in 2012, Wells bypass operations for spring outmigration would be changed from beginning April 12 to beginning April 9; and from ending August 26 to ending August 19. He said that 2013 was the second year of implementing these bypass operation changes, and noted that Douglas PUD achieved the HCP requirement to provide bypass operations during 95% of the juvenile salmon and steelhead migration passing Wells Dam. He said further, that as described in Table 2 in Attachment C, bypass routes were provided for at least 98% of each plan species’ migrations.

Bryan Nordlund asked if average travel times as described in Table 1 of Attachment C were based on Chelan PUD’s acoustic tag studies. Kahler replied that they were except for the yearling Chinook data, which were based on the Douglas PUD 2010 survival verification study; and subyearling Chinook, for which they used the travel times for steelhead and
sockeye. Kahler said that he would revise the text describing Table 1 to reflect that average travel times were based on passive integrated transponder (PIT) tag studies for yearling Chinook, and acoustic tag studies of steelhead and sockeye for the other species. Kahler also acknowledged that those data on yearling Chinook are not representative of the run at large; however, he explained that they were used because the estimate is conservative.

Mike Schiewe asked for clarification of the meaning of the last column in Table 3 of Attachment C. Kahler explained that the value listed in the last column represents the amount of time (days) that the actual start date (second column) could have been adjusted and the 95% standard would still have been achieved. For example, in 2013, bypass operations could have started at 00:00 hours on April 10, and 98% coverage of the yearling Chinook outmigration would have still been achieved, but waiting until April 11 would have resulted in not achieving the 95% standard. In other words, at some point on April 10 enough fish migrated through Wells that had we waited until the April 11 to start the bypass operations we would have missed too large a proportion of the run to achieve the 95% standard.

Nordlund asked, regarding Table 3 of Attachment C, if the date by which the first 5% passed (fifth column) is modeled data, and Kahler replied that it is. Teresa Scott asked if those are modeled data, then why are the cumulative proportions not all 5%? Kahler explained that the cumulative count includes the entire day (i.e., 24 hours), but bypass dates always start at 00:00 hours.

Kahler said that he will revise the draft 2013 Wells Dam Post-Season Bypass Report, as requested by NMFS, and will provide the revised draft report to Geris for distribution to the Coordinating Committees. Douglas PUD will request approval of the revised draft report at the Coordinating Committees’ conference call on October 22, 2013.

IV. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe reported that the HCP Hatchery Committees did not meet in September due to the limited number of people available to attend. He said that a conference call is scheduled for October 7, 2013, to discuss time-sensitive agenda items, including:
• **Live-Spawning Twisp River Steelhead Broodstock Update:** The Yakama Nation (YN) plans to discuss live-spawning Twisp River steelhead for the YN Steelhead Kelt Reconditioning Program. The program is currently located at Winthrop National Fish Hatchery, and the YN has expressed interest in the Methow Fish Hatchery for live-spawning and early-rearing. The program is funded through the next few years through Columbia River Fish Accords funds; however, there is reluctance about the risk of transmitting disease. Bob Rogers of the Washington Department of Fish and Wildlife (WDFW) will be on the call to discuss potential fish health issues.

• **Hatchery and Genetic Management Plans Update:** In the midst of all of the permitting issues, there was potential that certain steelhead programs would go uncovered. NMFS agreed to provide letters extending existing permits. Tom Kahler confirmed that NMFS recently provided a letter to all applicable programs extending the current permits. He added that no end date was specified on the extension.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees’ meeting on September 23, 2013:

• **Budget Amendment:** The Wells Tributary Committee approved a $25,000 increase in funding for Trout Unlimited on the Twisp River Well Conversion Project. A recent system test found that the system was unable to produce the desired production of 150 gallons per minute. The driller and hydrogeologist said that the well will produce the required production if it is deeper. The additional funds will be used to deepen the well.

• **Contract Extension:** The Wells and Rocky Reach Tributary Committees granted a one year, no cost contract extension to the Okanagan Nation Alliance for the Shingle Creek Fish Passage Project.

• **General Salmon Habitat Program Projects:** Four projects selected to receive Plan Species Account funds were not selected to receive matching funds from the Salmon Recovery Funding Board (SRFB). Tom Kahler said there were some really high-priced projects that reduced the total number of SRFB-funded projects in this funding round relative to previous funding rounds. The Chelan County Natural Resource Department asked for additional clarity on the rejection of the Icicle-Peshastin Irrigation District Pump Exchange Project, and Kahler explained that there were too many concerns with the proposed project that had not been satisfactorily addressed.
by the project sponsor. Jim Craig added that Icicle-Peshastin did not want to be encumbered by pumping costs.

- **Okanagan Project Tours:** The Tributary Committees will tour habitat restoration projects in Canada on October 9 and 10, 2013.
- **Next Steps:** The next Tributary Committees meeting will be on November 15, 2013.

V. HCP Committees Administration

A. **Fish Passage Center’s Comparative Survival Study Presentation Follow-Up (Mike Schiewe)**

Mike Schiewe said that Bob Rose recently spoke with Michele DeHart of the FPC; however, he could not attend the meeting today because he was meeting with contractors at the Marion Drain sturgeon facility.

Teresa Scott recalled the FPC’s estimates that fish passage at dams only represent a sliver of the entire life cycle process. She said based on this estimate, she would be hard-pressed to ask more of the PUDs when, for example, ocean conditions are a major driver for returns.

Bryan Nordlund said that, compared to numbers calculated by the HCPs at each project, he was surprised by the survival numbers that the FPC presented. He said he then realized that the CSS numbers are “limited,” and represent only a composite fraction of what is really returning to the upper Columbia River, versus a statistically valid study on a project. Nordlund recalled several years back when a group of fish released in the Yakima River did poorly, and the CSS reported that it was due to passage issues in the Columbia River. He said another thing he had a hard time reconciling were the poor SARs that were presented, when there are such high counts at the dams. Nordlund said there were several limitations in their analyses, and they presented them as if they were dam operations. He said that CSS data were also presented in a recent article in the *NW Fishletter* that discussed the current status of the Federal Columbia River Power System Biological Opinion, which Nordlund said reflected the same incompleteness that was presented to the Coordinating Committees.

Jim Craig said that he appreciates the opportunity to learn about the CSS; however, there were many unverified assumptions. He added that the Independent Scientific Review Panel also provided a review suggesting problems with the analyses. Craig said he believes that the
claims the CSS are advocating are premature given the minimal data they have, and added that he feels more comfortable with the PUD survival estimates.

Nordlund said that he was unclear on why the FPC cannot analyze all of the PIT-tag data, when everything is available in the PIT-Tag Information System (PTAGIS). He added that he wondered what they were really asking for. Nordlund said that he is curious about the 2010 PIT-tag studies and what those SARs look like. Tom Kahler said that he started looking through those data; however, he was not evaluating SARs. Rather he was looking at differences between the treatment and control groups; which, Kahler added, would show delayed mortality effects. Nordlund asked if returning minijacks were tracked, and Kahler replied that they were, and were excluded from the data analysis (i.e., “censoring”). Kahler also noted that the FPC sampling at Rock Island was not representative of the run at large because of the condition of fish likely to be entrained into an unscreened gatewell.

Schiewe said that he briefly spoke with Denny Rohr about follow-up discussions at the Priest Rapids Coordinating Committee Hatchery Sub Committee (PRCC HSC) meeting, and Rohr indicated that discussions were, for the most part, ongoing. Nordlund said that, based on conversations within the PRCC following the FPC’s CSS presentation, the PRCC feels that they may need to develop a formal response. He added that Grant PUD has been publicizing how successful their programs are, and now the CSS is claiming poor SARs. Nordlund said that the PRCC may develop a document distinguishing the sources of those data, and how they may or may not fit with project survival estimates.

Scott said that WDFW is considering modifying TDG standards to accommodate an increase in the gas cap, and added that she is uncertain of the implications this would have in terms of a spill experiment. Schiewe asked if this meant that the U.S. Army Corp of Engineers would be granted a permanent waiver, opposed to the typical annual waiver. Scott replied that she believes this means the level of the waiver would be increased; i.e., the waiver will still be on an annual basis, but ground rules for an experiment would be established. Scott said that the details have not yet been discussed, but WDFW is doing their due diligence at this point of the process. Scott also noted that Oregon State has a completely different rule process. Kahler asked whether for dams on the Washington-Oregon border, the rules go by the most conservative standard. Schiewe recalled the huge body of information that was developed in
the 1970s about the cumulative effects of high gas—a time when high TDG was impacting
returning adult salmon. Schiewe said that he would hope that those data should be
considered. Nordlund asked how WDFW is consulting with Ecology, and Scott replied that
WDFW was recently invited to participate in a meeting with Ecology to discuss what needs
to be completed in terms of process. She said that this meeting would be composed of a staff
group to discuss process-wise options to present to the directors. She said that those 1970s
data would be considered, experts would be consulted, and risks and conditions would be
discussed. Scott noted that the experts consulted would likely include members of the HCP
Coordinating Committees.

Steve Hemstrom said he thought it would be difficult for Ecology to prove that increased
spill will increase survival or benefit SARs. He said that it will also be difficult to prove the
benefit of increasing spill will outweigh the detriment of TDG. Nordlund also noted that
since all project passage systems are different, and spillway passage survival at each project is
different, he did not understand how the proposed FPC study using a blanket uniform spill
percentage could be construed to optimize juvenile fish survival for the Columbia River.
Lance Keller noted the potential for adverse impacts on adults, and added that juveniles are
just as important as adults, but mathematically for SARs, adults weigh heavier.

Scott agreed with Craig’s sentiments that while the CSS has a lot of data on the Snake River,
it is unrealistic to expect to be at the same stage on the Upper Columbia. She recalled two
questions presented by the FPC: 1) can the PUDs help those involved in the CSS better
understand the PIT-tagged groups that are available to increase the sample size in Upper
Columbia; and 2) can the PUDs do anything to increase the number of tags in the Upper
Columbia. Scott suggested that keeping communication lines open about these things may
be helpful. Schiewe noted WDFW’s fairly extensive presence in Central Washington in the
Chiwawa and the Methow, and suggested that if WDFW is interested in assisting those
groups, there are staff in those areas who should be able to communicate and coordinate on
data.

Schiewe said that at this point, there is a lot of concern that conclusions are being drawn that
people are not comfortable with and noted that Rose will also want to weigh in on the
discussion when he is available.
B. **HCP Coordinating Committees Distribution List (Mike Schiewe)**

The Coordinating Committees revisited the restrictions for the HCP Coordinating Committees distribution list, and the Coordinating Committees representatives present agreed to maintain the distributions lists as previously prescribed.

C. **Next Meetings (Mike Schiewe)**

Mike Schiewe said that Denny Rohr requested that the Coordinating Committees reschedule their October 22, 2013, meeting to October 29, 2013, to accommodate the PRCC HSC’s schedule. Schiewe suggested instead of rescheduling the meeting, holding the meeting by conference call. Coordinating Committees representatives present agreed to hold their meeting on October 22, 2013, by conference call.

Schiewe reviewed the remaining 2013 Coordinating Committees meeting schedule; to accommodate the holidays, he suggested rescheduling the November and December meetings one week in advance of the typical meeting dates. He also suggested holding the November meeting in person, and the December meeting either by conference call or in person, as is yet to be determined. Coordinating Committees representatives present agreed to reschedule their meeting from November 26, 2013, to November 19, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington; and to reschedule their meeting from December 24, 2013, to December 17, 2013, which will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined. Schiewe said that he will contact Rohr regarding the Coordinating Committees’ remaining 2013 meetings arrangements.

Tom Kahler said that Jeff Fryer contacted him about providing a presentation on CRITFC’s sockeye studies at the next Coordinating Committees’ in-person meeting. Kahler said that he will contact Fryer about possibly presenting at the Coordinating Committees’ meeting on November 19, 2013.

Remaining 2013 Coordinating Committees’ meeting schedule:
The next scheduled Coordinating Committees meeting is October 22, 2013, to be held by conference call.

The meeting on November 19, 2013, will be held in person at the Radisson Hotel in SeaTac, Washington.

The meeting on December 17, 2013, will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

**List of Attachments**

Attachment A  List of Attendees
Attachment B  Chelan PUD's Final Draft 2013 HCP Preliminary Rocky Reach and Rock Island Fish Spill Report
Attachment C  Draft 2013 Wells Dam Post-Season Bypass Report
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<td>Lance Keller*</td>
<td>Chelan PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Teresa Scott*†</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
</tbody>
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Notes:
* Denotes Coordinating Committees member or alternate
† Joined by phone
2013 ROCKY REACH
Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 9% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 21 August, 2400 hrs
95% Est. passage date: 10 August
Est. % of run with spill: 97.81% on 21-August (estimated as of 31 August)
Cumulative index count: 22,073 subyearling Chinook (as of 31 August)
Summer spill percentage: 11.73% (9%, plus 2.74% forced spill 5 June – 21 August)
Avg river flow at RR: 153,805 cfs (5 June - 21 August)
Avg spill rate at RR: 18,044 cfs (5 June - 21 August)
Number of spill days: 78

2013 RR Bypass Subyearling Chinook Index Counts, 22 May - 31 August
2013 ROCK ISLAND

Spring Spill
Target species: Yearling Chinook, steelhead, sockeye
Spill target percentage: 10% of day average river flow
Spill start date: 17 April, 0001 hrs
Spill stop date: 4 June, 2400 hrs (immediate increase to 20% summer spill)
Percent of run with spill: Yearling Chin 98.25%; steelhead 98.23%; sockeye 98.81%
Cumulative index count: 28,324 Yearling Chins; 15,099 Steelhead; 25,111 sockeye
Spring spill percentage: 12.51% (10% plus 2.51% forced spill 17 April – 4 June)
Avg river flow at RI: 175,634 cfs (17 April - 4 June)
Avg spill flow at RI: 21,977 cfs (17 April - 4 June)
Total spill days: 49

Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 20% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 18 August, 2400 hrs
95% Est. passage date: 12 August
Percent of run with spill: Subyearling Chinook 95.18% (estimated as of 31-August)
Cumulative index count: 17,170 subyearling Chinook (as of 31 August)
Summer spill percentage: 20.08% (5 June- 18 August)
Avg river flow at RI: 158,962 cfs (5 June - 18 August)
Avg spill flow at RI: 31,734 cfs (5 June - 18 August)
Total spill days: 75

RIS Bypass Trap Subyearling Chinook Index Counts, 1 June - 31 August

20 September, 2013 Chelan PUD Fish Spill Programs
Juvenile Index Counts 2003-2013 from the Rocky Reach Juvenile Fish Bypass Sampling Facility and Rock Island Bypass Trap Smolt Monitoring Program (SMP) 1 April – 31 August.

Table 1. Rocky Reach Juvenile Bypass index sample counts, 2003-2013

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<tbody>
<tr>
<td>Sockeye</td>
<td>71,683</td>
<td>30,935</td>
<td>17,575</td>
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<td>27,611</td>
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<td>38,394</td>
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<td>Subyrning Chinook</td>
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<td>59,751</td>
<td>17,246</td>
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Table 2. Rock Island Smolt Monitoring Program index sample counts, 2003-2013

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<tr>
<td>Sockeye</td>
<td>10,312</td>
<td>7,114</td>
<td>1,991</td>
<td>34,604</td>
<td>16,410</td>
<td>38,965</td>
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<td>37,404</td>
<td>18,697</td>
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<tr>
<td>Steelhead</td>
<td>15,507</td>
<td>10,735</td>
<td>15,974</td>
<td>26,930</td>
<td>18,482</td>
<td>22,780</td>
<td>17,636</td>
<td>17,194</td>
<td>28,408</td>
<td>16,957</td>
<td>15,099</td>
</tr>
<tr>
<td>Yearling Chinook</td>
<td>15,355</td>
<td>12,574</td>
<td>14,797</td>
<td>37,267</td>
<td>23,714</td>
<td>22,562</td>
<td>9,225</td>
<td>11,802</td>
<td>26,407</td>
<td>25,759</td>
<td>28,324</td>
</tr>
<tr>
<td>Subyrning Chinook</td>
<td>25,916</td>
<td>23,563</td>
<td>18,710</td>
<td>27,106</td>
<td>15,686</td>
<td>15,940</td>
<td>8,189</td>
<td>23,205</td>
<td>27,397</td>
<td>27,298</td>
<td>17,170</td>
</tr>
</tbody>
</table>
Summary of 2013 Juvenile Fish Bypass Operations at Wells Hydroelectric Project
23 September 2013

Douglas PUD operated the Wells bypass system in 2013 as guided by the Wells HCP Coordinating Committee-approved 2013 Bypass Operating Plan. The plan was intended to provide non-turbine passage during 95 percent of the juvenile Plan Species migration passing Wells Dam. Bypass operations were initiated on April 9 at 00:00 hours, and operated continuously until terminated at 24:00 hours on August 19, for a total of 133 days.

The 2013 Bypass Operating Plan included measures for complying with Federal Energy Regulatory Commission (FERC) requirements for maintaining minimum automatic-gate-opening capacity under the Wells Project Emergency Action Plan and Washington Department of Ecology (Ecology) requirements for compliance with total dissolved gas (TDG) standards as directed by the FERC-approved Total Dissolved Gas Abatement Plan for the Wells Project. Compliance with the requirements of both of these plans was achieved by systematic removal of bypass barriers under increasing discharge as described in the 2013 Bypass Operating Plan. The strategy for compliance with Ecology’s TDG standards included the concentration of spill through adjacent spillways at the center of Wells Dam and spilling over the discharge from active turbine units. To implement these compliance measures as described in the 2013 Bypass Operating Plan, Douglas PUD removed bypass barriers from Spillway 6 on May 23 and reinstalled them on May 30; then removed them again on July 1 and reinstalled them on July 11.

Based on analysis conducted by John Skalski and Richard Townsend of Columbia Basin Research (Appendix A), Douglas PUD achieved the HCP requirement to provide bypass operations during 95 percent of the juvenile salmon and steelhead migration passing Wells Dam by providing bypass passage during 98.29 percent of the yearling Chinook migration, 99.21 percent of the steelhead migration, 99.99 percent of the sockeye migration, 100 percent of the coho migration, and 99.33 percent of the sub-yearling Chinook migration passing Wells Dam in 2013.
Appendix A

Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2013
Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2013

Prepared for:
Public Utility District No. 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, Washington 98802 - 4497

Prepared by:
John R. Skalski
Richard L. Townsend

Columbia Basin Research
School of Aquatic and Fishery Sciences
University of Washington
1325 Fourth Avenue, Suite 1820
Seattle, Washington 98101-2509

16 September 2013
Outmigration has been monitored at the juvenile sampling facility at Rocky Reach Dam for four stocks of salmonids (yearling and subyearling Chinook, steelhead, and sockeye) from 2005 onward. Coho were added this year, using the detections at Rocky Reach of PIT-tagged fish. The proportion of each stock covered by the bypass operations at Wells Dam can be estimated using the historical daily counts at Rocky Reach, and adding the travel time from Wells to Rocky Reach Dam. Table 1 has the average travel times, based 2010 acoustic-tag studies, for yearling Chinook, steelhead and sockeye. Due to a dearth of PIT-tag and acoustic-tag studies performed with subyearling Chinook and Coho, travel time was assumed to be 2 days.

Table 1: Average travel times from Wells tailrace to Rocky Reach Dam.

<table>
<thead>
<tr>
<th>Stock</th>
<th>Travel time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearling Chinook</td>
<td>5 days</td>
</tr>
<tr>
<td>Subyearling Chinook</td>
<td>2 days</td>
</tr>
<tr>
<td>Steelhead</td>
<td>2 days</td>
</tr>
<tr>
<td>Sockeye</td>
<td>2 days</td>
</tr>
<tr>
<td>Coho</td>
<td>2 days</td>
</tr>
</tbody>
</table>

Plots of the annual cumulative proportion of the outmigration for spring migrants (yearling Chinook, steelhead, sockeye, and coho), and the subyearling Chinook in the summer had fairly consistent start and end dates at Rocky Reach (Figure 1). The timing of bypass operations for the spring outmigration at Wells from 2004 through 2011 was from 00:00 12 April – 24:00 13 June of each year for the “spring” spill season, and from 00:00 14 June – 24:00 26 August for the “summer” spill season. For 2012 and beyond, the Wells Habitat Conservation Plan (HCP) Coordinating Committee approved the modification of the timing of bypass operations at Wells Dam as follows: bypass operations commenced at 00:00 on April 9 and continued through 24:00 on August 19. This current timing of bypass operations will continue annually, unless modified as a result of future investigations that demonstrate an inadequacy of these dates at providing bypass passage for 95% of both spring- and summer-migrating Plan Species at Wells Dam. Table 2 has the estimated proportion of the annual outmigration covered by the spring, summer, and total bypass operations from 2005 through 2013. Steelhead, sockeye, coho, and subyearling Chinook are estimated to have greater than 98% of their annual outmigration pass through Wells Dam during one or both of the two periods covered by bypass operations for the most recent nine years of record. For yearling Chinook, being the earliest arriving stock, proportion covered ranged from 94.49% to 99.96% over the period of record. To assess the effectiveness of the selected start date for spring bypass operations, Table 3 has the date that, with hindsight, the spring bypass operations should have started to achieve 95% coverage of the yearling Chinook outmigration for that year. These dates ranged from 9 April to 3 May. For the two years when yearling Chinook coverage was less than 95%, bypass starting dates should have been 9 and 11 April, respectively, instead of 12 April.
Similarly, Table 4 compares the actual date of bypass termination with the date on which bypass operations covered 95% of the subyearling Chinook outmigration. In each year, an earlier termination of bypass operations would have been possible without jeopardizing the achievement of the HCP standard of providing a bypass route for ≥ 95% of outmigrating subyearling Chinook. During the nine years analyzed, the 95% HCP standard was achieved 4 to 32 days prior to the actual date on which bypass operations were terminated.

Table 2. Total proportion of each stock’s migration affected by bypass operations (spring, summer) at Wells Dam, based on travel times from Wells to Rocky Reach Dam, the cumulative proportion of the annual migration of each stock at Rocky Reach, and the start and stop dates of Wells bypass operations.

<table>
<thead>
<tr>
<th></th>
<th>Proportion passed</th>
<th>Annual migration proportion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
<td>2006</td>
<td>2007</td>
</tr>
<tr>
<td><strong>Spring Outmigration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Yearling Chinook</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0.0528</td>
<td>0.0259</td>
<td>0.0551</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9455</td>
<td>0.9559</td>
<td>0.9154</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0017</td>
<td>0.0182</td>
<td>0.0296</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Covered by Bypass ops</strong></td>
<td>0.9472</td>
<td>0.9741</td>
<td>0.9449</td>
</tr>
<tr>
<td><strong>Steelhead</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0.0015</td>
<td>0.0101</td>
<td>0.0066</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9903</td>
<td>0.9762</td>
<td>0.9887</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0081</td>
<td>0.0137</td>
<td>0.0042</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Covered by Bypass ops</strong></td>
<td>0.9985</td>
<td>0.9899</td>
<td>0.9930</td>
</tr>
<tr>
<td><strong>Sockeye</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0.9983</td>
<td>0.9984</td>
<td>0.9998</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.0017</td>
<td>0.0016</td>
<td>0.0001</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Covered by Bypass ops</strong></td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.9999</td>
</tr>
<tr>
<td><strong>Coho</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9910</td>
<td></td>
<td></td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0090</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Covered by Bypass ops</strong></td>
<td>0.9910</td>
<td>0.0090</td>
<td></td>
</tr>
<tr>
<td><strong>Subyearling Chinook</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.1937</td>
<td>0.1894</td>
<td>0.2136</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.8022</td>
<td>0.8077</td>
<td>0.7847</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0.0041</td>
<td>0.0029</td>
<td>0.0017</td>
</tr>
<tr>
<td><strong>Total Covered by Bypass ops</strong></td>
<td>0.9959</td>
<td>0.9971</td>
<td>0.9983</td>
</tr>
</tbody>
</table>

*Proportions not summing to 1 are due to round-off error.
Table 3. Comparison of the actual start date for spring bypass operations at Wells Dam each year, versus the start date necessary to have covered at least 95% of the yearling Chinook outmigration that year. Operations are assumed to begin at 00:00 for the date listed.

<table>
<thead>
<tr>
<th>Migration Year</th>
<th>Actual Date</th>
<th>Cumulative proportion passed before 00:00</th>
<th>Proportion Covered by Bypass Ops</th>
<th>Date by which the first 5% passed</th>
<th>Cumulative proportion passed before 00:00</th>
<th>Bypass Ops would have Covered this Proportion</th>
<th># Days before or after actual date to get 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>April 12</td>
<td>0.0528</td>
<td>0.9472</td>
<td>April 11</td>
<td>0.0039</td>
<td>0.9961</td>
<td>1 before</td>
</tr>
<tr>
<td>2006</td>
<td>April 12</td>
<td>0.0259</td>
<td>0.9741</td>
<td>April 18</td>
<td>0.0468</td>
<td>0.9532</td>
<td>6 after</td>
</tr>
<tr>
<td>2007</td>
<td>April 12</td>
<td>0.0551</td>
<td>0.9449</td>
<td>April 9</td>
<td>0.0243</td>
<td>0.9757</td>
<td>3 before</td>
</tr>
<tr>
<td>2008</td>
<td>April 12</td>
<td>0.0025</td>
<td>0.9975</td>
<td>May 3</td>
<td>0.0406</td>
<td>0.9594</td>
<td>21 after</td>
</tr>
<tr>
<td>2009</td>
<td>April 12</td>
<td>0.0116</td>
<td>0.9884</td>
<td>April 19</td>
<td>0.0436</td>
<td>0.9564</td>
<td>7 after</td>
</tr>
<tr>
<td>2010</td>
<td>April 12</td>
<td>0.0067</td>
<td>0.9933</td>
<td>April 22</td>
<td>0.0410</td>
<td>0.9590</td>
<td>10 after</td>
</tr>
<tr>
<td>2011</td>
<td>April 12</td>
<td>0.0085</td>
<td>0.9915</td>
<td>April 15</td>
<td>0.0446</td>
<td>0.9554</td>
<td>3 after</td>
</tr>
<tr>
<td>2012</td>
<td>April 9</td>
<td>0.0004</td>
<td>0.9996</td>
<td>April 15</td>
<td>0.0115</td>
<td>0.9885</td>
<td>6 after</td>
</tr>
<tr>
<td>2013</td>
<td>April 9</td>
<td>0.0171</td>
<td>0.9829</td>
<td>April 10</td>
<td>0.0240</td>
<td>0.9760</td>
<td>1 after</td>
</tr>
</tbody>
</table>

Table 4. Comparison of the actual stop date for summer bypass operations at Wells Dam each year, versus the stop date necessary to have covered at least 95% of the subyearling Chinook outmigration that year. Operations are assumed to end at 24:00 for the date listed.

<table>
<thead>
<tr>
<th>Migration Year</th>
<th>Actual Stop Date</th>
<th>Cumulative proportion passed by 11:59:59 PM</th>
<th>Date on or before the last 5% passed</th>
<th>Cumulative proportion passed by 11:59:59 PM (Bypass Ops would have Covered this Proportion)</th>
<th># Days before actual date to get 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>August 26</td>
<td>0.9959</td>
<td>August 3</td>
<td>0.9525</td>
<td>23</td>
</tr>
<tr>
<td>2006</td>
<td>August 26</td>
<td>0.9971</td>
<td>August 2</td>
<td>0.9524</td>
<td>24</td>
</tr>
<tr>
<td>2007</td>
<td>August 26</td>
<td>0.9983</td>
<td>August 11</td>
<td>0.9538</td>
<td>15</td>
</tr>
<tr>
<td>2008</td>
<td>August 26</td>
<td>0.9887</td>
<td>August 19</td>
<td>0.9502</td>
<td>7</td>
</tr>
<tr>
<td>2009</td>
<td>August 26</td>
<td>0.9911</td>
<td>August 11</td>
<td>0.9709</td>
<td>4</td>
</tr>
<tr>
<td>2010</td>
<td>August 26</td>
<td>0.9936</td>
<td>August 10</td>
<td>0.9537</td>
<td>16</td>
</tr>
<tr>
<td>2011</td>
<td>August 26</td>
<td>0.9959</td>
<td>July 25</td>
<td>0.9528</td>
<td>32</td>
</tr>
<tr>
<td>2012</td>
<td>August 19</td>
<td>0.9930</td>
<td>July 29</td>
<td>0.9502</td>
<td>22</td>
</tr>
<tr>
<td>2013</td>
<td>August 19</td>
<td>0.9933</td>
<td>August 7</td>
<td>0.9592</td>
<td>12</td>
</tr>
</tbody>
</table>
Figure 1. Passage dates at Rocky Reach Dam for spring and summer migrating stocks, 2005-2013. Cumulative proportions are based on the expanded counts obtained from sampling daily from 1 April – 31 August (or through 4 September in 2008).

a. Yearling Chinook

b. Steelhead

c. Sockeye

d. Coho

e. Subyearling Chinook
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met by conference call on Tuesday, October 22, 2013, from 9:30 am to 11:30 am. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Washington Department of Fish and Wildlife (WDFW) will provide an official letter designating the current WDFW HCP Coordinating Committees representation to Kristi Geris for the administrative record (Item II-A).
- Lance Keller will provide unmarked yearling Chinook index counts at Rocky Reach for periods prior to April 17, to Kristi Geris for distribution to the Coordinating Committees (Item III-A).
- Steve Hemstrom will provide the raw data used to develop the original and updated flow duration curves for valid survival studies to Kristi Geris for distribution to the Coordinating Committees (Item III-B).
- Steve Hemstrom will review the calculations used to develop the updated flow duration curve for valid survival studies, for discussion at the Coordinating Committees’ meeting on November 19, 2013 (Item III-B).
- **The next Coordinating Committees’ meeting will be on November 19, 2013, and will be held in person at the Radisson Hotel in SeaTac, Washington (Item VI-A).**
DECISION SUMMARY

- The Coordinating Committees representatives present approved the Rock Island and Rocky Reach 2013 Fish Spill Report, as revised (Item III-A).
- The Coordinating Committees representatives present approved the 2013 Wells Dam Post-Season Bypass Report, as revised (WDFW abstained citing their recent changes in HCP representation) (Item IV-A).

AGREEMENTS

- Chelan PUD agreed to incorporate a graphic for Rock Island spring spill in future Rock Island and Rocky Reach Fish Spill Reports (Item III-A).

REVIEW ITEMS

- There are no documents that are currently out for review.

REPORTS FINALIZED

- The final Wells Hydroelectric Project Spill Prevention Control and Countermeasure Plan was filed with the Federal Energy Regulatory Commission (FERC) on October 15, 2013, and was distributed to the Coordinating Committees by Kristi Geris on October 17, 2013.
- The final Wells Hydroelectric Project Water Quality Attainment Plan (WQAP), which was approved by the Coordinating Committees on October 9, 2013, was filed with FERC on October 21, 2013, and was distributed to the Coordinating Committees by Kristi Geris on that same day.
- The final 2013 Wells Dam Post-Season Bypass Report, which was approved by the Coordinating Committees on October 22, 2013, was distributed to the Coordinating Committees by Kristi Geris on that same day.
I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. Jeff Korth requested a WDFW HCP Coordinating Committees representation update.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft September 24, 2013 meeting minutes. Kristi Geris said that a second revised draft was distributed to the Coordinating Committees on October 18, 2013, which included edits received from Bryan Nordlund (tracked in redline strikeout). Geris said that all other comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. The Coordinating Committees members present approved the draft September 24, 2013 meeting minutes, as revised; WDFW abstained citing recent changes in their HCP representation. Geris will finalize the meeting minutes and distribute them to the Committees.

II. WDFW

A. WDFW HCP Coordinating Committees Representation Update (Jeff Korth)

Jeff Korth, WDFW Region 2 Fish Program Manager, announced that he will replace Teresa Scott as the WDFW HCP Coordinating Committees representative. He said he has been following correspondences with Bill Tweit and Scott in the HCP Tributary Committees, and that he has also been on the Coordinating Committees’ distribution list for a couple of weeks now. He said that WDFW will provide an official letter designating the current WDFW HCP Coordinating Committees representation to Kristi Geris for the administrative record.

III. Chelan PUD

A. DECISION: Rock Island and Rocky Reach 2013 Fish Spill Report (Steve Hemstrom)

Steve Hemstrom said that the revised draft 2013 Rock Island and Rocky Reach Fish Spill Report (Attachment B) was distributed to the Coordinating Committees by Kristi Geris on October 11, 2013. He noted that for summer spill, a daily spill percentage line was added to the graphics in the report, as requested by the Coordinating Committees at the meeting on September 24, 2013. He explained that daily average spill levels are based on estimated
discharge at Chief Joseph Dam (CJD) from the day before. For example, if CJD discharges 160,000 cubic feet per second (160 kcfs), 20% of that is calculated to determine that Rocky Reach should spill 32 kcfs. He said that these estimates are not always accurate, which explains the variance in the daily spill percentage lines as depicted on the graphics. He said, for example, that data from this month indicate that CJD estimates were off for about 9 days straight. He said that CJD estimates and actuals are continually tracked, so that spill at Rocky Reach can be modified to compensate for these errors in estimations.

Mike Schiewe asked about the period on the Rocky Reach graphic from mid-June to the first week of July where the spill line spiked and subyearling passage (counts at the Rocky Reach Bypass sampling facility) went down; he noted that immediately following the spike in spill, the passage went back up. He asked if the spike in spill reflected added flow, which pushed fish into the reservoir; or if it was a case where fish passed via spill and did not show up in the bypass count. Hemstrom said that both could be possible, and Lance Keller also noted that volitional hatchery releases ended about then, which means that all fish remaining were forced out at that time.

Kirk Truscott asked if the U.S. Army Corps of Engineers is consistent in any way with regards to discharges out of CJD (e.g., typically discharge greater or less than estimated, etc.); and Hemstrom replied that they are not consistent from day to day. He said that Chelan PUD does the best they can to catch up the next day; or, for example, spill at Rocky Reach will be increased if daily estimates at CJD have been too low, to prepare for spilling the right percentage of the anticipated additional water.

Truscott noted that a graphic is included for Rock Island summer spill, but not for spring spill, and he requested that, in future spill reports, a graphic be included for spring spill. Chelan PUD agreed to incorporate a graphic for Rock Island spring spill in future Rock Island and Rocky Reach Fish Spill Reports. Truscott also asked if there is a way to delineate between spring Chinook and steelhead natural origin recruits (NORs) and hatchery origin recruits (HORs) in the bypass counts. He added that he is particularly interested in evaluating spill protection for spring Chinook NORs. Keller said that there are data for marked and unmarked migrants, which are combined before uploading to the Data Access in Real Time (DART) database. He said that he will provide unmarked yearling Chinook index
counts at Rocky Reach for periods prior to spill start on April 17, to Geris for distribution to the Coordinating Committees. Hemstrom asked if there are spring Chinook HORs that are adipose fin (ad)-present, and Tom Kahler replied that there are, but they are also wired. Keller said that neither Rocky Reach nor Rock Island interrogate for coded wire tags (CWTs); they only look for ad-present and no-clipped. He added that scanning for CWTs is not performed because doing so requires additional handling and time. He also added that at Rocky Reach, lengths are only obtained on the first 100 fish of each species. Keller noted that the objectives of the bypass are to obtain run times, monitor spill coverage, and provide study fish for survival studies; and also instantaneous data on descaling and mortalities are obtained. Truscott concluded, then, that the only way to differentiate between spring Chinook NORs and HORs would be to scan for CWTs; and Keller added that the other option would be to make proportional assumptions based on fin clips.

The Coordinating Committees representatives present approved the Rock Island and Rocky Reach 2013 Fish Spill Report, as revised.

B. Valid Study Flow Duration Curves (Steve Hemstrom)

Steve Hemstrom said that the 2013 Valid Study Flow Duration Curve Updates (Attachment C) were distributed to the Coordinating Committees by Kristi Geris on October 11, 2013. He reviewed page 1 of the document, and explained that the goal was to include enough background information to serve as a stand-alone document, including information about the purpose and history of the HCP valid study flow duration curve, and a description of those data used to develop both the original curve and the updated curves. Hemstrom said that he will provide the raw data used to develop the original and updated flow duration curves for valid survival studies to Geris for distribution to the Coordinating Committees.

Hemstrom reviewed Table 1 and Figure 1 in Attachment C, which he explained represent the original spring period HCP valid study flow duration curve. He noted that the 10th percentile flow is 205,381 cfs, and the 90th percentile flow is 100,523 cfs; and so flows between those levels would be a valid flow in a study. Hemstrom then reviewed Table 2 and Figure 2, which represent an updated spring period HCP valid study flow duration curve using both modeled and actual data; he noted the 10th percentile flow of 296,117 cfs and the 90th percentile flow of 103,410 cfs. He said that, lastly for the spring period,
Figure 3 represent an updated HCP valid study flow duration curve using only actual data, and he noted the 10th percentile flow of 181,635 cfs, and the 90th percentile flow of 90,325 cfs. Hemstrom noted that the updated curves were developed using the last 11 years of data (i.e., 2002 through 2012), as opposed to 10 years of data, as outlined in the HCPs. He also noted Table 7 on the last page of Attachment C, which provides a comparison of the original and updated spring period HCP valid study flow duration curve parameters.

Bryan Nordlund asked about the difference in high end flows in Tables 1 and 2, and said he was finding it difficult to reconcile the difference based on only 11 years of data. Hemstrom agreed and suggested that the difference was due to the recent high flow years. Nordlund said a few high flow years still would not explain the large difference. He noted, for example, the top flow in Table 1 of 255,259 cfs, and then noted that after adding only 11 years of record (i.e., Table 2), there are 20 flows greater than 250,000 cfs. Nordlund noted similar differences in the summer period HCP valid study flow duration curve (i.e., Tables 4, 5, 6, and 8). Hemstrom agreed that the numbers did not seem correct, and said that he will review the calculations used to develop the updated flow duration curve for valid survival studies, for discussion at the Coordinating Committees’ meeting on November 19, 2013. Nordlund speculated that perhaps different means were used to develop the original and updated curves; for example, a mean for an entire period versus daily means.

Nordlund said that these data are useful, and he noted that the reason for bringing these data before the Coordinating Committees is to obtain this type of technical review of the results. Schiewe said that this topic will be revisited at the Coordinating Committees’ meeting on November 19, 2013.

C. Rocky Reach Turbine Unit Outages (Lance Keller)
Lance Keller recalled that Turbine Unit 10 (C10) at Rocky Reach Dam has been offline for maintenance. He said that mechanic crews have now discovered a deep hairline crack in a stainless steel rod that delivers oil to the servo motor, as described in an email that was distributed to the Coordinating Committees by Kristi Geris on October 4, 2013. Keller explained that the servo motor adjusts the angle of the turbine blades in response to changing river flow and fluctuating load requests; and added that Turbine Unit 8 (C8), Turbine Unit 9 (C9), and Turbine Unit 11 (C11) all have the same stainless steel rod design as part of the
servo motors. He said that Rocky Reach engineers evaluated the situation and made the decision to take C8, C9, and C11 out of service. Keller noted that having 4 of 11 units at Rocky Reach out of service at the same time impacts a number of routine powerhouse operations. He said that the lower small units will compensate for the units that are out of service, and added that Rocky Reach engineers are currently working on an interim fix in order to get all large units, except C10 (i.e., full powerhouse), back online by March 2014. He said that C10 may be back online as late as August 2014; and once C10 is back online, engineers will go back into the larger units for a permanent fix. He said that the estimated completion date for all permanent fixes is December 2017.

Keller recalled discussing at the Coordinating Committees’ meeting on June 25, 2013, that Turbine Unit 2 (C2) at Rocky Reach was scheduled to be offline from January through mid-May 2014 for a mandatory repair of the cracked rotor. He said that outage has since been delayed, and it is now scheduled for the second part of 2014. Keller added that the outage will be outside of the spring juvenile migration period, and that he and Steve Hemstrom have been coordinating with Rocky Reach engineers about minimizing possible effects to fish passage.

Keller said that he will keep the Coordinating Committees up to date as plans move forward.

IV. Douglas PUD
A. DECISION: 2013 Wells Dam Post-Season Bypass Report (Tom Kahler)
Tom Kahler said that the revised draft 2013 Wells Dam Post-Season Bypass Report was distributed to the Coordinating Committees by Kristi Geris on October 11, 2013. He said that comments received from the National Marine Fisheries Service (NMFS) regarding the source of the travel-time numbers (as discussed at the Coordinating Committees’ meeting on September 24, 2013) were addressed in the revised draft. Bryan Nordlund agreed that his comments were adequately addressed.

The Coordinating Committees representatives present approved the 2013 Wells Dam Post-Season Bypass Report, as revised (WDFW abstained citing recent changes in their HCP representation). The final 2013 Wells Dam Post-Season Bypass Report (Attachment D) was
distributed to the Coordinating Committees by Geris following the meeting on October 22, 2013.

B. Wells Dam Fish Counts (Tom Kahler)

Tom Kahler announced that fish counts at Wells Dam are now up to date. He said that staff caught up on counts on the evening of October 9, 2013, as distributed to the Coordinating Committees by Kristi Geris on October 8, 2013. He said that Wells Dam staff is now working towards improving fish count efficiency for next year, including improvements to the count window and lighting, and improved camera and recording technology (i.e., installing a high-definition system that will enable quicker fish identification). He said that new fish counters will be hired and trained by May 2014.

Kahler recalled the issue with similar sized fish repeatedly passing back and forth through the count window causing difficulties in counting. He said he discussed the issue with Bryan Nordlund, and they determined that the only change in 2013 from previous years is the installation of the grated surfaces and ramp to improve lamprey enumeration for the 2013 Adult Lamprey Passage and Enumeration Study. Particularly, there is a ramp descending from the upstream side of the count window that Nordlund explained could possibly be causing uneven hydraulics and flow separation through the count window area. Kahler said that recordings of the count window indicate that, so far, no lamprey are actually using the upstream ramp to exit the count window; and so there are now discussions about possibly removing the ramp during the 2013/2014 winter maintenance period. Kahler indicated that decisions related to infrastructure modifications to the count window area affecting lamprey will be discussed first with the Aquatic Settlement Work Group (SWG).

C. Coho Broodstock Trapping (Tom Kahler)

Tom Kahler said that each fall, the Yakama Nation (YN) uses the Wells Dam east and west fish ladders to trap coho for their Methow reintroduction efforts. He said that, typically, trapping is conducted concurrent with WDFW’s steelhead trapping efforts. Kahler said that this year, however, WDFW conducted limited steelhead trapping in the ladders because part of the program will rely on broodstock trapped in the Twisp River and part was obtained from the Wells Hatchery outfall, reducing the number needed from the ladders. He said that once WDFW concluded trapping, the YN continued their efforts. Kahler said that the coho
run has not materialized as anticipated. He said that 51,000 have passed Bonneville Dam, only 3,000 have passed Priest Rapids Dam, and only about 300 have passed Wells Dam. He said the YN was growing concerned about obtaining enough broodstock, and so they started trapping 7 days per week (as per their Endangered Species Act [ESA] permits), and they started trapping at the Wells Hatchery outfall as well. Kahler said that the YN’s preferred trapping locations are the Winthrop Hatchery and Methow Hatchery outfalls, and collection in the Wells Dam ladders and at the Wells Hatchery outfall were intended to fill any shortfalls in collections from those preferred upstream locations. He said that if enough brood are trapped at the upstream locations, brood obtained from the lower locations will be returned to the river. Kahler also noted current seismicity evaluations (including borings) being conducted along the east embankment. He said there was concern that the boring efforts may interfere with trapping in the east ladder; however, no issues have been reported.

D. 2013 Adult Pacific Lamprey Passage and Enumeration Study (Tom Kahler)
Tom Kahler said that radio-tagged lampreys are continuing to be tracked. He said that by mid-November, the battery life in all radio tags will have expired, at which time analysis of the telemetry data will begin. He said that passive integrated transponder (PIT) tags are also being tracked as they pass PIT-tag arrays, and that 14 of the 110 study lampreys have been detected in the Methow. No lampreys have been detected in the Okanogan. He said that some lampreys have been detected downstream of Wells Dam, and one was detected in the Rocky Reach fish ladder. He said that about 30% of the lampreys are still unaccounted for. He said that no issues have been observed with lampreys passing through the Wells Dam count window, and he added that lampreys observed have mostly been free swimming through the area. Kahler said that the reduced fishway entrance head differential (lamprey operations) set up for the study concluded on October 7, 2013, per the study plan. A final report is expected to be ready by spring 2014.

V. Hatchery and Tributary Committees Update (Mike Schiewe)
Mike Schiewe reported that the HCP Tributary Committees did not meet in October; the update by Tracy Hillman was distributed to the Coordinating Committees by Kristi Geris on October 21, 2013. Schiewe said that some Tributary Committees members attended a tour of habitat restoration projects on the Okanagan River in Canada on October 9 and 10, 2013. He
said that the Wells Tributary Committee also approved a request from the Washington Water Project of Trout Unlimited to extend the Twisp River Well Conversion Project contract. The sponsor requested the extension due to a lack of available contractors, the onset of winter, and the fact that the irrigation system has been drained and will not be turned on until spring; and the extension would give the sponsor time to complete the project when the system is turned on in the spring.

Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last HCP Hatchery Committees’ meeting on October 16, 2013. Schiewe noted that the Hatchery Committees also held a conference call on October 7, 2013, after their September meeting was canceled due to limited availability for participation. The conference call focused on a time-sensitive YN agenda item regarding their Twisp River Steelhead Live Spawning Plan Statement of Agreement (SOA), as further discussed below:

- **DECISION: Twisp River Steelhead Live Spawning Plan SOA:** This SOA is a part of the YN’s Steelhead Kelt Reconditioning Program that was started a few years ago under Columbia River Basin Accords funding. The YN seek to recondition females from Douglas PUD’s Twisp steelhead program, which would necessitate live spawning of those fish at the Methow Hatchery, and there were fish health concerns regarding the potential impacts of components of the program to the HCP spring Chinook and steelhead programs currently at Methow Hatchery. WDFW Fish Health Staff determined that the YN’s program would not significantly affect the HCP programs currently at Methow Hatchery; and a lengthy list of risk-reducing measures was developed, including procedures to follow if Infectious Pancreatic Necrosis Virus (IPNV) is detected. WDFW Fish Health Staff are drafting a letter indicating that risk to HCP programs would be minimal if the risk protocols are followed. This letter will be packaged with the final draft SOA and the risk protocols, and delivered to Douglas PUD and the Hatchery Committees for approval via email consent. A preliminary vote indicated that the Hatchery Committees are on board with the proposed program. Discussions with NMFS still need to take place, especially because ESA-listed species are involved (due to the government shut-down, Lynn Hatcher has not been available to participate in these discussions). *(Note: the final package was distributed to the Hatchery Committees by Kristi Geris on October 22, 2013.)*
• **Expanded Acclimation in the Methow:** The YN is requesting the Hatchery Committees’ approval for the use of the Chewuch Pond for co-acclimation of the YN’s coho salmon production and Chelan PUD’s Methow spring Chinook production. They have also expressed interest in using supplementation programs to recolonize habitat that is currently being underutilized.

• **Non-Target Taxa of Concern (NTTOC) Update:** NTTOC analyses evaluate the effects of hatchery programs on other native species in the basin. These analyses have been ongoing for several years, and are being addressed using a risk model that Todd Pearsons and Craig Busack developed. A few bugs have been identified in the model code, which slowed progress, but analyses that can be run are now almost complete. The original plan was to establish an outside panel to review the model results; however, Greg Mackey volunteered to first compile a draft report summarizing the results for the Hatchery Committees to review, and then a decision will be made whether further actions are needed. Evaluating hatchery programs’ effects on other native species in the basin is one of ten Monitoring and Evaluation (M&E) objectives, and the NTTOC analyses were an effort to address that objective.

• **Hatchery M&E Plan Tables:** Greg Mackey developed draft Hatchery M&E Appendices tables for the Hatchery Committees review. Hatchery Committees’ approval of the draft tables will be requested at the next Hatchery Committees’ meeting on November 20, 2013.

• **Twisp Steelhead Relative Reproductive Success 2012 Genotyping Report Update:** Douglas PUD announced that they have received data from WDFW, and that the final Twisp Steelhead Relative Reproductive Success 2012 Genotyping Report was distributed to the Hatchery Committees by Kristi Geris on September 9, 2013. Approval of the report was not requested; rather, the report is just for information. Nucleotide polymorphic loci (SNPs) were used to analyze family relationships.

• **Summer Chinook Egg Request:** The Hatchery Committees representatives present agreed to a Chelan PUD request for 3,500 summer Chinook salmon eggs for use in an ongoing egg-fry survival study in Reach 4 of the lower Chelan River. The study is led by Steve Hays.

• **Draft Chelan PUD 2014 M&E Implementation Plan:** Chelan PUD is in the final stages of completing their Chelan PUD 2014 M&E Implementation Plan. Similar to what
has occurred in the past, Chelan PUD will contract with WDFW to collect field data, and Bio Analysts will complete the analyses and reporting.

VI. HCP Committees Administration

A. Next Meetings (Mike Schiewe)

Mike Schiewe said that the next scheduled Coordinating Committees’ meeting is November 19, 2013, to be held in person at the Radisson Hotel in SeaTac, Washington. He said that Tom Kahler arranged for Jeff Fryer to provide a presentation on the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) ongoing sockeye studies.

The December 17, 2013 and January 28, 2014 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

List of Attachments

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Description</th>
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<tbody>
<tr>
<td>Attachment A</td>
<td>List of Attendees</td>
</tr>
<tr>
<td>Attachment B</td>
<td>Chelan PUD’s Final 2013 HCP Rocky Reach and Rock Island Fish Spill Report</td>
</tr>
<tr>
<td>Attachment C</td>
<td>2013 Valid Study Flow Duration Curve Updates</td>
</tr>
<tr>
<td>Attachment D</td>
<td>Revised Draft 2013 Wells Dam Post-Season Bypass Report</td>
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## List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
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</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
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<tr>
<td>Lance Keller*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Jeff Korth</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
</tr>
</tbody>
</table>

Notes:
* Denotes Coordinating Committees member or alternate
2013 ROCKY REACH
Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 9% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 21 August, 2400 hrs
95% Est. passage date: 10 August
Est. % of run with spill: 97.81% on 21-August (estimated as of 31 August)
Cumulative index count: 22,073 subyearling Chinook (as of 31 August)
Summer spill percentage: 11.73% (9%, plus 2.74% forced spill 5 June – 21 August)
Avg river flow at RR: 153,805 cfs (5 June - 21 August)
Avg spill rate at RR: 18,044 cfs (5 June - 21 August)
Number of spill days: 78

2013 RR Bypass Subyearling Chinook Index Counts and Percent Project Spill
22 May - 31 August

Revised 10 October, 2013 Chelan PUD Fish Spill Programs
2013 ROCK ISLAND

Spring Spill
Target species: Yearling Chinook, steelhead, sockeye
Spill target percentage: 10% of day average river flow
Spill start date: 17 April, 0001 hrs
Spill stop date: 4 June, 2400 hrs (immediate increase to 20% summer spill)
Percent of run with spill: Yearling Chin 98.25%; steelhead 98.23%; sockeye 98.81%
Cumulative index count: 28,324 Yearling Chins; 15,099 Steelhead; 25,111 sockeye
Spring spill percentage: 12.51% (10% plus 2.51% forced spill 17 April – 4 June)
Avg river flow at RI: 175,634 cfs (17 April - 4 June)
Avg spill flow at RI: 21,977 cfs (17 April - 4 June)
Total spill days: 49

Summer Spill
Target species: Subyearling Chinook
Spill target percentage: 20% of day average river flow
Spill start date: 5 June, 0001 hrs
Spill stop date: 18 August, 2400 hrs
95% Est. passage date: 12 August
Percent of run with spill: Subyearling Chinook 95.18% (estimated as of 31-August)
Cumulative index count: 17,170 subyearling Chinook (as of 31 August)
Summer spill percentage: 20.08% (5 June- 18 August)
Avg river flow at RI: 158,962 cfs (5 June - 18 August)
Avg spill flow at RI: 31,734 cfs (5 June - 18 August)
Total spill days: 75

2013 RIS Bypass Subyearling Chinook Index Counts and Percent Project Spill
1 June - 31 August

attachment B
Juvenile Index Counts 2003-2013 from the Rocky Reach Juvenile Fish Bypass Sampling Facility and Rock Island Bypass Trap Smolt Monitoring Program (SMP) 1 April – 31 August.

Table 1. Rocky Reach Juvenile Bypass index sample counts, 2003-2013

<table>
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<tbody>
<tr>
<td>Sockeye</td>
<td>71,683</td>
<td>30,935</td>
<td>17,575</td>
<td>239,185</td>
<td>169,937</td>
<td>136,206</td>
<td>40,758</td>
<td>724,394</td>
<td>67,879</td>
<td>384,224</td>
<td>199,497</td>
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<td>Steelhead</td>
<td>10,585</td>
<td>6,433</td>
<td>5,821</td>
<td>4,329</td>
<td>4,532</td>
<td>8,721</td>
<td>6,309</td>
<td>4,931</td>
<td>5,683</td>
<td>4,902</td>
<td>2,528</td>
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<tr>
<td>Yearling Chinook</td>
<td>13,918</td>
<td>53,946</td>
<td>27,611</td>
<td>23,461</td>
<td>18,080</td>
<td>38,394</td>
<td>18,946</td>
<td>33,840</td>
<td>24,400</td>
<td>95,207</td>
<td>29,018</td>
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<tr>
<td>Subyrlng Chinook</td>
<td>172,392</td>
<td>20,062</td>
<td>10,978</td>
<td>19,996</td>
<td>13,496</td>
<td>11,820</td>
<td>11,944</td>
<td>59,751</td>
<td>17,246</td>
<td>5,774</td>
<td>22,073</td>
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Table 2. Rock Island Smolt Monitoring Program index sample counts, 2003-2013

<table>
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<tbody>
<tr>
<td>Sockeye</td>
<td>10,312</td>
<td>7,114</td>
<td>1,991</td>
<td>34,604</td>
<td>16,410</td>
<td>38,965</td>
<td>4,926</td>
<td>37,404</td>
<td>18,697</td>
<td>46,788</td>
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<tr>
<td>Steelhead</td>
<td>15,507</td>
<td>10,735</td>
<td>15,974</td>
<td>26,930</td>
<td>18,482</td>
<td>22,780</td>
<td>17,636</td>
<td>17,194</td>
<td>28,408</td>
<td>16,957</td>
<td>15,099</td>
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<tr>
<td>Yearling Chinook</td>
<td>15,355</td>
<td>12,574</td>
<td>14,797</td>
<td>37,267</td>
<td>23,714</td>
<td>22,562</td>
<td>9,225</td>
<td>11,802</td>
<td>26,407</td>
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<tr>
<td>Subyrlng Chinook</td>
<td>25,916</td>
<td>23,563</td>
<td>18,710</td>
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<td>15,940</td>
<td>8,189</td>
<td>23,205</td>
<td>27,397</td>
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HCP Valid Study Flows

The Rocky Reach and Rock Island HCPs use mean outflows from Grand Coulee Dam (GCL) to determine river flow ranges that constitute valid study flows for spring and summer juvenile survival studies. Spring and summer study periods are defined in the HCPs as April 16-May 31 (spring), and July 1-August 15 (summer). Valid flows for a study fall between the average 10\textsuperscript{th} and 90\textsuperscript{th} percentile flows from Grand Coulee Dam. For the HCPs’ 10-year HCP Comprehensive Progress review, the HCP Coordinating Committee (HCP CC) must update the flow duration curves with GCL outflows from the first decade of HCP implementation to insure flow conditions are representative. In addition to adding 10 years of GCL outflows to the existing data set, the HCP CC requested that June be added (previously June was excluded) into the summer study period because monitoring at the Rocky Reach Juvenile Bypass (http://www.cbr.washington.edu/inseason) shows a significant proportion of subyearling summer Chinook migrate past Rocky Reach and Rock Island dams (RRH avg 38.6%, range 17.45 - 71.65%, 2005-2013) in June each year. With the inclusion of June, the new HCP summer study period is June 1 - August 15.

Original flow data sets from GCL and resulting duration curves used both “modeled” and actual GCL outflow data. Modeled flow data came from Bonneville Power Administration’s HYDSIM Model (00FSH-26 BASE CASE-1995 FCRPS BiOp) http://www.bpa.gov/power/pgf/HydrPNW.shtml. The HYDSIM flow regulation model uses historic observed flows and applies an updated hydro regulation (year 2000 level of water development for operating rules - upstream storage, flood control, discharge) to produce estimated GCL outflows from 1929-1978. Both the modeled outflows and actual observed flows, 1983-2001, were used in the original HCP data set. Water years 1979-1982 were not used, however, because they were not representative and not part of the modeled record. For the 2013 update, the HCP CC requested analyses of flows with and without historic BPA modeled flow data to evaluate new study flows for next 10-year HCP period (2013-2023). Multiple duration curves were constructed for spring and summer periods using the following sets of Grand Coulee outflow data:

1) Spring - BPA modeled flow data 1929-1978 for GCL, combined with actual outflow data (DART) 1983-2012;
2) Spring - GCL actual outflow data only, 1983-2012;

1) Summer- BPA modeled flow data 1929-1977, including June, and observed data 1983-2012;
2) Summer- GCL actual observed data only including June, 1983-2012

The summer period is 1929-1977 because August 1978 is not included in the period of record and was not modeled.

Original and updated HCP spring valid flow ranges are shown below Tables 1-3 and Figures 1-3 below. The actual GCL outflow data used in the flow durations is compiled from Columbia Basin Research, Data Access in Real Time (DART). http://www.cbr.washington.edu/dart/query/river_graph_text. Summer period valid study flow duration curves are shown in Tables 4-6, and Figures 4-6. Summary table (Table 8, Table 9) is included which compares the resulting flow ranges for each of the four duration curves prepared.
**HCP Spring Study Period**

Table 1. *Original* HCP spring study period flows and exceedence percentiles calculated from BPA modeled Grand Coulee Dam outflow 1929-1978, and observed flows for the period April 16-May 31, 1983-2001.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Percentile</th>
<th>Mean Flows</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1.4%</td>
<td>255,259</td>
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<tr>
<td>7</td>
<td>10.1%</td>
<td>205,381</td>
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<tr>
<td>18</td>
<td>25.7%</td>
<td>169,289</td>
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<tr>
<td>35</td>
<td>50.0%</td>
<td>135,423</td>
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<tr>
<td>53</td>
<td>75.7%</td>
<td>117,402</td>
</tr>
<tr>
<td>63</td>
<td>89.9%</td>
<td>100,523</td>
</tr>
<tr>
<td>69</td>
<td>98.6%</td>
<td>51,389</td>
</tr>
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</table>

Figure 1. *Original* HCP valid study flow duration curve constructed using Grand Coulee outflow for the period April 16-May 31, 1929-1978 and 1983-2001 for Rocky Reach and Rock Island HCP spring studies. The tenth percentile flow is 205,381 cfs and the ninety percentile flow is 100,523 cfs.
Table 2. Updated HCP spring period (April 15-May 31) valid study flows and exceedence percentiles calculated from actual Grand Coulee Dam outflows, 1983-2012, and Grand Coulee modeled (year 2000 level of water development) outflows, 1929-1978.

<table>
<thead>
<tr>
<th>Spring Flow Rank</th>
<th>Exceedence Percentile</th>
<th>Apr 16-May 31 Mean Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0%</td>
<td>347,214</td>
</tr>
<tr>
<td>4</td>
<td>5.0%</td>
<td>312,247</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>10.0%</td>
<td><strong>296,117</strong></td>
</tr>
<tr>
<td>20</td>
<td>25.0%</td>
<td>250,740</td>
</tr>
<tr>
<td>40</td>
<td>50.0%</td>
<td>179,959</td>
</tr>
<tr>
<td>60</td>
<td>75.0%</td>
<td>131,705</td>
</tr>
<tr>
<td><strong>72</strong></td>
<td>90.0%</td>
<td><strong>103,410</strong></td>
</tr>
<tr>
<td>76</td>
<td>95%</td>
<td>96,777</td>
</tr>
<tr>
<td>80</td>
<td>100.0%</td>
<td>51,389</td>
</tr>
</tbody>
</table>

Figure 2. Updated Grand Coulee Dam mean spring outflow duration curve with 10th and 90th percentile exceedence flows for spring period, April 16 - May 31, 1929-1978, and 1983-2012.
Table 3. HCP spring period (April 15-May 31) flows and exceedence percentiles calculated from Grand Coulee Dam mean actual outflows, 1983-2012.

<table>
<thead>
<tr>
<th>Spring Flow Rank</th>
<th>Exceedence Percentile</th>
<th>Apr 16-May 31 Mean Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0%</td>
<td>202,798</td>
</tr>
<tr>
<td>2</td>
<td>6.7%</td>
<td>181,665</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>10.0%</strong></td>
<td><strong>181,635</strong></td>
</tr>
<tr>
<td>7</td>
<td>23.3%</td>
<td>146,043</td>
</tr>
<tr>
<td>15</td>
<td>50.0%</td>
<td>121,424</td>
</tr>
<tr>
<td>22</td>
<td>73.3%</td>
<td>103,410</td>
</tr>
<tr>
<td><strong>27</strong></td>
<td><strong>90.0%</strong></td>
<td><strong>90,325</strong></td>
</tr>
<tr>
<td>29</td>
<td>96.7%</td>
<td>83,374</td>
</tr>
<tr>
<td>30</td>
<td>100.0%</td>
<td>51,389</td>
</tr>
</tbody>
</table>

Figure 3. Grand Coulee Dam mean spring outflow duration curve with 10th and 90th percentile exceedence flows for the spring period, April 16-May 31, 1983-2012.
**HCP Summer Study Period**

Table 4. *Original* HCP summer period (July 1 – August 15) valid study flows and exceedence percentiles calculated from modeled Grand Coulee Dam outflow data 1929-1977, and actual flows from 1983-2001.

<table>
<thead>
<tr>
<th>Summer Flows Rank</th>
<th>Percentile</th>
<th>Jul1-Aug15 Mean Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.4%</td>
<td>192,888</td>
</tr>
<tr>
<td>7</td>
<td>10.1%</td>
<td>164,905*</td>
</tr>
<tr>
<td>18</td>
<td>26.1%</td>
<td>140,831</td>
</tr>
<tr>
<td>35</td>
<td>50.7%</td>
<td>119,087</td>
</tr>
<tr>
<td>52</td>
<td>75.4%</td>
<td>90,010</td>
</tr>
<tr>
<td>62</td>
<td>89.9%</td>
<td>76,318*</td>
</tr>
<tr>
<td>68</td>
<td>98.6%</td>
<td>55,388</td>
</tr>
</tbody>
</table>

Figure 4. *Original* HCP valid study flow duration curve constructed using Grand Coulee modeled outflow data July 1-August 15, 1929-1977 and actual outflows 1983-2001 for Rocky Reach and Rock Island HCP summer studies. The ten percentile flow is 164,905 cfs and the ninety percentile flow is 76,318 cfs.
Table 5. Updated HCP summer period (June 1-August 15) valid study flows and exceedence percentiles calculated from actual Grand Coulee Dam outflows, 1983-2012, and modeled (year 2000 level of water development) outflows, 1929-1977.

<table>
<thead>
<tr>
<th>Spring Flow Rank</th>
<th>Exceedence Percentile</th>
<th>June 1-Aug 15 Mean Flow (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0%</td>
<td>346,294</td>
</tr>
<tr>
<td>4</td>
<td>5.1%</td>
<td>314,267</td>
</tr>
<tr>
<td>8</td>
<td>10.1%</td>
<td><strong>290,712</strong></td>
</tr>
<tr>
<td>20</td>
<td>25.3%</td>
<td>240,393</td>
</tr>
<tr>
<td>40</td>
<td>50.6%</td>
<td>177,764</td>
</tr>
<tr>
<td>59</td>
<td>74.7%</td>
<td>133,641</td>
</tr>
<tr>
<td>71</td>
<td>89.9%</td>
<td><strong>103,902</strong></td>
</tr>
<tr>
<td>75</td>
<td>94.9%</td>
<td>88,282</td>
</tr>
<tr>
<td>79</td>
<td>100.0%</td>
<td>64,481</td>
</tr>
</tbody>
</table>

Figure 5. Updated GCL summer outflow duration curve, June included, with 10th and 90th percentile exceedence flows for the period 1929 - 1977, and 1983 - 2012.
Table 6. Updated HCP summer period flows and exceedence percentiles calculated from actual Grand Coulee Dam outflows (including June) for the period June 1 – August 15, 1983-2012.

<table>
<thead>
<tr>
<th>Summer Flow Rank</th>
<th>Exceedence Percentile</th>
<th>June 1-Aug 15 Mean Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0%</td>
<td>212,868</td>
</tr>
<tr>
<td>2</td>
<td>6.7%</td>
<td>196,866</td>
</tr>
<tr>
<td>3</td>
<td>10.0%</td>
<td>194,276</td>
</tr>
<tr>
<td>8</td>
<td>26.7%</td>
<td>144,009</td>
</tr>
<tr>
<td>15</td>
<td>50.0%</td>
<td>118,924</td>
</tr>
<tr>
<td>23</td>
<td>76.7%</td>
<td>101,521</td>
</tr>
<tr>
<td>27</td>
<td>90.0%</td>
<td>78,684</td>
</tr>
<tr>
<td>29</td>
<td>96.7%</td>
<td>72,463</td>
</tr>
<tr>
<td>30</td>
<td>100.0%</td>
<td>64,481</td>
</tr>
</tbody>
</table>

Figure 6. Grand Coulee Dam mean summer outflow duration curve, June flow included, with 10th and 90th percentile exceedence values for the summer period, June 1 – August 15, 1983-2012.
Summary

Comparison of resulting flow duration curves with and without inclusion of BPA modeled flow data (1929-1978) for GCL is shown in Table 7 (spring) and Table 8 (summer). Exclusion of 50-years of modeled outflows drives the differences in resulting valid study flow ranges, as might be expected. The number of years and run-off cycles captured in the modeled flow data likely captures a greater range of environmental variability with respect to flow. With modeled flows included, the original HCP flow duration curves contained 69 and 68 years of mean flow for spring and summer periods, respectively, while the newly updated curves contain 80 and 79 years in the spring and summer periods, respectively. Updated curves which exclude the modeled Grand Coulee outflow years contain only the last 30 years (1983-2012) to capture the same flow variability in spring and summer study periods.

Table 7. Comparison of original and updated spring period HCP valid study flow duration curve parameters.

<table>
<thead>
<tr>
<th>Spring Study Period</th>
<th>Original Duration Curve</th>
<th>Updated Curve Modeled + Actual Flows</th>
<th>Updated Curve Actual Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td># Years in data set</td>
<td>69</td>
<td>80</td>
<td>30</td>
</tr>
<tr>
<td>Modeled data used?</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>June flow in analysis?</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>10th percentile flow (cfs)</td>
<td>205,381</td>
<td>296,117</td>
<td>181,635</td>
</tr>
<tr>
<td>50th percentile flow (cfs)</td>
<td>135,423</td>
<td>179,959</td>
<td>121,424</td>
</tr>
<tr>
<td>90th percentile flow (cfs)</td>
<td>100,523</td>
<td>103,410</td>
<td>90,325</td>
</tr>
</tbody>
</table>

Table 8. Comparison of original and updated summer period HCP valid study flow duration curve parameters.

<table>
<thead>
<tr>
<th>Summer Study Period</th>
<th>Original Duration Curve</th>
<th>Updated curve Modeled + Actual Flows</th>
<th>Updated curve Actual Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td># Years in data set</td>
<td>68</td>
<td>79</td>
<td>30</td>
</tr>
<tr>
<td>Modeled data used?</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>June flows in analysis?</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>10th percentile flow (cfs)</td>
<td>164,905</td>
<td>290,712</td>
<td>194,276</td>
</tr>
<tr>
<td>50th percentile flow (cfs)</td>
<td>119,087</td>
<td>177,764</td>
<td>118,924</td>
</tr>
<tr>
<td>90th percentile flow (cfs)</td>
<td>76,318</td>
<td>103,902</td>
<td>78,684</td>
</tr>
</tbody>
</table>
Summary of 2013 Juvenile Fish Bypass Operations at Wells Hydroelectric Project
11 October 2013

Douglas PUD operated the Wells bypass system in 2013 as guided by the Wells HCP Coordinating Committee-approved 2013 Bypass Operating Plan. The plan was intended to provide non-turbine passage during 95 percent of the juvenile Plan Species migration passing Wells Dam. Bypass operations were initiated on April 9 at 00:00 hours, and operated continuously until terminated at 24:00 hours on August 19, for a total of 133 days.

The 2013 Bypass Operating Plan included measures for complying with Federal Energy Regulatory Commission (FERC) requirements for maintaining minimum automatic-gate-opening capacity under the Wells Project Emergency Action Plan and Washington Department of Ecology (Ecology) requirements for compliance with total dissolved gas (TDG) standards as directed by the FERC-approved Total Dissolved Gas Abatement Plan for the Wells Project. Compliance with the requirements of both of these plans was achieved by systematic removal of bypass barriers under increasing discharge as described in the 2013 Bypass Operating Plan. The strategy for compliance with Ecology’s TDG standards included the concentration of spill through adjacent spillways at the center of Wells Dam and spilling over the discharge from active turbine units. To implement these compliance measures as described in the 2013 Bypass Operating Plan, Douglas PUD removed bypass barriers from Spillway 6 on May 23 and reinstalled them on May 30; then removed them again on July 1 and reinstalled them on July 11.

Based on analysis conducted by John Skalski and Richard Townsend of Columbia Basin Research (Appendix A), Douglas PUD achieved the HCP requirement to provide bypass operations during 95 percent of the juvenile salmon and steelhead migration passing Wells Dam by providing bypass passage during 98.29 percent of the yearling Chinook migration, 99.21 percent of the steelhead migration, 99.99 percent of the sockeye migration, 100 percent of the coho migration, and 99.33 percent of the sub-yearling Chinook migration passing Wells Dam in 2013.
Appendix A

Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2013
Analysis of Proportion of Outmigration Affected by Bypass Operations at Wells Dam, 2005-2013

Prepared for:
Public Utility District No. 1 of Douglas County
1151 Valley Mall Parkway
East Wenatchee, Washington 98802 - 4497

Prepared by:
John R. Skalski
Richard L. Townsend

Columbia Basin Research
School of Aquatic and Fishery Sciences
University of Washington
1325 Fourth Avenue, Suite 1820
Seattle, Washington 98101-2509

16 September 2013
Outmigration has been monitored at the juvenile sampling facility at Rocky Reach Dam for four stocks of salmonids (yearling and subyearling Chinook, steelhead, and sockeye) from 2005 onward. Coho were added this year, using the detections at Rocky Reach of PIT-tagged fish. The proportion of each stock covered by the bypass operations at Wells Dam can be estimated using the historical daily counts at Rocky Reach, and adding the travel time from Wells to Rocky Reach Dam. Table 1 has the average travel times based on Douglas PUD’s 2010 PIT-tag study for yearling Chinook, and acoustic-tag studies for steelhead and sockeye. Due to a dearth of PIT-tag or acoustic-tag studies performed with subyearling Chinook and Coho, travel time was assumed to be 2 days.

<table>
<thead>
<tr>
<th>Stock</th>
<th>Travel time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yearling Chinook</td>
<td>5 days</td>
</tr>
<tr>
<td>Subyearling Chinook</td>
<td>2 days</td>
</tr>
<tr>
<td>Steelhead</td>
<td>2 days</td>
</tr>
<tr>
<td>Sockeye</td>
<td>2 days</td>
</tr>
<tr>
<td>Coho</td>
<td>2 days</td>
</tr>
</tbody>
</table>

Plots of the annual cumulative proportion of the outmigration for spring migrants (yearling Chinook, steelhead, sockeye, and coho), and the subyearling Chinook in the summer had fairly consistent start and end dates at Rocky Reach (Figure 1). The timing of bypass operations for the spring outmigration at Wells from 2004 through 2011 was from 00:00 12 April – 24:00 13 June of each year for the “spring” spill season, and from 00:00 14 June – 24:00 26 August for the “summer” spill season. For 2012 and beyond, the Wells Habitat Conservation Plan (HCP) Coordinating Committee approved the modification of the timing of bypass operations at Wells Dam as follows: bypass operations commenced at 00:00 on April 9 and continued through 24:00 on August 19. This current timing of bypass operations will continue annually, unless modified as a result of future investigations that demonstrate an inadequacy of these dates at providing bypass passage for 95% of both spring- and summer-migrating Plan Species at Wells Dam. Table 2 has the estimated proportion of the annual outmigration covered by the spring, summer, and total bypass operations from 2005 through 2013. Steelhead, sockeye, coho, and subyearling Chinook are estimated to have greater than 98% of their annual outmigration pass through Wells Dam during one or both of the two periods covered by bypass operations for the most recent nine years of record. For yearling Chinook, being the earliest arriving stock, proportion covered ranged from 94.49% to 99.96% over the period of record. To assess the effectiveness of the selected start date for spring bypass operations, Table 3 has the date that, with hindsight, the spring bypass operations should have started to achieve 95% coverage of the yearling Chinook outmigration for that year. These dates ranged from 9 April to 3 May. For the two years when yearling Chinook coverage was less than 95%, bypass starting dates should have been 9 and 11 April, respectively, instead of 12 April.
Similarly, Table 4 compares the actual date of bypass termination with the date on which bypass operations covered 95% of the subyearling Chinook outmigration. In each year, an earlier termination of bypass operations would have been possible without jeopardizing the achievement of the HCP standard of providing a bypass route for ≥ 95% of outmigrating subyearling Chinook. During the nine years analyzed, the 95% HCP standard was achieved 4 to 32 days prior to the actual date on which bypass operations were terminated.

Table 2. Total proportion of each stock’s migration affected by bypass operations (spring, summer) at Wells Dam, based on travel times from Wells to Rocky Reach Dam, the cumulative proportion of the annual migration of each stock at Rocky Reach, and the start and stop dates of Wells bypass operations.

<table>
<thead>
<tr>
<th>Stock Type</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subyearling Chinook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0.0528</td>
<td>0.0259</td>
<td>0.0551</td>
<td>0.0025</td>
<td>0.0116</td>
<td>0.0067</td>
<td>0.0085</td>
<td>0.0004</td>
<td>0.0171</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9455</td>
<td>0.9559</td>
<td>0.9154</td>
<td>0.9972</td>
<td>0.9827</td>
<td>0.9917</td>
<td>0.9910</td>
<td>0.9996</td>
<td>0.9823</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0017</td>
<td>0.0182</td>
<td>0.0296</td>
<td>0.0002</td>
<td>0.0056</td>
<td>0.0016</td>
<td>0.0005</td>
<td>0.0001</td>
<td>0.0006</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Covered by Bypass ops</td>
<td>0.9472</td>
<td>0.9741</td>
<td>0.9449</td>
<td>0.9975</td>
<td>0.9884</td>
<td>0.9933</td>
<td>0.9915</td>
<td>0.9996*</td>
<td>0.9829</td>
</tr>
<tr>
<td>Steelhead</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0.0015</td>
<td>0.0101</td>
<td>0.0066</td>
<td>0.0009</td>
<td>0.0019</td>
<td>0.0045</td>
<td>0.0190</td>
<td>0.0014</td>
<td>0.0079</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9903</td>
<td>0.9762</td>
<td>0.9887</td>
<td>0.9901</td>
<td>0.9965</td>
<td>0.9763</td>
<td>0.9513</td>
<td>0.9885</td>
<td>0.9847</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0081</td>
<td>0.0137</td>
<td>0.0042</td>
<td>0.0089</td>
<td>0.0016</td>
<td>0.0188</td>
<td>0.0297</td>
<td>0.0101</td>
<td>0.0074</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Covered by Bypass ops</td>
<td>0.9985</td>
<td>0.9899</td>
<td>0.9930</td>
<td>0.9990</td>
<td>0.9981</td>
<td>0.9951</td>
<td>0.9810</td>
<td>0.9986</td>
<td>0.9921</td>
</tr>
<tr>
<td>Sockeye</td>
<td></td>
<td></td>
<td></td>
<td>0.0017</td>
<td>0.016</td>
<td>0.0001</td>
<td>0.0028</td>
<td>0.0043</td>
<td>0.0008</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0.9983</td>
<td>0.9984</td>
<td>0.9998</td>
<td>0.9972</td>
<td>0.9957</td>
<td>0.9992</td>
<td>0.9923</td>
<td>0.9995</td>
<td>0.9990</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0.0017</td>
<td>0.016</td>
<td>0.0001</td>
<td>0.0028</td>
<td>0.0043</td>
<td>0.0008</td>
<td>0.0077</td>
<td>0.0005</td>
<td>0.0009</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0001</td>
</tr>
<tr>
<td>Total Covered by Bypass ops</td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.9999</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.9999</td>
</tr>
<tr>
<td>Coho</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.9910</td>
</tr>
<tr>
<td>prior to spring Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.9910</td>
</tr>
<tr>
<td>during spring Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0090</td>
</tr>
<tr>
<td>during summer Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>after Bypass Ops period</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total Covered by Bypass ops</td>
<td>1.0000</td>
<td>0.0000</td>
<td>0.9999</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>0.9999</td>
</tr>
</tbody>
</table>

*Proportions not summing to 1 are due to round-off error.
Table 3. Comparison of the actual start date for spring bypass operations at Wells Dam each year, versus the start date necessary to have covered at least 95% of the yearling Chinook outmigration that year. Operations are assumed to begin at 00:00 for the date listed.

<table>
<thead>
<tr>
<th>Migration Year</th>
<th>Actual Date</th>
<th>Cumulative proportion passed before 00:00</th>
<th>Proportion Covered by Bypass Ops</th>
<th>Date by which the first 5% passed</th>
<th>Cumulative proportion passed before 00:00</th>
<th>Bypass Ops would have Covered this Proportion</th>
<th># Days before or after actual date to get 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>April 12</td>
<td>0.0528</td>
<td>0.9472</td>
<td>April 11</td>
<td>0.0039</td>
<td>0.9961</td>
<td>1 before</td>
</tr>
<tr>
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<td>0.0259</td>
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<td>April 18</td>
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</tr>
<tr>
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<td>0.0551</td>
<td>0.9449</td>
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<td>2008</td>
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<td>May 3</td>
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<td>0.0116</td>
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<td>0.9829</td>
<td>April 10</td>
<td>0.0240</td>
<td>0.9760</td>
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Table 4. Comparison of the actual stop date for summer bypass operations at Wells Dam each year, versus the stop date necessary to have covered at least 95% of the subyearling Chinook outmigration that year. Operations are assumed to end at 24:00 for the date listed.

<table>
<thead>
<tr>
<th>Migration Year</th>
<th>Actual Stop Date</th>
<th>Cumulative proportion passed by 11:59:59 PM</th>
<th>Date on or before the last 5% passed</th>
<th>Cumulative proportion passed by 11:59:59 PM (Bypass Ops would have Covered this Proportion)</th>
<th># Days before actual date to get 95%</th>
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</thead>
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<tr>
<td>2005</td>
<td>August 26</td>
<td>0.9959</td>
<td>August 3</td>
<td>0.9525</td>
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<td>0.9538</td>
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<td>0.9502</td>
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<tr>
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<td>August 22</td>
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<td>August 7</td>
<td>0.9592</td>
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Figure 1. Passage dates at Rocky Reach Dam for spring and summer migrating stocks, 2005-2013. Cumulative proportions are based on the expanded counts obtained from sampling daily from 1 April – 31 August (or through 4 September in 2008).

a. Yearling Chinook

b. Steelhead

c. Sockeye

d. Coho

e. Subyearling Chinook
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met at the Radisson Gateway Hotel, in SeaTac, Washington, on Tuesday, November 19, 2013, from 9:30 am to 12:30 pm. Attendees are listed in Attachment A of these meeting minutes.

ACTION ITEM SUMMARY

- Washington Department of Fish and Wildlife (WDFW) will provide a letter designating a new WDFW HCP Coordinating Committees representative to Kristi Geris for the administrative record (carried forward from the Coordinating Committees meeting on October 22, 2013; Item I-A).
- Chelan PUD will provide a summary analysis of passage percentages for each turbine unit at Rocky Reach Dam to Kristi Geris for distribution to the Coordinating Committees (Item III-A).
- The updated flow duration curves for valid survival studies will be discussed at the Coordinating Committees meeting on December 17, 2013 (Item III-B).
- The next Coordinating Committees meeting will be on December 17, 2013, and will be held by conference call (Item VI-A).

DECISION SUMMARY

- No Statements of Agreement (SOAs) were approved at this meeting.
AGREEMENTS

• The Coordinating Committees representatives present agreed to the removal of the upstream ramps located at the Wells Dam count windows (Item II-C).

REVIEW ITEMS

• Kristi Geris sent an email to the Coordinating Committees on November 19, 2013, notifying them that the draft 2014 Wells Bypass Operating Plan is available for review for a 60-day period, with comments due to Tom Kahler no later than January 17, 2014 (Item II-E).

REPORTS FINALIZED

• There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. The following additions were requested:

• Lance Keller added: 1) a discussion on the unmarked yearling Chinook index counts at Rock Island for periods prior to April 17; and 2) an update on Rock Island Dam Ladder maintenance.
• Tom Kahler added a discussion on potential modifications to the Wells Dam count window area.

A. Action Items Review (Mike Schiewe)

Action items from the last Coordinating Committees meeting on October 22, 2013, and follow-up discussions were as follows: (Note: italicized item numbers below correspond to agenda items from the October 22, 2013 meeting.)

• WDFW will provide a letter designating a new WDFW HCP Coordinating Committees representative to Kristi Geris for the administrative record (Item II-A).
Jeff Korth indicated via email on November 18, 2013, that WDFW has not yet determined the new alternate; and so the official letter will be delayed until December 2013. This action item will be carried forward.

- **Lance Keller will provide unmarked yearling Chinook index counts at Rock Island for periods prior to April 17, to Kristi Geris for distribution to the Coordinating Committees (Item III-A).**
  
  Keller provided the index counts as requested to Geris on November 18, 2013, and Geris distributed them to the Coordinating Committees that same day. Keller said that he will discuss this further during today’s meeting.

- **Steve Hemstrom will provide the raw data used to develop the original and updated flow duration curves for valid survival studies to Kristi Geris for distribution to the Coordinating Committees (Item III-B).**
  
  Hemstrom provided these data to Geris, which she distributed to the Coordinating Committees on November 19, 2013.

- **Steve Hemstrom will review the calculations used to develop the updated flow duration curve for valid survival studies, for discussion at the Coordinating Committees meeting on November 19, 2013 (Item III-B).**
  
  The updated flow duration curves for valid survival studies will be discussed at the Coordinating Committees meeting on December 17, 2013.

- **The next Coordinating Committees meeting will be on November 19, 2013, and will be held in person at the Radisson Hotel in SeaTac, Washington (Item VI-A).**
  
  Observed.

**B. Meeting Minutes Approval (Mike Schiewe)**

The Coordinating Committees reviewed the revised draft October 22, 2013 conference call minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. She added that Bryan Nordlund and Jeff Korth approved the revised draft minutes via email on November 12, 2013 and November 18, 2013, respectively. The Coordinating Committees members present approved the draft October 22, 2013 conference call minutes, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.
II. Douglas PUD

A. PRESENTATION: CRITFC Sockeye Studies (Jeff Fryer)

Jeff Fryer’s presentation, titled “Columbia River Inter-Tribal Fish Commission (CRITFC) Sockeye Accords Project (2009-2013)” (Attachment B), was distributed to the Coordinating Committees by Kristi Geris during the meeting on November 19, 2013. Fryer’s presentation included an overview of study goals, methods, and project participants. He focused on the results from 2009, 2010, and 2011; and he also reviewed objectives and preliminary results from 2012 and 2013. Methods employed included extensive use of passive integrated transponder (PIT) tags, but also included tracking studies using Juvenile Salmon Acoustic Telemetry System (JSATS) acoustic tags, among others.

Fryer reviewed 2009 results (slides 5 through 16, Attachment B). He said that 838 sockeye salmon were PIT-tagged. He reviewed the percentage of tagged sockeye salmon detected at upstream dams, and also sockeye escapement based on PIT tag detections and visual fish counts at mainstem dams. Fryer noted the differences in escapement estimates based on 2009 PIT tag detections versus visual fish ladder counts. Travel times between dams and delay times at dams were reviewed. Fryer noted the extended delay times in 2009 at Tumwater Dam. He reviewed stock and age composition estimates, and he said that age sampling at Wells Dam is biased because smaller fish are not as easily trapped. He said there have been discussions about installing a screen to help trap smaller fish. Fryer reviewed the 2009 acoustic receiver locations, and also the numbers of sockeye salmon acoustically tagged at Wells Dam that were detected at upstream receivers. He noted that in 2009, inexperienced taggers may have affected results.

Fryer reviewed 2010 results (slides 17 through 23, Attachment B). As for 2009, Fryer presented a graphic depicting the percentage of tagged sockeye salmon detected at upstream dams. He reviewed two tables that described passage problems experienced at Tumwater Dam. He explained that after PIT tag detection arrays were installed in the White River and lower Wenatchee River, the effects of delays at Tumwater Dam were more apparent. Fryer reviewed 2010 acoustic receiver sites and results. He said that sockeye tend to prefer holding in Osoyoos Lake; however, when temperatures in the Okanogan River exceed their thermal preferences, sockeye tend to stay in the Wells Pool. He added that the Similkameen River is
the least preferred holding location, and that sockeye holding there typically do not appear to survive. Mike Schiewe asked why 30% of the sockeye are traveling up the Similkameen then. Fryer explained that during certain times of the year, the Similkameen is cooler than the Okanogan, making it more attractive to sockeye. Fryer reviewed 2010 tagging effects, noting that multiple tags had greater effects on fish survival. Lastly, for 2010, Fryer said that PIT tag antennas were also installed in Zosel Dam fishways; however, because flows have been so high since 2010, limited data have been obtained.

Fryer reviewed 2011 results (slides 24 through 30, Attachment B). He said that 767 sockeye salmon were PIT-tagged. PIT tag detections, delay times, and tagging effects were reviewed. He noted that these data indicate that fish tagged and released later in the season did not do as well as fish that were tagged and released earlier. Fryer compared PIT-tagged sockeye that were not detected at dams between 2006 and 2011; and he noted the high detection efficiency at Wells and Tumwater dams. Lastly, for 2011, Fryer reviewed last detection sites and detection by release ladder at Wells Dam. Fryer said he found it interesting that several sockeye were detected in both ladders, and Tom Kahler said that this occurs with other salmonid species as well at Wells Dam.

Fryer reviewed the work conducted in 2012 (slides 31 through 53, Attachment B), including PIT-tagging more than 3,000 adult sockeye and 600 juvenile sockeye, and acoustic tagging 60 adult sockeye. He noted that out of 1,600 adult sockeye PIT-tagged at Bonneville Dam, none were detected in the Snake River. He added that among the 1,600 PIT-tagged at Bonneville, three genetically tested to be Snake River fish. Fryer reviewed stock and age composition estimates, Okanagan Basin acoustic receiver sites, tagging effects, and detection sites. He said that the Columbia River Inter-Tribal Fish Commission (CRITFC) has been expanding locations of receivers into the Wells Pool, and that they would like to install more receivers upstream near Chief Joseph Dam. He said, however, that logistically they do not have the equipment to do so. Fryer reviewed fallback rates, noting the high rates at Rocky Reach, Wells, and Lower Granite for fish tagged as juveniles. He also reviewed PIT tag visual count estimates, and tabulated abundance, harvest, and escapement numbers based on PIT tag estimates. He reviewed genetics work, impacts to fisheries, and Bonneville to McNary conversion rates. He said that in terms of conversion rates, rates were higher for sockeye
PIT-tagged as adults than those PIT-tagged as juveniles. Lastly, for 2012, Fryer reviewed tagging effects and sockeye harvest comparisons.

Fryer reviewed some slides showing 2013 data, including upstream survival of sockeye acoustic-tagged at Wells Dam, and then he reviewed conclusions.

Kahler asked about the hours in which nighttime passage is monitored at Bonneville, and Fryer replied that they monitor for 18 hours per day. Rose asked if CRITFC is conducting limnological studies, and Fryer said they just started; however, they do not yet have results. Kirk Truscott said that WDFW recently installed a PIT-tag array on the Okanogan River at river kilometer (rkm) 24.9, and he noted that this will provide another PIT tag assessment from Wells to the lower Okanogan. Kahler said that National Marine Fisheries Service (NMFS) is also installing PIT-tag arrays in the Columbia River estuary, and Fryer said the issue with that is that fish will only be detected if they are migrating near the surface. He added that there is a lot of boat traffic through that area as well.

Fryer said that he and Josh Murauskas are working on developing a paper on Tumwater Dam passage issues, and Lance Keller added that Bryan Nordlund is also an author on the paper. Fryer added that in early 2014, he will be providing a similar request to the Coordinating Committees to continue the sockeye salmon tagging studies. Schiewe thanked Fryer for the presentation.

B. Wells Dam PIT Tag Detection System Upgrades (Tom Kahler)
Tom Kahler said that the current readers in the PIT tag detection system at Wells Dam are the original readers that were installed along with the original system, and he added that Biomark is now phasing them out. He said in early 2014, the old readers will be replaced by new FS2020 readers, which have faster read times. The new FS2020 readers will reduce the likelihood of missed detections.

C. Potential Modifications to the Wells Dam Count Window Area (Tom Kahler)
Tom Kahler recounted his discussions with Bryan Nordlund regarding smaller fish repeatedly passing back and forth through the count window, and the potential causes for this behavior. They concluded that the behavior might be related to the upstream ramps
descending from the count window to the fish ladder floor that were installed to improve lamprey passage for the 2013 Adult Lamprey Passage and Enumeration Study. Kahler said that Nordlund suggested that the ramp descending on the upstream side of the count window is likely causing uneven hydraulics and flow separation through the count window area, and Nordlund suggested removing the upstream ramp on both ladders. Kahler said that count window video footage was reviewed, and no lamprey were observed using the ramps to pass through the area (i.e., lamprey were free-swimming through the area).

Mike Schiewe said that this topic was also discussed at the Douglas PUD Aquatic Settlement Work Group (SWG) meeting last week. He said the Aquatic SWG was told that based on Nordlund’s recommendation, the Coordinating Committees would likely recommend removing the ramps. Kirk Truscott asked how many lampreys have been observed passing through the count window, and Kahler said there have been approximately 20 observations. Truscott asked if impacts to salmon have been observed, and Kahler said that he has not observed fish having difficulty passing the count window, but has observed jacks, mini-jacks and resident fish affected by the uneven hydraulics once they have successfully passed the count window and are holding in the large corner pool upstream of the window. Kahler added that smaller fish are predominantly the affected fish, seemingly caught by surprise by the accelerating flow as they get too close to the upstream end of the window slot and they get sucked back through the window slot before they can respond. Larger fish seem capable of bursting away from the accelerating flow and thus do not get washed back through the window repeatedly. He also said that in the past, he has observed schools of resident fish and mini-jacks holding in the corner pool just upstream of the count window, and he suggested that those fish are the ones that move back and forth through the count window.

The Coordinating Committees representatives present agreed to the removal of the upstream ramp located at the Wells Dam count window.

D. *Wells Hatchery Rebuild Update (Tom Kahler)*

Tom Kahler said that the Hatchery Committees have been tracking this item; however, he also wanted to alert the Coordinating Committees of progress. He said that HDR Engineering, Inc., the consultant for the rebuild, presented plans to the Hatchery Committees in August 2013, and the Hatchery Committees were given the opportunity to
provide input on the plans. He said that since that time, design development has been moving forward and 30% design is almost complete. Kahler noted that all comments need to be received prior to completing 30% design, which is projected to be complete in December 2013. He said that current efforts are focused on the water system, and he added that engineers are making sure that all wells that feed the hatchery are operating at their highest potential, so that the correct water budget can be established for the design. He also added that a new well is being drilled on Carpenter Island (i.e., Well 16b). Kahler encouraged Coordinating Committees’ representatives to contact their Hatchery Committees’ representative with questions.

E. Wells Dam 2014 Bypass Plan (Tom Kahler)

Tom Kahler said that the draft Wells Dam 2014 Bypass Operating Plan is essentially the same as the 2013 plan, only in a different format. He said he anticipates no changes to the total dissolved gas (TDG) operations and that there were no changes to the Emergency Action Plan, which includes a directive from the Federal Energy Regulatory Commission mandating the threshold discharge at which bypass barriers must be removed. Kristi Geris sent an email to the Coordinating Committees following the meeting on November 19, 2013, notifying them that the draft 2014 Wells Bypass Operating Plan is available for review for a 60-day period, with comments due to Kahler no later than January 17, 2014. Douglas PUD will be requesting approval of the draft plan at the Coordinating Committees meeting on January 28, 2014.

III. Chelan PUD

A. Rocky Reach Turbine Unit Outages (Lance Keller)

Lance Keller said that, currently, five turbine units are down for maintenance at Rocky Reach Dam. These include four large units (i.e., Turbine Units 8, 9, 10, and 11 [C8, C9, C10, and C11]) and one small unit (i.e., Turbine Unit 6 [C6]). He recalled that Turbine Unit 2 (C2) was also scheduled to be offline for repair from January to May 2014; however, due to the four large units being offline, repairs for C2 are now scheduled for July 2014. Keller noted that this new C2 schedule will be outside of the spring juvenile migration period; and added that the same alternative Rocky Reach Surface Collector Operation will be implemented as approved for the Turbine Unit 1 (C1) outage in April 2013.
Keller said that the rotor crack repair on C6 is scheduled to be complete by December 20, 2013, and repairs on the four larger units will follow. He said that Rocky Reach engineers plan to make interim fixes on the large units while the units are in full steep position, so that the units can still handle 23,000 cubic feet per second (23 kcfs). He said that because the monitoring equipment is located on C11, repairs will first be implemented on that unit. He said that C11 is already dewatered, and the interim fix is anticipated to be completed by January 31, 2014. He said repairs to C9 will then follow, and this unit is scheduled to be back online by February 28, 2014; and then C8 repairs will follow that, with that unit scheduled to be back online by March 31, 2014. He said that by April 1, 2014, a full powerhouse should be back online with the exception of C10. He said that based on the performance of the other larger units, the same interim fix may be applied to C10, in which case C10 would be back online by August 2014. Permanent fixes for C8, C9, C10, and C11 are anticipated to require six months per unit, and should be complete by fall 2018.

Keller recalled that at the Coordinating Committees meeting on August 27, 2013, the Coordinating Committees agreed to extend the 2013/2014 winter maintenance work period at Rocky Reach Dam from beginning January 2, 2014, to the new start date of December 2, 2013, to allow more time to complete required work. Keller said that the plan is to now have the ladders open through December 2013, so winter maintenance at Rocky Reach Dam will start at the usual start date of January 2.

Mike Schiewe asked how old the units are (i.e., were the failures premature?). Keller replied that they were premature and were caused by an engineering flaw. He said the servo rod in each larger unit is three times thinner than it should be. Jim Craig asked if any lubricant leaked into the river, and Keller replied that he does not believe so. He added, however, that oil was found around the generator shaft and metal shavings were found in a strainer. He also added that the engineers are investigating what level of stress on the unit occurs during the start and stop operations.

Keller noted that Turbine Unit 1 (C1) through Turbine Unit 7 (C7) are operating at full capacity, and C8, C9, and C11 will be operating at 23 kcfs in time for the fish migration; and so the only possible hole is located at the top of the powerhouse. He said that once the
permanent fixes are underway, one large unit can be brought back online every six months. He said the engineers have been instructed to keep each unit as close to peak efficiency as possible; however, this is somewhat limited in order to maintain control of the unit. Kirk Truscott asked if there is a way to estimate potential decreases in powerhouse or project-level survival due to the changes in powerhouse operations. Keller said that Chelan PUD is not anticipating a decrease. He said there are little data on passage for individual units, and he added that, in the past, data were combined for two units. He said that Steve Hemstrom cited a study indicating that the bulk of fish pass through Turbine Unit 4 (C4) and Turbine Unit 5 (C5). Truscott asked if Keller could provide a summary analysis of passage percentages for each turbine unit at Rocky Reach Dam, and Keller said that he would provide those data to Kristi Geris for distribution to the Coordinating Committees.

B. Valid Study Flow Duration Curves (Lance Keller)

Lance Keller said that the revised 2013 Valid Study Flow Duration Curve Updates were distributed to the Coordinating Committees by Kristi Geris prior to the meeting on November 19, 2013. He said that the raw data were received in the form of multiple tables, and when Steve Hemstrom reviewed his original calculations that were discussed at the last Coordinating Committees meeting on October 22, 2013, he realized that incorrect data were used, which resulted in the outliers as discussed at the meeting. Those errors were corrected and the outliers were removed. Because Hemstrom was unable to attend today’s meeting, the updated flow duration curves for valid survival studies will be discussed at the Coordinating Committees meeting on December 17, 2013.

C. Unmarked Yearling Chinook Index Counts at Rock Island for Periods Prior To April 17 (Lance Keller)

Lance Keller said that, per Chelan PUD’s October 22, 2013 Action Item, unmarked yearling Chinook index counts at Rock Island for periods prior to April 17 (Attachment C) were provided to Kristi Geris on November 18, 2013, which she distributed to the Coordinating Committees on that same day. Keller noted that the smolt numbers were expanded numbers; and explained that Chelan PUD enters the 24-hour fish counts at Rock Island into Data Access in Real Time (DART), and DART expands those numbers based on flow in the powerhouse. He reviewed that 163 (expanded) adipose (ad)-present spring Chinook passed Rock Island Dam prior to spill, with a total of 2,704 (expanded) estimated for a season total,
and equaled a little more than 6% of the total ad-present (expanded) run. He also reviewed ad-clipped and total data, and noted that ad-clipped fish detected at Rock Island represented only 1% of the total ad-clipped (expanded) run. Mike Schiewe asked where the ad-clipped fish would be coming from, and Keller replied they would be coming from either the Methow or Twisp. Tom Kahler confirmed that Methow fish were released after April 17, and Twisp and Metcomp fish were released from April 18 to 30, 2013. Keller also noted that last year the Chelan Falls Facility ran into issues and released fish early on April 11, 2013; and that according to the Fish Passage Center, Chiwawa released on April 16, 2013. Kirk Truscott confirmed with Keller than these data include yearling Chinook only, and Keller said that is correct. Jim Craig noted that the Entiat has also been releasing summer Chinook; and Keller clarified that these data also include Chinook “ones.” Truscott said that a season total of 2,704 fish did not make sense to him when Methow Hatchery releases approximately 400,000 to 500,000 fish. He asked if these data represented fish passing the dam, or only the bypass station; and Keller confirmed these data are for fish passing Rock Island Dam. Truscott and Keller agreed to discuss the data further offline. Keller later clarified that counts at the Rock Island trap are index counts used to estimate species run timing—not an absolute passage number at Rock Island.

D. **Rock Island Dam Ladder Maintenance (Lance Keller)**

Lance Keller said that ladder maintenance at Rock Island Dam will start in December 2013. He reminded the Coordinating Committees that there are three ladders at Rock Island Dam, so when one or two ladders are down for maintenance, one ladder can still remain in service. He also reminded the Committees that every third year, a longer, more comprehensive inspection is performed on each ladder. He said that this year, the longer outage will be performed on the right ladder, beginning December 2, 2013. Keller said this longer outage will provide enough time for Rock Island Dam engineers to install interim fixes on the picket-barrier, as discussed at the Coordinating Committees meeting on August 27, 2013; and the permanent fix is still scheduled for implementation during the 2014/2015 winter maintenance outage. Keller said that maintenance on the left ladder is scheduled for January 2, 2014, through January 24, 2014, and middle ladder maintenance is scheduled for January 27, 2014, through February 14, 2014. He said that by mid-February, all three ladders at Rock Island Dam should be back in service.
IV. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees meeting on November 15, 2013:

- **Wenatchee Levee Removal and Riparian Restoration Budget Amendment:** The Chelan County Natural Resources Department requested a budget amendment to move funds from contract labor to sponsor salaries and benefits. The Rock Island Tributary Committee requested more information prior to making a decision.

- **Methow/Chewuch Groundwater Monitoring Scope Change and Budget Amendment:** The Cascade Columbia Fisheries Enhancement Group requested a scope change and budget amendment to conduct a pump-drawdown test to measure groundwater quantity and recharge. The Wells Tributary Committee requested more information prior to making a decision.

- **Similkameen Habitat Design Information Request:** The Okanogan Conservation District asked the Rocky Reach Tributary Committee to recommend a width for the required riparian buffer zone for the Similkameen River Mile (RM) 3.8 Habitat Design Project. Tom Kahler said that an email poll was circulated to Rocky Reach Tributary Committee representatives, and that no one recommended less than 100 feet.

- **Okanagan Project Tours:** The Tributary Committees reviewed and discussed the Okanagan project tours that took place in October, and they were pleased with the progress that is occurring at each of the projects.

- **Next Steps:** The next Tributary Committees meeting will be held on December 12, 2013, if needed.

Schiewe said that the next Hatchery Committees meeting is scheduled to be held on November 20, 2013, at Douglas PUD in East Wenatchee, Washington. He said that other recent Hatchery Committees discussions are as follows:

- **October 7, 2013 conference call:** The Hatchery Committees held a conference call to discuss the Yakama Nation’s (YN’s) Twisp River Steelhead Live Spawning Plan SOA. Schiewe explained that components of the YN’s steelhead live-spawning program will be housed at the Methow Hatchery, which raised some questions regarding fish health risks. He said the Hatchery Committees relied on WDFW Fish Health Staff to
conduct a risk assessment and provide a formal endorsement. The risk assessment focused primarily on risk of disease transmission among programs at the hatchery, and was judged minimal; the program was approved by the Hatchery Committees. Schiewe said that there were also some funding issues between the YN and Douglas PUD involving covering costs. He said Keely Murdoch indicated that the program is funded by the Accords through 2017; and by that time, there should be a better understanding of whether or not the program will continue and perhaps require permanent arrangements. Bob Rose asked how disease could be transmitted. Tom Kahler expanded on the discussion noting that WDFW would collect females from Douglas PUD’s Twisp Weir, which would be live spawned and the progeny early reared at Methow Hatchery, and the YN would recondition the live-spawned females at the Winthrop National Fish Hatchery. He added that the fish health concern is that the steelhead may have Infectious Pancreatic Necrosis Virus (IPNV); therefore, maternal family units need to be held in isolation at Methow rather than being aggregated and reared at Wells Hatchery. They need to be reared for 60 days in discrete family units until each family can be screened to determine whether they are infected with IPNV. Schiewe added that there was also the issue of how many fish need to be destroyed if the disease is detected. Rose asked how many tanks would be used, and Kahler said there will be about 13 to 14 tanks with each tank holding a maternal family. He added that if disease is detected, every fish associated to that cross will need to be destroyed. Schiewe said there has been a lot of discussion and questions concerning risk, particularly because Endangered Species Act (ESA)-listed spring Chinook and steelhead are located at this hatchery and could be exposed to IPNV.

- **November 6, 2013 conference call:** The Hatchery Committees convened a conference call to discuss the draft Chelan PUD 2014 Hatchery Monitoring and Evaluation (M&E) Implementation Plan. Schiewe said that this discussion will continue at the Hatchery Committees meeting on November 20, 2013. He said the draft plan involves Grant PUD and also involves the development of an “approved” carrying capacity estimate for the Wenatchee basin, with the idea that this information could be used in future recalculations of hatchery production. He said the Joint Fishery Parties agreed to the importance of agreeing on an estimate of carrying capacity, but do not support being locked into how it is used. Schiewe noted that the Chelan PUD
hatchery mitigation program and M&E program are required under the HCP and that Grant PUD’s responsibilities are covered in their Settlement Agreement. Chelan PUD and Grant PUD are trying to work out similar details for their Wenatchee Basin programs, but in the end there may be differences because of the differences among programs and different committees that must approve them. Rose asked if the methods and data used to develop carrying capacity estimates have been agreed upon, and Schiewe replied that several monitoring activities have been discussed (such as snorkeling surveys and juvenile traps), but there are still questions regarding how the estimates would be calculated. He added that there are different perspectives about how the carrying capacity estimates should be used, which has created some tension. Rose asked if these discussions could inform habitat restoration efforts, and Kirk Truscott said that it would be difficult to assign increase in carrying capacity to specific habitat restoration efforts. He added, however, that these data may provide trend information that can be coupled with longer-term implementation of habitat projects.

V. HCP Committees Administration

A. Next Meetings (Mike Schiewe)

Mike Schiewe said that the next scheduled Coordinating Committees meeting is December 17, 2013, to be held by conference call. The January 28, 2014 and February 25, 2014 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

List of Attachments

<p>| Attachment A | List of Attendees |
| Attachment B | CRITFC Sockeye Accords Project (2009-2013) Presentation |
| Attachment C | Unmarked Yearling Chinook Index Counts at Rock Island for Periods Prior To April 17 |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Jeff Fryer</td>
<td>Columbia River Inter-Tribal Fish Commission</td>
</tr>
<tr>
<td>Lance Keller*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Kirk Truscott*†</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bob Rose*</td>
<td>Yakama Nation</td>
</tr>
</tbody>
</table>

Notes:
* Denotes Coordinating Committees member or alternate
† Joined by phone
CRITFC Sockeye Accords Project (2009-2013)

Jeffrey K. Fryer
Columbia River Inter-Tribal Fish Commission

Background

- Goal of Columbia Basin Accords project to expand knowledge on factors limiting production of Okanogan and Wenatchee sockeye salmon stocks.
- The project took over the PIT tagging of sockeye at Bonneville Dam (originally funded by the Pacific Salmon Commission Southern Fund) to assess adult sockeye salmon migration, timing, escapement, age composition, stock composition, length composition, mortality, and fallback rates.
Methods (Limiting Factors)
- Installed PIT tag array at OKC (2010) and Zosel Dam fishways (2011)
- Wells adult sockeye PIT, acoustic, and temperature tagging (2009)
- Canadian Acoustic receiver network (2009)
- U.S. Acoustic receiver network (2010)
- Juvenile sockeye acoustic trawl and limnology surveys of Lake Wenatchee to compare with Osoyoos Lake (2010).
- Juvenile Okanogan sockeye JSATS (2010), PIT tagging (2012)
- Priest Rapids adult sockeye PIT tagging (2012 only)

Project Participants
- Okanagan Nation: (Canadian acoustic network, OKC, juvenile work, technical assistance on U.S. work)
- Canada DFO: (Wenatchee Acoustic Trawl Survey, technical assistance of Dr. Kim Hyatt, Margot Stockwell, Paul Rankin, Rick Ferguson, and others)
- Yakama Nation: WEL, TUF, PRD sampling, Lake Wenatchee surveys
- Colville Tribe: Wells Acoustic tagging and sampling, PRD, U.S. acoustic monitoring, Zosel
- Biomark: OKC and Zosel installation and maintenance, McIntyre?
2009 Results

- PIT tagged 838 sockeye salmon out of the 850 we sampled as part of our PSC stock identification project.
- Sampling was halted on July 10 when we found we exceeded our Snake River sockeye ESA take (12 fish were detected at Snake River dams). Only 3% of the sockeye passed after this date.

Percentage of tagged sockeye salmon detected at upstream dams in 2009

- Estimated Zone 6: Harvest 5.9%
- McNeil: 85.7%
- Ice Harbor: 1.8%
- Lower Granite: 1.8%
- Peal Rapids: 82.1%
- Rock Island: 80.2%
- Rocky Reach: 67.1%
- Tumwater: 12.2%
- Weir: 55.2%
### Sockeye Escapement at Mainstem Dams as estimated using PIT tags and Visual Fish Counts in 2009

<table>
<thead>
<tr>
<th>Dam</th>
<th>PIT Tag Estimate</th>
<th>Visual Fish Ladder Count</th>
<th>% difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>177823</td>
<td>177823</td>
<td></td>
</tr>
<tr>
<td>McNary</td>
<td>148750</td>
<td>121672</td>
<td>22.3%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>142486</td>
<td>153466</td>
<td>-7.2%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>139142</td>
<td>162830</td>
<td>-14.5%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>116454</td>
<td>133106</td>
<td>-12.5%</td>
</tr>
<tr>
<td>Wells</td>
<td>113170</td>
<td>134937</td>
<td>-16.1%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>21212</td>
<td>16076</td>
<td>31.9%</td>
</tr>
<tr>
<td>Ice Harbor</td>
<td>3056</td>
<td>867</td>
<td>252.5%</td>
</tr>
<tr>
<td>Lower Granite</td>
<td>3056</td>
<td>1219</td>
<td>150.7%</td>
</tr>
</tbody>
</table>

### Travel time between dam pairs

<table>
<thead>
<tr>
<th>Dam pair</th>
<th>Distance (km)</th>
<th>Median time (km/day)</th>
<th>2009 Median travel time (km/day)</th>
<th>2008 Median travel time (km/day)</th>
<th>2007 Median travel time (km/day)</th>
<th>2006 Median travel time (km/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville-McNary</td>
<td>231</td>
<td>5.1</td>
<td>45.2</td>
<td>40.3</td>
<td>47.3</td>
<td>46.1</td>
</tr>
<tr>
<td>McNary-Priest Rapids</td>
<td>167</td>
<td>4.0</td>
<td>41.4</td>
<td>36.4</td>
<td>34.3</td>
<td>37.2</td>
</tr>
<tr>
<td>Priest Rapids-Rock Island</td>
<td>89</td>
<td>3.1</td>
<td>28.7</td>
<td>28.2</td>
<td>24.5</td>
<td>22.6</td>
</tr>
<tr>
<td>Rock Island-Rocky Reach</td>
<td>33</td>
<td>1.1</td>
<td>29.1</td>
<td>30.7</td>
<td>21.3</td>
<td>24.4</td>
</tr>
<tr>
<td>Rock Island-Tumwater</td>
<td>73</td>
<td>2.2</td>
<td>29.6</td>
<td>6.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocky Reach-Wells</td>
<td>65</td>
<td>11.2</td>
<td>6.5</td>
<td>29.3</td>
<td>28.2</td>
<td>22.7</td>
</tr>
<tr>
<td>Bonneville-Rock Island</td>
<td>487</td>
<td>12.7</td>
<td>38.2</td>
<td>34.7</td>
<td>35.1</td>
<td>34.9</td>
</tr>
<tr>
<td>Bonneville-Wells</td>
<td>585</td>
<td>26.0</td>
<td>21.6</td>
<td>32.5</td>
<td>32.8</td>
<td>32.2</td>
</tr>
</tbody>
</table>
### Time spent at mainstem dams

<table>
<thead>
<tr>
<th>Dam</th>
<th>Minutes (median)</th>
<th>2009</th>
<th>2008</th>
<th>2007</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>58</td>
<td>5.7%</td>
<td>6.9%</td>
<td>15.8%</td>
<td>6.8%</td>
</tr>
<tr>
<td>McNary</td>
<td>0</td>
<td>2.1%</td>
<td>1.4%</td>
<td>1.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>5</td>
<td>1.2%</td>
<td>0.6%</td>
<td>2.4%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>3</td>
<td>1.1%</td>
<td>0.3%</td>
<td>1.2%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>2</td>
<td>1.5%</td>
<td>1.0%</td>
<td>1.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Wells</td>
<td>3</td>
<td>2.1%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>159</td>
<td>41.4%</td>
<td>62.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stock Composition Estimates

<table>
<thead>
<tr>
<th>Statistical Week</th>
<th>Wenatchee (%)</th>
<th>Okanogan (%)</th>
<th>Snake (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>0.0%</td>
<td>100.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>24</td>
<td>1.6%</td>
<td>98.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>25</td>
<td>16.0%</td>
<td>84.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>26</td>
<td>22.2%</td>
<td>74.7%</td>
<td>3.1%</td>
</tr>
<tr>
<td>27</td>
<td>8.2%</td>
<td>88.1%</td>
<td>3.7%</td>
</tr>
<tr>
<td>28</td>
<td>11.3%</td>
<td>87.1%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Composite</td>
<td>15.1%</td>
<td>82.6%</td>
<td>2.3%</td>
</tr>
<tr>
<td></td>
<td>1.6</td>
<td>1.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dam Counts (WEN=RIS-RRH)</th>
<th>17.8%</th>
<th>79.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dam Counts (WEN=Tumwater)</td>
<td>9.6%</td>
<td>88.1%</td>
</tr>
</tbody>
</table>
### 2009 Age Composition Estimates

<table>
<thead>
<tr>
<th>Age</th>
<th>1.1</th>
<th>1.2</th>
<th>1.3</th>
<th>2.1</th>
<th>2.2</th>
<th>2.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wenatchee PIT tag</td>
<td>87.7</td>
<td>4.8</td>
<td>4.4</td>
<td>5.5</td>
<td>2.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Wenatchee-Tumwater</td>
<td>90.3</td>
<td>1.0</td>
<td>1.8</td>
<td>8.6</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Okanogan PIT Tag</td>
<td>7.4</td>
<td>86.4</td>
<td>0.7</td>
<td>2.3</td>
<td>3.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Bonneville Dam</td>
<td>7.1</td>
<td>87.4</td>
<td>0.5</td>
<td>1.7</td>
<td>3.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

### Acoustic and Temperature Tagging at Wells Dam

![Image of salmon being tagged at Wells Dam]
2009 Acoustic Receiver Sites

Number of sockeye salmon acoustic tagged at Wells passing upstream receivers

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>N</th>
<th>Passed Zosel</th>
<th>Passed Haynes Point</th>
<th>Passed Osoyoos Bridge</th>
<th>Passed Osoyoos Inlet</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>7/6,7,8</td>
<td>29</td>
<td>58% (17)</td>
<td>52% (15)</td>
<td>48% (14)</td>
<td>31% (9)</td>
</tr>
<tr>
<td>29</td>
<td>7/13,14</td>
<td>11</td>
<td>55% (6)</td>
<td>55% (6)</td>
<td>55% (6)</td>
<td>36% (4)</td>
</tr>
<tr>
<td>30</td>
<td>7/21</td>
<td>10</td>
<td>20% (2)</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All Weeks</td>
<td>50</td>
<td>50% (25)</td>
<td>42% (21)</td>
<td>40% (20)</td>
<td>26% (13)</td>
<td></td>
</tr>
</tbody>
</table>
Oroville, WA water temperatures and time spent passing Zosel Dam

Date first detected at Zosel Dam

Water Temperature in Degrees Celsius

Minutes from first to last detection at Zosel Dam

- Fish passage
- Zosel mortalities
- Oroville Temp

VDS 3 PIT tag antenna installation
### 2010 Tumwater Passage Problems

#### Number and Percentage Subsequently Detected by Site

<table>
<thead>
<tr>
<th>Tumwater Dam Antenna</th>
<th>Total Last detected</th>
<th>Middle Wenatchee River</th>
<th>Little Wenatchee</th>
<th>White River</th>
<th>Rocky Reach Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper</strong></td>
<td>74</td>
<td>1 (1.4%)</td>
<td>3 (4.1%)</td>
<td>27 (36.5%)</td>
<td>--</td>
</tr>
<tr>
<td><strong>Lower</strong></td>
<td>37</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>2 (5.4%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>111</td>
<td>1 (0.9%)</td>
<td>3 (2.7%)</td>
<td>27 (24.3%)</td>
<td>2 (1.8%)</td>
</tr>
</tbody>
</table>

#### Mean Passage Delay (days) at Tumwater Dam Based on Subsequent Detections

<table>
<thead>
<tr>
<th>Tumwater Dam Antenna</th>
<th>Total Last detected</th>
<th>Downstream</th>
<th>Upstream</th>
<th>Not Detected</th>
<th>All Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upper</strong></td>
<td>74</td>
<td>--</td>
<td>6.0</td>
<td>6.5</td>
<td>6.2</td>
</tr>
<tr>
<td><strong>Lower</strong></td>
<td>37</td>
<td>17.4</td>
<td>--</td>
<td>19.8</td>
<td>19.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>111</td>
<td>17.4</td>
<td>--</td>
<td>13.7</td>
<td>10.7</td>
</tr>
</tbody>
</table>
## 2010 Acoustic Results

<table>
<thead>
<tr>
<th>Statistical Week Tagged</th>
<th>Number Tagged</th>
<th>% Passing Monse Bridge</th>
<th>% Passing Haynes Point</th>
<th>% in Similkameen</th>
<th>Median Days to Monse Bridge</th>
<th>Median Days to Haynes Point</th>
<th>Median Days to OKC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27</td>
<td>15</td>
<td>100.0%</td>
<td>71.4%</td>
<td>7.1%</td>
<td>NA</td>
<td>12.7</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>15</td>
<td>93.3%</td>
<td>80.0%</td>
<td>66.7%</td>
<td>NA</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>16</td>
<td>100.0%</td>
<td>50.0%</td>
<td>37.5%</td>
<td>2.2</td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>12</td>
<td>66.7%</td>
<td>41.7%</td>
<td>16.7%</td>
<td>34.2</td>
<td>37.6</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>6</td>
<td>83.3%</td>
<td>50.0%</td>
<td>0.0%</td>
<td>28.7</td>
<td>32.3</td>
</tr>
<tr>
<td>Overall</td>
<td>64</td>
<td>90.5%</td>
<td>79.4%</td>
<td>60.3%</td>
<td>30.2%</td>
<td>4.1</td>
<td>8.9</td>
</tr>
</tbody>
</table>

### Diagram

2010 Acoustic Network

- Monse Bridge
- Haynes Point
- OKC
- Median Days to Monse Bridge
- Median Days to Haynes Point
- Median Days to OKC

- Acoustic Tag Receiver Site
- Canadian Border
- United States

- Map showing locations and distances.
Okanogan River Temperature and Number of Detections at Monse Receivers in 2010.

2010 Tagging Effects

<table>
<thead>
<tr>
<th>Week</th>
<th>Tags Deployed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Temp+PIT</td>
</tr>
<tr>
<td>27</td>
<td>--</td>
</tr>
<tr>
<td>28</td>
<td>73.3%</td>
</tr>
<tr>
<td>29</td>
<td>33.3%</td>
</tr>
<tr>
<td>30</td>
<td>42.9%</td>
</tr>
<tr>
<td>31</td>
<td>45.5%</td>
</tr>
<tr>
<td>Weighted</td>
<td>55.1%</td>
</tr>
<tr>
<td>Total Tagged</td>
<td>37</td>
</tr>
</tbody>
</table>
PIT Tag antennas also installed in Zosel Dam fishways in 2010.

2011 Results

- PIT tagged 767 sockeye salmon out of the 768 we sampled as part of our PSC stock identification project.
- Sampling was halted on July 19 when we found we exceeded our Snake River sockeye ESA take. (Five fish were detected at Snake River dams). Only 1.6% of the run passed Bonneville Dam after this date.
Percentage of fish tagged at Bonneville detected at Rock Island Dam

![Chart showing percentage passing Rock Island Dam over time]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>56</td>
<td>3.0%</td>
<td>6.1%</td>
<td>5.7%</td>
<td>6.9%</td>
<td>15.8%</td>
<td>6.8%</td>
</tr>
<tr>
<td>McNary</td>
<td>0</td>
<td>5.9%</td>
<td>2.2%</td>
<td>2.1%</td>
<td>1.4%</td>
<td>1.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>6</td>
<td>1.9%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>0.6%</td>
<td>2.4%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>4</td>
<td>2.4%</td>
<td>0.8%</td>
<td>1.1%</td>
<td>0.3%</td>
<td>1.2%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>1</td>
<td>3.7%</td>
<td>2.1%</td>
<td>1.5%</td>
<td>1.0%</td>
<td>1.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Wells</td>
<td>3</td>
<td>5.5%</td>
<td>2.5%</td>
<td>2.1%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>6</td>
<td>12.6%</td>
<td>72.1%</td>
<td>41.4%</td>
<td>62.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells Tagged at Wells</td>
<td>5</td>
<td>7.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## PIT Tagged sockeye “missed” at dams 2006-2011

<table>
<thead>
<tr>
<th>Dam</th>
<th>2011 9 mm</th>
<th>2010</th>
<th>2009</th>
<th>2008</th>
<th>2007</th>
<th>2006</th>
<th>2008 8.5 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>1.8%</td>
<td>3.3%</td>
<td>0.7%</td>
<td>0.6%</td>
<td>0.4%</td>
<td>2.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td>McNary</td>
<td>2.1%</td>
<td>20.5%</td>
<td>4.0%</td>
<td>5.0%</td>
<td>10.1%</td>
<td>6.5%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>0.4%</td>
<td>5.7%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.8%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>0.0%</td>
<td>40.0%</td>
<td>6.4%</td>
<td>2.6%</td>
<td>6.9%</td>
<td>6.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>1.4%</td>
<td>8.8%</td>
<td>0.5%</td>
<td>0.0%</td>
<td>0.2%</td>
<td>0.7%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Wells</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

## Estimated conversion rate from Wells Dam to OKC of PIT, acoustic, and temperature tagged sockeye salmon in 2011

<table>
<thead>
<tr>
<th>Week</th>
<th>Weekly % passing Wells Dam</th>
<th>Weekly % passing Wells PIT Tagged (12 mm)</th>
<th>Bonneville PIT only</th>
<th>Wells PIT+Acoustic</th>
<th>Wells PIT+Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>4.9%</td>
<td>50.0%</td>
<td>100.0%</td>
<td>57.1%</td>
<td>61.5%</td>
</tr>
<tr>
<td>29</td>
<td>24.8%</td>
<td>80.0%</td>
<td>81.6%</td>
<td>66.7%</td>
<td>74.6%</td>
</tr>
<tr>
<td>30</td>
<td>39.5%</td>
<td>86.7%</td>
<td>73.5%</td>
<td>83.3%</td>
<td>82.0%</td>
</tr>
<tr>
<td>31</td>
<td>23.4%</td>
<td>71.4%</td>
<td>61.9%</td>
<td>66.7%</td>
<td>47.5%</td>
</tr>
<tr>
<td>32</td>
<td>7.5%</td>
<td>76.2%</td>
<td>26.7%</td>
<td>18.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Weighted</td>
<td>76.3%</td>
<td>70.6%</td>
<td>69.2%</td>
<td>65.0%</td>
<td></td>
</tr>
</tbody>
</table>

| Sample Size | 548 | 341 | 60 | 201 |
Last detection site for sockeye tagged at Wells Dam in 2011

<table>
<thead>
<tr>
<th>Week</th>
<th>Wenatchee River</th>
<th>Rocky Reach</th>
<th>Wells Dam</th>
<th>Methow River</th>
<th>Zosel Dam</th>
<th>OKC</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>0</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>89</td>
</tr>
<tr>
<td>30</td>
<td>3</td>
<td>1</td>
<td>34</td>
<td>0</td>
<td>0</td>
<td>135</td>
</tr>
<tr>
<td>31</td>
<td>0</td>
<td>4</td>
<td>66</td>
<td>1</td>
<td>1</td>
<td>120</td>
</tr>
<tr>
<td>32</td>
<td>1</td>
<td>4</td>
<td>41</td>
<td>1</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>9</td>
<td>176</td>
<td>2</td>
<td>3</td>
<td>371</td>
</tr>
</tbody>
</table>

6 out of 403 (1.5%) of Bonneville tagged sockeye were detected at both ladders.

Detections by release ladder at Wells Dam

<table>
<thead>
<tr>
<th>Wells Release Site</th>
<th>N</th>
<th>% at opposite Wells ladder</th>
<th>Detections at WEA</th>
<th>Detections at OKC</th>
<th>% subsequently detected at Wells</th>
<th>% subsequently detected at OKC</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Bank</td>
<td>521</td>
<td>13.4%*</td>
<td>491</td>
<td>325</td>
<td>94.2%</td>
<td>62.4%</td>
</tr>
<tr>
<td>West Bank</td>
<td>68</td>
<td>7.4%*</td>
<td>67</td>
<td>46</td>
<td>98.5%</td>
<td>67.6%</td>
</tr>
<tr>
<td>Upstream</td>
<td>13</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>53.8%</td>
</tr>
<tr>
<td>Unweighted Total</td>
<td>603</td>
<td>13.4%*</td>
<td>558</td>
<td>378</td>
<td>92.7%</td>
<td>62.8%</td>
</tr>
</tbody>
</table>
2012 work

- PIT tagged over 1600 adult sockeye at Bonneville Dam, 744 at Wells, and over 700 at Priest Rapids Dam (CCT).
- All Wells-tagged fish required to be released in forebay.
- Acoustic tagged 60 adult sockeye at Wells and deployed 27 receivers between Wells and Penticton.
- ONA PIT tagged over 600 juvenile sockeye at Skaha Falls and deployed JSATS tags and receivers.
- Identified the stock of over 1500 sockeye sampled at Bonneville Dam using genetics.
- ATS and limnology surveys at Lake Wenatchee.
- Maintenance of OKC and Zosel PIT tag antennas.

Percentage of tagged sockeye salmon detected at upstream dams in 2012
### Stock Composition Estimates

<table>
<thead>
<tr>
<th>Statistical Week</th>
<th>Wenatchee (%)</th>
<th>Okanogan (%)</th>
<th>Snake (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>4.9%</td>
<td>95.1%</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>5.3%</td>
<td>95.1%</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>8.8%</td>
<td>91.2%</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>13.8%</td>
<td>86.2%</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>20.6%</td>
<td>79.4%</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>22.2%</td>
<td>77.8%</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>15.5%</td>
<td>84.5%</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>5.0%</td>
<td>95.0%</td>
<td></td>
</tr>
<tr>
<td>Composite</td>
<td>17.6%</td>
<td>82.4%</td>
<td></td>
</tr>
</tbody>
</table>

### Dam Counts

- **(WEN=RIS-RRH)**: 11.6% 88.4%
- **(WEN=Tumwater)**: 16.3% 83.7%

### 2012 Age Composition Estimates (%)

<table>
<thead>
<tr>
<th>Age</th>
<th>1.1</th>
<th>1.2</th>
<th>1.3</th>
<th>2.1</th>
<th>2.2</th>
<th>2.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville Dam</td>
<td>1.3%</td>
<td>95.9%</td>
<td>1.1%</td>
<td>0.4%</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Wenatchee (BON PIT tag)</td>
<td>91.2%</td>
<td>8.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wenatchee (PRD PIT)</td>
<td>93.1%</td>
<td>7.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Okanagan (PRD PIT)</td>
<td>1.1%</td>
<td>95.4%</td>
<td>2.5%</td>
<td>0.4%</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Okanagan PIT Tag</td>
<td>1.8%</td>
<td>95.9%</td>
<td>0.1%</td>
<td>0.5%</td>
<td>1.6%</td>
<td></td>
</tr>
<tr>
<td>Okanagan-Wells Dam</td>
<td>0.1%</td>
<td>85.1%</td>
<td>14.5%</td>
<td></td>
<td>0.3%</td>
<td></td>
</tr>
</tbody>
</table>
(Preliminary) estimated conversion rate from Wells Dam to OKC of PIT, acoustic, and temperature tagged sockeye salmon in 2012

<table>
<thead>
<tr>
<th>Week past Wells Dam</th>
<th>Bonneville PIT Tagged</th>
<th>Priest Rapids PIT + Floy tagged</th>
<th>Wells PIT + Floy tagged</th>
<th>Wells PIT+ Floy + Acoustic tagged</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>29.6%</td>
<td>62.5%</td>
<td>40.4%</td>
<td>60.0%</td>
</tr>
<tr>
<td>28</td>
<td>45.7%</td>
<td>43.4%</td>
<td>40.5%</td>
<td>41.7%</td>
</tr>
<tr>
<td>29</td>
<td>39.8%</td>
<td>45.3%</td>
<td>46.8%</td>
<td>35.7%</td>
</tr>
<tr>
<td>30</td>
<td>32.6%</td>
<td>39.4%</td>
<td>29.5%</td>
<td>28.6%</td>
</tr>
<tr>
<td>31</td>
<td>51.1%</td>
<td>51.7%</td>
<td>61.4%</td>
<td>60.0%</td>
</tr>
<tr>
<td>32</td>
<td>57.1%</td>
<td>36.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted</td>
<td>41.4%</td>
<td>44.1%</td>
<td>41.8%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Sample Size (past WEL)</td>
<td>1001</td>
<td>562</td>
<td>709</td>
<td>60</td>
</tr>
<tr>
<td>CCT releases (to OKC)</td>
<td>66.7% (24)</td>
<td>38.2% (34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ONA fisheries (morts)</td>
<td>8.5%</td>
<td>11.8%</td>
<td>8.5%</td>
<td></td>
</tr>
</tbody>
</table>
Percentage of acoustic tagged sockeye salmon passing points in Okanagan Basin

<table>
<thead>
<tr>
<th>Week</th>
<th>N</th>
<th>Monse</th>
<th>Zosel Dam</th>
<th>Osoyoos Lake North Basin</th>
<th>OKC</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>10</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>28</td>
<td>12</td>
<td>75.0%</td>
<td>66.7%</td>
<td>66.7%</td>
<td>41.7%</td>
</tr>
<tr>
<td>29</td>
<td>14</td>
<td>85.7%</td>
<td>85.7%</td>
<td>85.7%</td>
<td>42.9%</td>
</tr>
<tr>
<td>30</td>
<td>14</td>
<td>85.7%</td>
<td>85.7%</td>
<td>85.7%</td>
<td>42.9%</td>
</tr>
<tr>
<td>31</td>
<td>10</td>
<td>50.0%</td>
<td>50.0%</td>
<td>50.0%</td>
<td>60.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>79.9%</td>
<td>76.3%</td>
<td>76.3%</td>
<td>43.8%</td>
</tr>
</tbody>
</table>

Data available in real-time resulted in the Osoyoos Lake fishery being cut off one week early, cutting harvest by an estimated 50,000 fish.

Fallback Rates in 2012

<table>
<thead>
<tr>
<th>Dam</th>
<th>Adults Tagged at Bonneville</th>
<th>Adults Tagged at Priest Rapids</th>
<th>Tagged as Juveniles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>0.4%</td>
<td>NA</td>
<td>4.6%</td>
</tr>
<tr>
<td>McNary</td>
<td>2.5%</td>
<td>NA</td>
<td>1.9%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>1.2%</td>
<td>0.8%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>1.1%</td>
<td>1.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>7.9%</td>
<td>8.2%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Wells</td>
<td>1.3%</td>
<td>2.3%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>0.5%</td>
<td>3.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Zosel</td>
<td>0.0%</td>
<td>0.0%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Ice Harbor</td>
<td></td>
<td></td>
<td>10.6%</td>
</tr>
<tr>
<td>Lower Granite</td>
<td></td>
<td></td>
<td>31.7%</td>
</tr>
</tbody>
</table>
PIT tag visual count estimates in 2012

<table>
<thead>
<tr>
<th>Site</th>
<th>Visual Count</th>
<th>PIT tag estimate</th>
<th>Missed Fall-back</th>
<th>Night Passage</th>
<th>Adjusted Visual Count</th>
<th>Adjusted PIT tag estimate</th>
<th>% Difference between adjusted counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>515,673</td>
<td>424,805</td>
<td>0.16%</td>
<td>1.2%</td>
<td>382,122</td>
<td>422,682</td>
<td>10.6%</td>
</tr>
<tr>
<td>McNary</td>
<td>364,147</td>
<td>424,805</td>
<td>0.16%</td>
<td>1.2%</td>
<td>382,122</td>
<td>422,682</td>
<td>10.6%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>408,298</td>
<td>398,505</td>
<td>0.16%</td>
<td>1.2%</td>
<td>382,122</td>
<td>396,513</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>410,614</td>
<td>386,452</td>
<td>4.38%</td>
<td>1.1%</td>
<td>406,028</td>
<td>384,521</td>
<td>-5.3%</td>
</tr>
<tr>
<td>Rocky Reach</td>
<td>363,297</td>
<td>322,250</td>
<td>0.70%</td>
<td>7.9%</td>
<td>334,447</td>
<td>320,639</td>
<td>-4.1%</td>
</tr>
<tr>
<td>Wells</td>
<td>326,084</td>
<td>313,568</td>
<td>0.00%</td>
<td>1.2%</td>
<td>322,175</td>
<td>311,999</td>
<td>-3.2%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>66,620</td>
<td>66,272</td>
<td>0.00%</td>
<td>0.5%</td>
<td>66,177</td>
<td>65,941</td>
<td>-0.4%</td>
</tr>
<tr>
<td>OKC array</td>
<td>145,317</td>
<td>144,591</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where did 517,154 sockeye go?

<table>
<thead>
<tr>
<th>Reach</th>
<th>Estimated abundance at reach start</th>
<th>Harvest</th>
<th>Escape-ment</th>
<th>Estimated abundance at reach end</th>
<th>Unaccounted (missing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Bonneville</td>
<td>517,154</td>
<td>4058</td>
<td></td>
<td>513,096</td>
<td>NA</td>
</tr>
<tr>
<td>Bonneville-McNary</td>
<td>513,096</td>
<td>46,281</td>
<td>100</td>
<td>422,682</td>
<td>44,033</td>
</tr>
<tr>
<td>McNary-Priest Rapids</td>
<td>422,682</td>
<td>10,453</td>
<td></td>
<td>396,513</td>
<td>15,716</td>
</tr>
<tr>
<td>Priest Rapids-Rock Island</td>
<td>396,513</td>
<td>2,663</td>
<td></td>
<td>384,521</td>
<td>9,330</td>
</tr>
<tr>
<td>Rock Island-Rocky Reach</td>
<td>384,521</td>
<td>134</td>
<td></td>
<td>320,639</td>
<td>-872</td>
</tr>
<tr>
<td>Rocky Reach-Wells</td>
<td>320,639</td>
<td>1547</td>
<td></td>
<td>305,744</td>
<td>7,094</td>
</tr>
<tr>
<td>Wells-Zosel</td>
<td>305,744</td>
<td>38,930</td>
<td></td>
<td>242,885</td>
<td>70,326</td>
</tr>
<tr>
<td>Zosel-OKC</td>
<td>242,885</td>
<td>63,100</td>
<td></td>
<td>144,591</td>
<td>-8,941</td>
</tr>
<tr>
<td>OKC array</td>
<td>136,117</td>
<td>93,400</td>
<td></td>
<td>55,185</td>
<td>24,019</td>
</tr>
<tr>
<td>Tumwater</td>
<td>64,619</td>
<td>12,100</td>
<td></td>
<td>28,500</td>
<td>24,019</td>
</tr>
<tr>
<td>Totals</td>
<td>168,813</td>
<td>132,453</td>
<td></td>
<td>215,888</td>
<td>215,888</td>
</tr>
<tr>
<td>Percentage</td>
<td>32.6%</td>
<td>25.6%</td>
<td></td>
<td>41.8%</td>
<td>41.8%</td>
</tr>
</tbody>
</table>
Genetics Work

- Genotyped 1535 sockeye sampled at Bonneville Dam
- Only 4 sockeye “misclassified”
  - 2 Okanogan sockeye (one a 57%er last detected at Tumwater dam)
  - Wenatchee sockeye (one at RRH, one at Wells)
- Genetics data suggested a Bonneville Dam stock composition of 19.6% Wenatchee, 80.3% Okanogan, and 0.2% Snake River compared to PIT tag data estimate of 17.6% Wenatchee, 82.4% Okanogan.
- This suggests that mortality between Bonneville and Rocky Reach/Tumwater was 23.3% for the Okanogan stock and 30.9% for the Wenatchee stock.
Impact of Fisheries

- Colville purse seine fishery in 2012 harvested 4.1% of sockeye and released Floy-tagged fish.
  - 24 Priest Rapids tagged fish released, 67% of which were subsequently detected at OKC (compared to 44.1% for all PRD tagged fish)
  - 34 Wells tagged fish released, 38.2% of which were subsequently detected at OKC (compared to 41.8% for all Wells tagged fish)
## Okanagan Falls Juvenile PIT tagging-2012

<table>
<thead>
<tr>
<th>Period</th>
<th>Survival</th>
<th>SE</th>
<th>Travel time</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release to Rocky Reach</td>
<td>0.5365</td>
<td>0.0768</td>
<td>7.79</td>
<td>0.20</td>
</tr>
<tr>
<td>Rocky Reach to McNary</td>
<td>1.1556</td>
<td>0.4376</td>
<td>3.92</td>
<td>0.22</td>
</tr>
<tr>
<td>McNary to John Day</td>
<td>0.8765</td>
<td>0.6464</td>
<td>2.33</td>
<td>0.18</td>
</tr>
<tr>
<td>John Day to Bonneville</td>
<td>0.2750</td>
<td>0.2360</td>
<td>1.47</td>
<td>0.06</td>
</tr>
<tr>
<td>Overall</td>
<td>0.1494</td>
<td>0.0844</td>
<td>15.52</td>
<td>0.62</td>
</tr>
</tbody>
</table>

## Bonneville-McNary Conversion Rates 2012

<table>
<thead>
<tr>
<th>Tag location</th>
<th>Tag life stage</th>
<th>Stock</th>
<th>N at Bonneville</th>
<th>% Detected at McNary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>Adults</td>
<td>Mixed</td>
<td>1612</td>
<td>83.0%</td>
</tr>
<tr>
<td></td>
<td>Adults</td>
<td>Wenatchee</td>
<td>290</td>
<td>74.5%</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>Okanogan</td>
<td>1320</td>
<td>85.2%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>Juveniles</td>
<td>Mixed</td>
<td>107</td>
<td>73.8%</td>
</tr>
<tr>
<td></td>
<td>Juveniles</td>
<td>Wenatchee W/H</td>
<td>256</td>
<td>74.7%</td>
</tr>
<tr>
<td>Eastbank</td>
<td>Juveniles</td>
<td>Wenatchee Hatchery</td>
<td>150</td>
<td>68.9%</td>
</tr>
</tbody>
</table>
2012 Tumwater-Spawning Grounds

<table>
<thead>
<tr>
<th>Tag location</th>
<th>Tag life stage</th>
<th>Marked</th>
<th>N at Tumwater</th>
<th>% Detected at WTL and LWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bonneville</td>
<td>Adults</td>
<td>No</td>
<td>194</td>
<td>45.4%</td>
</tr>
<tr>
<td>Priest Rapids</td>
<td>Adults</td>
<td>Yes</td>
<td>138</td>
<td>39.6%</td>
</tr>
<tr>
<td>Tumwater</td>
<td>Adults</td>
<td>Yes</td>
<td>960</td>
<td>42.2%</td>
</tr>
<tr>
<td>Rock Island</td>
<td>Juveniles</td>
<td>No</td>
<td>78</td>
<td>32.1%</td>
</tr>
<tr>
<td>Wenatchee R</td>
<td>Juveniles</td>
<td>No</td>
<td>111</td>
<td>36.7%</td>
</tr>
<tr>
<td>Eastbank</td>
<td>Juveniles</td>
<td>No</td>
<td>174</td>
<td>32.6%</td>
</tr>
</tbody>
</table>
### Summary of PIT tag impacts from Wells to OKC

<table>
<thead>
<tr>
<th>Year</th>
<th>Tag location</th>
<th>Metric</th>
<th>Impact</th>
<th>Tribal (selective)</th>
<th>Sport (?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Wells</td>
<td>Wells-OKC</td>
<td>2.8%</td>
<td>5.6%</td>
<td>&lt;3.7%</td>
</tr>
<tr>
<td>2011</td>
<td>Wells</td>
<td>Wells-OKC</td>
<td>4.9%</td>
<td>0.7%</td>
<td>&lt;2.6%</td>
</tr>
<tr>
<td>2012</td>
<td>Wells</td>
<td>Wells-OKC</td>
<td>-1.0%</td>
<td>4.1%</td>
<td>&lt;12.7%</td>
</tr>
<tr>
<td>2012</td>
<td>Priest Rapids</td>
<td>Wells-OKC</td>
<td>-6.5%</td>
<td>4.1%</td>
<td>&lt;12.7%</td>
</tr>
</tbody>
</table>

### Summary of Wells-OKC tag impacts

<table>
<thead>
<tr>
<th>Year</th>
<th>Regime</th>
<th>Impact</th>
<th>Tribal (selective)</th>
<th>Sport (?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Floy+Temp+PIT</td>
<td>27.3%</td>
<td>5.6%</td>
<td>&lt;3.7%</td>
</tr>
<tr>
<td>2010</td>
<td>Floy+Acoustic+PIT</td>
<td>27.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>Floy+Temp+Acoustic+PIT</td>
<td>16.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Floy+Temp+PIT</td>
<td>13.3%</td>
<td>0.7%</td>
<td>&lt;2.6%</td>
</tr>
<tr>
<td>2011</td>
<td>Floy+Acoustic+PIT</td>
<td>7.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Floy+Acoustic+PIT</td>
<td>6.3%</td>
<td>4.1%</td>
<td>&lt;12.8%</td>
</tr>
</tbody>
</table>
Caveats

- Tag impact also includes sampling impact which may differ from site to site. (Priest Rapids, Tumwater, and Bonneville traps require less handling than Wells and have recovery areas with volitional release.)
- Sockeye tagged at Wells and Tumwater dams are more mature than those at Priest and Bonneville, possibly affecting survival.
- Tagging at Priest Rapids and Wells also includes Floy tagging which may lead to additional tagging impacts. In addition, this opens up the issue of fishery selectivity.
- Traps at dams may also be selective for some particular trait which may affect comparisons. (For instance, the Wells trap selects for larger sockeye.)

Distribution of Columbia Basin sockeye harvest in 1984-87 and 2009-12

<table>
<thead>
<tr>
<th></th>
<th>1984-87</th>
<th>2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Run</td>
<td>123,500</td>
<td>316,400</td>
</tr>
<tr>
<td>Harvest Rate</td>
<td>39.1%</td>
<td>23.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1984-87</th>
<th>2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>37.1%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Sport</td>
<td>0.0%</td>
<td>20.7%</td>
</tr>
<tr>
<td>Tribal</td>
<td>62.9%</td>
<td>79.0%</td>
</tr>
</tbody>
</table>
### Comparison of stock composition estimates in 2012

<table>
<thead>
<tr>
<th>Method</th>
<th>Location of Estimate</th>
<th>% Okanogan</th>
<th>% Wenatchee</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>PIT tags deployed at Bonneville Dam Rocky Reach and Tumwater dams</td>
<td>83.4%</td>
<td>17.6%</td>
</tr>
<tr>
<td>B</td>
<td>PIT tags deployed at Priest Rapids Dam Rocky Reach and Tumwater dams</td>
<td>80.3%</td>
<td>19.7%</td>
</tr>
<tr>
<td>C</td>
<td>GSI on Bonneville samples Bonneville Dam</td>
<td>80.4%</td>
<td>19.6%</td>
</tr>
<tr>
<td>D</td>
<td>GSI on Bonneville samples combined with PIT detections Rock Island Dam</td>
<td>82.1%</td>
<td>17.9%</td>
</tr>
<tr>
<td>E</td>
<td>Visual dam counts taking the Rock Island-Rocky Reach difference as Wenatchee Rock Island Dam</td>
<td>88.5%</td>
<td>11.5%</td>
</tr>
<tr>
<td>F</td>
<td>Visual dam counts taking Tumwater as Wenatchee Rocky Reach and Tumwater dams</td>
<td>83.8%</td>
<td>16.2%</td>
</tr>
<tr>
<td>G</td>
<td>Method E using adjusted visual counts in Table 38 Rocky Reach Dam</td>
<td>82.4%</td>
<td>17.6%</td>
</tr>
<tr>
<td>H</td>
<td>Method F using adjusted visual counts in Table 38 Rocky Reach/Tum</td>
<td>84.7%</td>
<td>15.3%</td>
</tr>
</tbody>
</table>

### WEL-OKC conversion rate 2013 by date at Wells vs Okanogan River temperature

![Graph showing WEL-OKC conversion rate 2013 by date at Wells vs Okanogan River temperature]
Upstream Survive of Sockeye Acoustic Tagged at Wells Dam in 2013

<table>
<thead>
<tr>
<th>Week</th>
<th>N</th>
<th>Pateros</th>
<th>Brewster</th>
<th>Monse</th>
<th>Pump Station</th>
<th>Central Basin</th>
<th>Okanagan Mouth</th>
<th>Highway 97</th>
<th>McIntyre</th>
<th>OK Falls</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>10</td>
<td>100.0%</td>
<td>90.0%</td>
<td>90.0%</td>
<td>90.0%</td>
<td>90.0%</td>
<td>80.0%</td>
<td>50.0%</td>
<td>30.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>29</td>
<td>14</td>
<td>100.0%</td>
<td>92.9%</td>
<td>92.9%</td>
<td>57.1%</td>
<td>57.1%</td>
<td>42.9%</td>
<td>21.4%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>30</td>
<td>14</td>
<td>100.0%</td>
<td>100.0%</td>
<td>71.4%</td>
<td>64.3%</td>
<td>57.1%</td>
<td>50.0%</td>
<td>28.6%</td>
<td>21.4%</td>
<td>7.1%</td>
</tr>
<tr>
<td>31</td>
<td>15</td>
<td>100.0%</td>
<td>100.0%</td>
<td>73.3%</td>
<td>33.3%</td>
<td>20.0%</td>
<td>6.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>32</td>
<td>8</td>
<td>100.0%</td>
<td>100.0%</td>
<td>37.5%</td>
<td>25.0%</td>
<td>25.0%</td>
<td>12.5%</td>
<td>12.5%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100.0%</td>
<td>93.2%</td>
<td>85.6%</td>
<td>72.6%</td>
<td>71.3%</td>
<td>60.7%</td>
<td>35.7%</td>
<td>18.6%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

Conclusions and Future

- Finished year 5 of 10 year project.
- Adult Tagging at Wells and Bonneville dams is expected to continue.
- As PIT tag infrastructure continues to grow, I’d like to replace (expensive) acoustic tagging with PIT tagging. However, we likely need detection at the Highway 3 Bridge in Osoyoos.
- Acoustic trawl survey for juvenile abundance in Lake Wenatchee will continue as will limnology work.
- Will continue to assist in juvenile PIT tagging effort.
- Paleolimnology work and McIntyre Dam PIT tag detection planned.
### 2013 Rock Island expanded counts for ad-present (unmarked) and ad-clipped (marked) Spring Chinook at RIBT

<table>
<thead>
<tr>
<th>Date</th>
<th>Ad-present*</th>
<th>% of ad-present</th>
<th>Ad-clipped</th>
<th>% of ad-clipped</th>
<th>Total</th>
<th>% Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Apr</td>
<td>0</td>
<td>0.00%</td>
<td>1</td>
<td>0.00%</td>
<td>1</td>
<td>0.00%</td>
</tr>
<tr>
<td>2-Apr</td>
<td>2</td>
<td>0.07%</td>
<td>1</td>
<td>0.00%</td>
<td>3</td>
<td>0.01%</td>
</tr>
<tr>
<td>3-Apr</td>
<td>14</td>
<td>0.52%</td>
<td>0</td>
<td>0.00%</td>
<td>14</td>
<td>0.05%</td>
</tr>
<tr>
<td>4-Apr</td>
<td>13</td>
<td>0.48%</td>
<td>1</td>
<td>0.00%</td>
<td>14</td>
<td>0.05%</td>
</tr>
<tr>
<td>5-Apr</td>
<td>8</td>
<td>0.30%</td>
<td>0</td>
<td>0.00%</td>
<td>8</td>
<td>0.03%</td>
</tr>
<tr>
<td>6-Apr</td>
<td>4</td>
<td>0.15%</td>
<td>0</td>
<td>0.00%</td>
<td>4</td>
<td>0.01%</td>
</tr>
<tr>
<td>7-Apr</td>
<td>4</td>
<td>0.15%</td>
<td>0</td>
<td>0.00%</td>
<td>4</td>
<td>0.01%</td>
</tr>
<tr>
<td>8-Apr</td>
<td>10</td>
<td>0.37%</td>
<td>0</td>
<td>0.00%</td>
<td>10</td>
<td>0.04%</td>
</tr>
<tr>
<td>9-Apr</td>
<td>9</td>
<td>0.33%</td>
<td>0</td>
<td>0.00%</td>
<td>9</td>
<td>0.03%</td>
</tr>
<tr>
<td>10-Apr</td>
<td>13</td>
<td>0.48%</td>
<td>2</td>
<td>0.01%</td>
<td>15</td>
<td>0.05%</td>
</tr>
<tr>
<td>11-Apr</td>
<td>9</td>
<td>0.33%</td>
<td>0</td>
<td>0.00%</td>
<td>9</td>
<td>0.03%</td>
</tr>
<tr>
<td>12-Apr</td>
<td>24</td>
<td>0.89%</td>
<td>0</td>
<td>0.00%</td>
<td>24</td>
<td>0.08%</td>
</tr>
<tr>
<td>13-Apr</td>
<td>15</td>
<td>0.55%</td>
<td>11</td>
<td>0.04%</td>
<td>26</td>
<td>0.09%</td>
</tr>
<tr>
<td>14-Apr</td>
<td>5</td>
<td>0.18%</td>
<td>107</td>
<td>0.41%</td>
<td>112</td>
<td>0.39%</td>
</tr>
<tr>
<td>15-Apr</td>
<td>21</td>
<td>0.78%</td>
<td>116</td>
<td>0.45%</td>
<td>137</td>
<td>0.48%</td>
</tr>
<tr>
<td>16-Apr</td>
<td>12</td>
<td>0.44%</td>
<td>40</td>
<td>0.15%</td>
<td>52</td>
<td>0.18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>163</strong></td>
<td><strong>6.03%</strong></td>
<td><strong>279</strong></td>
<td><strong>1.08%</strong></td>
<td><strong>442</strong></td>
<td><strong>1.55%</strong></td>
</tr>
</tbody>
</table>

*Ad-present may contain both hatchery and wild origin Spring Chinook

| Season Total (Apr. 1-Aug 31) | 2704 | 25853 | 28557 |
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Coordinating Committees met by conference call, on Tuesday, December 17, 2013, from 9:30 am to 11:30 am. Attendees are listed in Attachment A of these meeting minutes.

**ACTION ITEM SUMMARY**

- Chelan PUD will check on the use of the Battelle Pacific Northwest National Laboratory (PNNL) turbine passage model to help inform the interim fix planned for the Rocky Reach Dam turbine units (Item II-A).
- Chelan PUD will provide their new valid flow duration curves and a brief summary describing the underlying data and the calculation methods used for discussion at the Coordinating Committees meeting on January 28, 2014 (Item II-B).
- Chelan PUD will prepare a draft Chelan PUD 2014 Rocky Reach and Rock Island HCP Action Plan for review prior to the Coordinating Committees meeting on January 28, 2014 (Item IV-A).
- Douglas PUD will provide the draft Wells Dam 2014 Gas Abatement Plan (GAP) and Bypass Operating Plan (BOP) for review prior to the Coordinating Committees meeting January 28, 2014; approval will be requested at the January meeting (Item IV-B).

**DECISION SUMMARY**

- No Statements of Agreement (SOAs) were approved at this meeting.
AGREEMENTS

• No agreements were discussed at this meeting.

REVIEW ITEMS

• Kristi Geris sent an email to the Coordinating Committees on December 17, 2013, notifying them that the draft 2014 Well Dam GAP and BOP are available for review with comments due to Tom Kahler no later than January 17, 2014 (Item IV-B).
• Kristi Geris sent an email to the Coordinating Committees on December 17, 2013, notifying them that the draft Douglas PUD 2014 Wells HCP Action Plan is available for review. Douglas PUD will be requesting approval of the draft action plan during the Coordinating Committees meeting on January 28, 2014 (Item IV-A).

REPORTS FINALIZED

• There are no reports that have been recently finalized.

I. Welcome

Mike Schiewe welcomed the Coordinating Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

• Chelan PUD added an update on the large unit turbine repairs at Rocky Reach Dam.
• Chelan PUD and Douglas PUD added a joint update on HCP document storage.
• Douglas PUD added an overview of highlights from the recent U.S. Army Corps of Engineers (USACE) Anadromous Fish Evaluation Program (AFEP) Annual Review.

A. Meeting Minutes Approval (Mike Schiewe)

The Coordinating Committees reviewed the revised draft November 19, 2013 meeting minutes. Mike Schiewe said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. Lance Keller indicated that Chelan PUD had a few additional revisions to incorporate in the draft November 19, 2013 meeting minutes. He said he would provide those revisions to Kristi Geris via email. The Coordinating Committees members present conditionally approved the draft November 19, 2013 meeting minutes, pending
incorporation of Chelan PUD’s final edits. *(Note: Keller provided Chelan PUD’s final edits to Geris on December 19, 2013, and Geris finalized and distributed the November 19, 2013 meeting minutes to the Coordinating Committees the same day.)*

II. Chelan PUD

A. Rocky Reach Passage Route Proportions (Lance Keller)

Lance Keller reviewed the handout summarizing passage percentages of fish through the units at Rocky Reach (Attachment B) that was distributed to the Coordinating Committees by Kristi Geris on December 16, 2013. He noted that, as described in Tables 1, 2, and 3 of Attachment B, fewer fish pass via the upper units (i.e., C8, C9, C10, and C11), which are the units that are being repaired.

Large Unit Turbine Repairs at Rocky Reach

Keller said that the interim fix, which will be made to the four upper units, will involve fixing the blades at a selected steep angle that were determined to be the most efficient at full river flow (23,000 cubic feet per second [23 kcfs]) on the unit curve; this steep angle also provides the safest position, minimizing cavitation and minimizing the risk of turbine runaway. A fact sheet on the large unit repair at Rocky Reach Dam (Attachment C) was distributed to the Coordinating Committees by Geris on December 16, 2013. Keller said that fixing the blades at a steep angle will allow all of the units to operate during the fish passage season this year (with the exception of C10). Chelan PUD is considering a range for fixing these blades of 28.65 to 30.65 degrees. Bryan Nordlund suggested that Chelan PUD check with Battelle PNNL regarding the turbine passage model that was developed for Grant PUD and used by them in their evaluation of turbines at the Priest Rapids Project. Steve Hemstrom agreed to check on the use of this Battelle PNNL turbine passage model to help inform the interim fix planned for the Rocky Reach Dam turbine units.

B. Valid Study Flow Duration Curves (Steve Hemstrom)

Steve Hemstrom updated the Coordinating Committees on the progress of updating the new flow duration curves. He recalled that Grand Coulee outflow data were used from 1929 to 1978 and 1983 to 2001 to calculate the new spring and summer periods. He said that the spring period is defined as April 16 to May 31, and that the new summer period is defined as
June 1 to August 15. Hemstrom recalled that the original summer period calculation had been defined as July 1 to August 15; however, the Coordinating Committees agreed to include June in the new summer period curves. The following table summarizes the new 10% and 90% flows for the spring and summer periods as compared to the previous flows:

<table>
<thead>
<tr>
<th>Season</th>
<th>Flow (kcfs)</th>
<th>10%</th>
<th>90%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>Original</td>
</tr>
<tr>
<td>Spring</td>
<td>202.785</td>
<td>205.381</td>
<td>98.141</td>
</tr>
<tr>
<td>Summer</td>
<td>184.746</td>
<td>164.905</td>
<td>101.165</td>
</tr>
</tbody>
</table>

Hemstrom said that Chelan PUD will provide the new valid flow duration curves and a brief summary describing the underlying data and the calculation methods used, for discussion at the Coordinating Committees meeting on January 28, 2014.

### III. Chelan PUD and Douglas PUD

#### A. HCP Document Storage (Steve Hemstrom and Tom Kahler)

Steve Hemstrom said that Keith Truscott and Shane Bickford discussed the use of a single SharePoint site for storage and retrieval of HCP Coordinating Committees, Hatchery Committees, and Tributary Committees documents. He said they agreed in principle to use the site being developed by Douglas PUD, pending discussion and agreement by Chelan PUD upper managers. Tom Kahler said that the Douglas PUD Information Systems (IS) staff has already developed a SharePoint Extranet solution for the Wells Aquatic Settlement Workgroup (SWG), and that a similar web based repository is being developed for the HCP committees. Kahler said that, as required by their Federal Energy Regulatory Commission (FERC) license, Douglas PUD has already begun populating a SharePoint site with all the shared HCP documents (e.g., agendas, meeting minutes, Wells SOAs, etc.), and that it would be more efficient for Anchor QEA and for Committee members to have all of the Chelan PUD and Douglas PUD HCP Committee documents located on one site. He said access to the SharePoint site is password-protected for Committee members only. Once Committee documents are made final then the FERC license requires that they be made available to the public via the Douglas PUD home page. Kahler said that he will arrange for Douglas PUD IS staff to provide a demonstration and briefing at the Coordinating Committees meeting on January 28, 2014.
IV. Douglas PUD

A. Douglas PUD 2014 Wells HCP Action Plan (Tom Kahler)

Tom Kahler said that he distributed the draft Douglas PUD 2014 Wells HCP Action Plan to the Coordinating Committees prior to the meeting on December 17, 2013. He requested that members review the draft and provide him with any edits prior to the Coordinating Committees meeting on January 28, 2014, when Douglas PUD will be requesting approval of the draft plan. He said that sections on hatchery activities and tributary activities will be reviewed by the Hatchery Committees and Tributary Committees, respectively.

Chelan PUD agreed to prepare a draft Chelan PUD 2014 Rocky Reach and Rock Island HCP Action Plan for review prior to the Coordinating Committees meeting on January 28, 2014 meeting.

B. Draft Wells Dam 2014 GAP (Tom Kahler)

Tom Kahler said that the draft Wells Dam 2014 GAP will be distributed to the Coordinating Committees for review later today or tomorrow. (Note: Kahler provided the draft plan to Kristi Geris on December 17, 2013, which she distributed to the Coordinating Committees the same day.) He said the draft GAP is related to the draft BOP, which Geris distributed to the Coordinating Committees for review on November 19, 2013, for a 60-day review period with comments due to him no later than January 17, 2014. He said the two plans outline dam operations for 2014. He said the draft GAP is already being reviewed by the Aquatic SWG; however, the Wells Project FERC license requires that the HCP Coordinating Committees also be given the opportunity to review the plan along with their review of the draft BOP. Kahler said that Douglas PUD will be requesting approval of both documents (or in the case of the GAP, acknowledgment of the opportunity to review and comment) at the Coordinating Committees meeting on January 28, 2014 meeting.

C. USACE’s AFEP Meeting Highlights (Tom Kahler)

Tom Kahler reported that there were several studies reported on during the AFEP Annual Review Meeting that was held in Walla Walla, Washington, earlier this month that he thought would be of interest to the Coordinating Committees. He provided an overview of select AFEP topics in the context of the U.S.–Canada Columbia River Treaty.
Kahler said that recent studies have reported that in years of high river discharge ocean species such as anchovies are pushed out of the Columbia River estuary, thereby exposing salmonid migrants to relatively greater depredation by Caspian terns and cormorants nesting on East Sand Island. He said that under more normal discharge events, those marine species offer alternative prey items to the avian predators, somewhat buffering the salmonids from depredation. He suggested that U.S. parties to the treaty negotiations should consider this finding when modeling the proposed higher magnitude freshet.

Kahler said that the other study result that warrants consideration in the Columbia River treaty negotiations is that in an analysis of all the acoustic-tag studies of survival for yearling Chinook and steelhead at Bonneville, survival generally increased with discharge, but decreased at the highest discharge values tested. He said that the sample size was smallest in this highest discharge category, so the error bars were large. Nevertheless, he said that results could reveal some unanticipated mortality factors at Bonneville that emerge under the highest discharge events. He said that both of these first two findings might be considered in reviewing the Comparative Survival Study (CSS) spill study.

Kahler also discussed some findings with direct implications for the proposed CSS spill study. He said that, first, in evaluating adult conversion rates through the Federal Columbia River Power System (FCRPS) projects, researchers observed that high spill volumes and high total dissolved gas (TDG; specifically at McNary) reduced conversion rates. Kahler said that this observation highlights the need to carefully consider the adult migration side of the smolt-to-adult-ratio (SAR) equation when deciding whether or how to implement the CSS study. He said that other factors reducing conversion rates were high temperatures and fish injuries from encounters with nets, but most notable was the unreported harvest. He said that both radio telemetry (RT) and passive integrated transponder (PIT) studies found that most of the loss of adults can be attributed to unreported harvest between Bonneville and McNary (mostly the Bonneville pool), with approximately 45% of the tagged sockeye and 50% of the tagged Chinook last detected at Bonneville, or in the reservoir. He said that aside from the implications for the CSS studies, these results confirm what has been observed for years in monitoring PIT tags. He said that this loss artificially reduces SAR estimates for Mid-
Columbia stocks, and he added that adult conversion rates stabilize upstream of McNary, with high conversion rates between upper Columbia River dams.

Kahler said that other studies reported that smolts in good condition avoided bypass systems in the FCRPS, while fish in fair and poor condition were more likely to be bypassed. He said that these results emphasize the limited applicability of the CSS survival and SAR calculations based on fish captured in the Rock Island bypass sampling facility. He said that another study reported decreased survival for fish in poor condition, and specifically noted the significantly lower survival to McNary of Rock Island steelhead with fin damage. Kahler recommended considering this finding when deciding on marking strategies that involve fin clipping (other than adipose fins). Kirk Truscott said that fin condition may represent an underlying problem with fish health in general, and thus observed differences in survival may reflect differences in fish condition rather than an effect of fin condition.

Lastly, Kahler described the reports on the development of the injectable Juvenile Salmonid Acoustic Telemetry System (JSATS) tags. He said there are now injectable JSATS tags; however, the tags are large, requiring an 8-gage needle. He said that studies have found that insertion via a 3-millimeter (mm) incision without suturing produced higher survival and lower tag shed than using the needle. He said that the tags have short battery life and still are not small enough for subyearlings in the upper Columbia. He said the tags are being tested with acceptable results in fish as small as 85 mm fork-length; however, developers are not yet ready to declare 85 mm as the new minimum fish size instead of the current 95 mm length. He said that tag life is 20 to 26 days.

V. Hatchery and Tributary Committees Update (Mike Schiewe)

Mike Schiewe updated the Coordinating Committees on the following actions and discussions that occurred at the last Tributary Committees meeting on December 13, 2013:

- **Wenatchee Levee Removal and Riparian Restoration Budget Amendment**: The Chelan County Natural Resources Department (NRD) requested a budget amendment to move $7,000 from contract labor to sponsor salaries and benefits to help navigate the Water Conservancy Board process and to ensure that the landowner can replace any potential lost water from another source. The Rock Island Tributary Committee
denied the budget amendment because the Committee believes the landowner should be working with an expert in water law to inform the decision. The Committee was also concerned that the purpose of this further investigation is so that the water owner can avoid relinquishing any portion of his existing water right, when reducing the volume of water withdrawn from the Wenatchee River was the basis of Committee approval of the project in the first place.

- **Methow/Chewuch Groundwater Monitoring Scope Change and Budget Amendment:** The Cascade Columbia Fisheries Enhancement Group requested a scope change and budget amendment to conduct a pump-drawdown test in two or three locations to measure groundwater quantity and recharge on the Burns-Garrity property. The Wells Tributary Committee approved the scope change and budget modification.

- **Silver Protection Project Time Extension:** Washington Department of Fish and Wildlife (WDFW) requested a contract extension from the original end date of December 31, 2013, to December 31, 2014, in order to explore opportunities related to ensuring the permanent preservation and enhancement of salmonid habitat on the properties. The Rocky Reach and Wells Tributary Committees approved the contract extension.

- **Nason Creek Upper White Pine (UWP) Floodplain Reconnection – PUD Powerline Reconnection Alternatives Analysis Time Extension and Scope Change:** The Chelan County NRD requested a contract extension and scope change to add additional tasks given that Chelan PUD supports moving the powerlines. The Rock Island Tributary Committee approved the contract extension and scope change.

- **Chewuch River Permanent Instream Flow Project Budget Amendment:** Trout Unlimited requested a budget amendment to move $1,838.71 from “Indirect/Overhead/Administration” to “Contract Labor” because of an accounting error. The Rocky Reach Tributary Committee approved the budget amendment.

- **Mission Creek Fish Passage Project Time Extension:** Cascade Conservation District requested a time extension because of fires in the Mission Creek watershed during 2012. The time extension will include additional time needed to secure the necessary permits for the project. The Rock Island Tributary Committee approved the contract extension.

- **Next Steps:** The next Tributary Committees meeting will be held on January 9, 2014.
Schiwe said that the Hatchery Committees will meet tomorrow on December 18, 2013. He said that the Hatchery Committees approved the Chelan PUD 2014 Hatchery Monitoring and Evaluation (M&E) Implementation Plan during their meeting on November 20, 2013, and they are expected to approve the Douglas PUD 2014 Hatchery M&E Implementation Plan during the December 18 meeting. He said that the Hatchery Committees are also planning to discuss Chelan PUD’s Wenatchee Basin sockeye monitoring activities, plans for meeting their Methow spring Chinook obligation for 61,000 smolts after this coming year, and the status of their Methow spring Chinook Hatchery and Genetic Management Plan (HGMP). Schiwe said that the National Marine Fisheries Service (NMFS) will also be providing an update on processing of new permits for all the Upper Columbia River hatchery programs, which they are steadily making progress on.

VI. HCP Committees Administration

A. Next Meetings (Mike Schiwe)

Mike Schiwe said that the next scheduled Coordinating Committees meeting is January 28, 2014, to be held in person at the Radisson Hotel in SeaTac, Washington. The February 25, 2014, and March 25, 2014 meetings will be held either by conference call or in person at the Radisson Hotel in SeaTac, Washington, as is yet to be determined.

List of Attachments

Attachment A    List of Attendees
Attachment B    Passage Percentages of Fish through the Units at Rocky Reach
Attachment C    Fact Sheet on the Large Unit Repair at Rocky Reach Dam
## List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Steve Hemstrom*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Lance Keller*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Jim Craig*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Bryan Nordlund*</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Jeff Korth*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bob Rose*</td>
<td>Yakama Nation</td>
</tr>
</tbody>
</table>

**Notes:**
- * Denotes Coordinating Committees member or alternate
Table 1. Combined percent of hydroacoustic detected fish passing through the individual turbine units at Rocky Reach Dam from April 1 through May 31 2003 (mean flow = 118 kcfs).

<table>
<thead>
<tr>
<th>Passage Route</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
<th>C7</th>
<th>C8</th>
<th>C9</th>
<th>C10</th>
<th>C11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passage %</td>
<td>18.3%</td>
<td>22.9%</td>
<td>13.2%</td>
<td>13.0%</td>
<td>7.9%</td>
<td>8.2%</td>
<td>7.0%</td>
<td>2.6%</td>
<td>2.4%</td>
<td>2.4%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

Table 2. Route specific passage percentages for acoustic-tagged yearling Chinook and Steelhead for 2003 at Rocky Reach.

<table>
<thead>
<tr>
<th>Passage Route</th>
<th>2003 Yearling Chinook Study-Wide Passage % (spill/no spill)</th>
<th>2003 Steelhead Study-Wide Passage % (spill/no spill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Collector</td>
<td>43.32%</td>
<td>50.94%</td>
</tr>
<tr>
<td>Bypass Screens</td>
<td>9.89%</td>
<td>7.36%</td>
</tr>
<tr>
<td>Units 1-11</td>
<td>34.03%</td>
<td>32.13%</td>
</tr>
<tr>
<td>Spillway</td>
<td>12.76%</td>
<td>9.57%</td>
</tr>
<tr>
<td><strong>Mean Study Flow</strong></td>
<td><strong>118.0 kcfs</strong></td>
<td><strong>118.0 kcfs</strong></td>
</tr>
</tbody>
</table>

Table 3. Route specific passage percentages for acoustic-tagged yearling Chinook and Steelhead over multiple years at Rocky Reach.

<table>
<thead>
<tr>
<th>Passage Route</th>
<th>2005 Steelhead Study-Wide Passage % (spill/no spill)</th>
<th>2010 Yearling Chinook Study-Wide Passage % (day/night)</th>
<th>2011 Yearling Chinook Study-Wide Passage % (day/night)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Collector</td>
<td>67.53%</td>
<td>48.35%</td>
<td>31.3%</td>
</tr>
<tr>
<td>Bypass Screens</td>
<td>6.28%</td>
<td>5.22%</td>
<td>5.72%</td>
</tr>
<tr>
<td>Units 1 and 2</td>
<td>6.06%</td>
<td>15.52%</td>
<td>5.60%</td>
</tr>
<tr>
<td>Units 3-11</td>
<td>17.97%</td>
<td>30.91%</td>
<td>52.38%</td>
</tr>
<tr>
<td>Spillway</td>
<td>2.16%</td>
<td>0.00%</td>
<td>4.99%</td>
</tr>
<tr>
<td><strong>Mean Study Flow</strong></td>
<td><strong>113.0 kcfs</strong></td>
<td><strong>109.7 kcfs</strong></td>
<td><strong>208 kcfs</strong></td>
</tr>
</tbody>
</table>
March 2013 – Unit C-10 is taken out of service due to the appearance of oil around the generator shaft and metal shavings were found in a strainer;

August 2013 – C-6 was taken out of service for planned rotor maintenance;

Sept. 23, 2013 – Units C-8, C-9, and C-11 were taken out of service when a crack was found in the rod on Unit C-10 that operates the servo motor. All four generating units have the same design; and the C-10 design issues are likely present in units C-8, C-9, and C-11;

Dec. 5 Unit C-6 was returned to service two weeks ahead of schedule. This allowed for additional generation during a high demand period with energy prices in the $80 - $90/MWh range;

Unit C-11 was placed in testing mode Dec. 14 and it will continue to be monitored. C-11 is scheduled to come back online in the temporary, fixed blade configuration either on or before Jan. 31, 2014;

Unit C-9 is scheduled to have a temporary, fixed blade repair and be brought back online by Feb. 28, 2014;

Unit C-8 is scheduled to have a temporary, fixed blade repair and be brought back online by March 31, 2014;

Unit C-10 is scheduled to return to service Aug. 31, 2014, with a longer-term repair, however the PUD has decided to return C-10 to service with an interim fixed blade repair similar to the other large units. This could allow C-10 to be back in production earlier;

The proposed operating angle for the fixed blades on unit C-11 is approximately 31 degrees or full steep position. The blade angle was selected to be the most efficient at full river flow (23 kcf) on the unit curve, which is also the safest position. The blade angles for the other three units are being assessed to provide the safest optimal angle and have not been selected. Performance and stability testing on C-11 also will help in determining the proper angle for the remaining units;

It is the District's desire to eventually restore all four units to Kaplan (variable pitch blade) service. The final repair schedule for returning C-8 - C-11 to the desired Kaplan condition is currently planned through the fall of 2018 and is variable dependent on fabrication and delivery of repair components.
APPENDIX B
HABITAT CONSERVATION PLAN
HATCHERY COMMITTEES
2013 MEETING MINUTES AND
CONFERENCE CALL MINUTES
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees  
Date: February 21, 2013

From: Mike Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the January 16, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, January 16, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Kristi Geris will verify with Bill Gale the final revisions to the revised December 12, 2012 Hatchery Committees meeting minutes, regarding edits to a statement that Gale made during Chelan PUD’s discussion on Methow spring Chinook production (Item I).

- The Hatchery Monitoring and Evaluation (M&E) working group will provide the revised Analytical Framework 5-Year Update to the Hatchery Committees for review prior to the February 20, 2013 meeting of the Hatchery Committees (Item III-A).

- Craig Busack will provide Kristi Geris with the National Marine Fisheries Service (NMFS) Production Advisory Committee (PAC) briefing documents on the draft Methow spring Chinook and steelhead Hatchery and Genetic Management Plans (HGMPs), for distribution to the Hatchery Committees (Item IV-A).

- Chelan PUD will draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap; the study would potentially involve trapping, tagging, and genetic testing at Priest Rapids Dam, and monitoring at the Rocky Reach Dam Fish Trap (Item VI-A).

- Kristi Geris will set up a WebEx meeting for 11:00 am on Monday, January 28, 2013, for the Colville Confederated Tribes (CCT), Chelan PUD, Douglas PUD, and Grant
PUD to discuss run-composition sampling at Wells Dam for summer Chinook upstream of Wells Dam (Item VIII-A).

- Mike Tonseth will provide Kristi Geris summer Chinook broodstock collection estimates for discussion during the run-composition sampling WebEx meeting scheduled for January 28, 2013, for distribution to the Hatchery Committees (Item VIII-A).

STATEMENT OF AGREEMENT DECISION SUMMARY

- No Statements of Agreement (SOAs) were approved at this meeting.

AGREEMENTS

- The Hatchery Committees approved the Douglas PUD 2013 HCP Action Plan, as revised (Item II-A).
- The Hatchery Committees agreed that the revised Hatchery M&E Analytical Framework 5-Year Update will consolidate and replace both the former Hatchery M&E Analytical Framework and Conceptual Framework (Item III-A).
- The Hatchery Committees agreed to extend the current HCP Hatchery Committees Conflict of Interest Policy, which was originally approved in November 2010, for two additional years (Item IX-A).

REVIEW ITEMS

- The updated revised draft Analytical Framework 5-Year Update was redistributed to the Hatchery Committees on January 25, 2013, with comments due to Greg Mackey no later than February 14, 2013.

FINALIZED REPORTS

- The Douglas PUD 2013 M&E Implementation Plan was finalized and distributed to the Hatchery Committees on December 28, 2012.
- The Chelan PUD 2013 M&E Work Plan was finalized and distributed to the Hatchery Committees on January 10, 2013.
I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and reviewed the agenda. The following revisions were made to the agenda:

- Keely Murdoch added: 1) an update on the Yakama Nation (YN) Steelhead Kelt Reconditioning Program; and 2) a follow-up discussion on the spring Chinook/steelhead conversion from the Lake Wenatchee Sockeye Program.
- Greg Mackey requested an update on 2013 broodstock protocols.
- Kirk Truscott added a follow-up discussion on run-composition sampling at Wells Dam for summer Chinook.
- Schiewe added a follow-up discussion on the HCP Hatchery Committees Conflict of Interest Policy.

The revised draft December 12, 2012 meeting minutes were reviewed. Kristi Geris said that there were four edits remaining to be discussed.

- Regarding Chelan PUD’s action item, which was to discuss with the YN the potential use of upper Methow basin acclimation sites for Chelan PUD’s BY2013 Methow spring Chinook production, Mike Tonseth said that Chelan PUD was to engage the YN about the feasibility of installing temporary adult weirs at the remote acclimation locations. Murdoch said that weir construction was indeed the focus of their discussion, and the action item was revised to state this. Murdoch also added that installing weirs seemed technically feasible; however, she is unsure if the neighboring land owners will be supportive of this proposal. She suggested that Goat Wall Pond might be the most feasible location. Murdoch also noted that the YN has finished developing the Multi-species Acclimation Plan, and will hopefully distribute the plan to the Hatchery Committees for review by the end of the week.
- Regarding Chelan PUD’s discussion on Methow production, it was clarified that Bill Gale said the U.S. Fish and Wildlife (USFWS) needed Methow hatchery- (not natural-) origin fish trapped in the Winthrop National Fish Hatchery (NFH) volunteer channel for the Winthrop NFH program. Geris said that she will verify the revision with Gale prior to finalizing the December 12, 2012 meeting minutes.
- Regarding the USFWS/NMFS discussion about assessing the ecological impact of Leavenworth Fish Hatchery (FH) releases on non-target taxa of concern (NTTOC), it was clarified by Mackey that the model does not quantify residuals, but rather
estimates the likelihood and magnitude of ecological interactions (*not the likelihood of residuals*).

- Regarding the CCT discussion on Chief Joseph Hatchery (CJH) updates, Mike Tonseth clarified that he was asking about CCT’s plans to conduct the run-composition sampling at Wells Dam for summer Chinook upstream of Wells (*not composition sampling for Methow origin Chinook*). The draft minutes were revised accordingly.

Geris said that all other comments and revisions received on the draft meeting minutes were incorporated. The Hatchery Committees members present approved the December 12, 2012 meeting minutes, as revised.

Murdoch requested that action items from the previous month’s Hatchery Committees meeting be discussed at the beginning of each meeting. Schiewe agreed. Actions items from the last Hatchery Committees meeting on December 12, 2012, and follow-up discussions are as follows:

- **Tonseth will send the proposal for broodstock collection at Tumwater Dam for Grant PUD’s Nason Creek spring Chinook program to Geris for distribution to the Hatchery Committees after the proposal has been vetted in the Priest Rapids Coordinating Committee Hatchery Subcommittee (PRCC HSC; Item I).**

  Murdoch said that a formal proposal had not yet been developed due to an outstanding Priest Rapids Coordinating Committee (PRCC) decision that will hopefully be resolved at their January 22, 2013 meeting. She said that the general concept of the proposal had been discussed; however, the details are still undecided. She explained that because natural-origin broodstock are needed for both the Chiwawa and Nason Creek programs, the JFP is proposing to collect returning adults from Tumwater Dam for both programs. She said that all fish would be moved to Eastbank FH for genetic sampling and sorting. She said that the total production at both facilities would stay the same; however, the numbers of natural origin fish would be expected to vary over time. Schiewe noted that this proposal suggests a shift in terms of where Chiwawa gets broodstock, and will therefore, require Hatchery Committees approval.

- **Mackey will distribute to the Hatchery Committees updates to the Analytical Framework for M&E PUD Hatchery Programs (Item II-B).**
Josh Murauskas distributed the updates to the Hatchery M&E Workgroup on December 28, 2012. Another revised version will be distributed to the entire Hatchery Committees, per the January 16, 2013 meeting action item.

- **Joe Miller** will contact Grant PUD about the potential to overwinter acclimate Chelan PUD Methow spring Chinook production at the Carlton facility in 2013 (Item III-A). Alene Underwood said that discussions are underway between Chelan PUD and Grant PUD.

- **Miller** will contact Craig Busack regarding drafting concurrence letters to authorize collection of Methow spring Chinook broodstock using a modified parental based tagging (PBT) approach, and out-of-basin rearing facilities—both for brood year (BY) 2013 only (Item III-A). Tonseth said that discussions are underway.

- **Chelan PUD** will discuss with the YN the potential use of upper Methow basin acclimation sites for Chelan PUD’s BY2013 Methow spring Chinook production, to include installation of temporary adult weirs at the remote acclimation locations (Item III-A). Chelan PUD said that discussions are underway and that an update will be provided at today’s meeting.

- **Chelan PUD** will draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap; the study would potentially involve trapping, tagging, and genetic testing at Priest Rapids Dam, and monitoring at the Rocky Reach Dam Fish Trap (Item III-A). Chelan PUD said that an update will be provided at today’s meeting.

- **Gale** will discuss with USFWS staff the potential to collect, spawn, incubate, and early rear Chelan PUD’s Methow spring Chinook at Winthrop NFH in 2013, and he will also propose a meeting for USFWS, Washington Department of Fish and Wildlife (WDFW), and Chelan PUD staff to review opportunities before the January 16, 2013 Hatchery Committees meeting (Item III-A). Underwood said that discussions are underway and an update will be provided soon.

- **Gale** will distribute to the Hatchery Committees the draft terms and conditions that incorporate non-target taxa of concern (NTTOC) analyses as M&E measures in the Leavenworth NFH Complex draft Biological Opinions (BiOps; Item IV-A).
Geris distributed the draft terms and conditions to the Hatchery Committees on December 12, 2012.

- *Truscott will coordinate internally to arrange a presentation on the CCT’s CJH M&E Plan for a future Hatchery Committees meeting (Item VI-A).*
  Truscott said that CCT is planning a presentation for the February 20, 2013 meeting of the Hatchery Committees.

- *Geris will re-circulate the Conflict of Interest Policy Agreement amongst the Hatchery Committees members (Item VII-B).*
  Geris distributed the agreement to the Hatchery Committees on December 18, 2012.

II. Douglas PUD

A. *Draft Douglas PUD 2013 HCP Action Plan (Tom Kahler)*

Tom Kahler said that Douglas PUD develops an HCP Action Plan each year. The draft Douglas PUD 2013 HCP Action Plan (Attachment B) was distributed to the Hatchery Committees by Kristi Geris on December 26, 2012. Kahler said that the Wells HCP Tributary Committee has already reviewed and approved the tributary portion of the action plan and that he is now looking for comments and approval from the Hatchery Committees on the hatchery portion of the action plan. He said that once approval is obtained from these two committees, the draft plan will be presented to the HCP Coordinating Committees for final approval. The following revisions were made to Attachment B:

- Item 1e – “August 2013” was revised to read “July 2013.”
- Item 1f – “October 2013” was revised to read “September 2013.”
- Item 1g – This item was deleted.
- Item 3 – “2010 Broodstock Collection Protocol” was revised to read “2013 Broodstock Collection Protocol.”
- Item 3b – “Approval deadline” was revised to read “NMFS submission deadline.”

The Hatchery Committees approved the Douglas PUD 2013 HCP Action Plan, as revised.
III. Douglas PUD and Chelan PUD

A. Updating the PUD M&E Plans (Greg Mackey and Josh Murauskas)

Greg Mackey said that the revised Analytical Framework 5-Year Update is ready for review by the Hatchery Committees. *(Note: Josh Murauskas distributed the revised Analytical Framework 5-Year Update to the Hatchery M&E Workgroup on December 28, 2012; Mackey distributed an updated revised Analytical Framework 5-Year Update to the entire Hatchery Committees on January 25, 2013).* Mike Tonseth reminded the Hatchery Committees about the agreement reached at the December 12, 2012 meeting of the Hatchery Committees regarding protocols and timeline for developing, reviewing, and approving the annual M&E Implementation Plans, where it was decided that approval by Hatchery Committees of the annual M&E Implementation Plans needs to occur in the summer preceding implementation (draft to the Committees for review by July 1, 2013), and that a timeline needs to be established based on the PUDs contracting processes.

Mackey reviewed the revised update, and said that comments discussed at the Hatchery M&E working group meetings were incorporated into the revised plan. He said that it was agreed to keep the plan goal- and objective-oriented. He said that the content of the plan was rearranged (though nothing was deleted) to improve the sequencing of the document, with the most important objectives presented first and supporting objectives presented in a logical order according to biological and analytical processes. He also said that there were several revisions to explanatory text to improve clarity (i.e., concepts that were mentioned in the previous plan are now more explicit in the revised plan). He said that charts and tables were also added to improve the organization of the plan. Mackey noted that some redundancy now exists due to edits, but that this can be addressed with further revisions, as needed. Murauskas noted that safety net programs did not exist when the original document was developed and that the revised plan now includes the safety net programs and explains how these programs have different objectives. Mike Schiewe suggested including a glossary to help define these and other concepts up front.

Mackey said that this document is a revision of the Hatchery M&E Analytical Framework, and Schiewe noted that it is important to ensure that the Hatchery M&E Analytical Framework, the Hatchery M&E Conceptual Framework, and the Hatchery M&E Annual
Plans do not contradict each other. Mackey said that, for simplicity, developing a single document that supersedes both the Hatchery M&E Analytical Framework and the Hatchery M&E Conceptual Framework is the preferred route of those that have worked on updating the plan. Keely Murdoch noted that the only reason both documents exist is because after the Hatchery M&E Conceptual Framework was completed, the Hatchery M&E Analytical Framework was developed to describe analytical elements that the former plan did not include. The Hatchery Committees agreed that the revised Hatchery M&E Analytical Framework 5-Year Update will consolidate and replace both the former Hatchery M&E Analytical Framework and Conceptual Framework.

Mike Tonseth suggested including appendices for management targets; for example, an appendix with information on the proportion of hatchery-origin spawners (pHOS) management targets could be included. Murdoch noted that management targets pending agreement in the committees should not be included in an appendix unless certain values were not specified because the Hatchery Committees would still need to approve them. Mackey agreed with the idea of appendices and said that “to be determined (TBD)” could be inserted as applicable.

Mackey said that the Hatchery M&E Workgroup would like to have the draft plan available for a 60-day review in February 2013, with the final available by April 2013. He said that the Hatchery M&E Workgroup will redistribute the updated revised Analytical Framework 5-Year Update to the Hatchery Committees for review prior to the February 20, 2013 meeting of the Hatchery Committees.

IV. NMFS

A. Methow HGMPs and Hatchery Litigation Updates (Craig Busack)

Craig Busack summarized NMFS progress toward completing their review of Wenatchee and Methow basin HGMPs and the associated Biological Opinions (BiOps). He said that the draft HGMPs for Methow steelhead (Winthrop and PUD/state) and Methow spring Chinook (Winthrop and PUD/state) programs are currently under review, as are HGMPs for the Leavenworth spring Chinook and Entiat spring Chinook BiOps. He said the Entiat summer Chinook BiOp is under final review with completion expected in about two weeks. Busack noted that the NMFS final review process will now take longer than in the past due to
greater scrutiny by the National Oceanic and Atmospheric Administration General Counsel (NOAA GC).

Busack explained that in November 2012, the Wild Fish Conservancy, The Conservation Angler, the Federation of Fly Fishers Steelhead Committee, and the Wild Steelhead Coalition filed a lawsuit against NMFS, USFWS, Olympic National Park, and representatives of the Lower Elwha S’Klallam tribe for allegedly supporting hatchery programs in the Elwha River without adequate Endangered Species Act (ESA) coverage. He explained that the foci of the litigation included several regulatory issues, but that of particular note to the Hatchery Committees was the need to address ecological interaction between hatchery- and naturally-produced fish. Busack said that as a result of this litigation, the NOAA attorneys are looking at everything with a fine-toothed comb, which means more revisions. Lynn Hatcher added that this is creating a mushroom effect that is impacting everything in the Mid-Columbia. Busack said that NMFS is developing a new BiOp template that will hopefully save time in the future.

Continuing with his update on the schedule for issuing new hatchery program permits, Busack said that the Chiwawa spring Chinook and Wenatchee steelhead draft section 10 permits are expected to be ready for review by late January or early February. He also said that Hatcher is developing the section 10(j) for the Okanogan spring Chinook permit. Hatcher explained that designation as an experimental population under Section 10(j) relaxes the prohibitions against take. He said that an Environmental Assessment (EA) needs to be developed and permits need to be completed so that when the fish enter the water in 2014, they will have the experimental tag and label. Kirk Truscott added that a HGMP was developed in addition to a section 10(j) because Okanogan spring Chinook remain endangered while they are still in the irrigation rearing ponds. Hatcher said that NMFS is reviewing the HGMP now, which he noted is likely sufficient; and he added that Busack is proceeding with the consultation process.

Busack said that with regard to the Methow HGMPs, NMFS has been working with the operators to determine the potential to reduce pHOS in the Methow Basin, and has received supplemental information documents associated with the Methow HGMPs that include pHOS analyses. He said that after several discussions with Steve Parker (YN), Parker has
mixed feelings about the HGMPs, but it is time to request input from the PAC and ultimately the U.S. v. Oregon Policy Group. Busack said that he is currently developing letters of sufficiency for the four Methow HGMPs. Busack said that he will provide Kristi Geris with these briefing documents for distribution to the Hatchery Committees.

Busack indicated that he believed that the production levels in the HGMPs are consistent with the Columbia River Fish Management Plan (U.S. v. Oregon), but that these will be a focus of the PAC review. Keely Murdoch said that she thought the new no net impact (NNI) production numbers were already approved. Mike Tonseth clarified that PAC is reviewing all program modifications, and that those changes have not yet been formally adopted in the program; although, they are consistent with their agreements. Busack added that NNI numbers are only reported in the supporting documents on adult management. He said that a goal of the HGMPs is to show the reader how the program will be run, and if there is confusion, explain the intent. Busack said that, regarding what to expect with the PAC proceedings, he guessed that PAC would first hold discussions with the Small Group at U.S. v. Oregon, and then meet with the larger Columbia River Inter-Tribal Fish Commission (CRITFC) group. Tonseth added that the NNI production levels will go to the Policy Group, but as an update, not as a decision item.

Tonseth asked when NMFS expected to publish the Methow HGMPs in the Federal Register for their 30-day review. Hatcher said that NMFS can process the HGMPs prior to PAC approval; however, that if there is a problem with PAC, it will delay the Federal Register Notice (FRN). Tonseth noted that consultations cannot occur until the FRN is published.

V. WDFW
A. Broodstock Protocol Update (Mike Tonseth)
Mike Tonseth said that WDFW is developing the draft 2013 Broodstock Protocols. He said that the final draft may not be ready by the March 20, 2013 meeting of the Hatchery Committees, but that a draft document should be available for review. Greg Mackey requested that the final 2013 document be distributed to the Hatchery Committees as soon as it is available; and Mike Schiewe suggested copying the Hatchery Committees on the version that goes to NMFS. Mackey asked if interim protocols, or protocols specific to a particular
operator could be developed in the event that other programs delay the final 2013 protocols; and Tonseth responded that he hesitates to have multiple protocols. Schiewe suggested that WDFW keep the Hatchery Committees updated as changes are made to the draft protocols and as program details are worked out. He suggested that any changes could be highlighted in track changes.

VI. Chelan PUD

A. Methow Spring Chinook (Josh Murauskas)
Josh Murauskas said that Chelan PUD, USFWS, and WDFW have finalized arrangements to meet Chelan PUD’s spring Chinook production for 2013. Mike Tonseth said that USFWS agreed to accommodate broodstock collection, holding, and incubation for 61,000 Chelan PUD spring Chinook. Eyed eggs would be moved to Eastbank Hatchery for initial rearing. Murauskas said that discussions on how to meet production for 2014 and beyond are still ongoing. Tonseth said that there are concerns with using the Rocky Reach Dam Fish Trap and the potential impact that this may have on spring Chinook returning to the Entiat River. He said that there are also ongoing discussions about permit limitations to implement the PBT approach using genetic stock identification (GSI) markers at Priest Rapids Dam. Chelan PUD said that they will carry forward their action item from the December 12, 2012 meeting of the Hatchery Committees to draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap, which may involve trapping, tagging, and genetic testing at Priest Rapids Dam, and monitoring at the Rocky Reach Dam Fish Trap.

VII. Yakama Nation

A. YN Steelhead Kelt Reconditioning Program Update (Keely Murdoch)
Keely Murdoch said that the YN has been discussing with WDFW, USFWS Fish Health, and Douglas PUD the feasibility of live-spawning natural-origin steelhead (females) from the Twisp River so as to recondition them to spawn again in the wild. She said that the YN had discussed with Douglas PUD the possibility of incorporating an isoincubation facility into the plans for the Wells Hatchery modernization; however, it has turned out that this option was not financially feasible. She said that the YN is discussing alternative opportunities with the
USFWS Fish Health Unit. Regarding the consideration of an off-site rearing alternative, Tom Kahler said that rearing fish offsite would address only some of the fish health concerns, and Murdoch noted that the fish would still need to be kept separate until testing for Infectious Pancreatic Necrosis Virus (IPNV) can be completed. Mike Tonseth explained that samples are typically taken for testing at 30 days after swim up, and it takes an additional 30 days to obtain results; this means that the fish need to be held 60 days in isolation. Murdoch said that the Hatchery Committees would need to decide whether or not to keep the progeny of individual females separate or in pairs (i.e., progeny of one female per tank or progeny of two females per tank).

Murdoch acknowledged that there would be several decisions that the Hatchery Committees would need to discuss prior to moving forward; however, she said that the YN wanted to provide an update on current progress and ongoing discussions.

B. *Spring Chinook/Steelhead Conversion from the Lake Wenatchee Sockeye Program (Keely Murdoch)*

Keely Murdoch reminded the Hatchery Committees about the YN proposal to convert 40,000 Lake Wenatchee sockeye to spring Chinook, instead of steelhead (as was specified in the 2011 SOA on hatchery recalculation). She said that WDFW is discussing this proposal internally and has not yet made a decision. Murdoch said that the YN just wanted to remind the Hatchery Committees that these discussions are ongoing and that the proposal is something that they will eventually ask the Hatchery Committees to weigh in on once again. Mike Tonseth concurred that discussions have been ongoing; however, he indicated that it was doubtful that an agreement would be reached prior to 2013 broodstock collection. Murdoch said that NMFS expressed support of the proposal as long as the numbers are compliant with the HGMP. She added that, as far as permitting, she does not foresee any impact.

VIII. **CCT**

A. *Run-Composition Sampling at Wells Dam for Summer Chinook (Kirk Truscott)*

Kirk Truscott said that summer Chinook sampling at Wells Dam was discussed at the December 12, 2012 meeting of the Hatchery Committees, but that this option was left
unresolved. Mike Tonseth added that, historically, the Wells sampling was used to collect information on Upper Columbia River summer Chinook run-composition. Tonseth said that with the termination of some prior production agreements and re-calculation of PUD production levels, Chelan PUD no longer has an Upper Columbia River summer Chinook obligation at Carlton Ponds. Tonseth said that run-composition sampling for summer Chinook upstream of Wells is still needed, if only for the Grant PUD program. He said that in order to avoid a data gap, the Hatchery Committees need to address who will be collecting these data.

Truscott explained that CCT did not include participation in this activity in their M&E Plan because run-composition sampling includes aggregate population sampling. Underwood noted that Grant PUD needs to be a part of this discussion as well. Josh Murauskas asked if a sample power analysis has been performed to determine the number of fish that would need to be sampled; and he added that these obligations could possibly be satisfied with broodstock collection for Carlton. Tonseth estimated that approximately 500 adults may be needed for sampling; and he added that information collected on the spawning grounds is inherently biased to older fish and is not a reliable substitute. He indicated that he did not know whether Grant PUD’s Carlton collection would provide sufficient information to satisfy what is needed. He added that information regarding fish length, scales, marks, presence/absence of coded-wire tags (via wand), fin clips, and gender would need to be collected as well. Tonseth said that if this option is not adequate, questions to be answered about the sampling include: who will perform it, what is the division of labor for it, and who will fund it. He added that Grant PUD is ultimately responsible for collecting for their program. Murauskas asked why the data were important and what decisions they informed; no one was able to respond with any detail. Truscott asked if these data could be obtained during the purse seine collections that the CCT conduct. Greg Mackey asked how mainstem spawners are differentiated in these samples; Tonseth said that they are not identifiable and hence the sample is considered an aggregate population.
Mike Schiewe said that WDFW, Chelan PUD, CCT, Douglas PUD, and Grant PUD need to decide how to move forward. He noted that this is a Hatchery M&E Program; however, it is not geographically defined by the program. Tonseth said that historically, all parties have supported run-composition sampling at Wells Dam, and that if a change to sampling locations is proposed, the change needs to meet everyone’s needs and Hatchery M&E Plans. Kristi Geris said that she will set up a WebEx meeting for 11:00 am on Monday, January 28, 2013, for WDFW, CCT, Chelan PUD, Douglas PUD, and Grant PUD to discuss run-composition sampling at Wells Dam for summer Chinook upstream of Wells Dam; and Tonseth said that he will provide Geris summer Chinook broodstock collection estimates for discussion during the run-composition sampling meeting.

IX. HCP Administration

A. Conflict of Interest Policy (Mike Schiewe)

Mike Schiewe said that the HCP Hatchery Committees Conflict of Interest Policy has run its 2-year course, and that it is now time to consider renewing the policy for the next 2 years. Schiewe said that since the current policy has not yet been applied, he proposed extending it for the next 2 years. He reminded the Hatchery Committees that the policy, originally approved in November 2010, underwent development and revisions through a course of about 2-to-3 meetings. The Hatchery Committees agreed to extend the current HCP Hatchery Committees Conflict of Interest Policy for two additional years.

B. Next Meetings

The next scheduled Hatchery Committees meetings are on February 20, 2013 (Chelan PUD office); March 20, 2013 (Douglas PUD office); and April 17, 2013 (Chelan PUD office).

List of Attachments

Attachment A – List of Attendees
Attachment B – Draft Douglas PUD 2013 HCP Action Plan
### List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Josh Murauskas*</td>
<td>Chelan PUD</td>
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<td>Alene Underwood</td>
<td>Chelan PUD</td>
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<tr>
<td>Greg Mackey*</td>
<td>Douglas PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<tr>
<td>Todd Pearsons†</td>
<td>Grant PUD</td>
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<tr>
<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
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<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Craig Busack*‡‡</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Todd Miller†</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Charlie Snow†</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
- ‡‡ Joined by phone for the Methow HGMPs and Hatchery Litigation Updates discussion
FINAL 2013 ACTION PLAN
WELLS HCP

WELLS HCP COORDINATING COMMITTEE

1. Juvenile Fish Bypass Plan
   a. Draft to Coordinating Committee (CC) ....................................................... December 2012
   b. CC comments to DCPUD ........................................................................ January 2013
   c. Submit to FERC for approval ................................................................. February 2013
   d. Draft report to CC ............................................................................. November 2013

2. 2013 NNI Progress Report (per Wells HCP §6.9)
   b. Report deadline ................................................................................ March 2013

3. Predator Control Programs
   a. Draft 2012 pikeminnow report to HCP CC ......................................... January 2013
   b. Final 2012 pikeminnow report integrated into HCP Annual Report ....... March 2013
   c. Pikeminnow removal – Wells Project ........................................... March – November 2013
   d. Draft 2013 pikeminnow report to DCPUD ........................................ January 2014
   e. Draft 2013 pikeminnow report to HCP CC ......................................... March 2014
   f. Avian predator hazing at Wells ................................................... October 2012 – May 2013
   g. 2012-2013 hazing memo to PUD ...................................................... June 2013
   h. 2012-2013 hazing memo to HCP CC .............................................. July 2013
   i. 2012-2013 hazing memo integrated into 2013 HCP Annual Report .... March 2014

4. Sub-yearling Chinook Life-history Study
   a. 2011 draft report to HCP CC ................................................................. December 2012
   b. 2011 final report to HCP CC ............................................................... February 2013
   c. Presentation of 2012 data analysis to HCP CC ................................... December 2013
   d. Update study plan for 2013 ............................................................... January-April 2013
   e. Tag and release study fish ................................................................. June-July 2013
   f. Monitor study fish .......................................................................... through life cycle
   g. 2011-13 draft report to CC ............................................................... December 2013
   h. 2011-13 final report ................................................................. April 2014

5. Annual Monitoring of Juvenile Migration Run Timing
   a. 2013 Skalski analysis of index data from RR ................................... September 2013
   b. 2013 draft of Skalski’s report to DCPUD ........................................... October 2013
   c. 2013 final report presented to CC .................................................. November 2013

6. Fish Passage and Count-station Maintenance
   a. Install grating around count station in the east ladder ......................... December 2012
   b. Install grating around count station in the east ladder ....................... January 2013

Attachment B
7. **FDX/HDX PIT-tag Detection System Installation**
   a. Install system in Pool 19 of east ladder .............................................December 17-20, 2012

8. **Fishway Outage Schedule for Fishway Inspection, Maintenance, and Fishway Projects**
   b. West Fishway ...............................................................January 21 – February 21, 2013

9. **Lamprey Passage and Enumeration Study**
   a. Study plan ........................................................................ February 2013
   b. Conduct head-differential test and efficiency study .....................July – October 2013
   c. Draft report ........................................................................ November 2013
   d. Final report ..........................................................................February 2014

10. **HCP Annual Report**
    b. Draft 2012 annual report to CC for 30-day review.....................February 8, 2013
    c. CC comments due to Anchor QEA ........................................ March 6, 2013
    d. Final 2012 annual report to DCPUD ....................................... March 22, 2013
    e. Final 2012 annual report due to FERC .................................... March 29, 2013

11. **License Amendments (requiring HCP CC approval)**
    a. Counting Facility Modifications (Lamprey Count Station Improvements) .... March 2013
    b. Temporary Operational Modifications (Lamprey Ladder Operations) ............ May 2013
1. Implement 5-year Hatchery Monitoring and Evaluation (M&E) Plan
   a. Ongoing implementation ............................................................. January – December 2013
   b. Draft annual report for 2012 to Douglas PUD ............................... June 2013
   c. Draft annual report to Hatchery Committee (HC) ............................. August 2013
   d. Final annual report to HC ........................................................... October 2013
   e. Draft 2014 implementation plan to HC .......................................... August 2013
   f. HC approval of final 2014 implementation plan ................................. October 2013
   g. HC approved 2014 implementation plan to FERC for approval ....... October 2013

2. Update 5-year M&E plan (per Wells HCP §8.5.1)
   a. Draft to HC .................................................................................. April 2013
   b. Final to HC .................................................................................... June 2013
   c. Approved M&E plan to FERC for approval ...................................... August 2013

3. 2010 Broodstock Collection Protocol
   a. Draft to HC: .................................................................................. March 2013
   b. Approval deadline: ........................................................................ April 2013
   c. Implementation: ............................................................................ May 2013 to April 2014

4. Annual Implementation - Sockeye Fish/Water Management Tools
   a. Period covered: ................................................................. Water Year 2012-2013 (October – September)
   b. Water Year 2011-2012 Report and Presentation to HC: ................. to be determined

5. Methow Steelhead Relative Reproductive Success Study
   a. Implementation: ................................................................. March 2010 - December 2021
   b. Final report: .................................................................................. 2021/2022

6. Wells Hatchery Modernization
   a. Draft Master Plan to Douglas PUD .................................................. January 2013
   b. Final Master Plan ........................................................................... March 2013
   c. Final Construction Drawings ......................................................... March 2014
   d. Provide updates to the HC ................................................................. Monthly
   e. Provide opportunities for HC input ............................................... Periodically
WELLS HCP TRIBUTARY COMMITTEE

1. Plan Species Account Annual Contribution
   a. $176,178 in 1998 dollars (estimated $250,000 2013 dollars) ..................... January 2013

2. Annual Report - Plan Species Account Status
   a. Draft to Tributary Committee (TC): ......................................................... February 2013
   b. Approval deadline: ..................................................................................... March 2013
   c. Period covered: ......................................................................................... January to December 2012

3. 2013 Funding-round – General Salmon Habitat Program
   a. Request for project pre-proposals: ......................................................... To be determined (typically in March)
   b. Pre-proposals to TC: ........................................................... To be determined (typically in early May)
   c. Tours of proposed projects: ........................................ To be determined (typically in late May)
   d. Project sponsor presentations to TC: .............................. To be determined (typically in early June)
   e. Final project proposals to TC: ................................. To be determined (typically in late June)
   f. RTT project rating decisions: ....................................... To be determined (typically in early July)
   g. Supplemental sponsor presentations, as necessary .................................... To be determined
   h. TC final funding decisions: ........................................ To be determined (typically before December)

4. Small Project Program
   a. Project review and funding Decision ..................................................... January – December 2013

5. Tributary Assessment Program
   a. Draft final report to TC on Year 5 of 5, and all years of ORRI monitoring ...... April 2013
   b. Final report to TC ....................................................................................... June 2013
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Chelan PUD headquarters in Wenatchee, Washington, on Wednesday, February 20, 2013, from 9:30 am to 2:45 pm. Attendees are listed in Attachment A to these meeting minutes.

**ACTION ITEM SUMMARY**

- Chelan PUD will draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap (Item I).
- Bill Gale will provide U.S. Fish and Wildlife Service’s (USFWS) Entiat National Fish Hatchery (NFH) and Leavenworth NFH Biological Assessments (BAs) and Biological Opinions (BiOps) to the Hatchery Committees as examples of consultation materials for bull trout (Item II-A).
- Craig Busack and Bill Gale will provide Kristi Geris with a list of people who should be invited to the discussion on hatchery and genetic management plans (HGMPs) for non-listed programs and the need for bull trout consultations (Item II-A).
- Kristi Geris will distribute a Doodle Poll for a 1-hour discussion on the status of HGMPs for non-listed programs (Item II-A).
- Josh Murauskas and Chris Moran will provide a proposal for evaluating release strategies for the Wenatchee Steelhead Program, including a consideration of how the release strategy for steelhead would affect the Chiwawa spring Chinook program, no later than one week prior to the Hatchery Committees March 20, 2013 meeting (Item III-A).
- Josh Murauskas will distribute to the Hatchery Committees an updated revised draft
Analytical Framework 5-Year Update with comments received to date that have been incorporated (Item IV-A).

- Josh Murauskas will distribute a Doodle Poll to the Hatchery Committees to schedule a Hatchery Monitoring and Evaluation (M&E) Workgroup meeting to prepare the final revised draft Analytical Framework 5-Year Update for Hatchery Committee review (Item IV-A).
- Greg Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when available (Item V-C).
- Chelan PUD, Douglas PUD, Grant PUD, and the Colville Confederated Tribes (CCT) will meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and Chelan PUD will provide an update on the discussions at the Hatchery Committees’ March 20, 2013 meeting (Item VI-A).
- Keith Wolf will provide Kristi Geris with CCT’s Chief Joseph Hatchery (CJH) M&E presentation materials for distribution to the Hatchery Committees (Item VI-B).

**STATEMENT OF AGREEMENT DECISION SUMMARY**

- No Statements of Agreement (SOA) were approved at this meeting.

**AGREEEMENTS**

- No agreements were discussed at this meeting.

**REVIEW ITEMS**

- The draft residual steelhead manuscript *Ecologic and demographic costs of releasing non-migratory juvenile hatchery steelhead in the Methow River, Washington* was distributed to the Hatchery Committees on February 19, 2013, for a 60-day review with comments due to Charlie Snow no later than April 22, 2013.

**FINALIZED REPORTS**

- The Yakama Nation (YN) Expanded Acclimation Plan was finalized and distributed to the Hatchery Committees on January 29, 2013.
I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and reviewed the agenda. The following revisions were made to the agenda:

- Lynn Hatcher added an update on the Nason Creek Hatchery permit timeline.
- Josh Murauskas added an update on spring Chinook brood collection at the Eastbank Hatchery outfall (EBO).
- Greg Mackey added a Wells summer Chinook HGMP update to the National Marine Fisheries Service (NMFS) HGMP agenda item; and he also added a Hatchery Evaluation Technical Team (HETT) update.
- Kirk Truscott added an update on run-composition sampling at Wells Dam for summer Chinook.

The revised draft January 16, 2013 meeting minutes were reviewed. Kristi Geris said that after the revised minutes were distributed to the Hatchery Committees on February 12, 2013, NMFS provided clarification on two pending items under their discussion on Methow HGMPs and Hatchery Litigation Updates. Geris said that Hatcher clarified that: 1) the draft Mid-Columbia HGMPs currently under review include draft HGMPs for Methow steelhead and Methow spring Chinook programs; and 2) the review period for Methow HGMPs in the Federal Register will be 30 days. Responding to a question from Mackey, Mike Tonseth clarified that during run-composition sampling at Wells Dam, all fish are screened for presence-absence of coded-wire tags. Geris said that she will revise the minutes to reflect this clarification. The Hatchery Committees members present approved the January 16, 2013 meeting minutes, as revised.

Action items from the last Hatchery Committees meeting on January 16, 2013, and follow-up discussions were as follows:

- Geris will verify with Bill Gale the final revisions to the revised December 12, 2012 Hatchery Committees meeting minutes, regarding edits to a statement that Gale made during Chelan PUD’s discussion on Methow spring Chinook production (Item I). Geris said that she received Gale’s approval via email on January 18, 2013, prior to distributing the final meeting minutes to the Hatchery Committees.
• **The Hatchery M&E working group will provide the revised Analytical Framework 5-Year Update to the Hatchery Committees for review prior to the February 20, 2013 meeting of the Hatchery Committees (Item III-A).**

The updated revised draft Analytical Framework 5-Year Update was redistributed to the Hatchery Committees on January 25, 2013.

• **Craig Busack will provide Geris with the NMFS Production Advisory Committee (PAC) briefing documents on the draft Methow spring Chinook and steelhead HGMPs, for distribution to the Hatchery Committees (Item IV-A).**

Geris said that Busack provided the documents and that they were posted to the ftp site and distributed to the Hatchery Committees on January 22, 2013.

• **Chelan PUD will draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap (Item VI-A).**

Murauskas said that Chelan PUD is discussing the logistics of trapping fish at the existing trap, and added that trapping summer Chinook is being considered to test the functionality of the trap. He said that Chelan PUD still plans to provide the Hatchery Committees with a proposal prior to conducting any work.

• **Geris will set up a WebEx meeting for 11:00 am on Monday, January 28, 2013, for the CCT, Chelan PUD, Douglas PUD, and Grant PUD to discuss run-composition sampling at Wells Dam for summer Chinook upstream of Wells Dam (Item VIII-A).**

Geris said that the meeting was scheduled as discussed.

• **Tonseth will provide Geris summer Chinook broodstock collection estimates for discussion during the run-composition sampling WebEx meeting scheduled for January 28, 2013, for distribution to the Hatchery Committees (Item VIII-A).**

Tonseth provided these estimates on January 17, 2013.

II. NMFS

A. **HGMP Update (Craig Busack)**

Craig Busack updated the Hatchery Committees on several topics, including the timeline for review and current status of Mid-Columbia hatchery programs HGMPs, and the requirements for consultations on non-direct take hatchery programs. Busack began by noting that the draft Okanogan section 10(j) sufficiency letter will be sent for CCT review tomorrow. He said that the Methow spring Chinook and steelhead sufficiency letters are on hold pending resolution of comments received from the YN and USFWS on HGMP
supplemental materials or supporting documents. Once these comments are addressed and differences are resolved, the Methow spring Chinook and steelhead sufficiency letters will be finalized. He indicated that no revisions will be made to the actual HGMP themselves, but that revisions only relate to the supporting documentation that includes new data collected after the HGMPs were originally submitted. Busack reported that the Wenatchee steelhead and Chiwawa spring Chinook draft BiOps are almost complete and will be sent for agency review after National Oceanic and Atmospheric Administration General Council (NOAA GC) legal review. He said that a new draft BiOp for the Nason Creek Hatchery Program will be out in early March 2013, and added that this is only the BiOp—not National Environmental Policy Act (NEPA) documentation. Kirk Truscott asked when a permit for the Nason Creek program will be required; Mike Tonseth responded that a permit will be needed by early May 2013. Busack also noted that the Leavenworth NFH spring Chinook and Entiat NFH spring Chinook draft BiOps are still in final review. He reminded the Hatchery Committees that the NMFS final review process is now taking longer than in the past due to greater scrutiny by the NOAA General Counsel (GC). He said that the Leavenworth spring Chinook and Entiat spring Chinook draft BiOps were originally anticipated to be completed this week; however, they have been delayed by further revisions.

Busack asked Truscott about the status of the Okanogan steelhead HGMP, to which Truscott replied that the CCT are still working on a draft. Busack said that NMFS needs a draft soon to stay on schedule. He also indicated that NMFS needs the draft Mid-Columbia coho HGMP and any revisions completed by March 2013. He also indicated that NMFS is requesting up-to-date information on all non-direct take programs because Permit 1347 (which covers those programs) is about to expire. NMFS is planning to issue a supplemental BiOp rather than issue a new BiOp and is completing the NEPA process again. Nonetheless, Busack said that this would require updating previous information. He said that NMFS already has a summer Chinook HGMP from Grant PUD, but they still need summer and fall Chinook HGMPs from Chelan PUD and Douglas PUD. Mackey asked about the nature of the new information and level of detail that NMFS would be requiring in the HGMPs. Alene Underwood added that Chelan PUD was under the impression that they were not required to submit a full HGMP. Busack replied that the requirement for a full HGMP was
still under internal discussion, and a determination should be reached next week. He added that if a full HGMP is required, NMFS would like them as streamlined as possible.

Mackey asked about the timeline for completing a new HGMP, and asked if the Hatchery Committees’ review process could be expedited to facilitate submitting a new HGMP to NMFS as soon as possible. He said he anticipated that the program descriptions would remain largely the same. Mike Schiewe asked if a 30-day review period would suffice; Busack replied that in order to finish the process by October 2013, and if a new NEPA is not required, then receiving the new HGMP within the next few months would be acceptable. Tonseth noted that permit 1347 coverage is primarily for brood collection and release, and he added that brood collection will be complete by mid-September 2013 and juvenile releases will not take place until spring 2014. He said, therefore, that a new permit is not technically needed until April 2014—Busack agreed, but added that he would still like to try to meet the October 2013 deadline.

Lastly, Busack said that he wanted to alert the Hatchery Committees about the need for bull trout consultation requirements associated with the non-direct take HGMP consultations. He explained that if a program needs a section 10 permit from NMFS, Biological Assessments (BAs) also need to be completed and approved by USFWS for bull trout and any other USFWS-listed species. This consultation is typically required to be complete before NMFS issues the section 10 permits. Busack clarified that development of BAs for USFWS-listed species is not NMFS’ responsibility, and he recommended that the BAs are developed in coordination with USFWS in order to ensure that the documents meet USFWS’ expectations. Busack explained that NMFS wrote a BA for Snake River Fall Chinook because USFWS agreement was needed quickly. He added that NMFS is still revising it to satisfy USFWS expectations. Bill Gale asked why NMFS is responsible for consultations with USFWS. Busack explained that when NMFS completes a section 10 consultation and issues a permit that NMFS becomes the action agency. He explained that for NMFS-listed species, NMFS consults with itself, and for USFWS-listed species, NMFS consults with USFWS. NMFS has no responsibility with respect to USFWS-listed species. Gale said that he can provide USFWS Entiat NFH and Leavenworth NFH BAs and BiOps to the Hatchery Committees as examples of consultation materials for bull trout. Busack suggested setting up a Hatchery Committees conference to further discuss needed input for HGMPs for summer/fall Chinook
non-direct take programs. Gale and Busack agreed to provide Kristi Geris with a list of NMFS and USFWS staff that should be included in the conference call, and Geris will distribute a Doodle Poll to establish a time and date for a 1-hour discussion.

III. Chelan PUD

A. Wenatchee Steelhead Release Strategy (Josh Murauskas)

Josh Murauskas reviewed that, as discussed at the Hatchery Committees’ November 14, 2012 meeting, hatchery steelhead smolts released into the Wenatchee River experienced an unprecedented and significant reduction in the combined probability of migration and survival in 2012. Murauskas said that the cause of these poor results will be difficult to discern because of many concurrent changes to program. He noted that the 2012 releases were the first after relocating the program from Turtle Rock to the Chiwawa Facility and after implementation of new release techniques. Murauskas said that based on 2012 steelhead survival results, Chelan PUD is advocating reverting back to the release strategy that was performed prior to 2012. A paper on the release strategy for hatchery-origin steelhead in the Wenatchee River Basin (Attachment B) was distributed to the Hatchery Committees by Kristi Geris on February 19, 2013.

Mike Tonseth noted that the previous release strategy (drop planting in the Wenatchee directly from Turtle Rock) was the only strategy available prior to relocating the program—not because it was preferred. Murauskas added, however, that the previous release strategy was also three times as successful. He also noted that residualism did not appear to be an issue in 2012 because less than one-tenth of a percent of passive integrated transponder (PIT) tags were detected after July 1, 2012, and that committee-approved population estimates of resident Oncorhynchus mykiss (O. mykiss) are low (e.g., Hillman et al. reports). He also noted that the smaller release groups and delayed releases that result from volitional releases may negate the desired benefits. Tonseth cautioned also that there are several factors that influence these results, such as differences in the behavior of hatchery-by-hatchery (HxH) and wild-by-wild (WxW) hatchery populations. He suggested that a larger sample size is needed prior to making any conclusions. Bill Gale noted that in Figure 5 of Attachment B (i.e., survival of juvenile steelhead under the new release strategy in 2012 by release group [circular vessels]), the non-migrant group migrated at a higher rate than typical; and Tonseth added that the term “non-migrant” needs to be carefully defined. Charlie Snow commented
that hatchery operations can influence migration rates. Kirk Truscott suggested that releases from circular tanks need to be considered separately from releases out of raceways because they are reared differently, and, in 2012, releases from circular tanks were intentionally delayed. Tonseth said that in 2012, the raceway fish survived at a slightly higher rate than those from circular tanks. Mike Schiewe noted that this may be a good opportunity to develop a more rigorous study, and suggested testing different rearing strategies to gather empirical data. Keely Murdoch said that she would be supportive of conducting further testing prior to making a decision, and also recommended testing both HxH and WxW in each test group. Alene Underwood explained that Chelan PUD would like the Hatchery Committees to approve a new release strategy in time for 2013 releases, and Muraskas added that they also do not want the same results as last year. Muraskas also added that bird predation increases by May. He said that a recent query indicated that about 1,555 Wenatchee steelhead PIT tags have been collected from area bird colonies, and added that those are from later releases. Schiewe suggested that Chelan PUD should have a proposal ready for review by the Hatchery Committees’ March 20, 2013 meeting, and Tonseth recommended that Chelan PUD consider impacts to the Chiwawa spring Chinook program. Muraskas said that he and Chris Moran will provide a proposal for evaluating release strategies for the Wenatchee Steelhead Program, including a consideration of how the release strategy for steelhead would affect the Chiwawa spring Chinook program, no later than one week prior to the Hatchery Committees’ March 20, 2013 meeting.

B. Summer Chinook Brood Collection at the Eastbank Outfall (EBO) (Josh Muraskas)

Josh Muraskas said that Chelan PUD and WDFW are working to complete preparations to utilize the EBO as the primary broodstock source for the Chelan Falls summer Chinook program. Mike Tonseth added that summer Chinook broodstock collection at the EBO will be included in the 2013 Broodstock Protocols for Chelan Falls’ broodstock collection. Chris Moran said that Chelan PUD and WDFW were also discussing potentially tagging fish and wiring the outfall to see how many and what type of fish are around the outfall. Muraskas added that the EBO might turn out to be a useful tool for stray management.
IV. Chelan PUD, Douglas PUD, and Grant PUD

A. 5-Year M&E Plan Update Discussion and Review of Draft Plan (Josh Murauskas and Greg Mackey)

Greg Mackey said that the updated revised draft Analytical Framework 5-Year Update was redistributed to the Hatchery Committees on January 25, 2013, with comments due no later than February 14, 2012. Mackey said that he received comments from Tracy Hillman, Andrew Murdoch, and Keely Murdoch. Andrew Murdoch’s comments on the draft plan were distributed to the Hatchery Committees on February 15, 2013, and Keely Murdoch’s comments on the draft plan were distributed to the Hatchery Committees on February 19, 2013. Josh Murauskas said that all comments received have now been incorporated into the draft plan, and he said that after he incorporates Chelan PUD comments, he plans to redistribute the revised draft plan to the Hatchery Committees for additional review. Mackey suggested scheduling another Hatchery M&E Workgroup meeting to decide on language and edits based on comments received. He added that most of the comments received were clarifications to explanatory text, and that not many significant changes were received.

Mike Tonseth noted that many of the substantial changes (e.g., revisions to the hypotheses) were reconciled during the last Hatchery M&E Workgroup meeting. Mackey said that a glossary and index were incorporated into the revised draft that was distributed on January 25, 2013, and he noted that those items still need to be further populated. Mike Schiewe reminded the Hatchery Committees that the target is to complete this plan by April 2013, prior to contracting for future years. Murauskas confirmed that the draft plan is on schedule to meet that deadline. Mackey said that a revised draft will be available for review prior to the Hatchery Committees’ March 20, 2013 meeting, and then final comments and edits can be addressed prior to the Hatchery Committees’ April 17, 2013 meeting, when the plan will be up for approval. Murauskas said that he will distribute a Doodle Poll to the Hatchery Committees to schedule a Hatchery M&E Workgroup meeting to prepare the final revised draft Analytical Framework 5-Year Update for Hatchery Committee review.
V. Douglas PUD

A. HETT Update (Greg Mackey)

Greg Mackey reminded the Hatchery Committees that when he was running the Predation, Competition, and Disease (PCD) risk models for Douglas PUD hatchery programs, he encountered problems when hatchery fish are smaller in size than wild fish, which resulted in the program crashing. Mackey said that he is having the code reviewed by a computer programmer to determine what type of effort would be involved to pinpoint the error. Once this information is available, future actions regarding the PCD Risk model can be decided upon.

B. Confidence in Estimation of Broodstock Numbers (Greg Mackey)

Greg Mackey said that he had recently completed exploratory work on broodstock calculations and summarized the work in a PowerPoint presentation on managing risk and expectations in broodstock collection (Attachment C), which was distributed to the Hatchery Committees by Kristi Geris on February 19, 2013. Mackey reviewed the basic broodstock calculation used to determine broodstock needed to produce a target production value. He noted that variability exists for each parameter used to calculate broodstock numbers, and this variability can be incorporated into broodstock calculations. He explained that using a deterministic approach would result in occasionally collecting too few, or too many broodstock, resulting in 10 percent less than the target production value may result in failing to meet mitigation obligations; whereas, broodstock numbers resulting in 10 percent greater than the target production value will likely result in overages. He then presented findings from a modeling exercise that explored the frequency at which a given program may be over or under acceptable bounds of production. Mackey noted that different programs may have a different emphasis on target production values (i.e., some programs may have an emphasis on not being below the lower 10 percent bound, versus others that may have an emphasis on meeting the target production value). He also noted that minimal changes to small programs, such as adding one female to the Twisp River spring Chinook program, could be significant in terms of resulting production values within, or outside, of the plus-or-minus 10-percent range. Mackey concluded that knowledge of these concepts and of the probability of
possible outcomes can allow for more informed and effective management of broodstock collection. Kirk Truscott also recommended being aware that biases exist in brood collected data versus brood spawned data. Keely Murdoch said that the YN adapts their strategies based on data received in order to address variability in the YN’s coho program. Mackey noted that a deterministic approach provides a number based on average conditions, while a probabilistic approach provides the number of broodstock needed, but also provides the likelihood of different, unintended outcomes, which managers can use to make better informed decisions. He said that he may develop a white paper on the results, and explore how this can inform future broodstock protocols.

C. Update on Wells Hatchery Modernization (Greg Mackey)

Greg Mackey said that Douglas PUD has been working with HDR Engineering, Inc., on planning for the modernization of the Wells Hatchery facility; and he added that Grant PUD has also been involved. Mackey said that the master plan is nearing completion (due March 2013); the plan will include a review and assessment of current infrastructure. He said that a groundwater well field assessment is also being conducted as part of bioprogramming to evaluate water needs for Wells Hatchery operations. He said that some of the wells may need to be upgraded. Mackey clarified that the facility is not undergoing a full rebuild, but it will be upgraded, as needed. He said that there are three major upgrades planned, including: 1) a new incubation building for anadromous programs (the existing incubation building will be used for the white sturgeon program and resident trout); 2) installation of fiberglass circular tanks for the Twisp and Okanogan steelhead programs; and 3) upgrades to the volunteer channel trap. Mackey said that a spawning facility will be developed that is integrated with the adult trapping and holding facility; however, those details are not yet worked out. Existing infrastructure such as the dirt ponds and Bureau ponds will be retained. He said that the next step will be to begin the design drawings, which he said should take about one year; and once completed, Douglas PUD will go out to bid for construction. He said that construction could potentially take a couple of years, as needed, to schedule around existing programs at the facility. Mackey said that once the Wells Hatchery
Modernization Master Plan is complete, he will provide the plan to the Hatchery Committees for review.

Keely Murdoch asked about the Hatchery Committees’ opportunity to comment and approve the plan. Mackey said that all upgrades will meet or exceed current standard WDFW rearing requirements. Mackey said that Douglas PUD did not intend to seek Hatchery Committees’ approval because the modifications are not for the purpose of improving program performance, but rather they are upgrading the facility because of aging infrastructure. Bill Gale said that the Hatchery Committees have commented on these types of plans in the past, and he asked Mackey what role he thought, if any, that the Hatchery Committees had in this modernization process. Mackey said that Douglas PUD is already meeting program targets, therefore, upgrades to Wells Hatchery is not a matter for the Hatchery Committees to approve. Gale replied that the Hatchery Committees have a role in how Hatchery mitigation is met—not just when targets are not being met. Schiewe said that once the master plan is complete, it will be available to the Hatchery Committees for review; and the Hatchery Committees’ role in approving the plan can be further discussed at that time. Mackey agreed that upon review of the master plan by the Hatchery Committees, Douglas PUD will consider input from the Hatchery Committees. Tonseth said that he just wants to make sure that WDFW has enough time to review any proposed modifications, if needed, and to make sure program obligations will be met.

VI. CCT

A. Run-Composition Sampling at Wells Dam for Summer Chinook (Kirk Truscott)
Kirk Truscott reviewed the need for run-composition sampling for summer Chinook upstream of Wells Dam. He said that based on Josh Murauskas’ power analysis that was distributed to the Hatchery Committees on February 5, 2013, a minimum of 38 adults from each group (hatchery and wild) is needed for sex and age analysis. Truscott also recalled that Mike Tonseth calculated that a sample size of roughly 500 fish will be needed for Carlton brood collection efforts. Tonseth said that given these numbers, the only issue that remains is how the sampling effort will be funded. Chelan PUD, Douglas PUD, Grant PUD, and the
CCT agreed to meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook. Murauskas said that Chelan PUD will provide an update on the discussions at the Hatchery Committees March 20, 2013 meeting.

B. CJH M&E Presentation (Kirk Truscott/Keith Wolf)
Keith Wolf introduced himself and distributed to the Hatchery Committees a supplemental packet of CJH M&E information (Attachment D) including: 1) a glossary of terms and variables; 2) an overview of the CJH program; 3) highlights from the draft 2013 CJH Implementation Plan (not included in Attachment D); 4) CJH 2013 spring, summer, and fall Chinook production summary (also not included in Attachment D, but previously distributed to the Hatchery Committees on September 14, 2012); and 5) the CJH Annual Program Review (APR) agenda. Wolf said that he will provide Kristi Geris with all CJH presentation materials for distribution to the Hatchery Committees (Note: Wolf provided the CJH presentation materials to Geris on February 21, 2013, which were distributed to the Hatchery Committees on the same day; the CJH M&E presentation is included in these meeting minutes as Attachment E).

Wolf presented an overview of the CJH Research, Monitoring, and Evaluation (RM&E) Programs, including a workflow diagram, and program assumptions and principles. Kirk Truscott noted that the CJH program is not a typical hatchery program. He said that instead, the program focuses heavily on meeting natural escapement, percent hatchery origin spawners (pHOS), and proportion of natural influence (PNI) values in the Okanogan Basin. Wolf shared a picture of the Okanogan adult fish weir and said that there are plans to upgrade the weir this year, including modification of the shape of the weir to facilitate more efficient trapping, installation of additional cameras, and an increase in trap size. Wolf said that the weir will be monitored to ensure that impingement does not occur with the new design. He said that a newly installed PIT tag array is located approximately one mile downstream of the weir. Todd Pearsons asked what the purpose of this weir is, and Wolf replied that it is primarily for managing genetics and stock composition. Wolf added that broodstock collected at this weir have a higher likelihood of being Okanogan fish. Truscott
said that the weir also serves an adult management purpose. Truscott said that other collection locations include the purse seine, tangle nets, and Wells Dam. Tonseth noted that CJH may not be a suitable location to collect natural origin brood, and Truscott said that the priority 2013 collection location is the purse seine. He said that if the broodstock quota is not being met by about August, other options will be investigated to collect the balance. Wolf said that the weir would be the last option for broodstock collection.

Wolf reviewed the CJH capture, tagging, and genetics programs. He said that in 2012, the CCT experimented with a new smolt trap that was not very successful. He said that trapping occurred at night, and all species were monitored. Tonseth asked if steelhead parr were PIT tagged, and Wolf replied that they are at the Omak facility; however, they are not PIT tagged at CJH. Tonseth asked if PIT tagging steelhead parr has been considered at CJH, and Wolf replied that it has been considered; however, trapping can only occur up to a certain flow, and there is high flow at CJH. Truscott said that the CCT is not planning to PIT tag steelhead in 2013. Wolf reviewed juvenile sampling objectives and said that the CCT were working on a new statistical approach to run regression analyses for abundance estimates.

To finish his presentation, Wolf reviewed the CJH field offices and acclimation sites. He said that details on tagging are well documented in the APR, and that adult fish management, data management, and other presentations and reports are available online at the CCT website. Lastly, Wolf encouraged Hatchery Committees members to attend the CJH APR in March 2013.

VII. HCP Administration

A. Next Meetings
The next scheduled Hatchery Committees meetings are on March 20, 2013 (Douglas PUD office); April 17, 2013 (Chelan PUD office); and May 15, 2013 (Douglas PUD office).

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# Attachment A
## List of Attendees

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<tr>
<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
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<td>Greg Mackey*</td>
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<td>Todd Pearsons†</td>
<td>Grant PUD</td>
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<td>Keely Murdoch*</td>
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<td>Kirk Truscott*</td>
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<td>Keith Wolf</td>
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<td>Lynn Hatcher*†</td>
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<td>Charlie Snow</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
- †† Joined by phone for the HGMPs Update
Release strategy for hatchery-origin steelhead in the Wenatchee River Basin

J.G. Murauskas  
Natural Resources Department, Chelan Public Utilities District, Wenatchee, WA

Summary—Hatchery steelhead smolts released annually into the Wenatchee River experienced an unprecedented and significant reduction in the combined probability of migration and survival in 2012 (≤ 55% compared to 2006-2011 averages). The decreased survival was in response to the relocation of the program and implementation of new release techniques advocated by fishery managers. While many variables may have influenced results, the release strategy likely compromised smolt survival without demonstrating any ability to screen fish that will fail to migrate. On account of these results, in addition to the absence of empirical data suggesting a preponderance of resident hatchery steelhead in the Wenatchee River Basin, a release strategy consistent with successful practices used in the past is recommended for 2013. This includes a forced release of all groups in early May, at the discretion of the hatchery staff. Further deviations from traditional practices should be properly vetted as described in the Rock Island and Rocky Reach Habitat and Conservation Plans.

Background discussion—Hatchery steelhead smolts Oncorhynchus mykiss are released annually at three locations in the Wenatchee River Basin (Basin) as mitigation for construction and operation of the Rock Island and Rocky Reach hydroelectric projects. Production targets were initially set at 400,000 smolts with the signing of the Rock Island and Rocky Reach Habitat and Conservation Plans (HCPs) in 2004 but have since been reduced to 247,300 smolts beginning with the 2012 releases. The program size allowed fishery managers to relocate the production to the Chiwawa Rearing Ponds (Chiwawa), an overwinter acclimation facility located at the confluence of the Wenatchee and Chiwawa rivers. The relocation from the former overwinter acclimation site on the mainstem Columbia River – Turtle Rock Island – was implemented in order to reduce stray rates of returning adults by extending the imprinting period in spawning tributaries.

Despite stray rates of returning adults from the past acclimation site, survival of hatchery steelhead smolts released in the Basin has been statistically greater and more consistent compared to other programs in the region (Figure 1). Within the Basin, survival is greatest for Wenatchee River mainstem releases compared to those in Chiwawa River and Nason Creek (Figure 2), though results may be confounded by brood origin (e.g., progeny of wild-origin brood are typically smaller and released in the upper Basin). Nonetheless, survival of hatchery-origin steelhead in the Basin has been greater than other programs and extremely consistent among locations, regardless of environmental conditions, such as outflow or temperature.

Figure 1. Box plot depicting the distribution of juvenile survival (to McNary Dam) of hatchery-origin steelhead released in the mid-Columbia River Basin tributaries, 2000-2010.

In addition to relocating the steelhead program to overwinter within the Basin, new operational release strategies were implemented in 2012. Specifically, smolts were provided the opportunity to volitionally exit their rearing vessel over a several week period. The fish that exited were considered to be displaying migratory behavior and were subsequently released into Nason Creek, Chiwawa River, or the mainstem Wenatchee River. Juvenile steelhead that remained at the end of the volitional release period were deemed non-migrants and released into the mainstem Wenatchee River. The intention of this strategy was to minimize the potential for resident O. mykiss in the Basin. The most significant changes resulting from this approach included more release groups, more handling, a reduced number of fish in each release group, and a prolonged release period spanning several weeks.
Monitoring data from the 2012 steelhead releases in the Basin showed a significant and unprecedented reduction in smolt survival to McNary Dam (Figure 3). The decreases from recent six-year averages ranged up to 55% for the largest release group in the Wenatchee River. Such dramatic reductions in survival were not expected given the favorable river conditions in 2012, and were also not observed in releases from other programs in the region (Murauskas, unpublished data).

Preliminary evidence suggests a few factors contributed to the decreased survival in 2012. Among these variables, the number of fish in each release group had the most significant effect on survival to McNary Dam. That is, the number of fish in each release group was positively correlated with survival for all releases (p < 0.01). Release groups with fewer fish performed poorly, even in the circular vessels that demonstrated exception survival in the past (Figure 4). Release date may have had an additional negative influence on survival: releases on May 8th survived at rates more than double those observed in releases from May 16th. However, given the negative influence of the smaller release groups, no statistical difference was detected among release times. Survival observed in groups released later in the month of May have performed poorly in the past (Murauskas, unpublished data) and are inconsistent with the natural migration of steelhead in the Basin. Smolt trapping efforts from the Wenatchee River (Monitor) between 2000 and 2010 indicate that the migration timing of wild steelhead smolts is May 4th on average (± 0.3 days SE), with a greater proportion of fish leaving prior (e.g., a negative skew). In comparison, hatchery-origin steelhead smolts captured at Monitor were observed May 11th (± 0.1 days SE) on average and were less variable and normally distributed compared to wild counterparts.

Other factors that may have influenced survival in 2012 include overwinter acclimation, brood origin, and size at release. No data suggest that overwinter acclimation could have affected survival. Several other programs are successfully overwintered and the highest smolt survival ever observed in steelhead released in the mid-Columbia River Basin (> 70% to McNary Dam) was from a group of steelhead overwintered at Chiwawa in circular vessels in 2010. Likewise, brood in 2012 was 100% wild-origin. While progeny of wild-origin brood may be smaller compared to progeny of hatchery-origin brood, these releases have performed well in the past (see Nason Creek releases above, comprised of 100% progeny of wild fish) and no evidence suggests this accounts for the decreased survival in 2012. Lastly, fish size was smaller in 2012. Releases from the large raceway were reported to average 12 fish per pound (FPP) and releases from the circular vessels were reported to average 8 FPP. While these were smaller than the targeted 6 FPP, they were not particularly different than releases in the past. Considering that the smolts reared in circular vessels were within the range of sizes observed in the past, it is possible that size could explain some of the variation observed in survival. However, survival to McNary Dam of the larger smolts released in the Wenatchee River, while...
greater than smaller smolts, were also extremely poor (28.8% ± 2.4% vs. 20.7% ± 2.3%, respectively). 

Figure 4. Survival to McNary Dam by number of fish in each release group of steelhead reared in circular vessels at Chiwawa in 2012 (p = 0.007). Release count represents PIT-tagged fish only, but is representative of the total group size assuming equal distribution of PITs.

The purpose for a volitional release strategy was to screen out non-migratory steelhead. Survival estimates from fish deemed to be migratory and non-migratory in 2012 showed that the release strategy was not effective. For example, in the fish reared in circular vessels, the last two releases on May 16th showed higher survival for “non-migratory” fish compared to those deemed migratory, and that release had a greater survival than the average survival of all volitional groups (n = 7, totaling 7,567 fish; Figure 5). The raceway-reared fish showed similar results, with downstream survival of fish deemed non-migratory showing no statistical difference than the average performance of the four volitional release groups. The last volitional release group and fish stocked into Blackbird Pond surprisingly had higher survival than the remaining volitional groups, though these differences were not significant (Figure 6).

Despite the intent behind the new release strategy, no evidence of excessive resident *O. mykiss* in the Basin exists. For example, a data query of steelhead PIT-tagged by Chelan PUD and released into the Basin (HUC = 17020011) between 2007 and 2011 (n=174,274) show that 0.1% of hatchery releases were detected anywhere in the system after July 1st and prior to their return as adults (Murauskas, unpublished data). Conversely, 2.9% of wild-origin fish are detected in the Basin after July 1st – a 25-fold increase compared to hatchery fish. While many of the wild-origin fish are tagged as parr and may not migrate the year they are tagged at the smolt traps, these results provide evidence that the likelihood of hatchery fish remaining in the Wenatchee River Basin is low. In addition, few resident *O. mykiss* are observed during monitoring and evaluation efforts that occur in the Wenatchee River Basin – none of which have been confirmed to be of hatchery origin (T. Hillman, personal communication). Exceptional survival to McNary Dam Wenatchee River Basin steelhead program is further evidence that the probability for resident *O. mykiss* is low.

Figure 5. Survival of juvenile steelhead under new release strategy in 2012 by release group (circular vessels).

Figure 6. Survival of juvenile steelhead under new release strategy in 2012 by release group (raceways).
Managing Risk and Expectations in Broodstock Collection

Greg Mackey
Douglas PUD
HCP Hatchery Committee
February 2013
Broodstock Calculation

Basic Broodstock Calculation

\[
\text{Number of Females Collected} \times \text{Pre-Spawn Survival} \times \text{BKD Culling Survival} \times \text{Fecundity} \times \text{Egg to Release Survival} = \text{Smolts}
\]

Assume 1:1 Sex Ratio

\[
\text{Number of Males Collected} + \text{Total Broodstock}
\]
Broodstock Calculation

Data Sources

\[
\text{Number of Females Collected} \times \text{Pre-Spawn Survival} \times \text{BKD Culling Survival} \times \text{Fecundity} \times \text{Egg to Release Survival} = \text{Smolts}
\]

- 2011 M&E: Recent 5-Years
- 2011 M&E: Recent 5-Years
- 2011 M&E: Recent 10-Years
- 2011 M&E: Recent 5-Years
**Broodstock Calculation**

**Example**

55 females x 0.979 pre-spawn survival x 0.814 cull survival x 3,702 fecundity x 0.837 egg to release survival = 135,000 smolts

Assume 1:1 Sex Ratio

55 males + 55 males = 110 broodstock
Broodstock Calculation

Example

55 females × 0.979 pre-spawn survival sd = 0.09 × 0.814 cull survival sd = 0.133 × 3,702 fecundity sd = 201 × 0.837 egg to release survival sd = 0.037 = 135,000 smolts

Assume 1:1 Sex Ratio

+ 55 males = 110 broodstock
Normal Distribution

50 % above the mean
50% below the mean
Broodstock Calculation

How often would a parameter be outside of the +/- 10% range?

\[
\begin{align*}
&\text{55 females} \times 0.979 \text{ pre-spawn survival} \quad \text{sd} = 0.09 \quad \times \quad 0.814 \text{ cull survival} \quad \text{sd} = 0.133 \quad \times \quad 3,702 \text{ fecundity} \quad \text{sd} = 201 \quad \times \quad 0.837 \text{ egg to release survival} \quad \text{sd} = 0.037 \quad = 135,000 \text{ smolts} \\
&16.0 \% \quad 51.5 \% \quad 6.1 \% \quad 2.5 \%
\end{align*}
\]
Broodstock Calculation

Example of Uncertainty

55 females \times 135,000 \text{ smolts} +/\!-\! 95\% \text{ CI} \times \text{ X} = 135,000 \text{ smolts} +/\!-\! 95\% \text{ CI}

Assume 1:1 Sex Ratio

55 males + 110 broodstock
Broodstock Calculation

We can model this

Random Draw

How many females? \times Pre-Spawn Survival \times BKD Culling Survival \times Fecundity \times Egg to Release Survival = 135,000 smolts +/- 95% CI
Repeat and Test Critical Values for Varying Numbers of Broodstock

Target Production Value
+10 % Production Value
- 10 % Production Value

How many females?  X
Pre-Spawn Survival  X
BKD Culling Survival  X
Fecundity  X
Egg to Release Survival  X

Random Draw
135,000 smolts +/- 95% CI

Attachment C
Results

Basic Broodstock Calculation
Key Concepts

1. Meet Program Target
2. Under -10% Bound: Fail to meet mitigation obligations
3. Over +10% Bound: Deal with overages – mine wild fish, culling etc.

These are likely to be competing objectives
Key Concepts

1. **Conservation Program**
   a. Emphasis on not being below lower 10% bound
   b. Avoid mining wild brood

2. **Safety-Net Program**
   a. Emphasis on meeting program
   b. Avoid overages

3. **Harvest Program**
   a. Emphasis on meeting program
   b. Overages on non-listed species easier to deal with
Results

Targets
Results

Mean Response with Targets
Results

Mean Response with Targets
Results

Probability of Meeting Target

![Graph showing probability of meeting target based on broodstock and smolt production.](Attachment C)
Results

Probability of Below -10% Target
Results

Probability of Exceeding +10% Target

![Graph showing probability of exceeding 10% target for broodstock production.](Attachment C)
Results

Probability of Exceeding +10% Target
Number to Cull at Mean and Upper 95% CI Response
Programs

Methow Spring Chinook - Conservation

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
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</thead>
<tbody>
<tr>
<td>0.500</td>
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<td>136,471</td>
<td>87,768</td>
<td>185,024</td>
<td>0.284</td>
<td>0.313</td>
</tr>
<tr>
<td>0.600</td>
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<td>194,686</td>
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<td>0.419</td>
</tr>
<tr>
<td>0.700</td>
<td>128</td>
<td>150,811</td>
<td>97,239</td>
<td>204,397</td>
<td>0.151</td>
<td>0.526</td>
</tr>
<tr>
<td>0.800</td>
<td>138</td>
<td>162,765</td>
<td>104,829</td>
<td>220,491</td>
<td>0.088</td>
<td>0.671</td>
</tr>
<tr>
<td>0.900</td>
<td>152</td>
<td>179,506</td>
<td>115,741</td>
<td>242,856</td>
<td>0.042</td>
<td>0.821</td>
</tr>
<tr>
<td>0.990</td>
<td>194</td>
<td>229,721</td>
<td>148,660</td>
<td>310,106</td>
<td>0.005</td>
<td>0.975</td>
</tr>
</tbody>
</table>
1. Choose some targets for the program
   – Meet program 80% of the time
   – Overages less than 33% of time
   – Under program less than 5% of the time
# Programs

## Methow Spring Chinook - Conservation

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.500</td>
<td>116</td>
<td>136,471</td>
<td>87,768</td>
<td>185,024</td>
<td>0.284</td>
</tr>
<tr>
<td>0.600</td>
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<tr>
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<td>150,811</td>
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<td>204,397</td>
<td>0.151</td>
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<td>162,765</td>
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</tr>
<tr>
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<td>229,721</td>
<td>148,660</td>
<td>310,106</td>
<td>0.003</td>
</tr>
</tbody>
</table>

The chart illustrates the relationship between broodstock production and probability of meeting conservation targets for Methow Spring Chinook. The graph shows the probability of meeting the target production levels for different broodstock values, with shaded regions indicating the 95% confidence intervals. The data points highlight the probability of culling (P of Culling) at various broodstock levels, with notable values circled at P ≥ Target of 0.500, 0.800, and 0.990.
# Programs

## Methow Spring Chinook - Conservation

<table>
<thead>
<tr>
<th>$P \geq \text{Target}$</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>$P \leq 90%$ of Target</th>
<th>$P$ of Culling</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.500</td>
<td>116</td>
<td>136,471</td>
<td>87,768</td>
<td>185,024</td>
<td>0.284</td>
<td>0.313</td>
</tr>
<tr>
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<td>143,636</td>
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<td>194,686</td>
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<td>0.419</td>
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<td><strong>0.700</strong></td>
<td><strong>128</strong></td>
<td><strong>150,811</strong></td>
<td><strong>97,239</strong></td>
<td><strong>204,397</strong></td>
<td><strong>0.151</strong></td>
<td><strong>0.526</strong></td>
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<tr>
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<td>162,765</td>
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<td>220,491</td>
<td>0.088</td>
<td>0.671</td>
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<td>179,506</td>
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<td>242,856</td>
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<td>0.821</td>
</tr>
<tr>
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<td>194</td>
<td>229,721</td>
<td>148,660</td>
<td>310,106</td>
<td>0.005</td>
<td>0.975</td>
</tr>
</tbody>
</table>

**Note:** The values highlighted in red indicate the optimal broodstock numbers for maximizing mean production within the specified target ranges. The diagram illustrates the relationship between broodstock size and smolt production probability, with key thresholds for culling and target achievement.
## Programs

### Twisp Spring Chinook - Conservation

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
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<td>0.700</td>
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### Diagram

- **Range ± 10%**
  - Brood in Range
  - Smolts
  - Target
  - Cull Number Mean
  - Cull Number 95% High CI

- **P ≤ Target**
  - P (≥ Target)
  - P ≤ 90% of Target
  - P of Culling
# Programs

## Methow Steelhead - Safety-Net

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
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</table>

![Graph showing the relationship between broodstock and smolt production probability](attachment:C)
# Programs

## Twisp Steelhead - Conservation

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
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![Graph](image.png)

**Legend**

- Range + - 10%
- Brood in Range
- Smolts
- Target
- Cull Number Mean
- Cull Number 95% High CI
- P (≥) Target
- P (≤) 90% of Target
- P of Culling
Programs
Sub-Yearling Summer Chinook - Harvest

<table>
<thead>
<tr>
<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>P ≤ 90% of Target</th>
<th>P of Culling</th>
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Attachment C
Programs
Yearling Summer Chinook - Harvest

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<th>P ≥ Target</th>
<th>Broodstock</th>
<th>Mean Production</th>
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<th>Upper 95% CI</th>
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</table>
Conclusions

• Meeting program targets carries considerable uncertainty
• Various objectives may be mutually exclusive
• Broodstock numbers can be specifically tailored to different types of programs using knowledge of uncertainty
• Knowledge of the probability of possible outcomes can allow more informed and effective management of broodstock collection.
Chief Joseph Hatchery
Annual Program Review (APR)

March 5-6, 2013 (CCT, State, Fed, PUD and stakeholder meeting)
March 7-8, 2013 (CCT staff and advisor workshops)

Chief Joseph Hatchery - Central Facility
38 Half Sun Way
Bridgeport, WA 98813

PREFACE:

The Annual Program Review (APR) is an integral component of the Chief Joseph Hatchery Project. The purpose of the APR is threefold: 1) to promote a shared vision for the Okanogan salmon resources and ensure an coordinated “all H” effort in working toward that vision, 2) to ensure that the best available science and most recent information is available to guide annual management decisions, and 3) to share results and accomplishments of the project with the broader community. To this end, the APR will begin with presentations on status and results from all activities supporting the Anadromous Fish Division and the Chief Joseph Hatchery Program (CJHP), followed by panel discussion and feedback from workshop participants. Information brought forward will help shape the action plan for the coming year. The Colville Tribes’ Anadromous Fish Division is the host for this workshop, led by the CJHP Science Program.

DAY 1 – Tuesday, March 5: Program Overview and Tour

9:00 - 9:15 Welcome and CCT Policy Review of the CJHP. Randy Friedlander
9:15 - 9:45 Introductions, Agenda Review, Work Shop Logistics. DJW staff
9:45 - 10:00 APR Workshop Objectives and Structure. Keith Wolf
10:00 - 12:00 P1: Production Program and Facility Tour. Pat Phillips, Kirk Truscott

12:00 - 1:00 Lunch: Available for purchase on-site (sandwich and salad buffet)
APR Part 1 – Results of Monitoring and Research

1:00 - 1:15 Agenda Review. DJW Staff

1:15 - 1:45 P2: CJHP Research, Monitoring and Evaluation Program. Keith Wolf

1:45 - 2:30 P3: 2012 Field Data/Activities/Analytical Procedures. Andrea Pearl, Lars Mobrand

Area 1 - Habitat and Natural Production

2:30 - 3:15 P4: Habitat Restoration Projects and Future Plans. Chris Fisher

3:15 - 3:30 Break

3:30 - 4:15 P5: Habitat Monitoring, Status and Trends. John Arterburn

Area 2 - Pre-terminal Harvest and Out-of-Subbasin Survival

4:15 - 5:15 P6: Adult Management, Tribal and non-Tribal Harvest. Mike Rayton and Others

Includes 1) results for 2012, including what CCT harvest did to PNI (how did we move the needle?)
2) run forecast and allocations for 2013 3) anticipated harvest activities for 2013 4) ISIT modeling results to indicate if CCT harvests their allocation then will CJHP achieve its goals (how much do we think we are going to move the needle on PNI)

5:15 - 5:30 Summary of Day 1. DJW staff

DAY 2 – Wednesday, March 6: Complete APR Part 1 and Start APR Part 2

8:00 - 8:15 Review Agenda, follow-up from Day 1, Part 1

Area 3 - Other Research and Information

8:15 - 9:00 P7: Using eDNA for use in determining spring Chinook presence/absence. Matt Laramie, USGS et. al.

9:00- 9:45 P8: Tagging, Radio tracking and other fish tagging and interrogation activities. Ryan Mann, WDFW and Casey Baldwin, CCT

9:45 - 10:00 Break

10:00 - 10:30 P9: The 10(J) process for spring Chinook, HGMP and ESA. Chuck Brushwood

10:30 - 12:00 Wrap-up APR Part 1. The facilitator will invite a panel of reviewers for each of the three topics to address two questions:

- Given the information provided, what are the best estimates for the key assumptions (see Step 1 of the ISIT)?, and
- How could the M&E program be improved in the coming year? The facilitator will summarize the conclusions at the end of the first day.
12:00 - 1:00  Lunch: Available for purchase on-site (sandwich and salad buffet)

APR Wrap up- Part 1, Start APR Part 2 – Last Year’s Operations Terminal Fisheries, Weir etc.

1:00 - 4:00  Results from 2012 operations. Lars Mobrand, Kevin Malone, CCT Staff
Sessions will cover terminal fisheries, operation of weirs and other capture activities, and hatchery operations. A special session will be devoted to run-reconstruction results and status and trend analysis. These sessions will be facilitated by the M&E leader. The objective for the second day is to address two questions: a) How can operations be improved in terms of effectiveness and efficiency in the coming year, and b) were biological targets met last year (and if not, why not?).

ISIT (In Season Implementation Tool)
- Review predicted Biological Targets for 2012
- Review 2012 escapement estimates (standard, CIR)
- Evaluate 2012 biological and management performance
- Review forecast for next year natural and hatchery fish returning
- Review decision rules for 2013

Hatchery and Weir 2013 Planning
- Identify 2013 Action Items related to:
  - Weir (review and revise weir operations plan, changes for next year)
  - Hatchery broodstock collection, any other details about integration planning
  - Data needs

Harvest and Escapement Monitoring 2013 Planning
- 2012 Review
- Changes and plans for 2013
- Review and update weir and escapement management

4:00 - 4:30  P10: Program Implementation, Key Internal and External Partnerships.
Acknowledgement of federal, state, PUD and other APR/CJHP participants and collaborators. Kirk Truscott

4:30 - 5:00  Summary of Day 2. DJW staff
DAY 3 – Thursday, March 7: APR Part 3 – Conclusions from Parts 1 & 2; provide updated plan for operating fisheries, weirs and hatchery activities for 2013. Colville Tribes Staff and Key Advisors

8:00 - 8:30  Review purpose and agenda for Days 3 and 4. DJW Staff

8:30 - 5:00  WS1: The CJH program management team (consisting of policy and technical personnel) will meet to review the implications of conclusions from day one on the Decision Rules (see Step 2 of the ISIT). The CJHP’s RM&E lead scientist will present conclusions from days one and two, and will present alternative modifications to the Decision Rules. Note that the purpose of the Decision Rules is to assure that the long-term goals for conservation and harvest established in the hatchery Master Plan are met over time. The product of the third day will be an updated plan for operating fisheries, weirs and hatchery activities in the coming year. These activities will be triggered by the NOR run size prediction for the coming season.

8:30 - 11:30  Conclusions from days one and two. Alternatives and modifications to the Decision Rules. DJW and CCT Staff

11:30 - 12:30  Lunch

12:30 - 3:30  Review the implications of conclusions from day one on the Decision Rules. DJW and CCT Staff

3:30 - 5:00  Complete updated plan for operating fisheries, weirs, RM&E and hatchery activities in the coming year. DJW and CCT Staff

DAY 4 – Friday, March 8: APR Part 3 Conclusion. Update RM&E operational plan, staff assignments for year-end activities and implementing harvest, hatchery and RM&E plans for 2013. Colville Tribes Staff and Key Advisors

8:00 - 8:30  Follow-up from Day 3 and review agenda/purpose for Day 4. DJW Staff

8:30 - 12:00  WS2: On the fourth day, the M&E operational plan will be reviewed and updated. Staff assignments will be made regarding year end activities (i.e., finalizing annual reports) and for implementing harvest, hatchery and M&E plans for the coming year.

12:00  Conclude.
The Chief Joseph Hatchery Program – About Us.

The Colville Tribes began designing the Chief Joseph Hatchery Program (CJHP) in the spring of 2001. The program is aimed at meeting trust obligations to the tribes for ceremony, subsistence, health and cultural purposes. This is the fourth hatchery obligated under the Grand Coulee Dam/Dry Falls project, originating in the 1940s. Because of World War II, the full mitigation responsibilities remained unmet until 2001. The hatchery began production operations in 2013, and the science component has been in place since 2010.

One of the guiding premises that the original planning team adopted was that production of salmon and steelhead at hatchery facilities reflects a considerable regional investment. It was further recognized that facility operation and production activities can have beneficial and or adverse biological and ecological implications extending far into the future. This embodies a new approach to managing and evaluating hatchery programs. Hence, fish culture, hatchery operations and the research, monitoring and evaluation components of the program are guided by rigorous, science-based planning and designs. Fish culture and science operations rely on modern management procedures and state-of-the-art facilities guided by a set of clear principles (See CJHP Principles under “Reports”). Data collection and analyses provide information that results in the use of learned knowledge that is applied in the operation of the hatchery, harvest programs, adult fish management and habitat restoration projects. The Colville Tribes Fish and Wildlife’s Anadromous Division, including the CJHP, benefits from the program’s impetus on adaptive management.

The Chief Joseph Hatchery is also the first of its kind to be structured under recommendations from the Congressional Hatchery Reform Act, the Northwest Power and Conservation Council’s 4-Step Planning and Master Plan process and independent science review. Accordingly, the project has defined objectives; operations, data collection protocols and analytical and reporting processes that span fish culture and research activities. These are being implemented in a manner that restores the characteristics of the historical Okanogan River population of naturally-spawning salmon while meeting related regional and tribal program objectives.

To date, CJHP program efforts have led to improvements in juvenile emigration and baseline survival data sets. Testing of the Okanogan River Adult Fish Weir has advanced design, brood stock and adult management protocols. Other actions are strengthening database development, report programming and Annual Program Review value. Additionally, a new harvest monitoring program was developed and implemented in coordination with the State of Washington, the Anadromous Division of the CCT Fish and Wildlife Department and the Tribes ESA Natural Resources Enforcement Division.

Finally, The Chief Joseph Hatchery Program has completed major infrastructure and program development activities. This includes professional staffing and equipment procurement while completing construction and improving prevailing administrative procedures. The first adult fish returns from the program will begin in 2016.
Annual Planning Workflow

Hatchery Operations
Broodstock, incubation, rearing, acclimation, RM&E components

Hatchery Science
Data Collection, Analysis & Management, Science Design, Methods, Protocols

Adult and Juvenile Population Monitoring
Weir, Traps, Spawning, Escapement, Survival

Inseason Management Modeling/Updates
Population Analysis, Research & Development

Physical Habitat RM&E and Restoration
OBMEP and OSHIP

Adult Management/Selective Harvest
Data/Harvest/Population Management

Hatchery RME
Survival, Condition Growth Program Effectiveness ISIT/AHA Attributes, Ops

Biological Data
POPULATION DYNAMICS Abundance, Survival, Genetics ISIT/AHA Attributes

Physical Data
HABITAT/ECOSYSTEM Productivity and Capacity ISIT/AHA Attributes, Restoration

Harvest/Hydro
All Fisheries Passage ISIT/AHA Attributes

Annual Program Review (APR)
ISIT/AHA

CJHP SCIENCE
Data Collection Data Analysis Data Management

Annual Chief Joseph Hatchery Program Plan
Production & Science Plans Anadromous Division Supporting Activities

CJHP POLICY
Key Assumptions Decision Rules Uncertainty Budget/Organization
Glossary of Terms and Variables

The following is a list of key terms and variables used in the CJHP:

- **HOS** = the number of hatchery-origin fish spawning naturally.

- **NOS** = the number of natural origin fish spawning naturally.

- **NOB** = the number of natural-origin fish used as hatchery broodstock.

- **HOB** = the number of hatchery origin fish used as hatchery broodstock.

- **HORs** = hatchery-origin recruits. The number of HORs equals the sum of HOS + HOB + hatchery-origin fish intercepted in fisheries.

- **NORs** = natural origin recruits. The number of NORs equals the sum of NOB, + NOS + natural-origin fish intercepted in fisheries.

- **pHOS** = proportion of natural spawners composed of HORs. Equals HOS/(NOS + HOS).

- **pNOB** = proportion of hatchery broodstock composed of NORs. Equals NOB/(HOB + NOB)

- **PNI** = proportion of natural influence on a composite hatchery-/natural-origin population. Can also be thought of as the percentage of time the genes of a composite population spend in the natural environment. Equals 1 - pNOB/(pNOB + pHOS).

- **SAR** = smolt to adult return.
Chief Joseph Hatchery Science Program Overview

Research, Monitoring & Evaluation Programs

Hatchery Coordinating Committee
February 20, 2013

CJHP RM&E Program Activity Overview

- Hatchery Monitoring
- Spawning and Carcass Survey
- Adult Fish Management
- Data Management
- Okanogan Adult Fish Weir
- Tag & Mark Programs
- Habitat Status & Trend
- Analysis
- Juvenile Outmigration
- Program Logistics
- Habitat Restoration
- APR
Annual Planning Workflow

Hatchery Operations
- Broodstock, Incubation, Rearing, Acclimation, RME components

Hatchery Science
- Data Collection, Analysis & Management, Science Design, Methods, Protocols

Adult and Juvenile Population Monitoring
- Weir, Traps, Spawning, Escapement, Survival

Instream Management Modeling/Updates
- Population Analysis, Research & Development

Physical Habitat RM&E and Restoration
- OBMEP and OSHIP

Adult Management/Selective Harvest
- Data/Harvest/Population Management

Hatchery RME
- Survival, Condition, Growth, Progress, Efficiency
- ISIT/AHA Attributes

Biological Data
- POPULATION DYNAMICS
- Abundance, Survival, Genetics ISIT/AHA Attributes

Physical Data
- HABITAT/Ecosystem
- Productivity and Capacity ISIT/AHA Attributes, Restoration

Harvest/Hydro
- All Fisheries
- ISIT/AHA Attributes

Annual Program Review (APR)
- ISIT/AHA

CHP Science
- Data Collection
- Data Analysis
- Data Management

CHP POLICY
- Key Assumptions
- Decision Rules
- Uncertainty
- Budget/Organization

Annual Chief Joseph Hatchery Program Plan
- Production & Science Plans
- Anadromous Division Supporting Activities

Glossary of Terms and Variables

1. HOS = the number of hatchery-origin fish spawning naturally.
2. NOS = the number of natural origin fish spawning naturally.
3. NOB = the number of natural-origin fish used as hatchery broodstock.
4. HOB = the number of hatchery origin fish used as hatchery broodstock.
5. HORs = hatchery-origin recruits. The number of HORs equals the sum of HOS + HOB + hatchery-origin fish intercepted in fisheries.
6. NORs = natural origin recruits. The number of NORs equals the sum of NOB + NOS + natural-origin fish intercepted in fisheries.
7. pHOS = proportion of natural spawners composed of HORs. Equals HOS/(NOS + HOS).
8. pNOB = proportion of hatchery broodstock composed of NORs. Equals NOB/(HOB + NOB).
9. PNI = proportion of natural influence on a composite hatchery-/natural-origin population. Can also be thought of as the percentage of time the genes of a composite population spend in the natural environment. Equals 1 - pNOB/(pNOB + pHOS).
10. SAR = smolt to adult return.
Assumptions

The central, working premises for the Okanogan summer/fall and spring Chinook programs can be captured in four assumptions:

1) Under prevailing habitat and out-of-sub basin survival conditions and current hatchery and pre-terminal harvest regimes, the Okanogan Chinook population can sustain natural spawning escapements greater than 2000 adults.

2) The productivity of the natural population can be increased by reducing the influence of hatchery fish on the spawning grounds as prescribed by the HSRG guidelines for “primary” populations (HSRG 2004).

3) The abundance and composition of the natural spawning escapement and hatchery broodstock can be managed in the terminal areas to meet HSRG guidelines for hatchery influence on “primary” and reintroduced populations.

4) Improved spawner distribution provided by multiple acclimation site releases and improved spawning habitat quality and quantity within the Okanogan River Basin will contribute to increased natural origin abundance and productivity.

Principles

- Manage hatchery broodstock to achieve proper genetic integration with, or segregation from, natural populations;
- Promote local adaptation of natural and hatchery populations;
- Minimize adverse ecological interactions between hatchery- and natural-origin fish;
- Minimize effects of hatchery facilities on the ecosystem;
- Maximize survival of hatchery fish in integrated and segregated programs;
- Develop clear, specific, quantifiable harvest and conservation goals for natural and hatchery populations within an “All H” (Hatcheries, Habitat, Harvest, Hydro) context;
Principles cont.

- Design and operate hatchery programs in a scientifically defensible manner;
- Monitor, evaluate and adaptively manage hatchery programs;
- Institutionalize and apply a common implementation framework;
- Use the framework to set priorities, guide project review, and determine return on investments;
- Provide training for all program staff;
- Host the Chief Joseph Annual Program Review as part of the adaptive management principle, and
- Develop and maintain a state-of-the-art CJHP database and a highly functional web-presence.

Tasks, Objectives & Attributes

Summary – Bonneville Power Administration SOW

1) Manage and Administer Program
2) Transfer/Consolidate Regionally Standardized Data
3) Mark/Tag Animals
4) Population and Annual Run Monitoring and Assessment
5) Life History Characteristics
6) Genetics
7) Socio Economic Effectiveness
8) Data Analysis
9) Annual Program Review (the “APR”)
10) Disseminate Raw/Summary data and Results (Annual Report)
Tasks, Objectives & Attributes

- Summary – CJHP Implementation Plan
  - 19 Objectives
  - 72 Tasks
  - 34 Logistics Categories
  - 27 Methods
  - 188 References and Citations
  - Annual Program Review–All Division
  - Annual RM&E Report
  - See Handout

CJHP RM&E Program Activity Overview

- Hatchery Monitoring
- Spawning and Carcass Survey
- Adult Fish Management
- Data Management
- Okanogan Adult Fish Weir
- Tag & Mark Programs
- Habitat Status & Trend
- Analysis
- Juvenile Outmigration
- Program Logistics
- Habitat Restoration
- APR
Central Facility – Bridgeport, WA

Example Attributes Monitored

- Brood Condition
- Mortality – all life stages
- Growth
- Tags and Marks
- Parentage
- Health
- Fecundity
- Returns to Hatchery Ladder
- Et. cetera
Okanogan Adult Fish Weir

Objectives and Attributes Monitored

- Adult Management – objective: PNI, pHOS, harvest
- Brood Stock Collection – objective: genetics, race
- Weir Efficiency
  - Capture
  - Transport - to hatchery
  - Release - of adult NOR's, retention of HOR’s, etc.
- Weir Effects
  - Delay
  - Mortality
  - 24/7 video observations, 5d/daylight direct observations
  - Passage of non-target species
  - Ecological Site Conditions, etc.
- Permanent Design and Protocols
Capture, tagging, genetics, etc.

Juvenile Sampling Objectives

- Stock Composition
- Species Composition
- Timing (e.g., sockeye for hydro passage programs)
- Abundance Estimates (new “R” based approach)
- Baseline NOR abundance v. future total abundance
- HOR release survival, timing and condition
- Baseline Genetics v. future genetic profile’s
- Survival Estimates
- Tagging 25k NOR CK.
Redds and Deads

Adult Sampling Objectives

- pHOS
- pNOS
- PNI
- SAR
- Total Abundance
- Escapement
- Age-at-Return
- Freshwater rearing time
- Distribution

*See “Glossary of Terms” in briefing books for definitions*
Field Offices, Acclimation Sites etc.

Analysis
Conclusions

1. Science and RM&E are integral parts of the CJHP
2. The Program is consistent with Hatchery Reform
3. The Program is consistent with PUD RM&E Plans
4. The Program Principles are well-defined
5. The CJHP is an integrated part of the CCT’s Anadromous Fish Division
Fresh Fish – NOR’s of Course!

Picture courtesy of Brian Miller, CCT Fish Biologist
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, March 20, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A to these meeting minutes.

**ACTION ITEM SUMMARY**

- Greg Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when it is available (Item I).

- Chelan PUD, Douglas PUD, Grant PUD, and the Colville Confederated Tribes (CCT) will meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and Chelan PUD will provide an update on the discussions at the Hatchery Committees April 17, 2013 meeting (Item I).

- Lynn Hatcher will check on the status of internal National Marine Fisheries Service (NMFS) discussions regarding processing of Hatchery and Genetic Management Plans (HGMPs) for non-listed programs currently covered by Permit 1347 (Item II-A).

- Josh Murauskas will distribute a summary of changes to the revised draft Analytical Framework 5-Year Update to the Hatchery Committees no later than March 22, 2013. Following distribution of this list, Hatchery Committees representatives will provide a list of additional objective-level change that should be considered, if any, including suggested revisions, to Kristi Geris for distribution to the Hatchery Committees no later than April 5, 2013 (Item IV-A).

- Alene Underwood will revise and redistribute Chelan PUD’s pilot study proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013, as recommended; and
Chelan PUD will also brief Bill Gale on the details of the proposal (Item IV-D).

- Hatchery Committees representatives will submit edits and comments on the draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols to Mike Tonseth no later than April 8, 2013 (Item VI-A).

STATEMENT OF AGREEMENT DECISION SUMMARY

- No Statements of Agreement (SOAs) were approved at this meeting.

AGREEMENTS

- Hatchery Committees representatives present agreed to use the steelhead broodstock collected in the fall of 2012 for the Douglas PUD Methow Safety-Net program broodstock, and to not collect additional broodstock in the Methow basin in the spring of 2013 for this program, unless an unexpected need for additional broodstock is identified by hatchery personnel (Item II-A).
- Hatchery Committees representatives present agreed to Chelan PUD’s 2013 Wenatchee River Basin Steelhead Release Strategy (Item V-B).

REVIEW ITEMS

- The draft residual steelhead manuscript *Ecologic and demographic costs of releasing non-migratory juvenile hatchery steelhead in the Methow River, Washington* was distributed to the Hatchery Committees on February 19, 2013, for a 60-day review with comments due to Charlie Snow no later than April 22, 2013.
- The draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols were distributed to the Hatchery Committees on March 15, 2013, for review with comments due to Mike Tonseth no later than April 8, 2013.
- The revised draft Analytical Framework 5-Year Update was distributed to the Hatchery Committees on March 19, 2013, for final review. Approval of the draft plan will be requested at the Hatchery Committees April 17, 2013 meeting.
FINALIZED REPORTS

- No reports have been finalized since the last Hatchery Committees meeting.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and reviewed the agenda. The following revisions were made to the agenda:

- Greg Mackey said that Douglas PUD’s 2013 program activities update will include: 1) Twisp Weir and Twisp and Chewuch ponds update; 2) Wells Hatchery summer Chinook HGMP update; 3) Methow spring Chinook HGMP and Wells Complex Steelhead HGMP sufficiency letters; 4) Methow spring Chinook broodstock collection analysis; 5) future of spring Chinook broodstock collection for Methow and Okanogan programs; and 6) steelhead broodstock collection for 2013 Methow Safety Net.

- Alene Underwood added a brief discussion on a Carlton Acclimation Facility Capacity Utilization Draft SOA.

- Schiewe said that Craig Busack’s agenda item to discuss HGMPs for non-listed programs and bull trout consultations has been postponed; however, Lynn Hatcher said that he would provide an HGMP update in lieu of Busack’s agenda item.

- Mike Tonseth added a brief discussion on the draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols.

- Kirk Truscott requested clarification regarding the February Monitoring and Evaluation (M&E) Progress Report for the Chelan PUD Hatchery Programs that was distributed to the Hatchery Committees by Tracy Hillman on March 19, 2013.

The revised draft February 20, 2013 meeting minutes were reviewed. Kristi Geris said that comments and revisions received from members of the Committees were incorporated in the revised minutes. She said that Tom Kahler noted an error in Chelan PUD’s discussion on “Spring Chinook Brood Collection at the Eastbank Outfall (EBO).” He noted that “spring” should read “summer.” The Hatchery Committees members present approved the February 20, 2013 meeting minutes, as revised.
Action items from the last Hatchery Committees meeting on February 20, 2013, and follow-up discussions were as follows:

- **Chelan PUD will draft a study plan to test Methow spring Chinook broodstock collection at the Rocky Reach Trap (Item I).**
  A pilot proposal to test trapping of spring-run Chinook salmon at Rocky Reach Dam in 2013 was distributed to the Hatchery Committees by Geris on March 19, 2013.

- **Bill Gale will provide U.S. Fish and Wildlife Service’s (USFWS) Entiat National Fish Hatchery (NFH) and Leavenworth NFH Biological Assessments (BAs) and Biological Opinions (BiOps) to the Hatchery Committees as examples of consultation materials for bull trout (Item II-A).**
  Gale provided the documents and said that they were distributed to the Hatchery Committees on February 21, 2013.

- **Busack and Gale will provide Geris with a list of people who should be invited to the discussion on HGMPs for non-listed programs and the need for bull trout consultations (Item II-A).**
  Busack and Gale provided these lists.

- **Geris will distribute a Doodle Poll for a 1-hour discussion on the status of HGMPs for non-listed programs (Item II-A).**
  A Doodle Poll was distributed, but the discussion was deferred to a future meeting.

- **Josh Murauskas and Chris Moran will provide a proposal for evaluating release strategies for the Wenatchee Steelhead Program, including a consideration of how the release strategy for steelhead would affect the Chiwawa spring Chinook program, no later than one week prior to the Hatchery Committees March 20, 2013 meeting (Item III-A).**
  Murauskas provided this proposal and it was distributed to the Hatchery Committees by Geris on March 15, 2013.

- **Murauskas will distribute to the Hatchery Committees an updated revised draft Analytical Framework 5-Year Update with comments received to date that have been incorporated (Item IV-A).**
  Murauskas provided the revised draft and it was distributed to the Hatchery Committees by Geris on February 27, 2013.

- **Murauskas will distribute a Doodle Poll to the Hatchery Committees to schedule a Hatchery M&E Workgroup meeting to prepare the final revised draft Analytical**
Murauskas distributed a Doodle Poll.

- **Greg Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when available (Item V-C).**
  
  Mackey said that the master plan is still under development, and that it may be available by the end of April 2013. This action item will be carried forward.

- **Chelan PUD, Douglas PUD, Grant PUD, and the CCT will meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and Chelan PUD will provide an update on the discussions at the Hatchery Committees’ March 20, 2013 meeting (Item VI-A).**

  Todd Miller said that WDFW developed a budget for the work and provided this to Peter Graf at Grant PUD. He said that he and Graf are now drafting a statement of work which Miller anticipates should be available for discussion at the Hatchery Committees April 17, 2013 meeting.

- **Keith Wolf will provide Geris with CCT’s Chief Joseph Hatchery (CJH) M&E presentation materials for distribution to the Hatchery Committees (Item VI-B).**

  Geris said that Wolf provided the presentation materials and that they were distributed to the Hatchery Committees on February 21, 2013.

### II. Douglas PUD

#### A. 2013 Program Activities Update (Greg Mackey)

Twisp Weir and Twisp and Chewuch Ponds Update

Greg Mackey said that the Twisp Weir was set up on March 11, 2013, and operations started the following day. He said that Twisp and Chewuch ponds were watered up and fish were already being transferred to the ponds on March 11, 2013. He said that Twisp steelhead and spring Chinook will be co-mingled with 5,000 of each species passive integrated transponder (PIT) tagged. He said that Charlie Snow monitors the fish as they exit the pond through the outfall channel. Mackey said that no issues have been observed to date with co-acclimating the Twisp spring Chinook and steelhead in the Twisp Pond.

Wells Hatchery Summer Chinook HGMP Update
Mackey said that Douglas PUD has completed drafting their Wells Hatchery Summer Chinook HGMP. He said that the recent Methow Hatchery Spring Chinook HGMP and the draft 2005 Summer Chinook HGMP that Kirk Truscott drafted were used as templates, with program-specific revisions and updates, as needed. Mackey said that Jayson Wahls, Wells Hatchery Complex Manager, reviewed the HGMP, and that Section 2, which summarizes effects on other populations, was updated with current information. He said that he hopes to get the draft HGMP to the Hatchery Committees for review as soon as possible. Mike Tonseth asked about the status of internal NMFS discussions regarding the processing of HGMPs for non-listed programs currently covered by Permit 1347. Lynn Hatcher said that he will check on this and report back to the Hatchery Committees.

**Methow Spring Chinook and Wells Complex Steelhead HGMP Sufficiency Letters**

Mackey said that Douglas PUD received Methow Spring Chinook and Wells Complex Steelhead HGMP sufficiency letters, which means that Douglas PUD is now in consultation. Tonseth said that spring Chinook and steelhead sufficiency letters have also been sent to USFWS regarding the Winthrop NFH programs.

**Methow FH Spring Chinook Broodstock Collection Analysis**

Mackey said that with all of the changes in the Methow spring Chinook Hatchery programs (i.e., survival study adjustments, recalculation, HGMPs, Chelan PUD withdrawal), there has been interest in releasing all 135,000 spring Chinook in the Methow River, and not releasing a portion in the Chewuch River. He said that, based on preliminary analyses, releasing a portion of the Methow Hatchery production in the Chewuch River would likely reduce the returns to Methow Hatchery, and hence the numbers that could be collected as broodstock. He added that this was part of the results when percent hatchery-origin spawners (pHOS) analyses were completed for the Methow basin. Mackey said that he has started analyses to further explore this; however, the analysis is incomplete. He said that so far he has found that the Methow Hatchery program should usually be able to fulfill its broodstock needs with 135,000 Chinook smolts released from the Methow Hatchery. However, he said that
Future of Spring Chinook Broodstock Collection for Methow and Okanogan Programs

Mackey said that he and Kirk Truscott have discussed the issue of collecting spring Chinook broodstock for the Methow and Chief Joseph Hatchery spring Chinook programs at Wells Dam. He said that a primary concern is that broodstock collected at Wells Dam cannot be readily sorted into those of Methow-versus Okanogan-origin and that when Chief Joseph Hatchery is at full operation, those fish will greatly outnumber Methow fish. Therefore, trapping at Wells Dam will necessitate handling large numbers of fish to sort through and identify target fish for certain programs. In addition, this means that wild fish will be subjected to this handling along with hatchery-origin fish. Using analytical means to identify wild fish would necessitate holding fish, resulting in migratory delay of non-target fish. Okanogan natural-origin fish would be at risk of being collected as Methow fish because they would be genetically indistinguishable. A fledgling Okanogan population would be at risk if unintentional by-catch for broodstock occurred. He added that a strategy to collect spring Chinook broodstock will need to be developed, especially when CJH begins returning large numbers of fish. Truscott added that neither the Methow nor Okanogan rivers have adult collection capabilities. He said that these issues would need to be addressed soon. Truscott noted that the Methow conservation fish have coded-wire tags (CWTs), so that they can be differentiated. Tonseth said that the first generation safety net fish out of Winthrop also have CWTs. Truscott recommended considering marking strategies for each program in order to differentiate the groups. Truscott asked about the possibility of alternate fin clips, although not typically accepted, and added that it may be useful to conduct a literature review on differential survival. Mackey noted that trapping is known to affect fish passage and it would need to be determined to what degree aggressive trapping would be acceptable. Microchemistry analysis may be a method that could discriminate wild fish, but this would require holding fish, inflicting handling stress and migration delay on non-target fish. Truscott said that CJH is not releasing spring Chinook at CJH this year, and that broodstock collected will be for 2015 releases. Tonseth said that the earliest returns from the Okanogan River will be in 2016—with jacks in 2015. Truscott said that collecting broodstock in-basin for the Methow Program would be complicated; Tonseth noted that
improvement to Foghorn Dam was identified in the U. S. Bureau of Reclamation’s (Reclamation’s) analysis in response to a BiOp reasonable and prudent alternative (RPA) action implementation for steelhead. Keely Murdoch noted that Bill Gale also should be a part of this discussion because of the Winthrop NFH program. Truscott and Mackey agreed. Mackey said that he will continue to run analyses on in-basin trap efficiency and likelihood of achieving broodstock collection to support both programs.

Steelhead Broodstock Collection for 2013 Methow Safety Net
Mackey said that all needed steelhead broodstock for the Methow Safety-Net program were collected in fall 2012 for the 2013 brood year Wells Hatchery Steelhead Programs, and that full egg take has been reached (the fish collected in the fall at Wells Dam and Hatchery spawn prior to when fish remaining in the river move to spawning areas in the spring and become susceptible to broodstock collection once again). Hence, for the 2013 brood year Methow Safety Net Program, he proposed that adult steelhead broodstock already collected and spawned in sufficient numbers to meet egg take requirements be used for the program in lieu of collecting broodstock in the Methow Basin. The return cohort for this brood year does not include returns from the new Twisp stock program, and therefore, returns to the Methow are of the same Wells stock as those already collected. Therefore, there is no advantage to collecting more fish. If additional fish are needed this spring, they would be collected at Wells Dam/Hatchery or the in the Methow basin in spring 2013. Charlie Snow agreed with this proposal and added that any excess fish could go to Ringold Hatchery. Mike Tonseth asked if the Twisp Weir has been considered to fill the safety net program, and Mackey said that 25 percent of the program can be collected from the Twisp Weir and the balance would come from Winthrop NH; and then if needed, additional broodstock could come from Methow Hatchery, or Wells Dam/hatchery. Keely Murdoch said that her only concern is that all broodstock were collected in the fall, which might not be representative of run timing for the entire run. She added, however, that if it is just for one year and only for the safety net program, then this option may not pose a significant issue. Mackey said that essentially, the process is the same as last year. Hatchery Committees representatives present agreed to use the steelhead broodstock collected in the fall of 2012 for the Douglas PUD Methow Safety-Net broodstock, and to not collect additional broodstock in the Methow basin in the spring of 2013 for this program, unless an unexpected need for additional
broodstock is identified by hatchery personnel with any excess fish going to Ringold Hatchery.

III. NMFS

A. HGMP Update (Lynn Hatcher)

Lynn Hatcher said that Craig Busack is working on the Mid-Columbia Coho BiOp, and that the Leavenworth NFH spring Chinook and Entiat NFH spring Chinook draft BiOps are still in final review by National Oceanic and Atmospheric Administration (NOAA) General Counsel (GC). Hatcher reminded the Hatchery Committees that the NMFS final review process is taking longer than in the past due to greater scrutiny by the NOAA GC. Mike Tonseth asked if the longer review process is due to more extensive reviews or due to pending lawsuits; and Hatcher replied that both reasons are true. Greg Mackey asked about the status of Methow HGMPs, and Hatcher replied that the US v OR Production Advisory Committee (PAC) is still waiting for NMFS and the Yakima Nation (YN) to address several pending issues. Mike Schiewe cautioned that NMFS needs to be mindful that consultations in the Methow have started and deadlines must be met, or agencies will be unable to obtain their permits and will subsequently default on their program requirements.

IV. Douglas PUD, Chelan PUD, and Grant PUD

A. 5-Year M&E Plan Update (Greg Mackey and Josh Murauskas)

Josh Murauskas said that the Hatchery M&E Workgroup met on March 18, 2013. He said that they addressed all comments and edits to the draft Analytical Framework 5-Year Update and a revised draft for final review was distributed to the Hatchery Committees on March 19, 2013. Mike Tonseth said that some components of the plan that consist of tables containing management objectives and targets have yet to be resolved, have been removed from the document, and will instead be added as appendices to the plan when they are fully developed. Murauskas said that, ultimately, the revised plan is similar to the previous plan only with further clarifications and objectives in meeting hatchery goals.

Keely Murdoch noted that the 5-year update of the Hatchery M&E Plan involved two steps: 1) updating the M&E plan to reflect changes in the way the programs are now operated; and
2) considering changes based on the 5-year analyses and reviewing each objective to evaluate if results of the 5-year analyses indicate changes to the plan are warranted. She questioned whether the second part of the review had been completed, and noted that the Hatchery Committees agreed that this step was important for making meaningful revisions to the M&E plan, implementation plan, and/or hatchery program itself. Murdoch asked, for example, how objectives for steelhead reference populations will be addressed. Greg Mackey explained that there are no data available to address steelhead objectives using reference populations, but Tracy Hillman’s white paper on using reference streams for M&E analysis has been cited in and appended to the plan. This document described approaches for situations when reference population data are not available. Todd Pearson said that language in the plan was modified, as necessary, to accommodate missing data. Mike Schiewe reminded the Hatchery Committees that the workgroup revising the Hatchery M&E Plan was open to all members and included regular participation by Hatchery Committees members and technical representatives of WDFW and BioAnalysts, which were collectively the biologists most familiar with implementation of the first 5 years of the M&E Program and analyses of the results. He said that based on the progress reports at Hatchery Committees’ meetings during the past several months, it was his understanding that the framework was modified based on lessons learned. Murdoch said that she had participated in all but the last meeting of the working group, and that she did not think that the second step had been well-documented. Tonseth added that in terms of program-by-program review, any modifications to any one program would be captured in the appendix, but would not be applied to the entire plan.

Murdoch suggested the need for better documentation of what changes were made, and why they were made. She recalled that, in the past, program objectives were reviewed and rewritten to be achievable, and said that she would like to see the same process implemented with this revision. Murauskas reminded the Hatchery Committees that the intention was to have this plan approved in April 2013 for contracting purposes. Mackey said he believes that a comprehensive review process was completed, and was uncertain that such a formalized record is necessary. He also said that Andrew Murdoch and Tracy Hillman both participated
in the review and revision process, and noted that they were among the lead authors of the annual reports and the 5-year summary report.

Schiewe suggested, in consideration of getting the programs in place for 2014, to proceed with the timeline on approving the revised plan, and reconvening again to develop a more detailed record and to evaluate if there are any additional changes needed. Murdoch said she would prefer that the Hatchery Committees review the reports to verify that all updates are incorporated. Kirk Truscott added that it would also be worthwhile to see an executive summary that summarizes what changes were made; and Murauskas said that he will distribute a summary of changes made to the revised draft Analytical Framework 5-Year Update to the Hatchery Committees no later than March 22, 2013. Following distribution of this list, Hatchery Committees representatives will provide a list of additional objective-level changes, if any, which should be considered, including suggested revisions, to Kristi Geris for distribution to the Hatchery Committees no later than April 5, 2013.

V. Chelan PUD

A. M&E Request for Proposal (Josh Murauskas)

Josh Murauskas said that a Wenatchee River Basin Hatchery M&E Request for Proposal (RFP) Timeline (Attachment B) was distributed to the Hatchery Committees by Kristi Geris on March 19, 2013. He said that this timeline is intended to highlight the path forward for the Wenatchee River Basin Hatchery M&E RFP process.

B. 2013 Wenatchee Steelhead Releases (Josh Murauskas)

Josh Murauskas said that Chelan PUD and WDFW discussed ways to improve steelhead releases in the Wenatchee basin, and summarized their discussions and proposed testing in Chelan PUD’s 2013 Wenatchee River Basin Steelhead Release Strategy (Attachment C), which was distributed to the Hatchery Committees by Kristi Geris on March 15, 2013. He said that the apparent survival to McNary Dam of forced released fish will be compared with those of volitionally released fish and will be sorted by PIT tags, using both circular tanks and raceways. He acknowledged that the migration rate of hatchery-by-hatchery (H×H) and
wild-by-wild (W×W) progeny may be different and could affect results. He said that a key difference with the volitional group in 2013 versus 2012 is that the releases will begin earlier, hopefully improving survival.

Mike Tonseth expressed concern with the release strategy, and in particular with the different parental origins and the potentially different migration patterns based on those origins. He said that recent literature indicates that certain parental crosses have a higher tendency to residualize, and asked whether the 2013 strategy could address this. He also noted that a condition in the hatchery permits specifies that non-migrants can only be released in the lower Wenatchee River. Murauskas acknowledged Tonseth’s concerns, and said that hopefully some of these issues can be addressed during review of PIT-tag data. Tonseth said that fish need to be sampled over time to determine dominant origin, and added that he would like this included in this year’s work. Murauskas said that Chelan PUD is discussing possible options to obtain additional information, such as installing antennas in the raceways and subsequent in-stream detections.

Regarding the second point (No. 2) in Attachment C, Tonseth asked what the proposed method is for comparing performance of different release strategies. Murauskas explained that if volitional release starts in April, it could bias the forced release; so, a net will be installed to make sure the forced release is representative of the entire population. Tonseth asked if the split would occur before or after the 25,000 fish destined for Blackbird Pond are moved out, and Murauskas replied that Blackbird fish will be taken out prior to installing the net, and that the PIT-tag data will later be tested for random distribution. Murauskas said that fish that do not volitionally exit the rearing raceway will be released in the lower Wenatchee River at Tumwater, as outlined in the Section 10 permit. Lynn Hatcher said that he thought those fish would go to Blackbird Pond, and Tonseth clarified that anything left is treated as a non-migrant. He added that they would not go to Blackbird Pond because there is no co-manager agreement, and the residualism rate is not known. Hatcher asked if the fish that are released below Tumwater would migrate, and Tonseth replied that they may. He added that Charlie Snow authored a white paper about non-migrants’ potential to migrate
that indicated that migration may simply depend on whether the fish are released in riverine waters or put in landlocked water.

Tonseth noted that according to the February M&E Progress Report for the Chelan PUD Hatchery Programs that was distributed on March 19, 2013, the steelhead population in the proposed strategy is incorrect, and therefore, the sample sizes need to be updated accordingly. Murauskas said that Chris Moran had originally proposed release dates; however, Murauskas stated that some flexibility may help operator in terms of logistics. Tonseth said that the existing data should be reviewed to determine what release time would result in the highest survival, and Murauskas explained that survival in 2012 was so poor, that nothing could be deduced by reviewing these data. Tonseth noted that any proposal should not impact spring Chinook releases in the Chiwawa River. He said that fishery managers are discussing starting spring Chinook volitional releases a day or so earlier than the spill start date and then pushing them out after about one week so that the steelhead volitional release can be initiated.

Kirk Truscott said he thinks that the release dates for circulars and raceways, respectively, need to be the same in order to maintain the same conditions. Murauskas said that forced release cannot be matched with volitional released fish over several weeks. He added that smolt trap data indicate that the maximum steelhead migration peaks in early-May. Keely Murdoch said that she is okay with volitional release not starting the same time, and added that release dates are not what is being compared, but rather, two different strategies are being compared—one is to push the fish out at the usual date, and the other is to let them leave on their own. She said that if the evaluation is when one release strategy works the best, then release dates should be compared.

Tonseth said that he has concerns about dividing the pond and achieving representative sample sizes. He asked if there will be enough PIT tags on each side of the pond, and Murauskas replied that PIT tag data will be reviewed from both groups, when available, to determine if there were representative populations. Truscott asked about the $W\times W$ progeny
in the ELISA pond, and Alene Underwood said that those fish will not be involved in the release strategy study.

Schiewe summarized that the idea was not to have a perfect experiment, but rather to begin sorting out possible explanations for low survival in 2012 and find a solution to have better survival in future years. Hatchery Committees representatives present agreed to Chelan PUD’s 2013 Wenatchee River Basin Steelhead Release Strategy.

C.  **Spring Chinook HGMPs (Joe Miller)**

Joe Miller said that Chelan PUD is preparing a document that requests Endangered Species Act (ESA) coverage for their Methow spring Chinook program. He said that the document focuses on the aspects of the program that have changed from the original HGMP submittal in 2010, as outlined in a handout provided at the meeting and also distributed via email on March 21, 2013 (Attachment D). Miller said that the document will include targets that are reflective of existing HCP targets, and that a variety of facilities will be included that may be available to ensure that ESA coverage exists for multiple contingencies. He added that the basic life-history stages and hatchery locations for Chelan PUD’s spring Chinook Hatchery program will also be described. He said that issues that will be addressed include straying, adult management, and percent hatchery origin spawners (pHOS).

Miller said that Chelan PUD is awaiting the results of discussions at the PAC meeting; however, they will need to move forward with this document soon. He said that this document is not a new HGMP, but rather an update.

D.  **Spring Chinook Pilot at Rocky Reach (Alene Underwood)**

Alene Underwood said that a proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013, including an overview of the trap design (Attachment E) was distributed to the Hatchery Committees by Kristi Geris on March 19, 2013. She said that the proposal basically looks to target spring Chinook, collect them in the trap, verify their species, and release them; this would happen over a 4-week sampling period from May to June 2013. She said
that the trap has been used successfully for bull trout and steelhead with virtually no passage delays, and added that the trap will be videotaped. She said that if no impacts are observed to non-target fish, then a path forward will be proposed.

Mike Tonseth asked how the facility will be staffed in the future if this proposal does prove feasible. He said that his assumption would be that a person would be needed to monitor the trap for fish that are not PIT-tagged. Joe Miller replied that in terms of the pilot, a protocol and/or additional information will be developed, if requested. He added that there are many broodstock issues coming up, and to the extent that this trap benefits hatchery programs, it makes sense. Mike Schiewe said that in terms of passage, this proposal will likely also go to the HCP Coordinating Committees for approval. Miller added that use of this trap has been approved in the past, and so he does not foresee this being an issue. He added that he believes use of the trap is covered by the current permit; however, he is unsure regarding direct take authority. He said that Chelan PUD is proposing only small numbers and the fish will not be taken out of the water. Tonseth said that identifying and isolating the fish will likely be the challenge and Underwood said that this has been accomplished before.

Underwood said that Chelan PUD will be asking for approval of the proposal at the Hatchery Committees’ April 17, 2013 meeting. Miller said that a letter will be prepared for NMFS that is similar to the letter that was developed for the Parental Based Tagging (PBT) study. Kirk Truscott requested that a summary be included in the proposal that indicates the reason behind the proposal. Underwood said that she will revise and redistribute Chelan PUD’s pilot study proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013, as recommended. Chelan PUD will also brief Bill Gale on the details of the proposal.

E. Carlton Acclimation Facility Capacity Utilization SOA (Alene Underwood)

Alene Underwood said that the Carlton Acclimation Facility Capacity Utilization Draft SOA that was distributed to the Hatchery Committees by Kristi Geris on March 19, 2013, is a draft for discussion purposes only. She said that the draft SOA is an agenda item at the Priest Rapids Coordinating Committee (PRCC) Hatchery Subcommittee’s (HSC’s) March 21, 2013 meeting, and that she just wanted to distribute the draft document to the Hatchery Committees prior to the HSC discussion. Mike Tonseth suggested revising the text to reflect
that the proposal applies to 2013 broodstock only. He acknowledged, however, that the
long-term plan for Chelan PUD’s 60,516 Methow spring Chinook mitigation obligation is
still unknown. Underwood said that if the Committee as a whole agrees to the revision, she
will update the language.

VI. WDFW

A. Draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-
Based Broodstock Collection Protocols (Mike Tonseth)

Mike Tonseth said that the draft 2013 Upper Columbia River Salmon and Steelhead
Broodstock Objectives and Site-Based Broodstock Collection Protocols (Attachment F) were
distributed to the Hatchery Committees by Kristi Geris on March 15, 2013. He said that
with the deadline to NOAA being April 15, 2013, Tonseth requested that Hatchery
Committees representatives submit edits and comments on the draft 2013 Broodstock
Protocols no later than April 8, 2013. Tonseth reviewed notable 2013 protocols, as described
in Attachment F, and said that the 2013 protocols were largely based on the 2012 Methow
Spring Chinook Broodstock Genetic Results, that were also distributed to the Hatchery
Committees on March 15, 2013.

VII. CCT

A. February M&E Progress Report for the Chelan PUD Hatchery Programs (Kirk Truscott)

Kirk Truscott requested clarification on rearing activities for the 2011 Brood Wells Summer
Chinook Yearling Program, as described in the February M&E Progress Report for the
Chelan PUD Hatchery Programs that was distributed to the Hatchery Committees on March
19, 2013. He said that the progress report indicated that Chelan Falls’ yearlings are being
reared at Chelan Falls Hatchery, and Mike Tonseth clarified that the yearlings are being
reared at the Chelan Falls Acclimation Facility. Truscott also asked about the size difference
of fish reared in circulars at the Chelan Falls Acclimation Facility, and Alene Underwood
suggested that the transfer size could have been different.
VIII. HCP Administration

A. Next Meetings
The next scheduled Hatchery Committees’ meetings are on April 17, 2013 (Chelan PUD office); May 15, 2013 (Douglas PUD office); and June 19, 2013 (Chelan PUD office).

List of Attachments

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<th>Attachment A</th>
<th>List of Attendees</th>
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<tbody>
<tr>
<td>Attachment B</td>
<td>Wenatchee River Basin Hatchery M&amp;E Request for Proposal Timeline</td>
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<tr>
<td>Attachment C</td>
<td>Chelan PUD’s 2013 Wenatchee River Basin Steelhead Release Strategy</td>
</tr>
<tr>
<td>Attachment D</td>
<td>Chelan PUD Spring Chinook HGMPs</td>
</tr>
<tr>
<td>Attachment E</td>
<td>Proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013</td>
</tr>
<tr>
<td>Attachment F</td>
<td>Draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols</td>
</tr>
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### Attachment A
#### List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
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<td>Josh Murauskas*</td>
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<td>Alene Underwood*</td>
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<td>Joe Miller</td>
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<td>Greg Mackey*</td>
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<td>Tom Kahler*</td>
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<tr>
<td>Todd Pearsons</td>
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<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<td>Charlie Snow†</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
Wenatchee River Basin Hatchery M&E – Request for Proposal Timeline

March 2013 overview for HCP Hatchery Committee

Scope of Work
- Committee-approved (e.g., Analytical Framework)
- Tied to License obligations (e.g., HCP or SA)

Request for Proposals
- Procurement Department, process to solicit responses
- May-June 2013

Review Period
- Evaluation of proposals
- July-August 2013

Contract(s) Awarded
- Procurement Department
- September-October 2013

Prepared by J. Murauskas, Chelan PUD
Wenatchee River Basin Steelhead Releases, 2013

Summary
The Chelan PUD Wenatchee River Steelhead Program was relocated to over-winter acclimation at Chiwawa Ponds beginning with release year 2012. In response to varying post-release performance observed in 2012, the HCP Hatchery Committee has requested a closer evaluation of release strategies in 2013. Specifically, a comparison of post-release performance of forced- and volitionally-released steelhead will help inform how each strategy may affect survival and the ability to screen for non-migratory juveniles. Roughly 25,000 passive integrated transponder (PIT) tags were implanted in juvenile steelhead for monitoring and evaluation purposes and will be used to assess post-release performance of the 2013 releases. While logistical constraints limit the ability to conduct fine-scale analyses, the proposed release strategy (Table 1) will provide insight. Specific points are as follows:

1. W×W progeny destined for Nason Creek are in the two circular vessels and the ELISA pond (with no volitional capabilities). Performance of fish reared in the circular vessels will be compared, with one vessel being force-released and the other being volitionally released.

2. Mixed (W×W and H×H) progeny destined for the mainstem Wenatchee River are in the large raceway. Performance of these fish will be compared, with one group being force-released and the remaining fish being volitionally released.

3. The remaining mixed progeny destined for the Chiwawa will be volitionally released with no direct comparison; fish destined for Blackbird Pond will also lack a direct comparison.

4. Fish remaining from the volitional release exercise will be stocked in the mainstem Wenatchee, below Tumwater Dam.

5. Volitional releases will begin in late April, following release of spring Chinook. Forced releases will occur in early May, at the discretion of the Chiwawa Ponds hatchery staff.

Table 1. Steelhead release strategy in the Wenatchee River Basin, 2013.

<table>
<thead>
<tr>
<th>Vessel</th>
<th>Origin</th>
<th>Number</th>
<th>PITs</th>
<th>Destination</th>
<th>Release strategy</th>
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<td>2,183</td>
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<td>Mix</td>
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<td>Lower Wen.</td>
<td>Non-migrants</td>
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Chelan Spring Chinook ESA/HGMP Update (3/20/2013 Hatchery Committee)

We are finishing a document that requests ESA coverage for our program. Not sure if it is an addendum, amendment or new HGMP. The document will focus on the aspects of the program that have changed from the original HGMP submittal in 2010.

1. All targets reflect existing HCP targets subject to adaptive management provisions in the HCPs.
   - Number of smolts released = 60,516
   - Smolt-to-adult returns SAR = 0.003
   - Adult Equivalents = 182
   - Number of smolts/adult = 333
   - Hatchery Return Rate = 5.3

2. In terms of facility use, Chelan is describing the maximum range of facilities that may be available to ensure that ESA coverage exists for multiple contingencies (Facilities not owned by Chelan will require additional approvals for use—for instance, WNFH is only approved for one year but may have additional utility if USFWS and the HC approve future use):

<table>
<thead>
<tr>
<th>Activity</th>
<th>Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broodstock Collection</td>
<td>Wells Dam, Rocky Reach Dam, Winthrop NFH outfalls and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Adult Holding</td>
<td>Eastbank Hatchery and Winthrop NFH and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Spawning</td>
<td>Eastbank Hatchery and Winthrop NFH and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Incubation</td>
<td>Eastbank Hatchery and Winthrop NFH and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Early Rearing</td>
<td>Eastbank Hatchery or Winthrop NFH and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Overwinter Rearing</td>
<td>Carlton Acclimation Pond or Winthrop NFH and other locations approved by HCP Hatchery Committee</td>
</tr>
<tr>
<td>Final Acclimation</td>
<td>Yakama Nation Expanded Acclimation sites: Goat Wall Acclimation Site, Mid Valley Pond, Chewuch River (future YN site) and other locations approved by the HCP Hatchery Committee</td>
</tr>
</tbody>
</table>

3. The basic life-history stages and hatchery locations (parenthetically) for Chelan’s spring Chinook Hatchery program are described:

<table>
<thead>
<tr>
<th>Year</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Brood Collection (Wells or RR)</td>
<td>Incubation (Eastbank)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>Incubation</td>
<td>Early Rearing (Eastbank)</td>
<td>Overwinter (Carlton)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Year 3</td>
<td>Overwinter</td>
<td>Acclimation (Goat wall or Mid-Valley)</td>
<td></td>
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</tr>
</tbody>
</table>
4. Chelan will make commitments to address contingencies related to straying: In the event stray rates exceed the HCP targets, Chelan would fund additional in-basin imprinting opportunities including (1) development of new water sources within the basin or (2) early life history acclimation (i.e., incubation and fry) or (3) other measures approved by the HCP hatchery committees.

5. Adult Management and pHOS: Chelan is providing infrastructure (RR trap), FTE funding and marking fish for managers to meet desired PNI goals. Same as Wenatchee HGMP.

6. Next steps: Chelan will send a draft to WDFW as a co-applicant and then off to NMFS (within next 2 weeks).
Proposal to Trap spring-run Chinook salmon at Rocky Reach Dam, 2013

Proposal
Trapping of adult salmon is an important component of hatchery supplementation and adult management in the mid-Columbia River. The Rocky Reach Trap (RRT) has been used historically to capture listed steelhead and bull trout (Alexander et al. 2003; Stevenson et al. 2009) without causing delays to non-target fish. Here, we propose to test the efficacy of the RRT on diverting hatchery-origin spring-run Chinook salmon during the 2013 migration. The trap will be operated during the spring migration, typically observed at in the mid-Columbia River (May/June, Figure 1), using visual selection criteria. The trap operator can target individual fish on the basis of visual identification of external marks observed at the counting window (i.e., ad clipped). No more than five fish will be trapped each week during a four-week sampling period. Fish will be released following trapping (i.e., no handling or delay will occur) and all interactions will be video recorded. Trapping will be active and technicians present at all times.

It is important to note that the Rocky Reach Trap has been successfully used to safely capture other listed species since the HCPs were implemented. The fact that the trap does not cause passage delays for non target fish is a critical benefit of the system. Overall, the consideration of this trapping method for spring Chinook broodstock collection is based on its active selection capability and previous regulatory approvals by NMFS and USFWS.

Overview of Trap Design
Trap facilities at Rocky Reach are integrated with the existing fish-viewing structures within the ladder. Essentially, the fish-viewing guide wall extends upstream to the exit weir, where a pneumatically-activated gate guides fish into a collection area (Figure 2 and 3). On the other side of the pneumatic gate the collection area contains a removable capture vessel. As adult fish enter the viewing area, a technician activates the pneumatic gate, which blocks passage into the forebay and diverts the adult fish into the collection area. Using an underwater camera, the technician observes the adult fish enter the collection area, at which time the gate is closed, trapping the fish. Non-target species are allowed to exit the ladder by simply not activating the pneumatic gate. After an adult fish is contained within the collection area, either an electric or hand-operated winch raises the collection vessel from the collection area up to the work-surface platform. As the vessel emerges from the water, a wooden cover is placed on top of the vessel to reduce stress to the fish and eliminate the possibility of the fish jumping out of the vessel. Captured fish can then be anesthetized and transferred to a processing area. At the RRT, the collection vessel is moved laterally along an I-beam monorail close to the processing facility located under the roadway of the ladder.
Figure 1. Historical run timing of PIT-tagged wild- and hatchery-origin spring-Run Chinook at Rock Island Dam, 2003-2012 (note that early years may be based on a limited number of adult returns).

Figure 2. Adult trapping facility at Rocky Reach Dam. The pneumatic arm (left and top right) activates a gate that guides fish into a holding vessel (bottom right, shown lifted). Trapped fish are either allowed to exit the holding vessel by opening the gate, or are lifted for processing.
To: NMFS and HCP-HC and PRCC-HSC committee members

From: Mike Tonseth, WDFW

Subject: DRAFT 2013 UPPER COLUMBIA RIVER SALMON AND STEELHEAD BROODSTOCK OBJECTIVES AND SITE-BASED BROODSTOCK COLLECTION PROTOCOLS

The attached protocol was developed for hatchery programs rearing spring Chinook salmon, summer Chinook salmon and summer steelhead associated with the mid-Columbia HCPs, spring Chinook salmon and steelhead programs associated with the 2008 Biological Opinion for the Priest Rapids Hydroelectric Project (FERC No. 2114) and fall Chinook consistent with Grant County Public Utility District and Federal mitigation obligations associated with Priest Rapids and John Day dams (ACOE funded), respectively. These programs are funded by Chelan, Douglas, and Grant County Public Utility Districts (PUDs) and are operated by the Washington Department of Fish and Wildlife (WDFW).

This protocol is intended to be a guide for 2013 collection of salmon and steelhead broodstocks in the Methow, Okanogan, Wenatchee, and Columbia River basins. It is consistent with previously defined program objectives such as program operational intent (i.e., conservation and/or harvest augmentation), mitigation production levels (HCPs, Priest Rapids Dam 2008 Biological Opinion), changes to programs as approved by the HCP-HC, and to comply with ESA permit provisions.

Notable in this years protocols are:

- Continuing for 2013, no age-3 males will be incorporated into spring or summer Chinook programs.

- Implementation of the draft Production Management Plan (Appendix B), for all programs where possible, to ensure mitigation production levels are met and that the permitted production ceiling is not exceeded at release.

- Chelan PUD’s 2013 Methow spring Chinook Obligation of 60,516 smolts will be met through eyed egg transfers to Eastbank FH from adults collected and spawned at Winthrop national Fish Hatchery.
• Utilization of genetic sampling/assessment to differentiate Twisp River and Methow Basin natural-origin spring Chinook adults collected at Wells Dam, and CWT interrogation during spawning of hatchery spring Chinook collected at the Twisp Weir, Methow FH and Winthrop NFH to differentiate Twisp and Methow Composite hatchery fish for discrete management of Twisp and Methow Composite production components.

• Collection of only hatchery adult steelhead at Wells Dam/hatchery for MFH safety net, Winthrop conservation, Okanogan, and mainstem Columbia programs.

• Implementation of Grant PUD’s Nason Creek spring Chinook program beginning with the 2013 brood.

• Targeted collection of natural origin spring Chinook at Tumwater Dam for both the Nason Creek and Chiwawa conservation programs.

• Targeted collection of 100% of the Wenatchee summer Chinook and Wenatchee hatchery origin steelhead broodstock at Dryden Dam to reduce the number of activities that may contribute to delays in fish passage at Tumwater Dam (some adult collections at Tumwater may be necessary if sufficient adults cannot be acquired at Dryden Dam).

• Targeted collection of 100% of the natural origin steelhead broodstock at Tumwater Dam.

• Collection of summer Chinook broodstock from the Eastbank Outfall, sufficient to meet a 576K yearling juvenile Chelan Falls program. The Wells volunteer channel will be the fallback location if insufficient females are collected in the outfall.

• Collection of 24-natural origin steelhead at the Twisp Weir in the spring of 2014. Adults will be transferred to Methow Hatchery for spawning and biosecure, isolated incubation through the eyed-egg stage after which they will be moved to Wells FH for the remainder of rearing.

• Collection of surplus hatchery origin steelhead from the Twisp Weir (up to 25% of the required broodstock) to produce the 100K Methow on-station-released smolts (up to 13 adults). The remainder of the broodstock (37) will be WNFH returns collected at WNFH and/or Methow Hatchery and surplus to the WNFH program needs. The collection of adults will occur in spring of 2014.

• With the CCT summer Chinook program coming on-line beginning with the 2013 brood year, only collections of summer Chinook for the Grant PUD’s obligation in the Methow (Carlton program) will occur at Wells Dam.

• The collection from the Wells Hatchery volunteer channel of Wells summer Chinook to support the USFWS, Entiat NFH summer Chinook programs (requires agreement of the HCP Hatchery Committee [HC]).
These protocols may be adjusted in-season, based on actual run monitoring at mainstem dams and/or other sampling locations. Additional adaptive management actions as they relate to broodstock objectives may be implemented as determined by the HCP-HC or PRCC-HSC and within the boundaries of applicable permits.

**Above Wells Dam**

*Spring Chinook*

Inclusion of natural-origin fish in the broodstock will be a priority, with natural-origin fish specifically being targeted. Collections of natural-origin fish will not exceed 33% of the MetComp and Twisp natural-origin run escapement to maximize natural origin fish on the spawning grounds.

To facilitate BKD management, comply with ESA Section 10 permit take provisions, and to meet programmed production, hatchery-origin spring Chinook will be collected in numbers excess to program production requirements. Based on historical Methow FH spring Chinook ELISA levels above 0.12, the hatchery origin spring Chinook broodstock collection will include hatchery origin spring Chinook in excess to broodstock requirements by approximately 18.2% (based upon the most recent 5-year mean ELISA results for the program). For purposes of BKD management and to comply with maximum production levels and other take provisions specified in ESA Section 10 permit 1196, culling will include the destruction of eggs from hatchery-origin females with ELISA levels greater than 0.12 and/or that number of hatchery origin eggs required to maintain production at 163,249 yearling smolts. Culling of eggs from natural-origin females will not occur unless their ELISA levels are determined by WDFW Fish Health to be a substantial risk to the program. Progeny of natural-origin females, with ELISA levels greater than 0.12, will be differentially tagged for evaluation purposes. Annual monitoring and evaluation of the prevalence and level of BKD and the efficacy of culling in returning hatchery- and natural-origin spring Chinook will continue and will be reported in the annual monitoring and evaluation report for this program.

Recent WDFW genetic assessment of natural-origin Methow spring Chinook (Small et al. 2007) indicated that Twisp natural-origin spring Chinook can be distinguished, via genetic analysis, from non-Twisp spring Chinook with a high degree of certainty. The Wells HCP Hatchery Committee accepted that Twisp-origin fish could be genetically assigned with sufficient confidence that natural origin collections can occur at Wells Dam. Scale samples and non-lethal tissue samples (fin clips) for genetic analysis will be obtained from adipose-present, non-CWT, non-ventral-clipped spring Chinook (suspected natural-origin spring Chinook) collected at Wells Dam, and origins assigned based on that analysis. Natural-origin fish retained for broodstock will be PIT tagged (dorsal sinus) for cross-referencing tissue samples/genetic analyses. Tissue samples will be preserved and sent to WDFW genetics lab in Olympia Washington for genetic/stock analysis. The spring Chinook sampled will be retained at Methow FH and will be sorted as Twisp or Methow Composite (non-Twisp) natural-origin fish prior to spawning. The number of natural-origin Twisp and Methow Composite (non-Twisp) spring Chinook retained...
will be dependent upon the number of natural-origin adults returning and the collection objective limiting extraction to no greater than 33% of the natural-origin spring Chinook return to the Methow Basin. Natural origin fish not assigning to the Twisp or Methow will be released back into the Columbia River. Based on the broodstock-collection schedule (3-day/week, 16 hours/day), extraction of natural-origin spring Chinook is expected to be approximately 33% or less.

Weekly estimates of the passage of Wells Dam by natural-origin spring Chinook will be provided through stock-assessment and broodstock-collection activities. This information will facilitate in-season adjustments to collection composition so that extraction of natural-origin spring Chinook remains less than 33%. Twisp and Methow Composite hatchery-origin spring Chinook will be captured at the Twisp Weir, and Methow FH outfall. Trapping at the Winthrop NFH will be included if needed because of broodstock shortfalls.

Pre-season run-escapement of Methow-origin spring Chinook above Wells Dam during 2013 is estimated at 1,808 spring Chinook, including 1,589 hatchery and 219 natural origin spring Chinook (Table 1 and Table 2). In-season estimates of natural-origin spring Chinook will be adjusted proportional to the estimated returns to Wells Dam at weekly intervals and may result in adjustments to the broodstock collection targets presented in this document.

The following broodstock collection protocol was developed based on the re-calculated program production levels (163,249 smolts – Chelan PUD spring Chinook production of 60,516 smolts will be met through Winthrop NFH collections and result in transfer of eyed eggs to EB FH per HCP-HC agreements for 2013), BKD management strategies, projected return for BY 2013 Methow Basin spring Chinook at Wells Dam (Table 1 and Table 2), and assumptions listed in Table 3.

The 2013 Methow spring Chinook broodstock collection will target up to 108 adult spring Chinook (24 Twisp, 84 Methow). Based on the pre-season run forecast, Twisp fish are expected to represent 9% of the adipose present, CWT tagged hatchery adults and 10.5% of the natural origin spring Chinook passing above Wells Dam (Tables 1 and 2). Based on this proportional contribution and a collection objective to limit extraction to no greater than 33% of the natural-origin spawning escapement to the Twisp, the 2013 Twisp origin broodstock collection will total 24 fish (7 wild and 17 hatchery origin), representing 100% of the broodstock necessary to meet Twisp program production of 30,000 smolts. Methow Composite fish are expected to represent 42% of the adipose present CWT tagged hatchery adults and 89.5% of the natural origin spring Chinook passing above Wells Dam (Tables 1 and 2). Based on this proportional contribution and a collection objective to limit extraction to no greater than 33% of the natural-origin recruits, the 2013 Methow broodstock collection will total 84 spring Chinook (64 wild and 20 Hatchery). The broodstock collected for the Methow program represents 100% of the broodstock necessary to meet Methow program production of 133,249 smolts. The Twisp River releases will be limited to releasing progeny of broodstock identified as wild Twisp and or known Twisp hatchery origin fish, per ESA Permit 1196. The Methow FH releases will include progeny of broodstock identified as wild non-Twisp origin and known Methow Composite hatchery origin fish. Age-3 males (“jacks”) will not be collected for broodstock.
Table 1. Brood year 2008-2010 age class-at-return projection for wild spring Chinook above Wells Dam, 2013.

<table>
<thead>
<tr>
<th>Brood year</th>
<th>Smolt Estimate</th>
<th>Twisp Basin</th>
<th>Methow Basin</th>
<th>Age-at-return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age-3</td>
<td>Age-4</td>
<td>Age-5</td>
<td>Total</td>
</tr>
<tr>
<td>2008</td>
<td>11,932</td>
<td>56,337</td>
<td>7</td>
<td>42</td>
</tr>
<tr>
<td>2009</td>
<td>5,124</td>
<td>31,212</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>2010</td>
<td>8,927</td>
<td>50,165</td>
<td>2</td>
<td>25</td>
</tr>
</tbody>
</table>

Estimated 2013 Return
<table>
<thead>
<tr>
<th>Age-3</th>
<th>Age-4</th>
<th>Age-5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>14</td>
<td>7</td>
<td>23</td>
</tr>
<tr>
<td>196</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/ Smolt estimate is based on sub-yearling and yearling emigration (Charlie Snow, personal communication).
2/ Estimated Methow Basin smolt emigration based on Twisp Basin smolt emigration, proportional redd deposition in the Twisp River and Twisp Basin smolt production estimate.
3/ Mean Chiwawa NOR spring Chinook SAR to the Wenatchee Basin (BY 1998-2003; WDFW unpublished data).

Table 2. Brood year 2008-2010 age class and origin run escapement projection for UCR spring Chinook at Wells Dam, 2013.

<table>
<thead>
<tr>
<th>Stock</th>
<th>Hatchery</th>
<th>Wild</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age-3</td>
<td>Age-4</td>
<td>Age-5</td>
</tr>
<tr>
<td>MetComp</td>
<td>138</td>
<td>468</td>
<td>67</td>
</tr>
<tr>
<td>%Total</td>
<td>42%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twisp</td>
<td>33</td>
<td>98</td>
<td>6</td>
</tr>
<tr>
<td>%Total</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winthrop (MetComp)</td>
<td>98</td>
<td>626</td>
<td>55</td>
</tr>
<tr>
<td>%Total</td>
<td>49%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>269</td>
<td>1,192</td>
<td>128</td>
</tr>
</tbody>
</table>

attachment F
Table 3. Assumptions and calculations to determine the number of broodstock needed for BY 2013 production of 163,249 smolts.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Twisp standard</th>
<th>Twisp program</th>
<th>Methow standard</th>
<th>Methow program</th>
<th>Total program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smolt Release</td>
<td></td>
<td>30,000</td>
<td></td>
<td>133,249</td>
<td>163,249</td>
</tr>
<tr>
<td>Fertilization-to-release survival</td>
<td>86.5%(^1)</td>
<td>84.8%(^1)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total egg take target</td>
<td></td>
<td>34,682</td>
<td></td>
<td>157,133</td>
<td>191,815</td>
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<tr>
<td>Egg take (production)</td>
<td></td>
<td>45,455</td>
<td>18.2%</td>
<td>163,423</td>
<td>208,878</td>
</tr>
<tr>
<td>Cull allowance(^2)</td>
<td>10.9%</td>
<td>18.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fecundity(^3)</td>
<td>3,626H/3,715W</td>
<td>3,719H/4,027W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Target</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female to male ratio</td>
<td>1:1</td>
<td>1:1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Broodstock target</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>91.8%</td>
<td>98.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total broodstock collection</td>
<td>7W</td>
<td>64W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17H</td>
<td>20H</td>
<td></td>
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</tbody>
</table>

\(^1\)- Median values.
\(^2\)- Hatchery origin MetComp. component only, and is based on the projected natural origin collection and assumption that all Twisp (hatchery and wild) and wild MetComp. fish will be retained for production.
\(^3\)- Based on historical age-4 fecundities and expected 2012 return age structure (Table 1).

Trapping at Wells Dam will occur at the East and West ladder traps beginning on 01 May, or at such time as the first spring Chinook are observed passing Wells Dam, and continue through 21 June 2013. The trapping schedule will consist of 3-day/week (Monday-Wednesday), up to 16-hours/day. Two of the three trapping days will be concurrent with the stock assessment sampling activities authorized through the 2013 Douglas PUD Hatchery M&E Implementation Plan. Natural origin spring Chinook will be retained from the run, consistent with spring Chinook run timing at Wells Dam (weekly collection quota). Once the weekly quota target is reached, broodstock collection will cease until the beginning of the next week. If a shortfall occurs in the weekly trapping quota, the shortfall will carry forward to the following week. All natural origin spring Chinook collected at Wells Dam for broodstock will be held at the Methow FH.

To meet Methow FH broodstock collection for hatchery origin Methow Composite and Twisp River stocks, adipose-present coded-wire tagged hatchery fish will be collected at Methow FH, Winthrop NFH and the Twisp Weir beginning 01 May or at such time as spring Chinook are observed passing Wells Dam and continuing through 23 August 2013. Natural origin spring Chinook will be retained at the Twisp Weir as necessary to bolster the Twisp program production so long as the aggregate collection at Wells Dam and Twisp River weir does not
exceed 33% of the estimated Twisp River natural origin spawners to maximize pNOS in the Twisp. All hatchery and natural origin fish collected at Methow FH, Twisp Weir and Winthrop NFH for broodstock will be held at the Methow FH.

**Steelhead**

Steelhead programs located upstream of Wells Dam and at Wells Hatchery are presented in Table 4.

Table 4. 2014 brood year Steelhead Programs at Wells Hatchery and Upstream of Wells Dam

<table>
<thead>
<tr>
<th>Program</th>
<th>Hatchery</th>
<th>Owner</th>
<th>Release Location</th>
<th>Release Target</th>
<th>Broodstock Collection Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twisp Conservation</td>
<td>Methow Hatchery</td>
<td>Douglas PUD</td>
<td>Twisp Acclimation Pond</td>
<td>48,000</td>
<td>Twisp WxW</td>
</tr>
<tr>
<td></td>
<td>(incubation);</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wells Hatchery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(rearing)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Methow Safety-Net</td>
<td>Wells Hatchery</td>
<td>Douglas PUD</td>
<td>Methow Hatchery</td>
<td>100,000</td>
<td>HxH: Twisp Hatchery (25%) + WNFH Hatchery (75%)</td>
</tr>
<tr>
<td>Mainstem Columbia Safety-Net</td>
<td>Wells Hatchery</td>
<td>Douglas PUD</td>
<td>Wells Hatchery</td>
<td>160,000</td>
<td>HxH: Methow Hatchery returns (1st option); Wells Stock (2nd option)</td>
</tr>
<tr>
<td>WNFH Conservation Program</td>
<td>WNFH</td>
<td>USFWS</td>
<td>WNFH</td>
<td>100,000</td>
<td>Up to 25 collected at Wells Dam/Hatchery; remaining 25 collected by USFWS</td>
</tr>
<tr>
<td>Omak Creek</td>
<td>Wells Hatchery</td>
<td>Grant PUD</td>
<td>Omak Creek</td>
<td>Up to 50,000¹</td>
<td>Omak Creek returns (up to 25 wild or hatchery)</td>
</tr>
<tr>
<td>Okanogan</td>
<td>Wells Hatchery</td>
<td>Grant PUD</td>
<td>Okanogan Basin</td>
<td>Up to 100,000¹</td>
<td>Wells Stock collected at Wells Dam/Hatchery</td>
</tr>
</tbody>
</table>

¹: The Grant PUD programs will total 100,000, with Omak Creek taking precedence, and the Okanogan program = 100,000 – Omak production.

Steelhead mitigation programs above Wells Dam (including the USFWS steelhead program at Winthrop NFH) utilize adult broodstock collections at Wells Dam, Twisp Weir, Methow Hatchery volunteer trap, and WNFH volunteer trap (Table 5) and incubation/rearing at Wells Fish Hatchery (FH) and incubation at Methow Hatchery (Twisp program). The Wells Steelhead Program has provided eggs for UCR steelhead reared at Ringold FH, not as a mitigation requirement, but rather an opportunity to reduce the prevalence of early spawn hatchery steelhead in the mitigation component above Wells Dam. However, the Methow steelhead program is shifting to locally collected Twisp wild broodstock (Twisp conservation program), and hatchery origin broodstock representative of the Twisp and WNFH conservation programs (Methow safety-net program). Therefore, surplus broodstock will not be collected for the Methow steelhead programs to address the spawn-timing issue of the Wells stock. The Wells Hatchery Columbia River releases will use returns to the Methow Hatchery volunteer trap to the extent possible, and will be augmented with Wells stock as required to fulfill the program.
However, the local collections of broodstock in the Methow Basin will occur in the spring, 2014. To ensure the safety-net programs have broodstock, some broodstock will be collected at Wells Dam in the autumn, 2013, and held at Wells Hatchery. These autumn-collected Wells stock fish will be considered surplus to the spring-collected Methow and Okanogan broodstock, and eggs from these surplus broodstock may be transferred to Ringold Hatchery. In addition, Wells Hatchery may be used for adult management and steelhead removed for adult management may be retained for the Ringold program (Table 5).

Table 5. Broodstock collection locations, number, and origin by program.

<table>
<thead>
<tr>
<th>Program</th>
<th>Wells Dam or Hatchery</th>
<th>Twisp Weir</th>
<th>WNFH</th>
<th>Methow Hatchery</th>
<th>Okanogan Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
<td>H W</td>
</tr>
<tr>
<td>Twisp Conservation</td>
<td></td>
<td></td>
<td>0</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Methow Safety-Net</td>
<td></td>
<td></td>
<td>Up to 52</td>
<td>0</td>
<td>Up to 52 (backup)</td>
</tr>
<tr>
<td>Mainstem Columbia Safety-Net</td>
<td>82 (backup)</td>
<td>0</td>
<td>Up to 52</td>
<td>0</td>
<td>82</td>
</tr>
<tr>
<td>WNFH Conservation Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Omak Creek</td>
<td>Up to 25</td>
<td></td>
<td></td>
<td></td>
<td>261</td>
</tr>
<tr>
<td>Okanogan</td>
<td>Up to 42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ringold</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>0</td>
<td>52 24</td>
<td>52 26</td>
<td>82 0</td>
</tr>
</tbody>
</table>

1/- Wild origin fish for WNFH program will be collected through USFWS hook and line angling efforts in the Methow in the spring of 2014.
2/- Wild origin preferred, but hatchery origin broodstock will also be collected to meet target.
3/- Broodstock derived from adult management at Wells Hatchery and surplus brood collected as backup for Methow and Okanogan programs.

The following broodstock collection protocol was developed based on mitigation program production objectives (Table 6), program assumptions (Table 7), and the probability that sufficient adult steelhead will return in 2013/2014 to meet production objectives absent a preseason forecast at the present time.

Trapping at Wells Dam will selectively retain up to 124 hatchery origin steelhead (East and West ladder collection). Ringold FH production will be based on the availability and comprised of surplus eggs/fish resultant from managing any production overruns in DC and GC PUD production. No adults for the Ringold program will be specifically targeted at Wells. In the spring of 2014, 24 wild steelhead will be targeted at the Twisp Weir and transferred to the Methow Hatchery for spawning and incubation to the eyed-egg stage after which they will be moved to Wells Hatchery for the balance of rearing. In addition, up to 50 surplus hatchery-origin steelhead (to meet the 100K Methow Safety-Net release) will be targeted at the Twisp Weir and/or Methow Hatchery and moved to Wells Hatchery for spawning. Surplus WNFH hatchery returns will be used to augment the Twisp/Methow hatchery-origin collection if needed. Should there be inadequate surplus steelhead from these two sources, steelhead captured at the Methow Hatchery volunteer trap will be used to fulfill the program. Wells stock held at the Wells Hatchery will be used as a final option. Approximately, 16 (up to 25) adult steelhead will
be targeted in Omak Creek for a 20K (up to 50K) endemic program operated by the CCT and funded by GCPUD as part of their 100K UCR steelhead mitigation obligation. Overall collection for the programs will be 385 fish (a combination of program specific and back-up adults) and limited to no more than 33% of the entire run or 33% of the natural origin return (NOR composition in the broodstock, is estimated at 17%). Hatchery and natural origin collections will be consistent with run-timing of hatchery and natural origin steelhead at Wells Dam. Ladder trapping at Wells Dam will begin on 01 August and terminate by 31 October, three days per week, up to 16 hours per day, if required to meet broodstock objectives. Trapping will be concurrent with summer Chinook broodstocking efforts through 15 September on the west ladder. If insufficient steelhead adults are encountered on the west ladder, the east ladder trap may be considered. Adult return composition including number, origin, age structure, and sex ratio will be assessed in-season at Priest Rapids and Wells dams. Broodstock collection adjustments may be made based on in-season monitoring and evaluation. If collection of adults from the east ladder trap is necessary, access will be coordinated with staff at Wells Dam due to the rotor rewind project.

Table 6. Adult steelhead collection objectives for programs supported through 2013 return year adult steelhead broodstock collected at Wells Dam, Twisp Weir, WNFH, and Omak Creek (CCT endemic program).

<table>
<thead>
<tr>
<th>Program</th>
<th># Smolts</th>
<th># Green eggs</th>
<th>% Wild</th>
<th># Wild</th>
<th># Hatchery</th>
<th>Total Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCPUD</td>
<td>160,000</td>
<td>226,629</td>
<td></td>
<td></td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>DCPUD Twisp</td>
<td>100,000</td>
<td>141,643</td>
<td></td>
<td></td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>GCPUD</td>
<td>48,000</td>
<td>67,989</td>
<td>100%</td>
<td>24</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>GCPUD Omak</td>
<td>80,000</td>
<td>113,315</td>
<td></td>
<td></td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>USFWS</td>
<td>20,000</td>
<td>40,000</td>
<td>100%</td>
<td>16</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Sub-total</td>
<td>458,000</td>
<td>660,397</td>
<td>17%</td>
<td>40</td>
<td>202</td>
<td>242</td>
</tr>
<tr>
<td>Ringold</td>
<td>50,000</td>
<td>70,821</td>
<td></td>
<td></td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Sub-total</td>
<td>180,000</td>
<td>285,714</td>
<td></td>
<td></td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td>Grand Total</td>
<td>638,000</td>
<td>946,111</td>
<td>12%</td>
<td>40</td>
<td>305</td>
<td>345</td>
</tr>
</tbody>
</table>

1\- Mainstem Columbia releases at Wells Dam. Target HxH parental adults as the hatchery component.
2\- Methow hatchery release of HxH fish produced from either adults returning from the Winthrop conservation program, adults trapped at MFH, and/or surplus hatchery adults from the Twisp weir.
3\- Okanogan Basin releases as part of GCPUD’s 100K summer steelhead obligation. Broodstock need is dependent on the Omak collection to achieve 100,000 smolts total.
4\- Broodstock targeted is 16 total (8 male/8 female) of mixed origin composition based upon what is trapped. Collection could range up to 25 broodstock (50,000 smolt program maximum.).
5\- Eggs/juveniles will be provided to the Ringold program consistent with management of program surpluses up to 180,000 smolts. Adults for the Ringold program will not be specifically targeted at Wells Dam/Hatchery in 2013.
6\- Based on steelhead production consistent with Mid-Columbia HCP’s, GCPUD BiOp and Section 10 permit 1395.
Table 7. Program assumptions used to determine the number of adults required to meet steelhead production objectives for programs above Wells Dam.

<table>
<thead>
<tr>
<th>Program assumptions</th>
<th>Hatchery</th>
<th>Wild</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-spawn survival</td>
<td>95.4%</td>
<td>97.6%</td>
</tr>
<tr>
<td>Female : Male ratio</td>
<td>1.0:1.0</td>
<td>1.0:1.0</td>
</tr>
<tr>
<td>Fecundity</td>
<td>5,822</td>
<td>5,800</td>
</tr>
<tr>
<td>Fertilization-to-yearling release</td>
<td>70.6%</td>
<td>70.6%</td>
</tr>
</tbody>
</table>

**Summer/fall Chinook**

The summer/fall Chinook mitigation program in the Methow River utilizes adult broodstock collections at Wells Dam and incubation/rearing at Eastbank Fish Hatchery. The total production level target is 200,000 summer/fall Chinook smolts for acclimation at Carlton Pond.

The TAC 2012 Columbia River UCR summer Chinook return projection to the Columbia River (Appendix A) and BY 2008, 2009 and 2010 spawn escapement to tributaries above Wells Dam indicate sufficient summer Chinook will return past Wells Dam to achieve full broodstock collection for supplementation programs above Wells Dam. The following broodstock collection protocol was developed based on initial run expectations of summer Chinook to the Columbia River, program objectives and program assumptions (Table 8).

For 2013, WDFW will retain up to 102 natural-origin summer/fall Chinook at Wells Dam east and/or west ladders, including 51 females for the Methow summer Chinook program. Collection will be proportional to return timing between 01 July and 15 September. Trapping may occur up to 3-days/week, 16 hours/day. Age-3 males (“jacks”) will not be collected for broodstock.

Additionally, in 2013 broodstock collection for Okanogan based summer Chinook programs will fall under the responsibility of the Colville Tribes as part of their overall summer Chinook program. Broodstock collection will be prioritized through purse seine operations, ladder returns to the Chief Joe Hatchery and the Okanogan weir. Should use of Wells Dams be needed to meet any shortfalls in broodstock, the CCT will notify the HCP-HC and coordinate with Douglas PUD and WDFW to facilitate additional effort.

To better assure achieving the appropriate females for program production, the collection will utilize ultrasonography to determine the sex of each fish retained for broodstock. If the probability of achieving the broodstock goal is reduced based on passage at the west ladder or actual natural-origin escapement levels, broodstock collections may be expanded to the east ladder trap and/or origin composition will be adjusted to meet the broodstock collection objective. If collection of adults from the east ladder trap is necessary, access will be coordinated with staff at Wells Dam due to the rotor rewind project.
Table 8. Assumptions and calculations to determine the number of broodstock needed for 2013 brood summer/fall Chinook production goals in the Methow River basin.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Metrics</th>
<th>Carlton Pond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smolt release</td>
<td></td>
<td>200,000</td>
</tr>
<tr>
<td><em>Fertilization-to-release survival</em></td>
<td>85.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Eggtake target</strong></td>
<td></td>
<td>232,829</td>
</tr>
<tr>
<td><em>Fecundity</em></td>
<td>4,982</td>
<td></td>
</tr>
<tr>
<td><strong>Female target</strong></td>
<td></td>
<td>48</td>
</tr>
<tr>
<td><em>Female: male ratio</em></td>
<td>1:1</td>
<td></td>
</tr>
<tr>
<td><strong>Broodstock target</strong></td>
<td></td>
<td>96</td>
</tr>
<tr>
<td><em>Pre-spawn survival</em></td>
<td>95.5%</td>
<td></td>
</tr>
<tr>
<td><strong>Total collection target</strong></td>
<td></td>
<td>102</td>
</tr>
</tbody>
</table>

Columbia River Mainstem below Wells Dam

Summer/fall Chinook

Summer/fall Chinook mitigation programs that release juveniles directly into the Columbia River between Wells and Rocky Reach dams have traditionally been supported through adult broodstock collections at the Wells Hatchery volunteer channel. Beginning in 2013, the broodstock requirement for the Chelan Falls summer Chinook program will be prioritized through broodstock collection of marked summer Chinook in the Eastbank Outfall (EBO) with the Wells volunteer channel as a back-up collection location should insufficient females be acquired at the EBO. The total production level supported by this collection is 320,000 yearling and 484,000 sub-yearling Chinook (Wells Hatchery) and up to 576,000 yearlings for the Chelan Falls program. Upon agreement in the HCP-HC, the 2013, summer Chinook broodstock collections at Wells FH may also include up to 266 adults for the USFWS Entiat program pending agreements between USFWS and DCPUD. If approved by the HCP Hatchery Committee, Adults for the Entiat program will be transferred to Entiat NFH by either WDFW or USFWS staff (arrangements between USFWS and DCPUD will have been made prior to implementation).

Adults returning from the Wells and Chelan Falls programs are to support harvest opportunities and are not intended to increase natural production and have been termed segregated harvest programs. These programs have contributed to harvest opportunities; however, adults from these programs have been documented contributing to adult spawning escapement in tributaries upstream and downstream from their release locations. Because of CCT concerns about sufficient natural origin fish reaching spawning grounds and to ensure sufficient NOR’s being available to meet the CCT summer Chinook program, incorporation of natural origin fish for the Wells program or programs with broodstock originating from the Wells volunteer channel, will be limited to fish collected in the Wells volunteer channel. The following broodstock collection protocol was developed based on mitigation objectives and program assumptions (Table 9).

WDFW will target 810 run-at-large summer Chinook from the volunteer ladder trap at Wells
Fish Hatchery outfall for the Wells sub-yearling and yearling programs and the USFWS Entiat summer Chinook program. Due to fish health concerns associated with the volunteer collection site (warming Columbia River water during late August), the volunteer collection will begin 11 July and terminate by 31 August. Age-3 males (“jacks”) will not be collected for broodstock.

For 2013, broodstock collection for the Chelan Falls summer Chinook program will be prioritized at the Eastbank Outfall using in-channel seining/netting beginning July 1 (or earlier if summer Chinook are detected in the outfall) through September 15. While preliminary evaluations of feasibility late in 2012 did demonstrate the ability to collect summer Chinook, the catch was comprised primarily of males. Given concerns about acquiring sufficient females to meet production objectives, if the number of females have not been reached by August 15, the broodstock collection will default to the Wells Volunteer channel to make up the difference. The 2013 broodstock target for the Chelan Falls program is 318 adults. Age-3 males will not be incorporated into the broodstock. Confirmation of gender will be made at the time of collection using established ultrasonography techniques.

Table 9. Assumptions and calculations to determine the number of broodstock needed for summer/fall Chinook production goals for programs relying on adult collection at Wells Dam or Wells Hatchery in 2013.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Standard Wells FH</th>
<th>Chelan Falls FH&lt;sup&gt;1&lt;/sup&gt;</th>
<th>USFWS&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sub-yearling</td>
<td>Yearling</td>
<td>Sub-yearling</td>
</tr>
<tr>
<td>Smolt release</td>
<td>484,000</td>
<td>320,000</td>
<td>576,000</td>
</tr>
<tr>
<td>Green egg-to-release survival</td>
<td>76.1%&lt;sup&gt;4&lt;/sup&gt;</td>
<td>83.6%</td>
<td>NA</td>
</tr>
<tr>
<td>Eggtake target</td>
<td>636,005</td>
<td>382,775</td>
<td>688,995</td>
</tr>
<tr>
<td>Fecundity</td>
<td>4,487</td>
<td>4,487</td>
<td>142</td>
</tr>
<tr>
<td>Female target</td>
<td>142</td>
<td>86</td>
<td>154</td>
</tr>
<tr>
<td>Female:Male ratio</td>
<td>1:1</td>
<td>1:1</td>
<td></td>
</tr>
<tr>
<td>Broodstock target</td>
<td>284</td>
<td>242&lt;sup&gt;3&lt;/sup&gt;</td>
<td>308</td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>96.8%</td>
<td>96.8%</td>
<td></td>
</tr>
<tr>
<td>Total collection target</td>
<td>294</td>
<td>250</td>
<td>318</td>
</tr>
</tbody>
</table>

<sup>1</sup>-The Well volunteer trap will only be a fallback broodstock source should efforts to acquire broodstock in the Eastbank outfall not provide sufficient females to meet production objectives.

<sup>2</sup>-Adults for USFWS summer Chinook program in the Entiat River Basin.

<sup>3</sup>- Includes 70 adults collected for the Lake Chelan triploid Chinook program.

Wenatchee River Basin

**Spring Chinook**

In 2013 the Eastbank Fish Hatchery (FH) is expecting to rear spring Chinook salmon for the Chiwawa River and Nason Creek acclimation facilities located on the Chiwawa River and Nason
Creek (2013 represents the first brood year production for the new Nason Creek program). The program production level target for the Chiwawa program in 2013 is 144,026 smolts, requiring a total broodstock collection of 74 natural origin spring Chinook (Table 10).

The spring Chinook production obligation for Grant PUD in the Wenatchee Basin is 223,670 smolts. Grant PUD’s production was originally scripted to be met through a combination of 74,556 smolts in the White River and 149,114 smolts at Nason Creek. Consistent with agreements in the PRCC-PC SOA 2013-01, the White River production will be met through progeny produced at Nason Creek through 2026. Because two brood years remain in the White River captive brood program, the PRCC SOA identifies a credit of 75,000 smolts from the captive brood program toward meeting the over 223K production obligation. Additionally, if the 2013 Nason program is unable to meet the balance of the production, any additional production from the 2013 captive brood program will be credited to Grant PUD.

2013 represents the proof of concept year in determining the effectiveness of utilizing Tumwater Dam and genetic assignment methodologies to target broodstock for the Nason Creek spring Chinook program and by default for the Chiwawa spring Chinook program as well. While the Chiwawa program could be met through adult collections solely at the Chiwawa without the use of Tumwater Dam, the Chiwawa NOR component makes up the preponderance of the NOR return in the Wenatchee Basin (~61% of the total return and ~72% of the Chiwawa/Nason aggregate based upon a 10-year geometric mean). As a direct result of targeting NOR’s for Nason Creek, generally, more than sufficient numbers of Chiwawa fish will be handled (and retained at Eastbank FH pending genetic assignments) to meet the Chiwawa program needs. To limit excessive handling of fish (being transported to EB, sampled, transported back to the river, and subsequently intercepted at the Chiwawa Weir and transported back to EB FH or upriver of the weir as per current protocol) which could contribute to handling mortality and to limit delaying fish as a result of the handling and operation of the weir, the JFP prefer to have collections for both programs occur at Tumwater Dam. If use of Tumwater Dam demonstrates a risk to the Wenatchee Basin population which is unacceptable to co-managers and permitting authorities as result of broodstock collection, alternate and other existing brood collection locations/methods will be considered.
Table 10. Assumptions and calculations to determine the number of broodstock needed for a combined Nason/Chiwawa spring Chinook production goal of 367,696 smolts. For 2013, the Nason Creek production will be met through a combination of smolts produced through one of two remaining captive brood years and the Nason Creek conservation program.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Standard Assumptions</th>
<th>Chiwawa</th>
<th>Nason Creek&lt;br&gt;1/</th>
<th>Wenatchee Basin Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smolt Release</td>
<td></td>
<td>144,026</td>
<td>125,000</td>
<td>98,670</td>
</tr>
<tr>
<td>Fertilization-to-release survival</td>
<td>85.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total egg take target</td>
<td></td>
<td>169,442</td>
<td>147,059</td>
<td>116,082</td>
</tr>
<tr>
<td>Egg take (production)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cull allowance</td>
<td>13.1%</td>
<td>17,499</td>
<td></td>
<td>450,082</td>
</tr>
<tr>
<td>Fecundity</td>
<td>4,684 W</td>
<td>4,145 H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Target</td>
<td></td>
<td>36</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Female to male ratio</td>
<td>1:1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broodstock target</td>
<td></td>
<td>72W</td>
<td>62W</td>
<td>64H</td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>97.7%W/97.7H</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total broodstock collection</td>
<td></td>
<td>74W</td>
<td>64W</td>
<td>66H</td>
</tr>
</tbody>
</table>

1/ Because Nason Creek is a new program beginning with the 2013 brood, hatchery performance values from the Chiwawa program were used as a surrogate to estimate the adult requirements for Nason Creek.

Inclusion of natural origin fish into the broodstock will be a priority, with natural origin fish specifically being targeted. Consistent with ESA Section 10 Permit 1196, natural origin fish collections will not exceed 33 percent of the return.

Pre-season estimates project a total of 2,732 (521 natural origin (19%) and 2,211 hatchery origin (81%) spring Chinook back to the Wenatchee Basin. Approximately 2,514 spring Chinook are destined for the Chiwawa River, of which 303 (12.1%) and 2,211 fish (87.9%) are expected to be natural and hatchery origin spring Chinook, respectively and approximately 110 natural origin spring Chinook are expected back to Nason Creek (Tables 11 and 12). These protocols, target anywhere between 110 and 175 spring Chinook to be trapped at Tumwater Dam and transported to Eastbank FH for broodstock purposes. In-season assessment of the magnitude and origin composition of the spring Chinook return above Tumwater Dam will be used to provide in-season adjustments to hatchery/wild composition and total broodstock collection, consistent with ESA Section 10 Permit 1196.
Table 11. BY 2008-2010 age class return projection for wild spring Chinook above Tumwater Dam during 2013.

<table>
<thead>
<tr>
<th>Brood year</th>
<th>Nason Cr. Basin</th>
<th>Chiwawa Basin</th>
<th>Wenatchee Basin above Tumwater Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Age-3</td>
<td>Age-4</td>
<td>Age-5</td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td>175</td>
<td>31</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>76</td>
<td>18</td>
</tr>
<tr>
<td>2010</td>
<td>3</td>
<td>122</td>
<td>21</td>
</tr>
</tbody>
</table>

Estimated Return: 3 76 31 110 19 156 128 303 53 312 156 521

1/-Based upon average age-at-return (return year 2007-2011), for natural origin spring Chinook above Tumwater Dam (WDFW unpublished data).
2/-Mean Chiwawa spring Chinook SAR to the Wenatchee Basin (BY 1998-2003; WDFW unpublished data).

Table 12. BY 2008-2010 age class return projection for Chiwawa hatchery spring Chinook above Tumwater Dam during 2013.

<table>
<thead>
<tr>
<th>Brood Year</th>
<th>Smolt Estimate</th>
<th>Adult Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chiwawa 1/-</td>
<td>Age-3 2/-</td>
</tr>
<tr>
<td>2008</td>
<td>609,789</td>
<td>1,229</td>
</tr>
<tr>
<td>2009</td>
<td>438,651</td>
<td>411</td>
</tr>
<tr>
<td>2010</td>
<td>346,248</td>
<td>245</td>
</tr>
</tbody>
</table>

Estimated 2013 Return: 245 1,827 139 2,211

1/-Chiwawa smolt release (Hillman et. al. 2013).
2/-Based on average age-at-return for hatchery origin spring Chinook above Tumwater Dam, 2006-2010 (WDFW, unpublished data) and total estimated BY return.
3/-Mean Chiwawa hatchery spring Chinook SAR to the Wenatchee Basin (BY 1998-2003).
4/-Mean Chiwawa hatchery spring Chinook SAR to the Wenatchee Basin (BY 2000-2004).
5/-Mean Chiwawa hatchery spring Chinook SAR to the Wenatchee Basin (BY 2001-2005).

Broodstock collection at Tumwater Dam will begin 01 June and terminate no later than 15 August. Spring Chinook trapping at Tumwater Dam if operated independent of the Spring Chinook Reproduction Success Study, will follow a three day per week and up to 16 hours per day and will be consistent with weekly broodstock collection quotas that approximate the historical run timing and a maximum 33 percent retention of the projected natural-origin escapement. If the weekly quota is attained prior to the end of the trapping period, broodstock trapping will cease. If the weekly quota is not attained within the trapping period, the shortfall will carry forward to the next week.

Age-3 males (“jacks”) will not be collected for broodstock.

Based upon these forecasts and assumptions, the following options for Wenatchee Basin spring Chinook were developed for discussion/decision by the HCP-HC and PRCC-HSC:
**Alternative 1**

Approximately 140 natural origin spring Chinook adults will be collected at Tumwater Dam (about 25% of the overall NOR return) through duration of the return and transferred to Eastbank FH for holding until a genetic assignments can be made to spawning aggregates (specifically Nason and Chiwawa). This should result in approximately 119 probable Nason/Chiwawa origin adults. Using an 86% probability assignment rate derived through a recent SNP’s evaluation of Wenatchee spring Chinook spawning aggregates, an estimated 29 Nason and 90 Chiwawa NOR’s would be identified (Table 13). The 29 Nason and 74 of the Chiwawa spring Chinook would be retained. All remaining adults either in excess of program needs or individuals not assigning to the two spawning aggregates, would be released at locations, yet to be determined above Tumwater Dam (this is to provide some offset to the delay in migration to the spawning grounds experienced by holding adults at Eastbank FH while the genetic evaluations are being conducted).

Under this alternative full production will be achieved for the Chiwawa spring Chinook conservation program (144,026 smolts; Table 13).

The Nason Creek program will achieve an estimated smolt production of 55,740 conservation program smolts (45% of the conservation program and 37% of the 2013 production target for Nason Creek). This will result in an additional 92,930 smolts (167,930) from the 2013 White River captive brood program being credited toward Grant PUD’s Wenatchee Spring Chinook production obligation. The 2013 WR captive brood program is expected to produce approximately 259,297 smolts (Table 16).

**Alternative 2**

Approximately 138 natural origin spring Chinook adults (the total number of adults needed to meet both the Chiwawa and Nason conservation programs not adjusted for adults not assigning to either or any spawning aggregate) will be collected at Tumwater Dam (about 21% of the overall NOR return) through duration of the return and transferred to Eastbank FH for holding until a genetic assignments can be made to spawning aggregates (specifically Nason and Chiwawa). This should result in approximately 115 probable Nason/Chiwawa origin adults. Using an 86% probability assignment rate derived through a recent SNP’s evaluation of Wenatchee spring Chinook spawning aggregates, an estimated 29 Nason and 71 Chiwawa NOR’s would be identified (Table 13). All 29 Nason and 71 Chiwawa spring Chinook would be retained. All adults not assigning to the two spawning aggregates, would be released at locations, yet to be determined above Tumwater Dam (this is to provide some offset to the delay in migration to the spawning grounds experienced by holding adults at Eastbank FH while the genetic evaluations are being conducted).

Under this alternative approximately 94% of the Chiwawa spring Chinook conservation program (135,368 smolts; Table 13) would be met. The balance of the Chiwawa program would achieved by producing 8,658 safety net smolts at Chiwawa (this will require approximately 6 hatchery origin adults).
The Nason Creek program will achieve an estimated smolt production of 43,795 conservation program smolts (35% of the conservation program and 29% of the 2013 production target for Nason Creek). This will result in an additional 140,502 smolts (179,875 total) from the 2013 White River captive brood program being credited toward Grant PUD’s Wenatchee Spring Chinook production obligation. The 2013 WR captive brood program is expected to produce approximately 259,297 smolts (Table 16).

Alternative 3

Approximately 172 natural origin spring Chinook adults will be collected at Tumwater Dam (about 33% of the overall NOR return) through duration of the return and transferred to Eastbank FH for holding until a genetic assignments can be made to spawning aggregates (specifically Nason and Chiwawa). This should result in approximately 147 probable Nason/Chiwawa origin adults. Using an 86% probability assignment rate derived through a recent SNP’s evaluation of Wenatchee spring Chinook spawning aggregates, an estimated 36 Nason and 111 Chiwawa NOR’s would be identified (Table 13). The 36 Nason and 74 of the Chiwawa spring Chinook would be retained. All remaining adults either in excess of program needs or individuals not assigning to the two spawning aggregates, would be released at locations, yet to be determined above Tumwater Dam (this is to provide some offset to the delay in migration to the spawning grounds experienced by holding adults at Eastbank FH while the genetic evaluations are being conducted).

Under this alternative full production will be achieved for the Chiwawa spring Chinook conservation program (144,026 smolts; Table 13) would be met.

The Nason Creek program will achieve an estimated smolt production of 71,665 conservation program smolts (57% of the conservation program and 48% of the 2013 production target for Nason Creek). This will result in an additional 77,005 smolts (152,005 total) from the 2013 White River captive brood program being credited toward Grant PUD’s Wenatchee Spring Chinook production obligation. The 2013 WR captive brood program is expected to produce approximately 259,297 smolts (Table 16).

Alternative 4

Alternative 4 is not significantly different than Alternative 3 other than the impacts consider extraction of no more than 33% of the Nason Creek NOR’s to Tumwater (versus Alternative 3 where the brood collection targets 33% over the combined NOR return to Tumwater Dam (Table 13). Production levels do not change. The total number of adults retained at Eastbank increases by two fish and would represent about 34% of the NOR return.
Steelhead

The steelhead mitigation program in the Wenatchee Basin use broodstock collected at Dryden and Tumwater dams located on the Wenatchee River. Per ESA section 10 Permit 1395 provisions, broodstock collection will target adults necessary to meet a 50% natural origin – conservation oriented program and a 50% hatchery origin – safety net program, not to exceed 33% of the natural origin steelhead return to the Wenatchee Basin. Based on these limitations and the assumptions listed below (Table 14), the following broodstock collection protocol was developed.

WDFW will retain a total of 130 mixed origin steelhead for broodstock for a smolt release objective of 247,300 smolts (Table 14). The 66 hatchery origin adults will be targeted at Dryden Dam and if necessary Tumwater dam. The 64 natural origin adults will be targeted for collection at Tumwater Dam. Collection will be proportional to return timing between 01 July and 12 November. Collection may also occur between 13 November and 3 December at both traps, concurrent with the Yakama Nation coho broodstock collection activities. Hatchery x wild and hatchery x hatchery parental cross and unknown hatchery parental cross adults will be excluded from the broodstock collection. Hatchery steelhead parental origins will be determined through evaluation of VIE tags, adipose/cwt presence/absence, and PIT tag interrogation during collection. Adult return composition including number, origin, age structure, and sex ratio will be assessed in-season at Priest Rapids and at Dryden Dam. In-season Broodstock collection adjustments may be made based on this monitoring and evaluation. To better assure achieving the appropriate females equivalents for program production, the collection will implement the draft Production Management Plan, including ultrasonography to determine the sex of each fish retained for broodstock.

In the event steelhead collections fall substantially behind schedule, WDFW may initiate/coordinated adult steelhead collection in the mainstem Wenatchee River by hook and
In addition to trapping and hook and line collection efforts, Tumwater and Dryden dams may be operated between February and early April the subsequent spring to supplement broodstock numbers if the fall trapping effort provides fewer than the required number of adults.

Table 14. Assumptions and calculations to determine the number and origin of 2014 brood Wenatchee summer steelhead broodstock needed for Wenatchee Basin program release of 247,300 smolts.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Standard</th>
<th>Conservation</th>
<th>Safety Net</th>
<th>Full Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smolt Release</td>
<td>123,650</td>
<td>123,650</td>
<td>247,300</td>
<td></td>
</tr>
<tr>
<td>Fertilization-to-release survival</td>
<td>70.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg take target</td>
<td>176,140</td>
<td>176,140</td>
<td>352,280</td>
<td></td>
</tr>
<tr>
<td>Fecundity</td>
<td>5,930 H</td>
<td>5,787 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Target</td>
<td>31</td>
<td>30</td>
<td>32 H</td>
<td>31 W</td>
</tr>
<tr>
<td>Female to male ratio</td>
<td>1:1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broodstock target</td>
<td>62</td>
<td>60</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>90.7%H/97.1%W</td>
<td>64</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Total broodstock collection</td>
<td></td>
<td></td>
<td>130</td>
<td></td>
</tr>
</tbody>
</table>

Summer/fall Chinook

Summer/fall Chinook mitigation programs in the Wenatchee River Basin utilize adult broodstock collections at Dryden and Tumwater dams, incubation/rearing at Eastbank Fish Hatchery (FH) and acclimation/release from the Dryden Acclimation Pond. The total production level target for BY 2013 is 500,001 smolts (181,816 GCPUD mitigation and 318,185 CCPUD mitigation).

The TAC 2013 Columbia River UCR summer Chinook return projection to the Columbia River (Appendix A) and BY 2008, 2009 and 2010 spawn escapement to the Wenatchee River indicate sufficient summer Chinook will return to the Wenatchee River to achieve full broodstock collection for the Wenatchee River summer Chinook supplementation program. Review of recent summer/fall Chinook run-timing past Dryden and Tumwater dam indicates that previous broodstock collection activities have omitted the early returning summer/fall Chinook, primarily due to limitations imposed by ESA Section 10 Permit 1347 to minimize impacts to listed spring Chinook. In an effort to incorporate broodstock that better represent the summer/fall Chinook run timing in the Wenatchee Basin, the broodstock collection will front-load the collection to account for the disproportionate collection timing. Approximately 43% of the summer/fall Chinook destined for the upper Basin (above Tumwater Dam) occurs prior to the end of the first week of July; therefore, the collection will provide 43% of the objective by the end of the first week of July. Weekly collection after the first week of July will be consistent with run timing of summer/fall Chinook during the remainder of the trapping period. With concurrence from NMFS, summer Chinook collections at Dryden Dam may begin up to one week earlier.
Collections will be limited to a 33% extraction of the estimated natural-origin escapement to the Wenatchee Basin. Based on these limitations and the assumptions listed below (Table 15), the following broodstock collection protocol was developed.

WDFW will retain up to 256 natural-origin, summer Chinook at Dryden and/or Tumwater dams, including 128 females. To better assure achieving the appropriate females for program production, the collection will implement the draft Production Management Plan, including ultrasonography to determine the sex of each fish retained for broodstock. Trapping at Dryden Dam may begin 01 July and terminate no later than 15 September and operate up to 7-days/week, 24-hours/day. Trapping at Tumwater Dam if needed may begin 15 July and terminate no later than 15 September and operate up to 48 hours per week.

Table 15. Assumptions and calculations to determine the number of 2013 brood Wenatchee summer Chinook salmon broodstock needed for Wenatchee Basin program release of 500,001 smolts.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Standard</th>
<th>Grant PUD</th>
<th>Chelan PUD</th>
<th>Total Wenatchee Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smolt Release</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertilization-to-release survival</td>
<td>77.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg take target</td>
<td>233,997</td>
<td>409,505</td>
<td>643,502</td>
<td></td>
</tr>
<tr>
<td>Fecundity</td>
<td>5,085</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Target</td>
<td>46</td>
<td>80</td>
<td>126</td>
<td></td>
</tr>
<tr>
<td>Female to male ratio</td>
<td>1:1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broodstock target</td>
<td>92</td>
<td>160</td>
<td>252</td>
<td></td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>98.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total broodstock collection</td>
<td>94</td>
<td>162</td>
<td>256</td>
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</table>

**White River Spring Chinook Captive Brood**

Smolt production associated with the White River Captive Broodstock Program (75,000 smolts) is linked to implementation of the smolt production objective associated with the Nason Creek adult supplementation program and consistent with the PRCC-PC SOA 2013-01. Spawning, incubation, rearing acclimation and release will be consistent with provisions of (expired) ESA Permit 1592.

Table 16. Estimated smolt production for BY13 and BY14 White River captive brood program at Little White Salmon National Fish Hatchery based upon 5% adult female mortality per month to spawning.

<table>
<thead>
<tr>
<th>Spawn Year</th>
<th>Release Year</th>
<th>Females Spawned</th>
<th>Egg take</th>
<th>Smolts</th>
<th>Adjusted egg take</th>
<th>Adjusted smolts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Age 4</td>
<td>Age 5</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>2015</td>
<td>346</td>
<td>92</td>
<td>439</td>
<td>526,225</td>
<td>384,144</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>2016</td>
<td>0</td>
<td>187</td>
<td>187</td>
<td>224,556</td>
<td>163,926</td>
</tr>
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</tr>
</tbody>
</table>
1. Adjusted smolt release numbers are based upon reduced eye-up rates for eggs fertilized with cryo-preserved sperm.
2. Adjusted for 50% of females crossed with cryo-preserved sperm with a mean eye-up rate of 35%.
3. Adjusted for 100% of females crossed with cryo-preserved sperm with a mean eye-up rate of 35%.


Priest Rapids Fall Chinook

Collection of fall Chinook broodstock at Priest Rapids Hatchery will generally begin in early September and continue through mid November. Juvenile release objectives specific to Grant PUD (5,325,543 sub-yearlings + 1,000,000 fry), Federal (1,700,000 sub-yearlings + 3,500,000 eggs – collection of broodstock for the federal programs are conditional upon having contracts in place with the ACOE), mitigation commitments. Biological assumptions are detailed in Table 17. Smolt release objectives for Ringold Springs occur as green eggs collected at Priest Rapids FH and incubated at Bonneville prior to eyed-egg transfers to Ringold Springs. After the new Priest Rapids FH rebuild there will no longer be incubation capacity for programs above GCPUD mitigation obligations.

For 2013, some portion of the broodstock will may be collected at the OLAFT and/or through hook-and-line angling efforts in the Hanford Reach to increase the proportion of natural origin adults in the broodstock to meet integration of the hatcher program. Close coordination between broodstock collections at the volunteer channel, the OLAFT and through hook-and-line efforts in the Hanford Reach will need to occur so over collection is minimized. Presumed NOR’s collected and spawned from either hook-and-line caught broodstock or OLAFT collections will be prioritized for PRH programs (i.e. OLAFT and Hanford Reach fish will be held in a separate raceways from volunteer collected fish and spawned first each week).

Based upon the biological assumptions in Table 15, an estimated 3,264 females will need to be spawned to meet the 12,350,575 eggs required to meet the current three up-river bright (URB) programs which rely on adults collected at the Priest Rapids Hatchery volunteer channel trap, hook-and-line efforts on the Hanford Reach, and/or the Priest Rapids Dam off ladder trap (OLAFT).

To increase the probability of incorporating a higher percentage of NOR’s from the volunteer channel, only adipose present, non-CWT males and females will be retained.

Implementation Assumptions

1) Broodstock may be collected at any or all of the following locations/means: the PRD off ladder trap (OLAFT – specific use to be determined), hook-and-line angling in the Hanford Reach, and the Priest Rapids Hatchery volunteer channel trap.

2) Assumptions used to determine egg/adult needs is based upon current program performance metrics.
3) Broodstock retained from the volunteer channel will exclude age-2 and 3 males (using length at age) to address genetic risks/concerns of younger age-at-maturity males producing offspring which return at a younger age (decreased age-at-maturity).

4) Only adipose present, non-CWT males and females will be retained for broodstock from volunteer channel collected broodstock unless a shortage is expected.

5) Only adipose present, non-wired fish encountered through hook-and-line angling and at the OLAFT will be retained for broodstock.

6) All gametes of fish spawned from hook-and-line broodstocking efforts and/or OLAFT collections will be incorporated into the URB programs.

Table 17. Assumptions and calculations to determine the number of fall Chinook salmon broodstock needed for a non-actively integrated Priest Rapids program release of 7,025,543 sub-yearling fall Chinook, 1,000,000 fry and 3,500,000 eggs for Ringold, in 2013.

<table>
<thead>
<tr>
<th>Program Assumptions</th>
<th>Standard</th>
<th>Program objective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Juvenile Production Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grant PUD Mitigation-PUD Funded</td>
<td>5,325,543 smolts</td>
<td></td>
</tr>
<tr>
<td>John Day Mitigation-Federally Funded</td>
<td>1,000,000 fry</td>
<td></td>
</tr>
<tr>
<td>John Day Mitigation ^1- Ringold Springs-ACOE funding.</td>
<td>1,700,000 smolts</td>
<td></td>
</tr>
<tr>
<td><strong>Total Program Objectives</strong></td>
<td>3,500,000 eggs</td>
<td></td>
</tr>
<tr>
<td><strong>Fertilization-to-release survival</strong></td>
<td>87%</td>
<td>11,525,543 eggs/fry/smolts</td>
</tr>
<tr>
<td><strong>Egg take target</strong></td>
<td></td>
<td>12,724,762</td>
</tr>
<tr>
<td>Fecundity</td>
<td>4,300</td>
<td></td>
</tr>
<tr>
<td><strong>Female Target</strong></td>
<td>2,959</td>
<td></td>
</tr>
<tr>
<td>Female to male ratio</td>
<td>2:1</td>
<td></td>
</tr>
<tr>
<td>Pre-spawn survival</td>
<td>88%</td>
<td></td>
</tr>
<tr>
<td><strong>Broodstock target</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>3,363</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>1,681</td>
<td></td>
</tr>
<tr>
<td><strong>Total broodstock collection</strong></td>
<td>5,044</td>
<td></td>
</tr>
<tr>
<td><strong>Estimated NOR’s needed</strong></td>
<td>1,530^2/-</td>
<td></td>
</tr>
<tr>
<td><strong>Estimated HOR’s needed</strong></td>
<td>3,514</td>
<td></td>
</tr>
</tbody>
</table>

^1 As of brood year 2009, Priest Rapids Hatchery is taking 3,500,000 eggs for release at Ringold-Meseberg Hatchery funded by the ACOE – incubation of this program occurs at Bonneville.

^2 Estimated NOR’s assumes a minimum of 306 wild males using them in the 2:1 F:M ratio and no more than 1,224 wild females. If the number of wild males is increased (the number of NOR females would decrease) or agreements are reached in the PRCC-HSC to use males beyond a 2:1 approach, then the total number of NOR’s required to meet a pNOB=0.4 would be less (the pNOB target applies only to the sub-yearling smolt and Ringold program. The fry program would consist of HxH crosses).
Appendix A

<table>
<thead>
<tr>
<th></th>
<th>2012 Forecast</th>
<th>2012 Return</th>
<th>2013 Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spring Chinook</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upriver Total</td>
<td>314,200</td>
<td>203,100</td>
<td>141,400</td>
</tr>
<tr>
<td>Upper Columbia (total)</td>
<td>32,600</td>
<td>24,400</td>
<td>14,300</td>
</tr>
<tr>
<td>Upper Columbia (wild)</td>
<td>2,800</td>
<td>4,800</td>
<td>1,600</td>
</tr>
<tr>
<td>Snake River Spring/Summer (total)</td>
<td>168,000</td>
<td>109,700</td>
<td>58,200</td>
</tr>
<tr>
<td>Snake River (wild)</td>
<td>39,000</td>
<td>33,400</td>
<td>18,900</td>
</tr>
<tr>
<td><strong>Summer Chinook</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>91,200</td>
<td>58,300</td>
<td>73,500</td>
</tr>
<tr>
<td><strong>Sockeye</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wenatchee</td>
<td>28,800</td>
<td>59,800</td>
<td>44,600</td>
</tr>
<tr>
<td>Okanogan</td>
<td>431,300</td>
<td>460,600</td>
<td>135,500</td>
</tr>
<tr>
<td>Snake River</td>
<td>1,900</td>
<td>500</td>
<td>1,250</td>
</tr>
</tbody>
</table>

\*Numbers may not sum due to rounding*
Hatchery Production Management Plan

The following management plan is intended to provide life-stage-appropriate management options for Upper Columbia River (UCR) PUD salmon and steelhead mitigation programs. Consistent, significant over-production or under-production risks the PUD’s not meeting the production objectives required by FERC and overages in excess of 110% of program release goals violates the terms and conditions set forth for the implementation of programs under ESA and poses potentially significant ecological risks to natural origin salmon communities.

Under RCW 77.95.210 (Appendix A) as established by House Bill 1286, the Washington Department of Fish and Wildlife has limited latitude in disposing of salmon and steelhead eggs/fry/fish. While this RCW speaks more specifically to the sale of fish and/or eggs WDFW takes a broader application of this statute to include any surplus fish and/or eggs irrespective of being sold or transferred.

We propose implementing specific measures during the different life-history stages to both improve the accuracy of production levels and make adjustments if over-production occurs. These measures include (1) Improved Fecundity Estimates, (2) Adult Collection Adjustments, (3) Within-Hatchery Program Adjustments, and (4) Culling.

Improved Fecundity Estimates

A) Develop broodstock collection protocols based upon the most recent 5-year mean in-hatchery performance values for female to spawn, fecundity, Green egg to eye, and green egg to release.

B) Use portable ultrasound units to confirm gender of broodstock collected (broodstock collection protocols assume a 1:1 male-to-female ratio). Ultrasonography, when used by properly trained staff will ensure the 1:1 assumption is met (or that the female equivalents needed to meet production objective are collected). Spawning matrices can be developed such that if broodstock for any given program are male limited sufficient gametes are available to spawn with the females.

Adult Collection Adjustments

C) Make in-season adjustments to adult collections based upon a fecundity-at-length regression model for each population/program and origin composition needs (hatchery/wild). This method is intended to make in-season allowances for the age structure of the return (i.e. age-5 fish are larger and therefore more fecund than age-4 fish), but will also make allowances for age-4 fish that experienced more growth through better ocean conditions compared to an age-5 fish that reared in poorer ocean conditions.
Within-Hatchery Program Adjustments

D) At the eyed egg inventory (first trued inventory), after adjustments have been made for culling to meet BKD management objectives, the over production will be managed in one or more of the following actions as approved by the HCP-HC:

- Voluntary cooperative salmon culture programs under the supervision of the department under chapter 77.100 RCW;

- Regional fisheries enhancement group salmon culture programs under the supervision of the department under this chapter;

- Salmon culture programs requested by lead entities and approved by the salmon funding recovery board under chapter 77.85 RCW;

- Hatcheries of federally approved tribes in Washington to whom eggs are moved, not sold, under the interlocal cooperation act, chapter 39.34 RCW; and

- Governmental hatcheries in Washington, Oregon, and Idaho; or

- Culling for diseases such as BKD and IHN, consistent with the Salmonid Disease Control Policy of the Fisheries Co-managers of Washington State; or

- Distribution to approved organizations/projects for research.

E) At tagging (second inventory correction) fish will be tagged up to 110% of production level at that life stage. If the balance of the population combined with the tagged population amounts to more than 110% of the total release number allowed by Section 10 permits then the excess will be distributed in one or more of the following actions as approved by the HCP-HC:

- Voluntary cooperative salmon culture programs under the supervision of the department under chapter 77.100 RCW;

- Regional fisheries enhancement group salmon culture programs under the supervision of the department under this chapter;

- Salmon culture programs requested by lead entities and approved by the salmon funding recovery board under chapter 77.85 RCW;

- Hatcheries of federally approved tribes in Washington to whom eggs are moved, not sold, under the interlocal cooperation act, chapter 39.34 RCW; and
• Transfer to another resource manager program such as CCT, YN, or USFWS program;

• Governmental hatcheries in Washington, Oregon, and Idaho;

• Placement of fish into a resident fishery (lake) zone, provided disease risks are within acceptable guidelines; or

• Culling for diseases such as BKD and IHN, consistent with the Salmonid Disease Control Policy of the Fisheries Co-managers of Washington State; or

• Distribution to approved organizations/projects for research.

F) In the event that a production overage occurs after the above actions have been implemented or considered, and deemed non viable for fish health reasons in accordance with agency aquaculture disease control regulations (i.e. either a pathogen is detected in a population that may pose jeopardy to the remaining population or other programs if retained or could introduce a pathogen to a watershed where it had not previously been detected) then culling of those fish may be considered.

All, provisions, distributions, or transfers shall be consistent with the department's egg transfer and aquaculture disease control regulations as now existing or hereafter amended. Prior to department determination that eggs of a salmon stock are surplus and available for sale, the department shall assess the productivity of each watershed that is suitable for receiving eggs.
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Chelan PUD headquarters in Wenatchee, Washington, on Wednesday, April 17, 2013, from 9:30 am to 2:30 pm. Attendees are listed in Attachment A to these meeting minutes.

**ACTION ITEM SUMMARY**

- Greg Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when available (Item I).
- Chelan PUD, Douglas PUD, Grant PUD, and the Colville Confederated Tribes (CCT) will discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and an update will be provided on the discussions at the Hatchery Committees May 15, 2013, meeting (Item I).
- National Marine Fisheries Service (NMFS) will have a standing agenda item to provide a Hatchery and Genetic Management Plan (HGMP) update at future Hatchery Committees meetings (Item I).
- Mackey will provide the final Revised Analytical Framework 5-Year Update to Kristi Geris for distribution to the Hatchery Committees (Item II-A).
- Douglas PUD and Chelan PUD will provide their final Statements of Agreement (SOAs) approving the Revised Analytical Framework 5-Year Update to Geris for distribution to the Hatchery Committees (Item II-A).
- Representatives of the Hatchery Committees will submit recommendations for peer reviewers to participate along with Hatchery Committees members in the review of
responses to the Chelan PUD Hatchery Monitoring and Evaluation (M&E) Request for Proposals (RFPs; Item II-A).

- Alene Underwood will provide the final SOA for the Carlton Acclimation Facility Capacity Utilization to Geris for distribution to the Hatchery Committees (Item III-A).

- Underwood will provide the revised Spring Chinook Pilot Study at Rocky Reach to Geris for distribution to the Hatchery Committees no later than April 19, 2013; email approval of the pilot study will be requested from Hatchery Committees representatives no later than April 26, 2013 (Item III-A).

- Lynn Hatcher will provide NMFS direction on what type of additional documentation is needed from the PUDs to obtain new permits (i.e., a full HGMP versus an updated program description) by Friday, April 26, 2013, including a timeline of when documents are needed, to Geris for distribution to the Hatchery Committees (Item IV-A).

- Hatchery Committees representatives will review Mackey’s white paper on Methods for Estimating Likelihoods of Outcomes in Broodstock-Collection prior to the Hatchery Committees May 15, 2013, meeting, when the Committees will discuss its use in developing future broodstock protocols (Item IV-D).

**STATEMENT OF AGREEMENT DECISION SUMMARY**

- The Douglas PUD SOA approving the revised Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update was approved by Hatchery Committees representatives (Item II-A).

- The Chelan PUD SOA approving the Revised Analytical Framework 5-Year Update was approved by Hatchery Committees representatives (Item II-A).

- The SOA for the Carlton Acclimation Facility Capacity Utilization was approved by Hatchery Committees representatives present (Item III-A).

**AGREEMENTS**

- Hatchery Committees representatives present approved the Revised Analytical Framework 5-Year Update (Item II-A).
• Hatchery Committees representatives present agreed that, in the event that Carson ancestry is detected in natural-origin fish collected for broodstock at Methow hatcheries, those fish will be retained and used for broodstock (Item V-A).

REVIEW ITEMS

• The draft residual steelhead manuscript *Ecologic and demographic costs of releasing non-migratory juvenile hatchery steelhead in the Methow River, Washington* was distributed to the Hatchery Committees on February 19, 2013, for a 60-day review with comments due to Charlie Snow no later than April 22, 2013.

• Kristi Geris sent an email to the Hatchery Committees on April 1, 2013, notifying them that the draft 2012 Annual Chelan PUD Hatchery M&E Report is available for download from the FTP site and is out for a 30-day review period, with comments due to Tracy Hillman by April 30, 2013.

FINALIZED REPORTS

• No reports have been finalized since the last Hatchery Committees meeting.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and reviewed the agenda. The following revisions were made to the agenda:

• Mike Tonseth added an update on Chelan Falls summer Chinook.
• Greg Mackey added an update on Wells subyearling release numbers.

The revised draft March 20, 2013 meeting minutes were reviewed. Two outstanding comments were discussed.

• Regarding Chelan PUD’s discussion on 2013 Wenatchee Steelhead Releases, Tonseth clarified that hatchery permits specify that non-migrants—not migrants—must be released in the lower Wenatchee River.
• Regarding the discussion of the February M&E Progress Report for the Chelan PUD Hatchery Programs, Kirk Truscott clarified details of his question about the size of fish reared at the Chelan Falls Acclimation Facility.
Kristi Geris said that all other comments and revisions received on the draft meeting minutes were incorporated. The Hatchery Committees members present approved the March 20, 2013 meeting minutes, as revised.

Action items from the last Hatchery Committees meeting on March 20, 2013, and follow-up discussions were as follows:

- Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when it is available (Item I).

Mackey said that Douglas PUD anticipates that the draft Master Plan will be complete by April 30, 2013, as which time he will provide it to the Hatchery Committees for review. Mackey reminded Committees members that the new Federal Energy Regulatory Commission (FERC) license requires agency reviews on many documents (such as this one), and because of uncertainty about FERC deadlines, will likely require expedited review. Mackey noted that the Master Plan, excluding the appendices, includes bio-programming and other conceptual information, but will not include detailed engineering or design specifications. Keely Murdoch asked if an additional review will be held for the engineering specifications, and Mackey replied that Douglas PUD had not yet planned for one. He said, however, that the HCP Coordinating Committees and NMFS will review plans related to fish passage. Murdoch noted that for the Priest Rapids Hatchery rebuild, Grant PUD held meetings where the engineers explained the designs to those interested. She said that these meetings included discussions that resulted in design changes, and added that it may be beneficial to do something similar for the Wells Hatchery modernization. Bill Gale said that changes included significant improvements in how fish are handled, general hatchery operations, and worker safety. Mackey said that Douglas PUD had been considering inviting the HDR Engineering, Inc. (HDR) team to present details of the modernization at a future meeting. He also said that Jayson Wahls of the Washington Department of Fish and Wildlife (WDFW) has been involved in the entire process, and many design issues have been addressed on the ground level. Murdoch agreed that Wahls' involvement was good, but added that it still may be beneficial to obtain additional input from other sources. Tonseth added that the Hatchery Committees are responsible for making sure modifications do not compromise the programs. He also added that meeting with the engineers may help
expedite moving the plans forward, opposed to scheduling additional review periods. Mackey said that Douglas PUD will discuss options for review of the engineering aspects of the modernization.

- **Chelan PUD, Douglas PUD, Grant PUD, and the CCT will meet to discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and Chelan PUD will provide an update on the discussions at the Hatchery Committees April 17, 2013 meeting (Item I).**

Alene Underwood said that Chelan PUD and Grant PUD staff had discussed the need for additional information before reaching any agreement. Peter Graf said that Grant PUD is now coordinating with Todd Miller at WDFW, and that discussions are underway. An update on progress will be provided at the Hatchery Committees May 15, 2013 meeting.

- **Hatcher will check on the status of internal NMFS discussions regarding processing of HGMPs for non-listed programs currently covered by Permit 1347 (Item II-A).**

Hatcher said that Craig Busack has received additional materials from the PUDs and that he is now in the process of determining if information received to date is sufficient to request a time extension on the current Permit 1347. Hatcher added that Busack said to contact him directly with any questions. Schiewe reminded the Hatchery Committees that NMFS needs a U.S. Fish and Wildlife Service (USFWS) consultation for bull trout and any other USFWS-listed species from the PUDs in order for NMFS to issue new permits. Gale recommended contacting Karl Halupka (USFWS), and added that Halupka will do his best to complete consultations in a timely manner. Hatcher said that NMFS, WDFW, and USFWS plan to hold a meeting on April 19, 2013 to discuss Section 7 permitting. Schiewe suggested that NMFS have a standing agenda item to provide a HGMP update at future Hatchery Committees meetings. Hatcher said that he would ask Busack about requesting a set time for the update.

- **Josh Murauskas will distribute a summary of changes to the revised draft Analytical Framework 5-Year Update to the Hatchery Committees no later than March 22, 2013. Following distribution of this list, Hatchery Committees representatives will provide a list of additional objective-level change that should be considered, if any, including suggested revisions, to Geris for distribution to the Hatchery Committees no later than April 5, 2013 (Item IV-A).**
Murauskas provided a summary of changes to the revised draft Analytical Framework 5-Year Update as distributed to the Hatchery Committees by Geris on March 22, 2013.

- **Underwood will revise and redistribute Chelan PUD’s pilot study proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013, as recommended; and Chelan PUD will also brief Gale on the details of the proposal (Item IV-D).**

  Underwood provided Chelan PUD’s revised pilot study proposal as distributed to the Hatchery Committees by Geris on April 16, 2013.

- **Hatchery Committees representatives will submit edits and comments on the draft 2013 Upper Columbia River Salmon and Steelhead Broodstock Objectives and Site-Based Broodstock Collection Protocols to Tonseth no later than April 8, 2013 (Item VI-A).**

  Tonseth said that he will discuss pending comments during his agenda item today.

### II. Chelan PUD, Douglas PUD, Grant PUD


Greg Mackey said that the 5-year update of the M&E plan titled “Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update” was distributed to the Hatchery Committees by Kristi Geris on March 19, 2013, for final review. Keely Murdoch provided comments on the revised draft update on April 11, 2013. Kirk Truscott also provided verbal comments on the draft update. Mackey said that, with Murdoch’s and Truscott’s comments addressed, a final draft was distributed to the Hatchery Committees by Geris on April 16, 2013. Mackey reviewed the changes with the Hatchery Committees and additional edits and clarifications were made to the document as recommended by Hatchery Committees representatives.

Hatchery Committees representatives present approved the Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update, and Mackey said that he will provide the final document to Geris for distribution to the Hatchery Committees.

Truscott asked if the Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update will be the basis for RFPs to implement the program, and Alene Underwood replied that it will and that the document will also be appended to the RFPs. Underwood said that Chelan PUD plans to put out their Hatchery M&E RFPs for implementation in 2014 no later than
mid-May 2013. She said that RFPs will be out for 2 months, and then proposals received will be reviewed by an expert panel. Joe Miller said that the expert panel is not yet in place yet, and that Chelan PUD plans to seek input from all Hatchery Committees representatives on the composition of the panel. Mike Tonseth noted that with the Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update appended to the RFPs, alternative methods to achieve M&E objectives could potentially be proposed by parties. He asked if and when the Hatchery Committees will have a chance to review proposals submitted in response to the RFPs, and in particular any alternative methods? Mike Schiewe said that the review panel would include Hatchery Committees members that did not have a conflict of interest, as defined in the Hatchery Committees’ Conflict of Interest Policy. He said that as outlined in the Policy, members with a conflict will not vote on or be asked to approve or disapprove proposals, but may, at the discretion of the Hatchery Committees participate in discussions on the proposals. Schiewe indicated that members without a conflict will participate on the review panel, and that all members will be asked to recommend external reviewers to assist in the review of proposals. Murdoch asked about the Hatchery Committees’ review and approval of the annual Implementation Plans, which in the past has been completed prior to annual contracting. Underwood noted that the contractor(s) will have already been selected by the time the first Implementation Plan is reviewed. Murdoch said that there could be issues approving the Implementation Plan if the Hatchery Committees find that a contractor is unable to meet components of the Implementation Plan. She asked if any significant changes are anticipated with implementation, and Miller replied that he is not expecting anything. Murdoch asked about Douglas PUD’s RFP process, and Mackey replied that Douglas PUD must periodically issue RFPs for contracts, but will not be on the same timeline as Chelan PUD’s RFP process. Bill Gale asked about the Grant PUD process, and Peter Graf said that Grant PUD will go out with an RFP with Chelan PUD.

Schiewe reiterated that the Hatchery Committees members without a conflict of interest will be part of the expert review panel. All Hatchery Committees representatives will have the opportunity to recommend outside reviewers. Lynn Hatcher asked about limitations to who can be recommended for the panel in terms of cost, and then asked who funds the review. Underwood said that Chelan PUD and Grant PUD would take care of costs for individual reviewers. Murdoch asked how far removed a person would need to be from the conflicted party, and Schiewe replied that the Hatchery Committees Conflict of Interest Policy includes
as a conflicted party someone who works for the same agency. Underwood added that this
decision is also partly up to the discretion of the person in question—do they feel that they
are conflicted? Gale noted that there are also several good, potential reviewers who are
retired. The Hatchery Committees agreed to submit recommendations for peer reviewers to
participate along with Hatchery Committees members in the review of responses to the
Hatchery M&E RFPs.

Returning to the just-approved Hatchery M&E program document, Mackey said that Douglas
PUD is also requesting approval of a SOA approving the Monitoring and Evaluation for PUD
Hatchery Programs: 2013 Update. Douglas PUD’s draft SOA was distributed to the Hatchery
Committees by Geris on April 16, 2013. Mackey reviewed the SOA, and Hatchery
Committees representatives provided comments and suggested revisions, including the
addition of a conditional statement regarding the completion and approval of pending
appendices. Underwood said that Chelan PUD is also planning to request approval of a SOA,
and that they intend to use the same format and language as Douglas PUD.

The Hatchery Committees representatives present approved the Douglas PUD SOA as
revised, and approved a Chelan PUD SOA contingent on the use of the same language as the
revised Douglas PUD SOA. (Note: Douglas PUD’s final SOA [Attachment B], and Chelan
PUD’s final SOA [Attachment C] were distributed to the Hatchery Committees by Geris on
April 19, 2013, and April 22, 2013, respectively.)

III. Chelan PUD

A. DECISION: Carlton Acclimation Facility Capacity Utilization SOA (Alene Underwood)

Alene Underwood said that the revised draft SOA for the Carlton Acclimation Facility
Capacity Utilization was distributed to the Hatchery Committees by Kristi Geris on April 16,
2013. Underwood reminded the Hatchery Committees that the intent of this SOA is to
merely recognize the existence of sufficient capacity at the Carlton Acclimation Facility to
accommodate both Chelan PUD’s 60,516 spring Chinook and Grant PUD’s 200,000 summer
Chinook programs, but does not obligate the Hatchery Committees to support Carlton as a
permanent location for overwinter rearing Chelan PUD’s spring Chinook obligation. Joe
Miller added that the way the SOA was previously written seemed to imply approval of the
Carlton Acclimation Facility as a permanent location for Chelan PUD.
Bill Gale questioned whether a SOA is really needed if the only intent is to recognize capacity at the Carlton Acclimation Facility, and Mike Schiewe said that the SOA supports Chelan PUD’s relationship with Grant PUD at the facility. Gale also suggested indicating that the SOA only applies to brood year (BY) 2013, and Mike Tonseth recalled that agreement was already reached by the Hatchery Committees that Chelan PUD would use the Carlton Acclimation Facility for BY 2013, as documented in the Hatchery Committees December 12, 2012 meeting minutes. Miller added that specifying BY in the SOA will require a new SOA each year, which Chelan PUD would like to avoid. Gale said that Chelan PUD’s spring Chinook program will need to be re-addressed in 2014 regardless, and Miller agreed in terms of the use of the facility, not capacity. Miller suggested adding a statement to the SOA reflecting that the use of the Carlton Acclimation Facility as a long-term location for overwinter rearing will be determined in the future by the Hatchery Committees. Schiewe also suggested adding a statement reflecting that the Hatchery Committees have previously agreed to use the Carlton Acclimation Facility for BY 2013. Gale asked if the Hatchery Committees should expect an additional SOA on how these fish will be marked and evaluated, and Tonseth replied that Chelan PUD has already plans to tag 25 percent with passive integrated transponder (PIT) tags.

Tonseth noted that the SOA acknowledges that the facility is capable of accommodating the programs; however, it does not state the actual capacity of the Carlton Acclimation Facility. Underwood said that the capacity of the facility has already been stated in previous documentation, and Gale suggested simply referencing that documentation.

Underwood incorporated all suggested revisions and the revised SOA for the Carlton Acclimation Facility Capacity Utilization was approved by Hatchery Committees representatives present. The final SOA for the Carlton Acclimation Facility Capacity Utilization (Attachment D) was distributed by Geris to the Hatchery Committees on April 18, 2013.

B. DECISION: Spring Chinook Pilot at Rocky Reach (Alene Underwood)
Alene Underwood said that a revised Chelan PUD pilot study proposal to trap spring-run Chinook salmon at Rocky Reach Dam in 2013 was distributed to the Hatchery Committees
by Kristi Geris on April 16, 2013. She said that, as requested at the Hatchery Committees March 20, 2013 meeting, an introductory paragraph was added providing a brief background on the purpose of the pilot study. Following distribution of the latest version of the draft pilot study she said that an additional paragraph about next steps was also added based on comments received from Bill Gale. Mike Tonseth requested that a refined description of trap operations also be included. Mike Schiewe noted that the HCP Coordinating Committees will also need to review this pilot study with regards to potential effects on fish passage. Kirk Truscott asked what data Chelan PUD will be collecting regarding trap efficiency, and Joe Miller replied that the pilot study proposes to simply document ease of operation and any potential problems that need to be addressed. Gale asked that if only ad-clipped fish are targeted, why not collect the fish to obtain additional data? Tonseth replied that collecting and handling the fish might require direct take coverage at Rocky Reach Dam. Underwood added that this pilot only aims to look at operation of the trap. Truscott asked about the efficiency of the trap when the ladder is full of fish. Miller responded that is one of the issues that the pilot study will address. Schiewe said that the Hatchery Committees need to come to agreement on exploring this trap as a collection location for broodstock, and the HCP Coordinating Committees will review the pilot from a fish passage issue perspective. Miller said that Chelan PUD will revise the draft pilot and redistribute it to the Hatchery Committees for email approval. Gale requested that the revisions clearly state the information gaps and how they will be addressed. Tonseth suggested outlining the questions that this year’s evaluations are set to address, and also outlining the questions that still need to be addressed, and by whom (i.e., the Hatchery Committees and/or HCP Coordinating Committees). Schiewe reminded the Hatchery Committees that agreement needs to be reached soon because the spring run has already started.

Underwood said that she will provide the revised Spring Chinook Pilot at Rocky Reach to Geris for distribution to the Hatchery Committees no later than April 19, 2013, and email approval of the pilot study will be requested from Hatchery Committees representatives no later than April 26, 2013.

C. **Dryden Update (Alene Underwood)**

Alene Underwood updated the Hatchery Committees on progress on Chelan PUD’s plan for Dryden total maximum daily load (TMDL) compliance (Attachment E) that was originally
distributed to the Hatchery Committees on July 18, 2012. The plan was redistributed to the Hatchery Committees by Kristi Geris on April 10, 2013. Regarding Action #1, Underwood said that Chelan PUD is currently conducting phosphorus sampling while fish are on station at the Dryden facility. She said that last year it took about one month to get results back. Regarding Action #2, Underwood said that the low phosphorous feed trial was not ready in time for the 2013 acclimation period; and added that Chelan PUD is still waiting for certain information to come together to move forward. She said that, as for 2014, it is uncertain whether the feed trial will be performed in conjunction with the size evaluation that is already planned. Regarding Action #3, Underwood said that samples are still being collected at Chelan Falls, and that she plans to touch base with the Leavenworth National Fish Hatchery to verify that the circular tanks are still on track to be completed by the end of 2013. Regarding Action #4, Underwood said that she has met with Northwest Fisheries Science Center scientists, Chris Moran, and Eastbank Fish Hatchery staff, and that evaluating 2012 brood is underway. Regarding Action #5, Underwood said that this year the fish on station will be the last of the 864,000 program, and that next year Chelan PUD will evaluate phosphorus discharges from the reduced program.

Also, in March 2013, Underwood said that there was an outbreak of fungus in the summer Chinook at the Dryden facility. She said that losses amounted to approximately 300 to 500 per day. Mike Tonseth said that the fungus was a secondary infection, and added that Bob Rogers has been looking into these losses and is finding deep tissue bruising in the fish. He also added that the bruising appears to be from a lateral hit, and that Rogers plans to evaluate the transportation vessels. Tonseth noted that while each year fungus is observed at the Dryden facility, these issues are not present at the Carlton facility which uses the same equipment. Tonseth said that this increases interest in evaluating the water quality at Dryden. Bill Gale also suggested that something may exist at the Dryden facility that causes additional stress in combination with the injury. Gale asked if the Dryden facility fish are always reared in the same raceways, and Tonseth replied that they are not. Mike Schiewe asked about temperatures of receiving versus rearing water at Dryden and Carlton, and Tonseth replied that they are relatively the similar. He added that fish transfers are only allowed when the water is equal to or less than a 10 degree difference.
IV. Douglas PUD

A. Wells Subyearling Release Numbers Update (Greg Mackey)

Greg Mackey said that higher than typical hatchery survival at Wells Hatchery resulted in surplus subyearling summer Chinook for release in 2013. WDFW has inquired about what to do with the excess fish and identified a need at Prosser Fish Hatchery. Mackey said there are about 600,000 subyearling Chinook on station, of which about 500,000 will be tagged and released to fulfill the 484,000 subyearling Chinook mitigation component under the Wells HCP; the remaining 100,000 will be transferred to Prosser Fish Hatchery, which recently experienced a significant loss of summer Chinook due to a pump failure.

B. Wells Hatchery Master Plan (Greg Mackey)

Greg Mackey discussed this agenda item during the review of action items from the last Hatchery Committees meeting on March 20, 2013.

C. HGMP for Wells Summer Chinook (Greg Mackey)

Greg Mackey said that Rob Jones at NMFS indicated that Douglas PUD needs to provide a full HGMP for the Wells summer Chinook program. However, there has also been discussion of needing to submit only a program description. As a result, Mackey said that Douglas PUD develop an updated HGMP, which can serve both purposes. He said that Mike Tonseth has already reviewed the document and provided comments. The draft Wells Summer Chinook HGMP, along with a one-page Wells Summer Chinook HGMP summary, and a draft SOA approving the HGMP, were distributed to the Hatchery Committees by Kristi Geris on April 16, 2013. Mackey said that the updated HGMP is largely the same as the 2005 draft HGMP with the exception of incorporating at least 10 percent natural fish in the broodstock. Mackey said that effects on other species and populations were also updated with excerpts from the recent 5-Year M&E report. He added that it was modeled after the 2005 draft that Kirk Truscott developed, and also follows the current draft Methow Hatchery Spring Chinook HGMP.

Mackey said that he is still unsure of when NMFS will need the program description and/or HGMP, and depending on that deadline, Douglas PUD may request an expedited Hatchery Committees review. Mike Tonseth noted that the timeline really depends on whether NMFS needs an actual HGMP or just a program description. He added that if NMFS only requests a
program description, then it would seem that NMFS has already determined that only the program description will suffice to get permitted. Lynn Hatcher said that he will provide NMFS direction on what type of additional documentation is needed from the PUDs to obtain new permits (i.e., a full HGMP versus an updated program description), including a timeline of when documents are needed, to Geris for distribution to the Hatchery Committees by Friday, April 26, 2013. Joe Miller indicated that Chelan PUD is not planning to submit any new HGMPs pending further direction from NMFS.

D. *Methods for Estimating Likelihoods of Outcomes in Broodstock-Collection (Greg Mackey)*

Greg Mackey briefly reviewed and summarized his exploratory work on broodstock estimation and managing risk and expectations in broodstock collection that he presented at the Hatchery Committees February 20, 2013 meeting. He said that he has now incorporated parameters from the draft 2013 Broodstock Protocols into his analyses (Attachment F) to facilitate discussions on applying these methods to brood collection in 2013, or future years. *(Note: the presentation [Attachment F] was distributed to the Hatchery Committees by Kristi Geris on April 18, 2013.)* Mackey added that a white paper on the broodstock collection estimation approach was also distributed to the Hatchery Committees by Geris on April 9, 2013; however, a small revision was made to the paper and a revised draft will be distributed to the Hatchery Committees following the meeting.

Mackey briefly reviewed the broodstock collection formula, as discussed at the Hatchery Committees February 20, 2013 meeting. He then reviewed the Methow spring Chinook program with the draft 2013 Broodstock Protocols parameters used in the model (highlighted in tan in Attachment F). Mackey reminded the Hatchery Committees that these are not concrete values and are not intended to advocate anything, but rather are meant to inform decisionmaking. Bill Gale said that this formula seems to have real potential to ground truth the current methods of estimating broodstock needs. Mike Tonseth added that there are a few other things to consider when estimating broodstock requirements, depending on whether the program was for listed- and non-listed species, and the potential constraints of a 33 percent extraction rate for natural origin recruits (NORs). He said that, for example, the draft 2013 Broodstock Protocols estimated the need for 88 total Methow spring Chinook, including 20 hatchery- and 68 natural-origin adults to meet program goals. He said that additional natural-origin fish cannot be added because it would exceed the 33 percent
extraction rate. As for listed programs, Tonseth said that NMFS may prefer to be under the production goal, rather than over (i.e., surplus). He said that all of these types of considerations need to be evaluated before modifying the protocols. Tonseth said that he has no objections to incorporating the use of Mackey’s modeling approach, but exactly how it is used needs to be considered. Keely Murdoch said that she supports the use of Mackey’s method if it helps to meet program goals. Tonseth suggested that it might be useful to test the formula this year on a pilot basis to guide collection of broodstock for the Wells subyearling Chinook program. Gale commented that the difficulty has not been with coming up with the numbers, per se, but rather collection logistics such as where and when to collect. Mike Schiewe noted that, if the draft 2013 Broodstock Protocols are modified, that WDFW needs to make sure the Hatchery Committees are included in the discussion and that better attention to version control is needed to avoid the same tracking issues experienced with the 2012 Broodstock Protocols. Mackey said that this information is meant more for use as a managerial tool—not necessarily to dictate the process. It can be used by managers to assess tradeoffs in risk of collecting too few or too many fish for broodstock. He said that the white paper on the broodstock collection estimation approach explains how this method works and how to use it. Hatchery Committees representatives said that they will review Mackey’s white paper on Methods for Estimating Likelihoods of Outcomes in Broodstock-Collection prior to the Hatchery Committees May 15, 2013 meeting, when the Hatchery Committees will discuss its use in developing future broodstock protocols.

V. **WDFW**

A. **2013 Broodstock Collection Protocols (Mike Tonseth)**

Mike Tonseth recalled the Hatchery Committees’ decision to release 27 natural-origin Carson lineage adult spring Chinook, collected as broodstock for the Methow Hatchery program, into the Methow River in 2012; this was discussed at the Hatchery Committees June 20, 2012 meeting. He added that the Yakama Nation (YN) decided to abstain from the decision, and Keely Murdoch explained that the abstention was because the YN had not anticipated the need for a decision, nor had they had the opportunity to fully assess the potential outcomes. Tonseth said that the draft 2013 Broodstock Protocols was once again unclear on Carson ancestry, and that he would like to avoid a similar situation as in 2012. Tonseth said that because numbers of returning NORs are expected to be limited in 2013, Hatchery fish will need to be incorporated to meet program obligations. He said that from
this perspective, he sees the question as: what is better to retain for broodstock—natural-origin fish with some degree of Carson lineage or hatchery origin fish which may possess a lower degree of Carson lineage? Hatchery Committees representatives present agreed that, in the event that Carson ancestry is detected in natural origin fish collected for broodstock, those fish will be retained and used for broodstock. Tonseth said that this decision will be reflected in the 2013 Broodstock Protocols.

B. Chelan Falls Summer Chinook Update (Mike Tonseth)

Mike Tonseth said that Bob Rogers recently contacted him about an emerging fish health issue with summer Chinook at Chelan Falls Hatchery. Tonseth said that Rogers initially thought it was a bacterial gill disease (BGD) related to gas bubble trauma (GBT). He said that fish were dying in Circulars 1 and 2, with the fish Circular 2 dying more rapidly. He added that the dissolved oxygen (DO) was quite low in Circulars 3 and 4, and fish in those tanks were taken off feed. Tonseth said that even after feed was halted, DO remained depressed. He said that a decision was made to release Circular 2 due to the disease issue; and because of the low DO in Circulars 3 and 4 and increasing disease in Circular 1, all tanks were ultimately released a few days earlier than planned. Tonseth said that Rogers is developing a pathology report, and once available, will be distributed to the Hatchery Committees for discussion. Alene Underwood added that the water seemed turbid, but there is no indication why. Tonseth noted that the fish health issues were first observed around the same time that Chelan Falls Powerhouse had issues. Underwood said that the facility had recently experienced generator issues and it was not realized that the pump was down for an extended amount of time. She also added that Chelan PUD is now discussing a supplemental oxygen system to avoid a similar situation in the future. Tonseth said that 2013 summer Chinook practices are being compared to those executed in 2012 to identify any differences. He said that low DO was only experienced in Circulars 3 and 4, and added that in addition to BGD, erythrocytic inclusion body syndrome (EIBS), or anemia in fish, was also observed. Tonseth recalled that EIBS had previously been detected in fish at the Eastbank Annex; however, it had no significant impacts on the fish. He added that although fish at the Eastbank Annex had EIBS, fish at the Eastbank Hatchery did not. Underwood said that even with the loss, program goals were still met.
VI. HCP Administration

A. Next Meetings

The next scheduled Hatchery Committees’ meetings are on May 15, 2013 (Douglas PUD office), June 19, 2013 (Chelan PUD office), and July 17, 2013 (Douglas PUD office).

List of Attachments

Attachment A  List of Attendees
Attachment B  Douglas PUD’s final SOA approving the Monitoring and Evaluation for PUD Hatchery Programs: 2013 Update
Attachment C  Chelan PUD’s final SOA approving the Revised Analytical Framework 5-Year Update
Attachment D  Final SOA for the Carlton Acclimation Facility Capacity Utilization
Attachment E  Chelan PUD’s Plan for Dryden TMDL Compliance
Attachment F  Methods for Estimating Likely Programmatic Outcomes for Broodstock Collection Targets Presentation
<table>
<thead>
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<th>Name</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
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<td>Kristi Geris</td>
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<td>Alene Underwood*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Joe Miller</td>
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<td>Greg Mackey*</td>
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<td>Peter Graf</td>
<td>Grant PUD</td>
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<tr>
<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
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Notes:
* Denotes Hatchery Committees member or alternate
Wells HCP Hatchery Committees
Statement of Agreement

Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update, dated April 17, 2013

Statement
The Wells HCP Hatchery Committees approves the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update, dated April 17, 2013. Any future appendices for the plan will require HCP Hatchery Committee approval.

Background
The Wells HCP, Section 8.5, requires the HCP Hatchery Committee to develop a five-year monitoring and evaluation plan that is updated every five years. This document, Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update, dated April 17, 2013, is the first five-year update of the hatchery monitoring and evaluation plan.
### Statement

The Rock Island and Rocky Reach HCP Hatchery Committees approves the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update, dated April 17, 2013. Any future appendices for the plan will require HCP Hatchery Committee approval.

### Background

The Rock Island and Rocky Reach HCPs, Section(s) 8.5, require the HCP Hatchery Committee to develop a five-year monitoring and evaluation plan that is updated every five years. This document, Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update, dated April 17, 2013, is the first five-year update of the hatchery monitoring and evaluation plan.
Statement

The Rock Island and Rocky Reach HCP Hatchery Committees agree that the capacity exists (per Grant PUD’s Basis of Design, 2012) for Chelan PUD’s Methow spring Chinook mitigation obligation (60,516 smolts) to be overwinter reared in the new Carlton Acclimation Facility, to be constructed by Grant PUD in 2013. Fish management for both Chelan PUD’s 60,516 spring Chinook and Grant PUD’s 200,000 summer Chinook will be targeted to accommodate the following criteria:

<table>
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<tr>
<th>Program</th>
<th>Release number</th>
<th>Size at release</th>
<th>Length at release</th>
<th>Density index</th>
<th>Flow index</th>
<th>Flow demand/tank</th>
<th># 30-ft. tanks</th>
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<tr>
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<td>200,000</td>
<td>15 fpp</td>
<td>5.7”</td>
<td>0.10 lb/cf/in</td>
<td>1.0 lb/cf/in.</td>
<td>388 gpm</td>
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<td>0.6 lb./gpm/in</td>
<td>560 gpm</td>
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This agreement approves the existence of sufficient capacity at Carlton but does not obligate the HCP Hatchery Committees to support Carlton as a permanent location for overwinter rearing Chelan’s spring Chinook obligation. The use of Carlton as a long term location for overwinter rearing will be determined in the future by the Committees. The Committees have previously agreed to using Carlton for the 2013 brood.

Background

As part of the recalculated hatchery compensation levels approved by the Committees on December 14, 2011, Chelan PUD has a mitigation obligation to produce 60,516 Methow spring Chinook. In February 2013, Chelan PUD and Grant PUD executed a lease agreement which allowed Grant PUD to construct a new overwinter acclimation facility on Chelan PUD property. Within this lease, Grant PUD agreed to provide Chelan PUD with capacity to overwinter acclimate 60,516 Methow spring Chinook within the new facility.
Chelan PUD- Dryden TMDL Compliance

At the June HCP HC meeting, Chelan PUD committed to provide the HC with a description of activities required to ensure that we can meet hatchery production levels and TMDL compliance.

The following actions will be used to ensure that summer Chinook production and infrastructure complies with the Wenatchee River TMDL for phosphorus.

<table>
<thead>
<tr>
<th>Action</th>
<th>Purpose</th>
<th>Timeline</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Measure baseline phosphorus levels in Wenatchee River and at Dryden facility (Chelan PUD) before, during, and after fish on station</td>
<td>Use WQ data to establish baseline phosphorous levels and estimate variability. Then, determine the (1) quantity of phosphorous and (2) the flow “Q” that can be discharged</td>
<td>2013 &amp; 2014 acclimation periods</td>
<td>If background concentration levels exceed wasteload allocation, resize Q to appropriate level or consider other treatment options.</td>
</tr>
<tr>
<td>2. Conduct low phosphorous feed trial at Dryden (Grant PUD &amp; Chelan PUD)</td>
<td>Use regular and low phosphorous feeds during acclimation to measure WQ response in effluent and to determine efficacy of future use</td>
<td>2013 acclimation period</td>
<td>If low phosphorous feed reduces effluent phosphorous concentration and meets fish health parameters (evaluated separately at FWS lab), then consider use for TMDL compliance</td>
</tr>
<tr>
<td>3. Benchmark Chelan Falls and Leavenworth circulars (Chelan PUD &amp; USFWS).</td>
<td>Determine efficacy of circular tanks and radial flow separators for phosphorous removal by looking at effluent WQ</td>
<td>2013 &amp; 2014 (Chelan Falls is currently operational, Leavenworth would be considered if infrastructure is built)</td>
<td>If circular tanks and waste removal effectively remove phosphorous, consider future application for Dryden. Consider reuse if Q is reduced significantly.</td>
</tr>
<tr>
<td>4. Evaluate size of smolts released-use physiological data and PIT tag data to empirically test different smolt sizes (NOAA - Beckman and Larsen &amp; Chelan PUD)</td>
<td>Optimize smolt release size to decrease precocity, increase SARs, and reduce phosphorous input (i.e., less food)</td>
<td>Begins in 2012 and would focus on 2014 &amp; 2015 release years</td>
<td>If a smaller smolt can improve return performance, consider application of smaller size for Dryden production group</td>
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<tr>
<td>5. Evaluate the</td>
<td>Examine reduction in</td>
<td>2014 acclimation period</td>
<td>Program changes are</td>
</tr>
<tr>
<td>Action</td>
<td>Purpose</td>
<td>Timeline</td>
<td>Decision</td>
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<tr>
<td>--------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>number of fish released and effects on phosphorous levels (Chelan PUD)</td>
<td>phosphorous discharge associated with 500k smolt production (reduced from 864k)</td>
<td></td>
<td>likely to reduce phosphorous levels (supports decision in Action 1). This is not a proposal for further reductions.</td>
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<tr>
<td>6. Evaluate Actions 1-5 and select best option(s) for Dryden to meet TMDL standard</td>
<td></td>
<td>2015 summer</td>
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Broodstock Collection in 2013: Model Results

Greg Mackey
Douglas PUD
HCP Hatchery Committee
April 2013
Broodstock Calculation

Basic Broodstock Calculation

Assume 1:1 Sex Ratio

Number of Females Collected × Pre-Spawn Survival × BKD Culling Survival × Fecundity × Egg to Release Survival = Smolts

Number of Males Collected + Total Broodstock = Total Broodstock
Broodstock Calculation

Data Sources

*Used 2013 Broodstock Protocol Mean Values*

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<thead>
<tr>
<th>Number of Females Collected</th>
<th>Pre-Spawn Survival</th>
<th>BKD Culling Survival</th>
<th>Fecundity</th>
<th>Egg to Release Survival</th>
<th>Smolts</th>
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<td>2011 M&amp;E: Recent 5-Years</td>
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Variance Sources

Attachment F
## Size Matters

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# Methow Spring Chinook Program

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<th>P &gt; 110% of Target</th>
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<tbody>
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<th>P &gt; 110% of Target</th>
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<tbody>
<tr>
<td>P ≥ Target</td>
<td>Total</td>
<td>Hatchery</td>
<td>Wild</td>
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## Twisp Steelhead Program

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<tbody>
<tr>
<td>P ≥ Target</td>
<td>Total</td>
<td>Hatchery</td>
<td>Wild</td>
<td>Production</td>
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### Attachment F
### Methow Safety Net Steelhead Program

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<th>Lower 95% CI</th>
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<th>P &lt; 90% of Target</th>
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<tr>
<td>P ≥ Target</td>
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## Wells SubYearling Summer Chinook Program

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FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees
From: Mike Schiewe, Chair
Cc: Kristi Geris and Emily Pizzichemi
Re: Final Minutes of the May 15, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, May 15, 2013, from 9:30 am to 1:30 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Mike Tonseth will consult with Ken Warheit (Washington Department of Fish and Wildlife [WDFW] geneticist) and then provide the Wenatchee spring Chinook trapping/sampling protocols, including the genetic inclusion/exclusion criteria, to Emily Pizzichemi and Kristi Geris for distribution to the Hatchery Committees (Item II-A).
- Lynn Hatcher will send a status update on Wenatchee spring Chinook permitting to Emily Pizzichemi and Kristi Geris for distribution to the Hatchery Committees no later than May 31, 2013 (Item II-A).
- Emily Pizzichemi and Kristi Geris will arrange a conference line and distribute details to the Hatchery Committees for a conference call to review the status of Wenatchee spring Chinook permitting, scheduled for June 3, 2013, at 10:00 am (Item II-A).
- Hatchery Committees representatives will provide the names of recommended statisticians, salmon ecologists, and hatchery biologists to serve on a technical peer review panel to rank responses to the Chelan PUD Hatchery Monitoring and Evaluation (M&E) Requests for Proposal (RFPs) to Mike Schiewe (with a copy to Kristi Geris) no later than June 3, 2013 (Item III-A).
- Greg Mackey will revise the Wells Hatchery Summer Chinook Program Hatchery
and Genetic Management Plan (HGMP) and Statement of Agreement (SOA) accordingly, as requested by the Hatchery Committees, and Emily Pizzichemi will distribute the revised documents to the Hatchery Committees no later than May 17, 2013 (Item IV-A).

(*Note: the revised documents were received from Mackey and distributed to the Hatchery Committees by Pizzichemi on May 16, 2013; and the revised HGMP and SOA were approved by email vote on May 22, 2013, with the Yakama Nation [YN], the Colville Confederated Tribes [CCT], the U.S. Fish and Wildlife Service [USFWS], WDFW, and Douglas PUD approving, and the National Marine Fisheries Service [NMFS] abstaining.)

- Hatchery Committees representatives will send their approval or requested changes to the Wells Summer Chinook HGMP to Mike Schiewe (with copies to Emily Pizzichemi, Kristi Geris, and Greg Mackey) no later than May 22, 2013 (Item IV-A).

- Mackey will provide a list of critical sections in the Wells Hatchery Modernization Master Plan to help guide review to Emily Pizzichemi for distribution to the Hatchery Committees (Item IV-B). (*Note: the list was received from Mackey and distributed to the Hatchery Committees by Pizzichemi on May 20, 2013.)

- The Hatchery Committees June 19, 2013 meeting will be held at 9:00 am in the Chelan PUD Auditorium (Item VI-A).

**STATEMENT OF AGREEMENT DECISION SUMMARY**

- Douglas PUD’s revised Wells Summer Chinook HGMP and SOA were approved by email vote on May 22, 2013, with the YN, CCT, USFWS, WDFW, and Douglas PUD approving, and NMFS abstaining.

**AGREEMENTS**

- There were no agreements discussed at today’s meeting.

**REVIEW ITEMS**

- Emily Pizzichemi sent an email to the Hatchery Committees on May 14, 2013, notifying them that the Wells Hatchery Master Plan is available for download from
the ftp site and is out for a 60-day review period, with comments due to Greg Mackey no later than July 13, 2013.

FINALIZED REPORTS

- There are no reports that have been recently finalized.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. Bill Gale added a brief status update on permitting at the Leavenworth and Tumwater National Fish Hatcheries (NFHs).

The revised draft April 17, 2013 meeting minutes were reviewed. Four outstanding comments were discussed.

- Under the Agreements section, USFWS requested to clarify that natural-origin fish with Carson ancestry collected “at Methow Hatcheries” will be retained and used for broodstock.
- Regarding the Conflict of Interest Policy in the context of the M&E RFPs for PUD Hatchery Programs, Douglas PUD requested that Mike Schiewe’s statement be revised so as to not limit the definition of a conflict of interest to professional relationships.
- Regarding the discussion of the revised M&E Plan, Douglas PUD requested to clarify that the Chelan PUD SOA was approved contingent on the use of the same language as the revised Douglas PUD SOA.
- Regarding the Chelan Falls Summer Chinook Update, Mike Tonseth clarified that the emerging fish health issue with summer Chinook at Chelan Falls Hatchery was bacterial gill disease (BGD).

Emily Pizzichemi said that all other comments and revisions received on the draft meeting minutes were incorporated. The Hatchery Committees members present approved the April 17, 2013 meeting minutes as revised.

Action items from the last Hatchery Committees meeting on April 17, 2013, and follow-up discussions were as follows:
• **Greg Mackey will provide the Wells Hatchery Modernization Master Plan to the Hatchery Committees for review, when available (Item I).**

Emily Pizzichemi notified the Hatchery Committees that the Wells Hatchery Modernization Master Plan was available for download from the ftp site for a 60-day review beginning on May 14, 2013, with comments due no later than July 13, 2013.

• **Chelan PUD, Douglas PUD, Grant PUD, and the CCT will discuss proportional responsibilities for funding run-composition sampling at Wells Dam for summer Chinook; and an update will be provided on the discussions at the Hatchery Committees meeting on May 15, 2013 (Item I).**

Peter Graf said that Grant PUD is waiting to hear back from WDFW before making a final decision on how to proceed. Alene Underwood proposed removing this item from the list of Action Items as the responsible parties are working on it. The Hatchery Committees representatives present agreed to remove this item from the Action Items with the stipulation that any problems regarding funding run-composition sampling at Wells Dam for summer Chinook are reported to the Hatchery Committees.

• **NMFS will have a standing agenda item to provide a HGMP update at future Hatchery Committees meetings (Item I).**

Craig Busack provided the first of these standing monthly updates at this meeting.

• **Greg Mackey will provide the final revised M&E Plan for PUD Hatchery Programs: 2013 to Kristi Geris for distribution to the Hatchery Committees (Item II-A).**

Kristi Geris distributed the final revised M&E Plan for PUD Hatchery Programs: 2013 to the Hatchery Committees in an email dated April 19, 2013.

• **Douglas PUD and Chelan PUD will provide their final SOAs approving the Revised Analytical Framework 5-Year Update to Kristi Geris for distribution to the Hatchery Committees (Item II-A).**

Kristi Geris distributed the Final Douglas PUD and Chelan PUD SOAs to the Hatchery Committees in emails dated April 19, 2013, and April 22, 2013, respectively.

• **Representatives of the Hatchery Committees will submit recommendations for peer reviewers to participate along with Hatchery Committees members in the review of responses to the Chelan PUD Hatchery M&E RFPs (Item II-A).**

Hatchery Committees representatives will provide recommendations for peer reviewers to Mike Schiewe no later than June 3, 2013.
• **Alene Underwood will provide the final SOA for the Carlton Acclimation Facility Capacity Utilization to Kristi Geris for distribution to the Hatchery Committees (Item III-A).**

Kristi Geris distributed the final SOA for the Carlton Acclimation Facility Capacity Utilization in an email dated April 18, 2013.

• **Alene Underwood will provide the revised Spring Chinook Pilot Study at Rocky Reach to Kristi Geris for distribution to the Hatchery Committees no later than April 19, 2013; email approval of the pilot study will be requested from Hatchery Committees representatives no later than April 26, 2013 (Item III-A).**

Kristi Geris distributed the updated Rocky Reach Spring Chinook Pilot Study to the Hatchery Committees in an email dated April 22, 2013. Approvals or abstentions were received from all Committees representatives via email.

• **Lynn Hatcher will provide NMFS direction on what type of additional documentation is needed from the PUDs to obtain new permits for the existing Permit 1347 that will expire on October 22, 2013 (i.e., a full HGMP versus an updated program description) by Friday, April 26, 2013, including a timeline of when documents are needed, to Kristi Geris for distribution to the Hatchery Committees (Item IV-A).**

Lynn Hatcher said that he and Craig Busack are working on this item and will get back to the Hatchery Committees representatives with more information.

• **Hatchery Committees representatives will review Greg Mackey’s white paper on Methods for Estimating Likelihoods of Outcomes in Broodstock-Collection prior to the Hatchery Committees May 15, 2013 meeting, when the Committees will discuss its use in developing future broodstock protocols (Item IV-D).**

Greg Mackey said that although this paper should be discussed because of its potential influence on future broodstock collection protocols, he recommended revisiting the topic at a later date.

II. **NMFS**

A. **Monthly HGMP Update**

Craig Busack said that the Entiat Biological Opinion (BiOp) was completed and signed on April 18, 2013. He said NMFS is currently working on consultations for the Mid-Columbia coho program, which requires two BiOps—one for construction of facilities and one for operations. Busack hopes to have the draft BiOp completed by June 2013. Busack said that
Amilee Wilson (NMFS) expects to complete the joint BiOp for the Chiwawa, Nason, and White River spring Chinook programs by June 14, 2013. Wilson has alerted Busack that completion of the National Environmental Policy Act (NEPA) Environmental Assessment (EA) for the Nason Creek and White River programs may cause a delay. Busack said that the Chiwawa spring Chinook program is currently covered by the existing Permit 1196; however, broodstock collection at Tumwater Dam (TWD) for the Nason program will require new permits. Busack added that the new permits will not be available until the NEPA packages are complete. Busack said that the Leavenworth NFH spring Chinook BiOp was delayed because it is being revised to fit a new BiOp template. NMFS is focusing on approval of the Wenatchee spring Chinook BiOp before finalizing the Leavenworth NFH spring Chinook BiOp.

Busack reiterated that the probable completion date for the Chiwawa spring Chinook BiOp is June 14, 2013. Joe Miller asked what ramifications this new deadline will have on the broodstock collection schedule, and Mike Tonseth replied that the biggest issue with the delayed timeline is getting staff prepared on short notice. Alene Underwood said that even though the rivers are running high right now, it is possible that the spring Chinook run will reach Chiwawa soon. Underwood said that the existing permit can be used to collect spring Chinook at the Chiwawa weir if the fish start to run before June 14, 2013, when the new permit is issued for collection at TWD. Bill Gale said that, from the USFWS perspective, collecting at TWD would be preferable, but Kirk Truscott said that sampling and collecting at TWD will require new permits. Tonseth said that with the expected permit completion date of June 14, 2013, broodstock collection can begin as early as June 17, 2013, but it will be a rush to deploy staff.

Underwood asked about the broodstock genetic testing turnaround time for spring Chinook collected at TWD, and Tonseth said that he received more information from Ken Warheit (WDFW geneticist) to discuss at the Priest Rapids Coordinating Committee Habitat Subcommittee (PRCC HSC) meeting on May 16, 2013. Underwood requested that the topic also be discussed today for the benefit of the Hatchery Committees. Tonseth said that genetic testing is expected to take about 4 business days, or less if there is a rush. He said this timeline fits the original proposal time of a 2-week holding period for individual fish, and that hatchery staff will be expected to maintain this schedule. Underwood requested a
written protocol to discuss with hatchery staff. Tonseth replied that he is setting up a meeting for the week of May 20, 2013, to discuss the holding plan protocol, and Underwood asked to be included in the discussion. Miller expressed concern about the lack of genetic criteria for inclusion/exclusion in broodstock for each of the Wenatchee spring Chinook programs. Tonseth replied that Warheit is currently travelling and unavailable, but that he will compile more details early next week, including a scope of work and a budget for the genetic testing component. He added that he will eventually arrange a conference call to review everything with the Hatchery Committees.

Hatcher asked Tonseth about starting sampling on June 17, 2013, particularly with the NEPA process not expected to be completed until June 14, 2013. Hatcher suggested that the public review period could delay the sampling start date even more. Busack stressed that June 14, 2013, is a tentative deadline and that he will have to verify when the public comment period opens and closes. Schiewe said that Underwood’s idea of setting up a contingency plan is relevant and that WDFW and Chelan PUD may have to collect spring Chinook at the Chiwawa weir under the existing permit authority. Tonseth said that there is a difference of opinion on how sampling at Chiwawa weir may affect bull trout. Gale said that, as far as USFWS is concerned, operating the Chiwawa Weir and TWD collection facilities simultaneously is not recommended because of potential impacts on bull trout and he cannot guarantee USFWS support of dual operation. Busack asked about USWFS’s permit coverage and Gale said that the state currently has Section 6 coverage for blanket fish actions. Truscott added that the state’s Section 6 coverage explicitly mentions Chiwawa. Tonseth cited conversations he previously had with Karl Halupka and said that they currently have coverage under Section 6 provided WDFW is the operator. He said that if they move forward with collecting broodstock at the Chiwawa weir, WDFW will approve the sampling. Gale said that he supports broodstock collection at TWD under a new permit and not running Chiwawa.

Keely Murdoch asked when staff will begin work on the reproductive success study and suggested loading the computer (at TWD) with passive integrated transponder (PIT)-tag files for definitive identifications, and Tonseth agreed. She said that if fish are getting handled at TWD regardless, then it makes sense to collect those that can be positively identified as natural origin Chiwawa adults at TWD to avoid double-handling and recollection at the
Chiwawa Weir. Josh Murauskas supported Murdoch’s idea, and said that there are many PIT-tags from Chiwawa on wild fish—last year there were over 74. Tonseth agreed that PIT-tags can certainly be used for identification if they are linked to the weir computer system. Tonseth said that he hopes to have a clear indication by the end of May 2013 as to whether or not June 14, 2013, is a feasible deadline. Schiewe requested that NMFS provide a permit update no later than May 31, 2013, and Emily Pizzichemi will set up a conference call for June 3, 2013, to discuss the update from Busack with the Hatchery Committees representatives.

Busack gave an update on the permit 1347 programs, which include the non-listed summer and fall Chinook programs. He said that NMFS intends to issue a 10-year extension on the permits, which will expedite the consultation process. The process will still require issuing a BiOp; however, he said that the same EA can be used. Busack said that this has already been completed for the Wenatchee summer Chinook program and that he believes that he has all of the appropriate information for the other programs. Gale asked if they are required to have a separate consultation for bull trout, and Busack proposed that he and Gale discuss the issue outside of the meeting. For the Okanogan programs, Busack said that he needs an HGMP on steelhead from the CCT as soon as possible.

Busack said that BiOps also must be written for the section 10(j) programs (i.e., experimental populations). In order to expedite the NEPA process, he said that he plans to use the Chief Joseph Dam Environmental Impact Statement (EIS) and the Bonneville Power Administration permit to cover the substitution of MetComp fish for Carson fish. Gale asked how many BiOps have to be written, and Busack said that separate BiOps are needed for the hatchery action (holding fish) and release of fish. Busack said that the hatchery BiOp needs to be completed as soon as possible so that the CCT can legally possess the fish. Truscott said he is concerned that if the release permit fails after he has already acted on the transfer authorization, he will be stuck holding fish. He added that if the CCT accepts the fish before they have the section 10(j) permit, they would be releasing *endangered* spring Chinook instead of *threatened* spring Chinook. Hatcher said that, considering this fact, they would need permits by April 2014 because, once the fish are released, they are technically covered under section 10(j). He added that the EA and BiOp on the release action are already underway, and so the entire process should be complete by fall 2013. Gale asked if the two
different permitting processes (hatchery holding and release effects) are dependent or if they can be exclusively finalized, and Busack said that they can be separately filed. Gale asked about public comment and Busack said that he has not yet set a date, but would like to put out all of the Methow and Okanogan HGMPs at the same time.

Busack said that there has been considerable discussion within NMFS recently about whether the currently contemplated permits for the Methow basin are *U.S. v. Oregon* compliant. He said that they are currently finalizing the details in the proposals for spring Chinook and steelhead; and will be asking the Hatchery Committees for comments and/or formal approvals. He highlighted the new items in the General Management Framework for Methow Spring Chinook and Steelhead (Attachment B), which was distributed to the Hatchery Committees by Pizzichemi on May 14, 2013. Specifically for spring Chinook, Busack said that the framework includes a requirement for a relative reproductive success study to determine if hatchery-origin fish spawning in the vicinity of hatchery outfalls are contributing to natural production, and if the estimated percentages of hatchery origin spawners (pHOS) have been adjusted to reflect this. He said that this is not intended to be a large study, but rather just a few years of monitoring. For steelhead, Busack said that the previous pHOS values may have been optimistic, and so he has proposed a 2-stage standard—a pHOS of 0.5 over the entire basin (October 2013 to October 2020); and a pHOS of 0.50 calculated over the entire basin, with 0.25 in half of the “production area” (October 2020 to October 2023). Murdoch offered several comments on the draft Management Framework document. Regarding spring Chinook, she considered the hatchery outfall area “artificial,” a place where wild fish and hatchery fish interaction is minimal, and she thinks that this area should be discounted from the pHOS calculation. She claimed that in this area, the hatchery fish are not contributing to natural origin recruit (NOR) fish productivity. Busack said that natural production by hatchery fish, whether or not they mix with the wild fish when reproducing, is the issue, because such production ultimately introduces hatchery genetics into the natural population. Murdoch agreed that data should be collected, but she maintained that it should not be used to adjust pHOS value. Greg Mackey suggested that a few years of data under the forthcoming management regime with reduced fish numbers, adult management activities, and potentially adjusted release locations, might help decide if there should be further studies conducted in the area. Gale agreed with Busack that the fish in that area should be considered and suggested that the BiOp be amended to allow for
revisions within the first 5 years of data collection. Regarding steelhead, Murdoch said that she is concerned that the Phase II pHOS goal of 0.5 may be too restrictive given the current state of the run. She asked, for example, what happens if they hit pHOS = 0.6 but are still seeing positive trends in the population, will they have to move fish down to the Columbia? Murdoch also suggested adding adaptive management language to the draft Framework.

Busack said that he anticipated using a 3-year geomean for pHOS and not assessing pHOS on a one-year basis. Gale suggested revising the Management Framework so that the initial targets for pHOS are moving toward a Phase II goal. Regarding Methow steelhead (i.e., Attachment B, page 3, Overall point 3), Mackey reminded the Hatchery Committees representatives that the previously agreed-upon total steelhead release was 250,000 individuals, which is what the HGMPs reflect, but this new draft Management Framework has 350,000 as the upper limit. Schiewe suggested that if the upper limit (i.e., 350,000) was a change from what had previously been agreed to in approval of the HGMP, then it should be brought back to the Hatchery Committees for discussion regardless of U.S. v. Oregon. Gale noted that the Wells HGMP states that the upper basin limit for steelhead release is 150,000. Tonseth pointed out that once the fish move from the upper Methow to the lower Methow, they can be moved to the Columbia River if necessary. Mackey recommended that the limit should be 250,000, regardless of where they come from—not 250,000 from the upper basin and 350,000 overall (as written in the draft Management Framework). Busack said that he thought the Hatchery Committees previously agreed that 250,000 should come from the upper basin. Gale said that if the draft Management Framework is left as it is currently written, once permits are obtained, U.S. v. Oregon will need to approve increasing the count from the upper basin from 150,000 to 250,000.

Busack said that because agreement cannot be reached on the new spring Chinook monitoring measure, NMFS may change the pHOS standard from a flat value to a sliding scale to allow for adaptive management. NMFS may also change the total steelhead release number back to 250,000 individuals. Busack said that he will amend and discuss the revised document at the next Joint Fisheries Parties (JFP) conference call. Schiewe reminded Busack that Hatchery Committees approval is independent of U.S. v. Oregon approval. Schiewe suggested that Busack include the PUDs in these discussions.
Busack said that NMFS recently received Chelan PUD's permit application detailing their portion of the Methow spring Chinook program. Chelan PUD proposed releasing spring Chinook at two acclimation sites in the Methow, and Busack asked the Hatchery Committees members for their input. Miller said that there is no new information in the plan—just a scope of activities, as discussed previously with the Committees.

III. Chelan PUD

A. Suggestions for M&E RFP Technical Review Panel (Alene Underwood)

Alene Underwood asked Hatchery Committees representatives to recommend people for the M&E RFP Review Panel. Mike Schiewe requested that all suggestions be sent to him (with a copy to Kristi Geris) via email no later than June 3, 2013. He suggested identifying potential reviewers by areas of expertise, and added that potential reviewers should include statisticians, salmon biologists, hatchery biologists, and any other fields of study that the Hatchery Committees deem applicable. Bill Gale said that he has already approached two people—Barry Berejikian of NMFS and Brian Cates, USFWS retired. Gale said that he would like to provide more information about compensation, and Underwood replied that Chelan PUD will fund all expenses related to the project, including travel. Lynn Hatcher recommended Larry Lestelle as a good salmon ecology expert. Underwood said that she anticipates that Chelan PUD will select a minimum of three reviewers, and the final number will depend on qualifications, availability, the number of proposal submissions, and the number of interested reviewers. Murauskas suggested that Chelan PUD compile a list of reviewers, assess their availability, and then come back to the Hatchery Committees for final review. Gale asked if Anchor QEA would facilitate the discussion and review process, and Underwood replied that Chelan PUD and Grant PUD will facilitate the process, but the reviewers will be independent. Murauskas described Chelan PUD's recent experience with a review panel for a sturgeon study, recalling that it consisted of three reviewers working independently; however, one also facilitated the group. Underwood added that for that particular review process, Chelan PUD also conducted an internal review and ranking process. The internal reviews and the expert panel reviews were both considered when making a final contract decision. She said that this RFP will follow a similar protocol. Murauskas recommended Dr. John Skalski for his statistical knowledge, and Dr. John Clark, the chief scientist for Alaska Department of Fish and Game (ADFG), for his salmon biology expertise. Murauskas said that Clark is a good choice because he is close enough to the
Columbia River to understand the issues, but far enough removed to provide a unique view. Keely Murdoch said that the YN hoped that no one would be removed from consideration based on their perceived views or opinions. Schiewe reminded the Hatchery Committees that non-conflicted members of the Hatchery Committees may sit on the panel, and clarified that a conflicted party includes individuals from agencies that are bidding on the project and responding to the RFP.

Underwood said that the RFP closes July 9, 2013, and that she would like the panel to begin the ranking process immediately upon closing. The Hatchery Committees agreed to discuss how to choose reviewers at the Hatchery Committees’ June 19, 2013 meeting, once Chelan PUD has had a chance to compile the names and contact information of potential experts. Murdoch asked if the panel is only judging the scientific merit of the proposals or if they are making any final decisions about the study. Underwood confirmed that the panel is solely judging the scientific merit of the proposals in the context of the study, and that their rankings will only be used to inform Chelan PUD’s final decision. Underwood also stated that Chelan PUD will be considering the cost effectiveness of each proposal, not necessarily the lowest cost, but the quality of work available for the proposed price.

Mike Tonseth said that he had questions about the RFP itself. He pointed out that sockeye were not mentioned at all, and Murdoch added that sockeye should be addressed because there is an M&E obligation to consider the species. Murauskas said the issue of whether or not the District will continue to fund the upper Wenatchee trap or other activities pertaining to sockeye monitoring has not been resolved, which is why sockeye was not included in the RFP. Tonseth asked if an addendum to the RFP will go out once all of the questions and issues have been resolved, and Underwood replied that Chelan PUD will internally discuss the sockeye question and apprise the Hatchery Committees once a decision is made. Underwood clarified that even though something is not contained within the RFP, that fact does not mean that the RFP does not cover it, and that it is precedent for outstanding issues such as this to be dealt with internally and then clarified to potential proposers in an addendum.

Tonseth asked, regarding spring Chinook in the Wenatchee River, whether the respective PUDs planned to fund hatchery programs independent of their dams. Murauskas replied
that there is a geographical dilemma—Grant PUD has responsibilities for Nason Creek and White River, whereas Chelan PUD has responsibility for the Chiwawa; therefore, Chelan PUD and Grant PUD will each assume responsibility for their own portion of the bill. Tonseth said that the language is misleading because it only mentions those three locations, when, in reality, assessing stray rates requires monitoring additional tributaries and reaches. Underwood stressed that the RFP is intended as a guide and that if a potential bidder does not already know that stray sampling also may occur outside of the Chiwawa (or other tributary), then they probably are not qualified to pursue the work. Tonseth asked why the other Mid-Columbia dams are not mentioned, and Murauskas replied that the Methow will be covered by Grant PUD and Douglas PUD in a separate RFP. The in-hatchery monitoring component for Chelan Falls will be addresses at a later date. Tonseth said that there is concern within WDFW about this RFP having too many last-minute changes and addenda. Underwood reminded the group to send all questions or concerns related to clarifications of the RFP to Jackie Krueger.

B. Rocky Reach Trap Pilot Update (Alene Underwood)

Alene Underwood said that Chelan PUD started operating the Rocky Reach trap during the week of May 13, 2013. She said that visibility was low due to high turbidity, and added that Chelan PUD is hopeful that the turbidity will abate in the near future. Tonseth asked if Chelan PUD is tracking days where high turbidity impedes visibility. He added that if turbidity compromises the ability to collect data, then the program might not be a viable undertaking. Underwood said that Chelan PUD keeps a daily log of water quality and that if the problem persists, they will consider different sampling options before shutting the program down completely. Underwood invited Hatchery Committees members to view the trap with the Coordinating Committees at the Coordinating Committees meeting on May 21, 2013, or at another convenient time.

IV. Douglas PUD

A. DECISION: Wells Summer Chinook HGMP/Program description (Greg Mackey)

Greg Mackey reminded the Hatchery Committees that the Wells Hatchery Summer Chinook HGMP and associated draft SOA were distributed to the Hatchery Committees for review by Kristi Geris on April 16, 2013. Mike Schiewe asked if the new program differs from the current program, and Mackey replied that Douglas PUD will be releasing the same number
of fish, but the HGMP incorporates the Hatchery Committee approved (Sept. 19, 2012) change in timing for release of subyearlings (revised from mid-June to mid-May), because this change has been shown to improve survival. Mackey said that the only other change is that up to 10 percent of the broodstock will be composed of NORs. Kirk Truscott said that, conceptually, this is a status quo program with the exception of the 10 percent NORs expectation. Tonseth said that the aim was to take as many NORs that enter the volunteer trap, with 10 percent as a goal but not a requirement. Mackey also added that the HGMP language should allow flexibility for years in which it is not possible to reach the 10 percent goal. Kirk Truscott suggested including a statement such as, “in any year that there will be a proposal to collect NORs at Wells, it will be addressed in the Broodstock Collection Agreement.” Tonseth agreed that the percentage will be a sliding scale based on the number of fish captured and that they will provide a proposal to the Hatchery Committees for NOR collection. Bill Gale said that a segregated harvest program like this one, by definition, does not typically include targeting NORs for broodstock. He expressed concern that the proposal was creating a hybrid of a segregated program and an integrated program. Gale said that he approves the “up to 10 percent” language, but is uncomfortable defining the numbers in terms of the volunteer channel. Tonseth clarified that using the volunteer trap for sampling is not targeting NORs, but natural-origin fish use the volunteer channel and can be incorporated into the broodstock. Lynn Hatcher agreed with Gale and was concerned that the language suggested that Douglas PUD would be targeting NORs at the dam. Mackey proposed that the language be amended to reflect that broodstock will be composed primarily of hatchery-origin adults, with up to 10 percent of natural-origin. If 10 percent natural-origin fish is expected to be exceeded in any given year, WDFW will present the supporting data and proposal to the Hatchery Committees for inclusion in the Annual Broodstock Collection Protocol. Tonseth added that 10 percent from the volunteer channel should be considered a baseline, but anything above 10 percent NORs—whether from the volunteer channel or from anywhere else—should be justified in the Broodstock Protocol.

Truscott recommended that the monitoring and evaluation indicator target values contained in the document be more specific because, as it is currently written, the values are merely defined as an unknown target value. Mackey said that the Hatchery Committee will be creating new target values for the new Hatchery M&E Plan, and that the M&E Plan will be updated with those values. He said that Douglas PUD will add a footnote to the document
saying that the target values are pending approval of the Hatchery Committees (The HGMP references the M&E Plan, so updates to the Plan are automatically linked to HGMP).

Truscott proposed that he and Tonseth have an outside discussion about how these new sampling protocols will affect the CCT because there will be fish from CCT-ceded land.

Keely Murdoch requested additional time for review prior to approving the HGMP. Mackey said that he will revise the SOA and the HGMP, making the discussed changes, and he will provide the revised documents to Emily Pizzichemi for distribution to the Hatchery Committees no later than May 17, 2013. (*Note: the revised documents were received from Mackey and distributed to the Hatchery Committees by Pizzichemi on May 16, 2013). Hatchery Committees representatives will send their approval or requested changes to the Wells Summer Chinook HGMP to Schiewe (with copies to Pizzichemi, Geris, and Mackey) no later than May 22, 2013. (*Note: the revised HGMP and SOA were approved by email vote on May 22, 2013, with the YN, CCT, USFWS, WDFW, and Douglas PUD approving, and NMFS abstaining.)

B. Discussion: Wells Hatchery Modernization Master Plan (Greg Mackey)

Greg Mackey reminded the Hatchery Committees that Emily Pizzichemi sent an email to the Hatchery Committees on May 14, 2013, notifying them that the Wells Hatchery Modernization Master Plan is available for download from the ftp site and is available for 60-day review, with comments due to him no later than July 13, 2013. Mackey noted that the new Wells Hatchery design uses gravity feed to convey water and transfer fish as they transition through different life stages—a process which is more energy efficient for the facility and more beneficial for the fish. He provided a brief explanation of the bio-programming section, which contains calculations for estimating growth and size and required rearing volumes and flows. Mackey said that Douglas PUD plans to host a workshop for the Hatchery Committees and invite HDR Engineering, Inc. (HDR), the firm that designed the facility update, to field questions about the upgrades. Schiewe suggested holding the workshop in early July 2013, because June 2013 is typically a very busy month for the Committees.

Bill Gale asked if there were specific sections of the Master Plan that could be identified to make review by the Committee more efficient. Gale added that having a list of critical areas
for review will help focus and guide the review process on such a large document. Tonseth recommended a close review of the fish health section to ensure that details are consistent with previous Hatchery Committees discussions. Mackey said that he will provide a list of critical sections in the Wells Hatchery Modernization Master Plan to help guide review to Emily Pizzichemi for distribution to the Hatchery Committees. (*Note: the list was received from Mackey and distributed to the Hatchery Committees by Pizzichemi on May 20, 2013).

Gale asked if Hatchery Committees approval of the Master Plan is needed. Mackey said he was not sure at this point, and that the Federal Energy Regulatory Commission (FERC) may require agency approval, which would be in the form of a SOA from the Hatchery Committees. Gale suggested that the Hatchery Committees’ approval could be as simple as noting it in the meeting minutes. Schiewe asked Mackey when FERC needs the Hatchery Committees’ approval because that will influence when the Hatchery Committees workshop with HDR is held, as it may influence their decision. Mackey said at this time there is no established date.

**V. USFWS**

*A. National Fish Hatchery Update (Bill Gale)*

Bill Gale said that USFWS is behind schedule installing the water-reuse circular tanks at Leavenworth NFH due to construction problems. He said installation has been delayed by a leaky pipe, which remains unresolved. Gale said that some renovations are still moving forward; however, he estimated they are about a year behind schedule.

Gale said that WDFW approached USFWS about taking adult spring Chinook from TWD if the appropriate permitting is obtained. He said that Leavenworth NFH has agreed to house the adults for a 3-day AQUI-S® withdrawal period and that the two agencies are currently discussing logistics of the arrangement.

**VI. HCP Administration**

*A. Next Meetings*

Mike Schiewe said that Andy Chinn from the PRCC HSC contacted him about potentially sharing the Hatchery Committees meeting date and location on June 19, 2013. Schiewe said
that, if these plans are amenable, he proposed beginning at 9:00 am to accommodate the PRCC HSC meeting in the afternoon. The Hatchery Committees meeting on June 19, 2013 will be held at 9:00 am in the Chelan PUD Auditorium.

The next scheduled Hatchery Committees’ meetings are on June 19, 2013 (Chelan PUD Auditorium); July 17, 2013 (Douglas PUD office); and August 21, 2013 (Chelan PUD).

**List of Attachments**

Attachment A List of Attendees
Attachment B General Management Framework for Methow Spring Chinook and Steelhead
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Emily Pizzichemi</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<tr>
<td>Joe Miller</td>
<td>Chelan PUD</td>
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<tr>
<td>Josh Murauskas*</td>
<td>Chelan PUD</td>
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<tr>
<td>Greg Mackey*</td>
<td>Douglas PUD</td>
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<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<tr>
<td>Peter Graf</td>
<td>Grant PUD</td>
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<tr>
<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
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<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Craig Busack*†</td>
<td>National Marine Fisheries Service</td>
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<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
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Notes:
* Denotes Hatchery Committees member or alternate
† Joined by phone
General Management Framework for Methow Spring Chinook and Steelhead

May 13, 2013

Introduction:

This document presents bare-bones overviews of Methow spring Chinook and steelhead management during the proposed 10-year permit period from Fall 2013 to Fall 2023. The purpose of the documents is to achieve agreement on US v. Oregon compliance by augmenting existing HGMPs, addendum documents, and sufficiency letters in a way that both addresses all the concerns that were presented by YN to PAC at its April meeting, and reflects further development of management ideas in response to YN proposals and additional discussion. Our plan is that once these overview frameworks are finalized, their elements will be summarized in addenda that will be added to the permit application package, eliminating the need for edits to existing documents.

Our goal is to be able to report at the PAC meeting on May 22 that the concerns about US v. Oregon compliance have been addressed. At that point NMFS can move forward on the consultations and wind them up before the permits expire.
Methow Spring Chinook

Overall:

1. Program details other than those described here are as described in the HGMPs and addendum documents, and/or will be developed by the managers/operators in a management implementation plan.

2. Adult management will be used to manage overall basin pHOS, by the following sliding scale:

<table>
<thead>
<tr>
<th>Natural-Origin Escapement</th>
<th>Management Response</th>
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</thead>
<tbody>
<tr>
<td>&lt;300</td>
<td>500 total spawners</td>
</tr>
<tr>
<td>301-500</td>
<td>pHOS ≤ 0.4</td>
</tr>
<tr>
<td>501-900</td>
<td>pHOS ≤ 0.3</td>
</tr>
<tr>
<td>901-1500</td>
<td>pHOS ≤ 0.2</td>
</tr>
<tr>
<td>1501-2000</td>
<td>pHOS ≤ 0.1</td>
</tr>
<tr>
<td>&gt;2000</td>
<td>pHOS = 0</td>
</tr>
</tbody>
</table>

3. Reproductive success of hatchery-origin fish spawning in hatchery outfall reaches and in reach “m6” will be evaluated relative to fish spawning in other areas in a limited-duration study. If fish spawning in these areas are found to be less fit than fish spawning in other areas, this will be reflected in pHOS estimates.

Winthrop Program- Safety-net program

1. 400k fish total- released on-station; if available, additional 200k will be transferred to Okanogan

“Methow” (PUD) Program-Conservation program

1. 224k fish total- released on-station, at Twisp acclimation site, and at other acclimation sites in basin (must include Chewuch) as appropriate as sites and supplementation plans are developed by the managers/operators

2. Currently only 163k fish are included in HGMPs. Remaining 61k will be covered by pending HGMP addendum from Chelan PUD.
Methow Steelhead

Overall:

1. Program details other than those described here are as described in the HGMPs and addendum documents, and/or will be developed by the managers/operators in a management implementation plan.
2. Permit will encompass two phases:
   a. Phase I (10/2013-10/2020) pHOS will be managed to a maximum of 0.5, calculated over entire basin.
   b. Phase II (10/2020-10/2023) pHOS will be managed to a maximum of 0.5 calculated over entire basin and to maximum of 0.25 in half the occupied spawning habitat (details to be determined by the managers/operators).
3. Total steelhead releases into upper basin not to exceed 250K and total Methow releases not to exceed 350K

Wells Program:

1. Twisp pHOS managed at pHOS required by RRS study, for duration of study, then as appropriate to assist in achieving overall pHOS objectives
2. Lower Methow component coordinated with growth of WNFH program; as production increases occur in WNFH program, corresponding number of Wells fish will be moved to lower basin or to Columbia release component

WNFH Program:

1. Managed to accommodate ongoing rearing-strategy study through its completion (release of BY 2014 completes study)
2. Will grow during permit period from 100k to as high as 200k as feasible consistent with pNOB=0.5
3. Will incorporate off-station acclimation as appropriate, as sites and supplementation plans are developed by the managers/operators
Final Memorandum

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees

From: Mike Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the June 19, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Chelan PUD headquarters in Wenatchee, Washington, on Wednesday, June 19, 2013, from 9:00 am to 11:30 am. Attendees are listed in Attachment A to these meeting minutes.

Action Item Summary

- Mike Tonseth will consult with Ken Warheit (Washington Department of Fish and Wildlife [WDFW] geneticist) and then provide the Wenatchee spring Chinook trapping/sampling protocols, including the genetic inclusion/exclusion criteria, to Kristi Geris for distribution to the Hatchery Committees (action item carried forward from Hatchery Committees meeting on May 15, 2013).

- The National Marine Fisheries Service (NMFS) will provide a letter of concurrence for transport back to the river of Wenatchee spring Chinook adults collected for the Nason Creek and Chiwawa River programs that do not assign to either Nason Creek or Chiwawa River (Item II-A). (Note: NMFS provided approval for transport back to the river of Wenatchee spring Chinook adults not assigning to either Nason Creek or Chiwawa River via email on June 19, 2013.)

- Lynn Hatcher will distribute an update on the status of Wenatchee spring Chinook permitting to the Hatchery Committees prior to June 27, 2013 (Item II-A).

- Kristi Geris will arrange a conference line to review the status of Wenatchee spring Chinook permitting and potential paths forward, scheduled for June 27, 2013, at 10:00 am (Item II-A).

- Greg Mackey will arrange and distribute a date for the Wells Hatchery Master Plan Workshop, planned to discuss engineering aspects of the modernization with HDR
Greg Mackey will develop an agenda for the next Hatchery Monitoring and Evaluation (M&E) Workgroup meeting, to be attached to the doodle poll distributed to arrange the meeting (Item IV-C).

STATEMENT OF AGREEMENT DECISION SUMMARY

- No Statements of Agreement (SOAs) were approved at today’s meeting.

AGREEMENTS

- Hatchery Committees representative approved the Chelan PUD Methow Spring Chinook Hatchery and Genetic Management Plan (HGMP) Addendum via email on June 3, 2013.
- Hatchery Committees representatives present agreed to a shortened 14-day review period for Chelan PUD’s full Methow Spring Chinook HGMP (Item II-A).
- Grant PUD concurred with WDFW’s request to begin Wenatchee spring Chinook broodstock collection for the Nason Creek and Chiwawa River programs of up to 136 natural origin spring Chinook adults at Tumwater Dam, contingent on Chelan PUD’s concurrence, and NMFS’ approval for transport back to the river of adults not assigning to either Nason Creek or Chiwawa River (Item II-A).
- Hatchery Committees members present agreed with WDFW’s request to begin Wenatchee spring Chinook broodstock collection for the Nason Creek and Chiwawa River programs of up to 136 natural origin spring Chinook adults at Tumwater Dam, contingent on NMFS’ approval for transport back to the river of adults not assigning to either Nason Creek or Chiwawa River (Item II-A).
- NMFS approved via email on June 19, 2013, transport back to the river of Wenatchee spring Chinook adults collected for the Nason Creek and Chiwawa River programs not assigning to either Nason Creek or Chiwawa River (Item II-A).
- Hatchery Committees representatives present approved the Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) request to collect tissue samples from broodstock for parentage-based tagging (PBT) of Columbia River hatchery programs. The Colville Confederated Tribes (CCT), although they approved the request, declined to participate in 2013 (Item III-A).
- Hatchery Committees representatives present approved Grant PUD’s request for Douglas PUD to produce 100,000 steelhead for release in the Okanogan at Wells Hatchery, and 134,126 Methow River spring Chinook at the Methow Fish Hatchery (FH), for Grant PUD’s respective programs (Item IV-A).

REVIEW ITEMS
- Emily Pizzichemi sent an email to the Hatchery Committees on May 14, 2013, notifying them that the Wells Hatchery Master Plan is available for download from the ftp site and is out for a 60-day review period, with comments due to Greg Mackey no later than July 13, 2013.

FINALIZED REPORTS
- The 2012 Annual Chelan PUD Hatchery M&E Report was finalized and posted to the ftp site on June 3, 2013.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items
Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. The following revisions were requested:
- Mike Tonseth added a discussion of NMFS’ HGMP update on spring Chinook permitting for the Nason Creek and Chiwawa River programs.
- Greg Mackey added a Grant PUD fish production request.
- Alene Underwood added an update on Chelan PUD’s Methow Spring Chinook HGMP.
- Kirk Truscott added an update on Chief Joseph Wenatchee spring Chinook brood collection at Leavenworth National Fish Hatchery (NFH).

The revised draft May 15, 2013 meeting minutes were reviewed. Three outstanding comments were discussed regarding NMFS’ HGMP update:
- It was clarified that NMFS is focusing on approval of the Wenatchee spring Chinook biological opinion (BiOp)—not steelhead BiOp—before finalizing the Leavenworth NFH spring Chinook BiOp.
A statement made by Keely Murdoch was clarified to indicate that she considered hatchery outfall areas to be a place where wild fish and hatchery fish interaction is minimal—not that they do not interact at all.

A statement made by Craig Busack was clarified to indicate that, “natural production by hatchery fish, whether or not they mix with the wild fish when reproducing, is the issue, because such production ultimately introduces hatchery genetics into the natural population”—not that, “NMFS believes that any and all genetic mixing, no matter how unlikely, should be considered.”

Bill Gale also requested the following edits:

- Regarding U.S. Fish and Wildlife Service (USFWS) additions to the agenda, Gale clarified that he added a brief status update on Leavenworth NFH activities—not on permitting at Leavenworth NFH and Tumwater Dam.
- Regarding USFWS' Leavenworth NFH update, Gale clarified that Leavenworth NFH has agreed to hold the adults for a 3-day AQUI-S® withdrawal period—not 30-day MS-222 withdrawal period.

Kristi Geris said that all other comments and revisions received on the draft meeting minutes were incorporated. The Hatchery Committees members present approved the May 15, 2013 meeting minutes as revised.

Action items from the last Hatchery Committees meeting on May 15, 2013, and follow-up discussions were as follows:

- Mike Tonseth will consult with Ken Warheit (WDFW geneticist) and then provide the Wenatchee spring Chinook trapping/sampling protocols, including the genetic inclusion/exclusion criteria, to Emily Pizzichemi and Kristi Geris for distribution to the Hatchery Committees (Item II-A).
  Tonseth said that he contacted Warheit and obtained the needed information; however, he has not yet amended the protocols. Tonseth requested that this action item be carried forward.
- Lynn Hatcher will send a status update on Wenatchee spring Chinook permitting to Emily Pizzichemi and Kristi Geris for distribution to the Hatchery Committees no later than May 31, 2013 (Item II-A).
Amilee Wilson provided a National Environmental Policy Act/Endangered Species Act (NEPA/ESA) Wenatchee hatchery program consultation update on May 31, 2013, and Geris distributed the update to the Hatchery Committees the same day.

- **Emily Pizzichemi and Kristi Geris** will arrange a conference line and distribute details to the Hatchery Committees for a conference call to review the status of Wenatchee spring Chinook permitting, scheduled for June 3, 2013, at 10:00 am (Item II-A).

  Geris arranged a conference line; however, the Hatchery Committees agreed that the conference call was not needed following receipt of Amilee Wilson’s NEPA/ESA Wenatchee hatchery program consultations update.

- **Hatchery Committees representatives** will provide the names of recommended statisticians, salmon ecologists, and hatchery biologists to serve on a technical peer review panel to rank responses to the Chelan PUD Hatchery M&E Requests for Proposal (RFPs) to Mike Schiewe (with a copy to Kristi Geris) no later than June 3, 2013 (Item III-A).

  Recommendations for potential peer reviewers were received from Hatchery Committees representatives.

- **Greg Mackey** will revise the Wells Hatchery Summer Chinook Program HGMP and SOA accordingly, as requested by the Hatchery Committees, and Emily Pizzichemi will distribute the revised documents to the Hatchery Committees no later than May 17, 2013 (Item IV-A).

  Mackey provided the revised documents on May 16, 2013, and Pizzichemi distributed them to the Hatchery Committees the same day.

- **Hatchery Committees representatives** will send their approval or requested changes to the Wells Summer Chinook HGMP to Mike Schiewe (with copies to Emily Pizzichemi, Kristi Geris, and Greg Mackey) no later than May 22, 2013 (Item IV-A).

  The revised HGMP and SOA were approved by email vote on May 22, 2013, with the Yakama Nation (YN), CCT, USFWS, WDFW, and Douglas PUD approving, and NMFS abstaining.

- **Greg Mackey** will provide a list of critical sections in the Wells Hatchery Modernization Master Plan to help guide review to Emily Pizzichemi for distribution to the Hatchery Committees (Item IV-B).

  Mackey provided the list on May 20, 2013, and Pizzichemi distributed it to the Hatchery Committees the same day.
• The Hatchery Committees June 19, 2013 meeting will be held at 9:00 am in the Chelan PUD Auditorium (Item VI-A).

  Noted.

II. NMFS

A. HGMP Update (Lynn Hatcher)

Okanogan Programs

Lynn Hatcher said that NMFS is continuing to work on the transfer of spring Chinook from Winthrop NFH to the CCT, and designation of this population as an ESA Section 10(j) experimental population. The Environmental Assessment (EA) will be available for a 60-day public review in July or August 2013, and then public meetings are planned for September or October 2013 to discuss the status of the EA. Hatcher said that BiOps are also planned to be completed no later than October 2013, which is a deadline that would allow the fall 2013 transfer of fish from Winthrop NFH to the acclimation ponds in the Okanogan and subsequent release in the spring of 2014 to initiate the experimental population. He said that in order to obtain permits, both the NEPA process and BiOps need to be complete; and the Section 10(j) designation finalized. Hatcher said that he expects no setbacks from the public meetings and that fish should be ready to transport come this fall. Kirk Truscott asked if the Section 10(j) permit could be issued before the NEPA. Mike Tonseth noted that WDFW was instructed that the BiOp and Section 10 permits may be issued prior to the EA; however, they are not effective until the EA is complete. Hatcher said that fish are not covered under Section 10(j) until they are released. Lastly, Hatcher said that NMFS is waiting for an Okanogan steelhead HGMP from the CCT.

Methow Programs

Hatcher said that agreement seems to have been reached among U.S. v. Oregon parties regarding Methow steelhead and spring Chinook. He said that the existing EA was determined sufficient, but a supplemental EA is still needed for the Chelan PUD spring Chinook program; Hatcher added that this supplemental EA is planned to be complete by October 2013. Bill Gale asked what discussions NMFS, Douglas PUD, or Grant PUD have had with Karl Halupka (USFWS) on program interactions with bull trout, and Hatcher replied that NMFS has been in constant communication with Halupka. Greg Mackey said that when Douglas PUD completed relicensing for Wells Dam, a full bull trout consultation
with USFWS was completed, which Douglas PUD supplied to NMFS. He added that Grant PUD programs at Douglas PUD facilities are also covered under Douglas PUD's consultation, so long as they are tied to Douglas PUD's facilities and operations. Hatcher said that the addendums for the approved Methow FH and Winthrop NFH HGMPs do not deviate significantly from what was already approved by the Hatchery Committees, and do not require an additional review by the Committees. He also said that the Methow Basin spring Chinook BiOp will include Chelan PUD's 61,000 Methow spring Chinook obligation. However, Alene Underwood said that she had heard otherwise from Craig Busack. Underwood also said that although NMFS had already stated that an addendum would be acceptable for the Chelan PUD Methow spring Chinook program, as described in an email distributed to the Hatchery Committees by Busack on June 3, 2013, NMFS is now requesting a full HGMP. Hatcher explained that NMFS approved the Winthrop NFH spring Chinook HGMP and Methow FH spring Chinook HGMP, and their supplements, but had not yet approved (or received) Chelan PUD's Carlton Rearing Pond spring Chinook HGMP. He said that Chelan PUD's HGMP for the Carlton Rearing Pond is necessary before NMFS can complete the Methow Basin spring Chinook BiOp. She asked the Hatchery Committees if they would approve a shortened review period for the full Chelan PUD Methow Spring Chinook HGMP in consideration of the timeline. Hatchery Committees representatives present agreed to a shortened 14-day review period of Chelan PUD's Methow Spring Chinook HGMP, and Underwood said that she hopes to get a draft out for review within the next 3 weeks.

**Wenatchee Programs**

Hatcher said that the existing NEPA documentation was determined sufficient for Wenatchee steelhead, but the Wenatchee steelhead BiOp will be on hold until after the spring Chinook BiOp is complete. He said that NMFS is currently working to complete the joint BiOp for the Chiwawa River, Nason Creek, and White River spring Chinook programs, along with the EA for Nason Creek. He said that once those are complete, NMFS will then focus on completing the Leavenworth spring Chinook BiOp. Hatcher said that signature pages will be needed from the PUDs and the State of Washington before permits are effective. Hatcher said that public comment on the Nason Creek spring Chinook EA ended on June 14, 2013, and the EA was sent to Washington D.C. for final review and signature. He also noted that about 30 pages of supporting information were added to the draft BiOp;
however, the analyses themselves were not changed. Underwood added that the BiOp format also changed, and additions were made to the sections on genetics, discussion of strays, and effects analysis. Tonseth asked that NMFS highlight the revisions to expedite a quicker final review.

Collection of Spring Chinook for Nason Creek and Chiwawa River Programs
Tonseth said that he recently distributed a revised spring Chinook adult return update that projected that approximately 40 percent of the run will pass Tumwater Dam by June 22, 2013. He said that, currently, the run is about 20 to 25 percent wild in composition; and that broodstock collection for the Nason Creek and Chiwawa River programs needs to begin as soon as possible. In light of this new information, as described in an email distributed to the Hatchery Committees by Kristi Geris on June 18, 2013, WDFW requested concurrence from NMFS to begin broodstock collection of up to 136 natural origin spring Chinook adults at Tumwater Dam, under and consistent with the current amended Section 10 Permit 1196. NMFS concurred that WDFW’s request was consistent with the current amended Section 10 Permit 1196 (NMFS 2004) which states that, “Of the combined total number of naturally produced spring Chinook salmon adults and jacks that return to the Chiwawa River and Nason Creek each year, WDFW may retain no more than 400 or one-third, whichever is less, for broodstock to meet the smolt production levels of the program. The ESA-listed adult Chinook salmon retained for broodstock may be transferred to transport vehicles and transported to holding/spawning facilities.”

Tonseth said that once new permits are obtained, collection will default to the original broodstock collection plan of 172 adults as described in the 2013 Broodstock Collection Protocols. Underwood said that although NMFS concurred with the collection and transport of broodstock, Chelan PUD’s concern is that the current permit does not cover transport back to the river of adults not assigning to either Nason Creek or Chiwawa River or fish in excess of Program needs. Tonseth noted that releasing unassigned fish back to the river is an activity that already has precedence; and said that WDFW is ready to assume liability for hauling unassigned fish back to the river. Underwood said that Chelan PUD appreciates the offer, but as co-signatories on the permit, Chelan PUD must also assume liability and potential take. Underwood requested that NMFS provide written confirmation that transport back to the river of adults not assigning to either Nason Creek or Chiwawa River is
covered under the current Section 10 Permit 1196. Underwood noted that Grant PUD also needs to approve the proposed path forward, and Shannon Lowry said that Grant PUD concurs with WDFW’s request to begin Wenatchee spring Chinook broodstock collection for the Nason Creek and Chiwawa River programs of up to 136 natural origin spring Chinook adults at Tumwater Dam, contingent on Chelan PUD’s concurrence, and NMFS’ approval for transport back to the river of adults not assigning to either Nason Creek or Chiwawa River. Hatchery Committees members present also agreed with WDFW’s request to begin Wenatchee spring Chinook broodstock collection for the Nason Creek and Chiwawa River programs, contingent on NMFS’ approval for transport back to the river of adults not assigning to either Nason Creek or Chiwawa River. Hatcher said that NMFS will provide a letter of concurrence for transport back to the river of Wenatchee spring Chinook adults collected for the Nason Creek and Chiwawa River programs not assigning to either Nason Creek or Chiwawa River. (Note: NMFS provided approval for transport back to the river of Wenatchee spring Chinook adults not assigning to either Nason Creek or Chiwawa River via email on June 19, 2013.)

Gale asked if agreement is reached for spring Chinook brood collection for the Nason Creek and Chiwawa River programs, will the revision also be considered approved in the 2013 Broodstock Protocols. Tonseth replied that the protocols will still need to be revised; then reviewed and approved by the Hatchery Committees; and then sent to NMFS for final approval. With regards to a spring Chinook timeline, Hatcher will distribute an update on the status of Wenatchee spring Chinook permitting to the Hatchery Committees prior to June 27, 2013, and Geris will arrange a conference line to review the status of Wenatchee spring Chinook permitting and potential paths forward, scheduled for June 27, 2013, at 10:00 am.

III. WDFW

A. DECISION: CRITFC Request to Conduct Genetic Sampling for PBT of Columbia River Hatchery Programs (Mike Tonseth and Tom Scribner)

Mike Tonseth said that CRITFC’s 2013 request to conduct genetic sampling of broodstock for PBT of Columbia River hatchery programs is consistent with the 2012 request that was presented at the Hatchery Committees meeting on March 28, 2012; he added that, like last year, the request is a 1-year agreement. CRITFC’s proposal to conduct a second year of
genetic sampling (samples to be archived for possible future use) for PBT of Columbia River hatchery programs (Attachment B) and general tissue sampling protocol for PBT were distributed to the Hatchery Committees by Kristi Geris on June 11, 2013. Tom Scribner also provided additional background information that Geris distributed to the Hatchery Committees on June 12, 2013, including: a PBT geographic range graphic; a media release from the Canadian Journal of Fisheries and Aquatic Sciences (CJFAS) on technology used to genetically tag fish in the Snake River Basin titled, “It’s all in the genes — including the tracking device”; and a 2012 paper that was published in CJFAS titled, “Validation of Parentage-Based Tagging for hatchery steelhead in the Snake River basin” by Steele et al.

Tonseth said that some agencies, including WDFW, still have some concerns about the project, such as long-term funding for genetic analyses, access to the database, and who maintains the database. However, he expected these issues will be resolved and WDFW supports collection of the sample for another year. He said that, as was the case last year, Maureen Hess, CRITFC, will provide the supplies needed to conduct sampling. Scribner said that genetic sampling for PBT is expanding rapidly. He acknowledged that there are some associated costs but he said that he sees no downside, conceptually, to participating.

Bill Gale said that USFWS has concerns similar to those of WDFW; however, they are supportive of the intent, and have agreed to collect samples at Leavenworth NFH and Winthrop NFH. He said that USFWS is not planning to sample summer Chinook at Entiat NFH, and added that it was his understanding that CRITFC was not focusing on non-listed species at this time. Tonseth clarified that CRITFC was initially only interested in listed species; however, based on those samples, they have decided to also include non-listed species. He said that, in 2012, samples of non-listed species were obtained from Priest Rapids Fish Hatchery, and added that Hess indicated very clearly that CRITFC will supply staff to collect samples, if needed. Charlie Snow said that, in 2012, summer Chinook at Wells Dam were also sampled. He said that Hess was on site for one day of sampling. Alene Underwood said that Chelan PUD is supportive of the proposal, and Tonseth said that samples were collected last year for Chelan PUD programs. Kirk Truscott said that the CCT supports the proposed sampling; however, the CCT will not participate in 2013. He said that the CCT would like to establish and refine Chief Joseph FH’s broodstock protocols before considering additional procedures. The Hatchery Committees representatives present approved
CRITFC’s request to conduct genetic sampling for PBT of Columbia River hatchery programs.

IV. Douglas PUD

A. Grant PUD Fish Production Request (Greg Mackey)

Greg Mackey said that each year, Grant PUD submits a request to Douglas PUD to produce fish for Grant PUD programs. He said that Hatchery Committees representatives have routinely approved the request as long as it does not impact Douglas PUD’s HCP production. Mackey said that this year, Grant PUD is requesting that Douglas PUD produce 100,000 steelhead for release in the Okanogan at Wells Hatchery, and 134,126 Methow River spring Chinook at the Methow FH. Mackey said that both requests can be comfortably accomplished without placing Douglas PUD programs at risk. Hatchery Committees representatives present approved Grant PUD’s request.

B. Wells Hatchery Master Plan Workshop (Greg Mackey)

Greg Mackey recalled that the Hatchery Committees had requested that Douglas PUD arrange a Wells Hatchery Master Plan Workshop to discuss design aspects of the modernization with HDR. He said that Douglas PUD still plans to hold a workshop; however, dates have not yet been solidified. He added that tentative dates are in early July or early August 2013, and that, ideally, Douglas PUD would like to hold the workshop early enough in the design process such that comments and revisions can be addressed and incorporated into the plans without setting back the schedule. Mackey said that the workshop would probably not be scheduled on a Hatchery Committees meeting date, and that the venue would likely be the Douglas PUD office—not Wells Hatchery. He said that comments on the Wells Hatchery Master Plan are due on July 13, 2013, and Bill Gale suggested holding the workshop prior to the comment deadline. Mackey said that he will arrange and distribute a date for the Wells Hatchery Master Plan Workshop. Gale asked if the comment deadline can be delayed in the event that the workshop cannot be scheduled before the July 13, 2013 comment deadline, and Mackey replied that the comment period will remain the same, and that any comments from the workshop will still be considered.
C. Hatchery M&E Plan Assessment Targets (Greg Mackey)

Greg Mackey said that two doodle polls have been distributed trying to reconvene a Hatchery M&E Workgroup. He said there are two issues that remain to be discussed: 1) layout of information in the appendices; and 2) content to be included in the appendices. Mike Tonseth noted that some content may remain blank for some time. Mike Schiewe also noted that if there are some appendices that are not common to all three HCPs and the Grant PUD Settlement Agreement, it would make sense to address those issues in separate meetings, so as to use everyone's time more effectively. Mackey said that he will develop an agenda for the next Hatchery M&E Workgroup meeting. The agenda will be attached to a doodle poll that will be distributed to arrange the meeting.

V. Chelan PUD

A. Hatchery M&E RFP Technical Review Panel (Alene Underwood)

Alene Underwood said that recommendations for potential peer reviewers were received from Hatchery Committees representatives. She said that Chelan PUD plans to contact the recommended reviewers to see who is available and interested in participating on the panel. Underwood said that Chelan PUD also held a mandatory pre-proposal conference for interested proposers, which she reported had a good turnout. Underwood said that once a list of available reviewers is compiled, the list will be shared with the Hatchery Committees. She said that proposals are due on July 9, 2013, and she estimated that the technical review panel would begin reviews by July 15, 2013. She added that Chelan PUD and Grant PUD are still discussing how to facilitate the process.

B. Chelan PUD Methow Spring Chinook HGMP (Alene Underwood)

Alene Underwood said that this agenda item was adequately discussed during NMFS’ HGMP update.

VI. CCT

A. Chief Joseph Wenatchee Spring Chinook Brood Collection at Leavenworth NFH (Kirk Truscott)

Kirk Truscott said that USFWS, WDFW, and the CCT had been examining passive integrated transponder (PIT) tag data coming into Leavenworth NFH, and, due to low return projections, the CCT had recently decided to close the CCT spring Chinook fishery on the Icicle River.
He also noted that the YN had delayed expanding their fishery in Icicle Creek. Truscott said that to date, 132 adult females, 62 adult males, and 40 jacks have been obtained for CJH broodstock; and over the weekend, there was a pulse of water and a good number of additional Chinook have come in to Leavenworth NFH. Current projections are that a full broodstock for CJH is likely; therefore, the CCT is planning to reinitiate the CCT spring Chinook fishery on the Icicle River.

VII. HCP Administration

A. Chelan PUD Change in Hatchery Committee Representation

Mike Schiewe announced that Keith Truscott provided notification of a change in Chelan PUD HCP Hatchery Committee representation on June 14, 2013, designating Alene Underwood as the new Chelan PUD HCP Hatchery Committee lead representative.

B. Next Meetings

The next scheduled Hatchery Committees’ meetings are on July 17, 2013 (Douglas PUD office); August 21, 2013 (Chelan PUD); and September 18, 2013 (Douglas PUD).

List of Attachments

Attachment A  List of Attendees
Attachment B  CRITFC’s proposal to conduct a second year of genetic sampling for PBT of Columbia River hatchery programs
## Attachment A

**List of Attendees**

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<td>Greg Mackey*</td>
<td>Douglas PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Todd Pearsons</td>
<td>Grant PUD</td>
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<td>Andy Chinn</td>
<td>Grant PUD</td>
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<td>Shannon Lowry</td>
<td>Grant PUD</td>
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<td>Peter Graf</td>
<td>Grant PUD</td>
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<tr>
<td>Tom Scribner**†</td>
<td>Yakama Nation</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Charlie Snow†</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**

* Denotes Hatchery Committees member or alternate  
† Joined by phone
Proposal to collect tissue samples from Chinook salmon and steelhead broodstock annually at facilities under the oversight of the HCP Hatchery Committee and PRCC Hatchery Sub Committee

Submitted to:
HCP Hatchery Committee and PRCC Hatchery Sub Committee

Requesting agency:
Columbia River Inter-Tribal Fish Commission
3059-F National Fish Hatchery Rd.
Hagerman, Idaho 83332

Contact information:
Maureen Hess, CRITFC, hesm@critfc.org, 208-837-9096 x1117
Shawn Narum, CRITFC, nars@critfc.org, 208-837-9096 x1120
Objective
In order to expand parentage based tagging (PBT) throughout the Columbia River basin for Chinook salmon and steelhead, we are requesting that tissue samples be collected from all broodstock as fish are spawned in hatcheries above Bonneville Dam starting in 2012 and continuing for the foreseeable future. We are specifically requesting that Chinook salmon and steelhead hatchery programs collect tissue samples from 100% of broodstock, and tissues be sent to the appropriate operating agency’s genetics lab for storage until the anticipated funding is in place to genotype samples.

CRITFC can provide sampling supplies in the form of Whatman sheets for spawn year 2013. At a minimum, we ask that a tissue sample be collected upon spawning from every individual fish used as broodstock, and the corresponding spawn date and gender be recorded for each individual. Optional information would include spawn cross records (i.e., which fish were mated together), length, or any other associated data recorded by hatchery staff.

PBT data is intended to be shared within a centralized database. IDFG recently received funding through Pacific Coast Salmon Recovery Fund to coordinate the development of a broad database to house genetic data for multi-agency use.

Background
Several committees and science review groups have recommended that large-scale evaluations of PBT technology be performed (PFMC 2008; PSC 2008; ISAB/ISRP 2009). Thus far, PBT has been effectively applied to Chinook salmon and steelhead populations in California (Anderson & Garza 2006; Anderson 2010) and throughout the Snake River basin (Steele et al. 2012; Steele et al. in press) for accomplishing a variety of objectives including identification of hatchery parents of harvested fish, strays, returning adults, and outmigrating juveniles.

PBT technology greatly reduces the problem of small sample sizes encountered with CWTs, and thus would provide the statistical power needed to improve escapement estimates and identification of stock contributions to fisheries. By genotyping 100% of parental broodstock, 100% of all offspring are genetically tagged. Implementation of PBT involves annual sampling of hatchery broodstock to create a parental genotype baseline. Offspring produced by these parents must then be sampled (e.g. non-lethal fin clips) either as adults or juveniles, and then genotyped to be assigned back to their parents – thus identifying their age and hatchery of origin. This new PBT approach will provide many opportunities to address additional questions related to fisheries management and strongly complements the existing CWT program in the Columbia Basin.

Literature cited


FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees

From: Mike Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the July 17, 2013 HCP Hatchery Committees Conference Call

Date: August 21, 2013

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held by conference call, on Wednesday, July 17, 2013, from 9:00 am to 11:00 am. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Mike Tonseth will consult with Ken Warheit (Washington Department of Fish and Wildlife [WDFW] geneticist) and provide the Wenatchee spring Chinook trapping and sampling protocols, including the criteria for genetic inclusion or exclusion, to Kristi Geris for distribution to the Hatchery Committees (action item carried forward from the Hatchery Committees meeting on June 19, 2013) (Item I).

- Chelan PUD will provide a schedule and timeline outlining their Hatchery Monitoring and Evaluation (M&E) Request for Proposal (RFP) and 2014 Hatchery M&E Implementation Plan processes, to Kristi Geris for distribution to the Hatchery Committees (Item II-A).

- Chelan PUD will provide an update regarding when their draft Spring Chinook Hatchery and Genetic Management Plan (HGMP) will be available for review, to Kristi Geris for distribution to the Hatchery Committees (Item II-B).

- Mike Tonseth will provide a summary of the genetic assignments of the spring Chinook broodstock that were collected at Tumwater Dam (TWD), to Kristi Geris for distribution to the Hatchery Committees (Item II-C).

- Keely Murdoch will update the Hatchery Committees on potential co-acclimation of Chelan PUD’s spring Chinook Methow production and the Yakama Nation’s (YN’s) coho salmon production at the Chewuch Pond (Item III-A).
• The Hatchery Committees’ meeting on August 21, 2013 **will be held at Douglas PUD**, with the Wells Hatchery Master Plan Workshop in the afternoon (Item IV-A).

**STATEMENT OF AGREEMENT DECISION SUMMARY**

• No Statements of Agreement (SOAs) were approved at today’s meeting.

**AGREEMENTS**

• Hatchery Committees representatives present agreed to Chelan PUD’s proposed schedule to provide their draft 2014 Hatchery M&E Implementation Plan for Hatchery Committees review as early as September 2013, and no later than October 2013 (Item II-A).

• Hatchery Committees representatives present agreed to the YN’s request to continue planning for co-acclimation of Chelan PUD’s Methow spring Chinook production with the YN coho salmon production at the Chewuch Pond in 2015 (Item III-A).

**REVIEW ITEMS**

• There are no items that are currently out for review.

**FINALIZED REPORTS**

• Kristi Geris sent an email to the Hatchery Committees on August 2, 2013, notifying them that the Wells Hatchery Master Plan was finalized following a 60-day review period, which ended on July 13, 2013. As noted in the email, no comments were received from Hatchery Committees members on the draft plan.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. Schiewe requested that Chelan PUD provide an update on spring Chinook broodstock collection at TWD. No other additions or changes were requested.

Action items from the last Hatchery Committees meeting on June 19, 2013, and follow-up discussions were as follows:

• *Mike Tonseth will consult with Ken Warheit (WDFW geneticist) and provide the*
Wenatchee spring Chinook trapping and sampling protocols, including the criteria for genetic inclusion or exclusion, to Kristi Geris for distribution to the Hatchery Committees (action item carried forward from Hatchery Committees meeting on May 15, 2013).

Tonseth requested that this action item be carried forward.

- The National Marine Fisheries Service (NMFS) will provide a letter of concurrence for transport back to the river of Wenatchee spring Chinook adults collected for the Nason Creek and Chiwawa River programs that do not assign to either Nason Creek or Chiwawa River (Item II-A).

NMFS provided approval for transport back to the river of Wenatchee spring Chinook adults not assigning to either Nason Creek or Chiwawa River via email on June 19, 2013.

- Lynn Hatcher will distribute an update on the status of Wenatchee spring Chinook permitting to the Hatchery Committees prior to June 27, 2013 (Item II-A).

Craig Busack provided an update on the status of Wenatchee spring Chinook permitting that Kristi Geris distributed to the Hatchery Committees on June 26, 2013.

- Kristi Geris will arrange a conference line to review the status of Wenatchee spring Chinook permitting and potential paths forward, scheduled for June 27, 2013, at 10:00 am (Item II-A).

Kristi Geris arranged a conference line; however, the Hatchery Committees agreed that the conference call was not needed following receipt of Craig Busack’s update on the status of Wenatchee spring Chinook permitting.

- Greg Mackey will arrange and distribute a date for the Wells Hatchery Master Plan Workshop, planned to discuss engineering aspects of the modernization with HDR Engineering, Inc. (HDR) (Item IV-B).

Greg Mackey scheduled the Wells Hatchery Master Plan Workshop on the afternoon of August 21, 2013, as Kristi Geris informed the Hatchery Committees on July 8, 2013.

- Greg Mackey will develop an agenda for the next Hatchery M&E Workgroup meeting, to be attached to the doodle poll distributed to arrange the meeting (Item IV-C).

Greg Mackey developed an agenda for the next Hatchery M&E Workgroup meeting that was attached to the doodle poll distributed to arrange the meeting, as the Hatchery Committees were notified by Kristi Geris on July 5, 2013.
The Hatchery Committees reviewed the revised draft June 19, 2013 meeting minutes. Kristi Geris said that a second draft of the revised minutes was distributed to the Hatchery Committees today, prior to the call. She said that the second draft incorporated additional edits, which are tracked in redline in the meeting minutes; these edits are as follows:

- Regarding the NMFS’ HGMP update, Bill Gale clarified that the October 2013 deadline for submitting Biological Opinions (BiOps) would allow the fall 2013 transfer of fish from Winthrop National Fish Hatchery (NFH) to the acclimation ponds in the Okanogan and subsequent release in the spring of 2014 to initiate the experimental population.
- Regarding WDFW’s decision item about Columbia River Inter-Tribal Fish Commission’s (CRITFC’s) request, it was clarified that, in 2012, samples of non-listed species were obtained from Priest Rapids Fish Hatchery (FH)—not from Spring Creek NFH.
- Regarding the Colville Confederated Tribe’s (CCT’s) discussion on Chief Joseph Wenatchee spring Chinook brood collection at Leavenworth NFH, Truscott clarified the sequence of events and reasoning surrounding the decision to close—and the subsequent decision to reinitiate—the CCT spring Chinook fishery on the Icicle River.

Geris said that all other comments and revisions received from members of the Committees were incorporated in the revised minutes. The Hatchery Committees members present approved the June 19, 2013 meeting minutes as revised. Keely Murdoch confirmed Tom Scribner’s approval of the revised minutes, and Lynn Hatcher provided NMFS approval of the revised minutes via email on July 26, 2013. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Chelan PUD

A. Hatchery M&E RFP Update and 2014 Hatchery M&E Implementation Plan Schedule (Alene Underwood)

Alene Underwood said that the Chelan PUD Hatchery M&E RFP closed on July 8, 2013. She said that three proposals were received, which are currently being reviewed for completeness. She said that Grant PUD and Chelan PUD have a call scheduled for July 30,
2013, to discuss which proposals qualify as “complete,” and also to determine a path forward for interviews. Once it is determined which proposals are complete, those proposals will be provided for review to those Hatchery Committees members who do not have a conflict of interest.

Mike Tonseth asked what assurances the Hatchery Committees would have, as a whole, that what is being proposed meets program needs—specifically as related to aspects of proposals that may be different from past Hatchery M&E Implementation Plans. Underwood replied that it is up to the proposer to demonstrate how objectives will be met. Where different methods are proposed, the proposer will be required to show congruence with past data collection, with no data gaps. She said that if alternative methods are proposed, they will be included in the draft 2014 Hatchery M&E Implementation Plan that will be available for review by the entire Hatchery Committees. Tonseth recalled that, last year, the Hatchery Committees agreed that the draft Hatchery M&E Implementation Plans were to be available for review no later than July 1. (*Note: this agreement was made at the Hatchery Committees’ meeting on December 12, 2012.*) Underwood acknowledged that although the draft Implementation Plan was originally scheduled for review in July, the RFP review process has affected the schedule; and she proposed that the draft Implementation Plan instead be submitted to the Hatchery Committees for review in September or October 2013. Tonseth said that, in order to remain consistent with that agreement, as long as the draft Implementation Plan is a precursor to contracting, there should be no issues with submitting the draft plan at a later date. Underwood clarified that developing the draft Implementation Plan and contracting will be completed on parallel paths because contracting cannot happen without knowing the scope of work. Keely Murdoch said that her main concern in reviewing the Implementation Plan before contracting is to make sure the plan is consistent with the M&E Plan. Underwood said that Chelan PUD is also committed to meeting the objectives outlined in the M&E Plan. She added that even if contracts are in place in general terms, they can be adjusted as needed to meet M&E objectives. Hatchery Committees representatives present agreed to Chelan PUD’s proposed schedule of providing their draft 2014 Hatchery M&E Implementation Plan for Hatchery Committees review as early as September 2013, and no later than October 2013.
Underwood said that if interviews with the proposers were judged necessary, they will likely be conducted around the first part of August 2013. She noted that the interviews are separate from the RFP review panel, and both are likely to occur in parallel. She said that about 10 scientists had been recommended by Hatchery Committees representatives for the RFP review panel, and that those recommended will be contacted regarding their availability. She said she expects that 3 to 5, out of the 10 total, may be available; however, she also has no plans to exclude recommended reviewers if they are available. She said that she will have a better idea of what the RFP review panel will look like following Chelan PUD and Grant PUD’s coordination call on July 30, 2013. Underwood also said that she will provide a schedule and timeline outlining Chelan PUD’s Hatchery M&E RFP and 2014 Hatchery M&E Implementation Plan processes, to Kristi Geris for distribution to the Hatchery Committees.

Tonseth asked if Hatchery Committees representatives with a conflict of interest would still be allowed to review the proposals, but just not comment or participate in the decision-making. Underwood said that she was uncertain about the benefits of including such a step. Schiewe said that it would be highly unusual for a conflicted person to review the proposal at all; and added that there is a certain level of confidentiality with these proposals. Tonseth asked which Hatchery Committees members were not conflicted, and Underwood replied that they include U.S. Fish and Wildlife Service (USFWS), the CCT, and NMFS. Kirk Truscott suggested that, although conflicted parties are not participating in the selection of a contractor, the Hatchery Committees and the RFP review panel may still benefit from a conflicted party’s review of the proposals. Schiewe said that if a non-conflicted party decides to seek input from conflicted parties outside of the Hatchery Committees venue, then that is up to them. However, he said that the Conflict of Interest Policy clearly establishes a protocol for review that puts conflicted parties at arm’s length in the review process; he added that this is a traditional thing to do.

B. Methow Spring Chinook HGMP Update (Alene Underwood)
Alene Underwood said that, as discussed at the Hatchery Committee’s meeting on June 19, 2013, Chelan PUD has been asked to submit a full Methow Spring Chinook HGMP. She said that Chelan PUD planned to have a draft ready for Hatchery Committees review by July 22, 2013; however, the draft may not be ready until July 26, 2013. Underwood said that she will
provide an update regarding when the draft HGMP will be available for review, to Kristi Geris for distribution to the Hatchery Committees.

C. Spring Chinook Broodstock Collection at Tumwater Dam (Alene Underwood)

Alene Underwood said that after the Hatchery Committees meeting on June 19, 2013, WDFW commenced collection of spring Chinook broodstock at TWD; and as of July 12, 2013, Grant PUD, Chelan PUD, and WDFW have obtained Section 10 permits for Wenatchee spring Chinook. Mike Tonseth said that 172 adult spring Chinook were collected at TWD as described in the 2013 Broodstock Collection Protocols, and that genetic assignments for a full Chiwawa River spring Chinook program were obtained; however, they were not obtained for Nason Creek. He added that the majority of fish trapped at TWD assigned to the Chiwawa River, followed by White River, Leavenworth, and then Nason Creek. Bill Gale asked how many adults assigned to Leavenworth, and Tonseth replied that about 10 assigned as having originated at Leavenworth NFH; however, only four or five assigned given the broodstock criteria. Tonseth said that assignments will be confirmed once scale analyses are available, and he added that he will provide a summary of the genetic assignments of the spring Chinook broodstock that were collected at TWD, to Kristi Geris for distribution to the Hatchery Committees. Tonseth said that the 55 of 172 adults that did not assign were returned to the Wenatchee River at Swiftwater. He said that fish were sorted in the morning, then trucked to the release location, and released in the afternoon. He said that there were two releases, which were both water-to-water transfers. Tonseth said that he was present for the first transfer, which went well. Fish were released in deep pools so they could become oriented and gain their bearings; and after a short while, they swam into deeper water. He added that, currently, water temperature at the release location is slightly warmer than that at Eastbank.

Underwood said that spring Chinook collection at TWD is now complete, and that high numbers of sockeye are now passing TWD. She said that, as of July 12, 2013, TWD switched to a 3-day trapping schedule, and that weekly monitoring for potential delays associated with
trapping has been ongoing. She said that no delays in excess of the criteria previously agreed to by the Hatchery Committees have been observed.

III. Yakama Nation

A. Potential Acclimation Locations for Chelan PUD Methow Spring Chinook (specifically as it relates to the Chewuch River) (Keely Murdoch)

Keely Murdoch said that an agreement is being explored between the YN and Douglas PUD for use of the Chewuch Pond for the YN’s coho salmon production and acclimation, and she added that there has been discussion about possibly co-acclimating Chelan PUD’s spring Chinook Methow production at the site as well. Mike Tonseth said that the proposal was worth considering; however, he said, additional discussion of long-term adult management would be required. He asked what is known about past acclimation at that location, and he noted that when Douglas PUD’s program operated out of the Methow Hatchery, about 40 percent of returning adults did not return to the Chewuch. Murdoch agreed that additional discussion of adult management was appropriate; she also noted that she was uncertain about what effect acclimation at the Chewuch Ponds would have on percent hatchery-origin spawners (pHOS) in the Chewuch. She noted that the Chewuch Pond is also a secure facility, which is advantageous when dealing with listed fish. With regards to previous data, Murdoch said that it was her understanding that closer to 50 percent of Douglas PUD’s program did not return to the Chewuch while operating out of the Methow Hatchery. She speculated that this may have been because the fish were homing to the Methow Hatchery. Murdoch said, however, that since Chelan PUD’s spring Chinook will be overwintered at Carlton, they may exhibit a higher fidelity to home back to the Chewuch, as opposed to the Methow. She added that depending on how they are marked, options for removal could include Wells Dam.

Tonseth suggested that, in order to evaluate this option, the Hatchery Committees should consider what the expectations are for the program in terms of overwintering at Carlton and spring acclimating in the Chewuch. Bill Gale said that he is more interested in how Chelan PUD is going to collect broodstock than in how they are going to release them. He also said that he is not opposed to the idea, and added that he agrees with Tonseth that NMFS will
want to see data that demonstrate that fish will return to the Chewuch. Kirk Truscott noted that he is unaware of options other than what the YN is suggesting; and asked if coho and spring Chinook have been co-acclimated before. Murdoch replied that coho and spring Chinook have been co-acclimated in the back-channel at Winthrop, and she added that fish at Chewuch Pond could either be commingled or be separated by a net. Truscott asked what the capacity is at Chewuch Pond, and Tom Kahler replied that he believes the design capacity is 223,000 fish. Tonseth noted that spring Chinook have lower bacterial kidney disease (BKD) rearing density requirements than coho; and Alene Underwood said that, as described in their Methow Spring Chinook HGMP Addendum, Chelan PUD is not anticipating density issues with regards to their Methow spring Chinook obligation. Tonseth said that it is not Chelan PUD’s program that will cause the density issue, but combining the YN’s 180,000 coho is what will increase the density. He asked how many coho the YN planned to acclimate in the Chewuch Pond, and Murdoch replied that those figures depend on what other acclimation options are agreed upon in the Methow and Chewuch. She added that the YN is cognizant of keeping densities low with commingled acclimation—they do not intend to acclimate an unhealthy number of fish in one location.

Truscott asked if there are fish health concerns with commingling coho and spring Chinook, and Gale replied that he did not recall any concerns with commingling them in the back-channel at Winthrop. Gale added that there is a correlation between a fish’s condition when transferred and subsequent fish health problems. He said that in the past, minor fish health issues arose when fish arrived and the stress of transfer triggered secondary fish health issues. Tonseth said that he has observed behavioral issues among commingled steelhead and spring Chinook, such as fin nipping, and asked if anything of that nature was observed at Winthrop. Gale replied that he had not observed that at Winthrop.

Murdoch noted that the commingled acclimation would be short-term, and she said that, at this point, the YN just wanted to share the concept with the Hatchery Committees to make sure there were no red flags before the YN continues investigating this option. Hatchery Committees representatives present agreed to the YN’s request to continue planning for co-
acclimation of Chelan PUD’s Methow spring Chinook production with the YN coho salmon production at the Chewuch Pond in 2015. Murdoch said that she will update the Hatchery Committees as plans solidify.

IV. HCP Administration

A. Next Meetings

Mike Schiewe reminded the Hatchery Committees that the next meeting on August 21, 2013, will be held at Douglas PUD, with the Wells Hatchery Master Plan Workshop to follow in the afternoon. Alene Underwood added that Chelan PUD and Grant PUD have been discussing inviting Dr. Kim Hyatt of Fisheries and Oceans, Canada (DFO), to provide an update on the Sockeye Reintroduction Program on the morning following the meeting (August 22, 2013). Tom Kahler said that Douglas PUD would be fine with that arrangement, but that they would want Hyatt to also include information on the implementation of the Douglas PUD-funded Fish Water Management Tool (FWMT). Underwood said that she would finalize the arrangements with Grant PUD.

The next scheduled Hatchery Committees’ meetings are on August 21, 2013 (Douglas PUD); September 18, 2013 (Douglas PUD); and October 16, 2013 (Chelan PUD).

List of Attachments

Attachment A List of Attendees
<table>
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<tr>
<th>Name</th>
<th>Organization</th>
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<tr>
<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<td>Tom Kahler*</td>
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<td>Keely Murdoch*</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Charlie Snow</td>
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Notes:
* Denotes Hatchery Committees member or alternate
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees
From: Mike Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the August 21, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, August 21, 2013, from 9:30 am to 12:00 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Mike Tonseth will consult with Ken Warheit (Washington Department of Fish and Wildlife [WDFW] geneticist) and provide the Wenatchee spring Chinook trapping and sampling protocols, including the criteria for genetic inclusion or exclusion, to Kristi Geris for distribution to the Hatchery Committees, by no later than the end of 2013 (action item carried forward from the Hatchery Committees meeting on June 19, 2013) (Item I).

- Mike Tonseth will provide a summary of the genetic assignments of the spring Chinook broodstock that were collected at Tumwater Dam (TWD), to Kristi Geris for distribution to the Hatchery Committees (action item carried forward from the Hatchery Committees conference call on July 17, 2013) (Item I).

- Keely Murdoch will provide a draft Implementation Plan for co-acclimation of Chelan PUD’s spring Chinook Methow production and the Yakama Nation’s (YN’s) coho salmon production at the Chewuch Pond, to Kristi Geris for distribution to the Hatchery Committees prior to the September 18, 2013 meeting (Item I).

- Greg Mackey will contact the National Marine Fisheries Service (NMFS) regarding consultations as they relate to coverage under Permit 1347, and will let Mike Schiewe know whether there is a need for him to also contact NMFS on behalf of the Hatchery Committees (Item II-A).

- Greg Mackey will provide draft tables for inclusion in the Hatchery Monitoring and
Evaluation (M&E) Plan Appendices, to Kristi Geris for distribution to the Hatchery Committees (Item III-A).

- Keely Murdoch will contact WDFW fish health staff to confirm their support of the proposed approach for live spawning Twisp River steelhead broodstock at Methow Hatchery; and based on those discussions, she will determine a path forward to be discussed at the Hatchery Committees meeting on September 18, 2013 (Item V-A).

- The Hatchery Committees’ meeting on September 18, 2013 will be held at Douglas PUD (Item VIII-A).

**STATEMENT OF AGREEMENT DECISION SUMMARY**

- No Statements of Agreement (SOAs) were approved at today’s meeting.

**AGREEMENTS**

- Hatchery Committees representatives present agreed that Greg Mackey would develop draft tables for inclusion in the Hatchery M&E Plan Appendices, for Hatchery Committee review (Item III-A).

**REVIEW ITEMS**

- There are no items that are currently out for review.

**FINALIZED REPORTS**

- There are no reports that have been recently finalized.

I. **Welcome, Agenda Review, Meeting Minutes, and Action Items**

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

- Kirk Truscott added an update on Chief Joseph Hatchery (CJH) brood collection.
- Bill Gale added a brief update on U.S. Fish and Wildlife Service (USFWS) staffing.
The Hatchery Committees reviewed the revised draft July 17, 2013 conference call minutes. Kristi Geris said there were two outstanding comments remaining to be discussed, as follows:

- Regarding review of the revised draft June 19, 2013 meeting minutes, Kirk Truscott confirmed that the Colville Confederated Tribes (CCT) discussed Chief Joseph Wenatchee spring Chinook brood collection at Leavenworth National Fish Hatchery (NFH) as it affected the CCT spring Chinook fishery on the Icicle River. Mike Tonseth noted that a recreational fishery was also affected; however, this issue was not specifically discussed at the June 19, 2013 meeting.

- Regarding the YN’s discussion on potential acclimation locations for Chelan PUD Methow spring Chinook, Mike Tonseth clarified that spring Chinook have lower bacterial kidney disease (BKD) rearing density requirements than coho.

Geris said that all other comments and revisions received from members of the Committees were incorporated in the revised minutes. The Hatchery Committees members present approved the July 17, 2013 meeting minutes as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

Action items from the last Hatchery Committees meeting on July 17, 2013, and follow-up discussions were as follows:

- **Mike Tonseth will consult with Ken Warheit (WDFW geneticist) and provide the Wenatchee spring Chinook trapping and sampling protocols, including the criteria for genetic inclusion or exclusion, to Kristi Geris for distribution to the Hatchery Committees (action item carried forward from the Hatchery Committees meeting on June 19, 2013) (Item I).**
  
  Tonseth said that he has the needed information, but still needs to amend the protocols. He said that he hopes to have this complete as early as the end of October, and no later than the end of 2013. Tonseth requested that this action item be carried forward.

- **Chelan PUD will provide a schedule and timeline outlining their Hatchery M&E Request for Proposal (RFP) and 2014 Hatchery M&E Implementation Plan processes, to Kristi Geris for distribution to the Hatchery Committees (Item II-A).**
  
  Chelan PUD will address this today during their Hatchery M&E Update.
• **Chelan PUD will provide an update regarding when their draft Spring Chinook Hatchery and Genetic Management Plan (HGMP) will be available for review, to Kristi Geris for distribution to the Hatchery Committees (Item II-B).**

Chelan PUD will address this today during their Methow Spring Chinook HGMP Update.

• **Mike Tonseth will provide a summary of the genetic assignments of the spring Chinook broodstock that were collected at Tumwater Dam (TWD), to Kristi Geris for distribution to the Hatchery Committees (Item II-C).**

Tonseth requested that this action item be carried forward.

• **Keely Murdoch will update the Hatchery Committees on potential co-acclimation of Chelan PUD’s Methow spring Chinook production and the Yakama Nation’s (YN’s) coho salmon production at the Chewuch Pond (Item III-A).**

Murdoch said that details are still being sorted between the YN and Douglas PUD for use of the Chewuch Pond for co-acclimation of the YN’s coho salmon production and Chelan PUD’s Methow spring Chinook production. She said that the YN plans to produce a more detailed proposal. Kirk Truscott requested that the YN also provide a draft Implementation Plan and SOA. Mike Tonseth said that a draft Implementation Plan should include more than just the number of spring Chinook that would be placed into Chewuch Pond—that it would also include how many coho, at what size, and what the ultimate flow and rearing density levels would be planned for fish placed in Chewuch Pond. He added that additional details would include timing of transfer (to Chewuch Pond), timing of release, and release strategy (i.e., forced versus volitional). Bill Gale asked how acclimation implementation ties in with consultation. He said that it seems like NMFS will eventually want to know how acclimation ties into spring Chinook objectives, such as escapement goals, etc. Mike Schiewe said that a good start would be for Murdoch to draft an Implementation Plan, highlighting the main features of the program. Greg Mackey said that Douglas PUD would also like a SOA on the use of the Chewuch Pond, in order to document formal approval by the Hatchery Committees. Alene Underwood said that Chelan PUD supports these suggestions. Gale asked if the draft Implementation Plan and SOA would only address the use of the Chewuch Pond, or if they would also include other possible Methow acclimation locations. Murdoch replied that, for Chelan PUD’s production, the YN is mainly considering use of the Chewuch Pond; she
added, however, that the YN is also considering other places in the Upper Methow for other programs. Mackey said that Douglas PUD has already provided Tom Scribner with financial information for using Chewuch Pond and Douglas and the YN would need to work out an agreement. Tonseth noted that there are two agreements: a facility sharing agreement, and an agreement for the use of the facility for Chelan PUD production. He requested that there be clear separation of these two agreements. Murdoch said that she will provide a draft Implementation Plan for co-acclimation of Chelan PUD’s spring Chinook Methow production and the YN’s coho salmon production at the Chewuch Pond, to Kristi Geris for distribution to the Hatchery Committees prior to the September 18, 2013 meeting.

- The Hatchery Committees’ meeting on August 21, 2013 will be held at Douglas PUD, with the Wells Hatchery Master Plan Workshop in the afternoon (Item IV-A). Noted.

II. NMFS

A. HGMP Update (Lynn Hatcher)

Lynn Hatcher said that NMFS is now primarily focusing on the Mid/Upper-Columbia. He said that Amilee Wilson has been working full time and that everyone has been very responsive to requests, which has all helped move things forward. He said that NMFS would like to have all Upper/Mid-Columbia permitting completed by mid-March 2014.

Okanogan Programs

Hatcher said that NMFS is unable to complete the Biological Opinion (BiOp) and Section 10 permits for USFWS to transfer listed spring Chinook to the CCT by the October 2013 deadline. The new completion date is January 20, 2014. The Endangered Species Act (ESA) Section 10(j) experimental population designation for the CCT’s spring Chinook program is still on schedule for completion in March 2014. He added that NMFS and the CCT have been meeting monthly about the Section 10(j) designation and permitting process. Bill Gale said that, as a result, the Winthrop NFH will release 100,000 to 150,000 under-yearling spring Chinook smolts in the Methow this fall to get under capacity; and he added that total release in spring 2014 will be 650,000. Keely Murdoch asked whether, should the Section 10(j) come through in March, the smolts might then not be transferred to the Okanogan, and Mike Tonseth replied that they would not because the capacity problem arises in the fall.
Mike Schiewe asked if the current permit allows pre-smolt release; and Gale replied that it does. Tonseth said that the release is intended to reduce rearing densities and address potential fish health concerns. Gale said that similar situations (excess production) have happened in the past, and that unless someone has space for 100,000 to 150,000 smolts in the Methow, releasing them is the only option. Hatcher said that with regards to the Okanogan steelhead HGMP, NMFS expects to receive a draft from the CCT by September 5, 2013. He said the revised Environmental Assessment (EA) is complete, and that Craig Busack plans to complete the BiOp and the Section 10 permits by January 20, 2014 (same date as for spring Chinook).

**Methow Programs**

Hatcher said that negotiations among *U.S. v. Oregon* parties are now complete regarding Methow steelhead and spring Chinook. He said that the existing EA was determined sufficient for the current programs, but that a supplemental EA will have to be completed for the Chelan PUD spring Chinook program. He said that the goal is to have one consultation for all Methow Basin steelhead and spring Chinook hatchery programs; however, if Chelan PUD’s HGMP is not completed in time, there will have to be two consultations. The BiOp and Section 10 permit for Chelan PUD’s spring Chinook program would be separated out, and not completed until an agreement is reached between Chelan PUD and NMFS. *(Note: Greg Mackey later indicated that steelhead and spring Chinook will be handled as separate BiOps and permits.)* Hatcher added that he was concerned that a Section 10 permit will not be approved if Chelan PUD proposes brood collection at Rocky Reach Trap (RRT). Alene Underwood said that she spoke with Busack, and as it stands now, Chelan PUD is including RRT as a potential collection location. She said that Chelan PUD is proposing that brood collection at RRT may also tie into Chiwawa spring Chinook stray management required under the new Section 10 permit. Hatcher said that NMFS is hoping to complete permitting for Methow steelhead and spring Chinook by January 20, 2014, including the Chelan PUD program. Greg Mackey noted that the current Methow steelhead Section 10 Permit 1395 expires October 2, 2013; and Hatcher replied that NMFS will not be able to complete the new permits by then. Tonseth said that USFWS is also covered under Permit 1395. Hatcher said that NMFS would like to publish in a Federal Register Notice (FRN) the Wells and Winthrop Steelhead HGMPs, and the Winthrop and Methow Spring Chinook HGMPs, all at the same time. Mackey said that this is a problem because the Wells Hatchery steelhead
programs will not have ESA permit coverage for three months. Gale suggested that if formal consultation is already underway, the program is still covered under the existing permit so long as there are no changes in program activities. Mackey said that Douglas PUD would be requesting a letter from NMFS, acknowledging this lack of coverage between October 2, 2013 and January 20, 2014. As for summer and fall Chinook programs (i.e., Permit 1347), Hatcher said that it is unlikely that the extension of Permit 1347 will be completed by October 23, 2013. Underwood said that Chelan PUD would need a letter from NMFS indicating coverage for Chelan PUD programs from October 23, 2013 to when the extension of Permit 1347 is completed. Hatcher said that NMFS would not likely issue any letters in the interim because the extension of Permit 1347 would be close to being issued.

**Wenatchee Programs**

Hatcher said that the existing National Environmental Policy Act (NEPA) documentation was determined sufficient for Wenatchee steelhead. Hatcher said that Section 10 permits are being distributed, and that applicant comments are due on September 13, 2013. The draft BiOp has not yet been distributed. Wenatchee steelhead Section 10 permits should be completed before Permit 1395 expires on October 2, 2013. Hatcher said that the Leavenworth spring Chinook BiOp will be sent to the National Oceanic and Atmospheric Administration (NOAA) General Counsel for review by August 26, 2013, and that a new permit will be issued in September 2013. Hatcher also said that Wilson and Karl Halupka (USFWS) have been meeting regularly and are in close coordination on bull trout coverage. Tonseth said that Section 7 consultations for bull trout are on the same completion schedule for Wenatchee programs.

Kirk Truscott said that he thinks a paper trail documenting continued coverage for any of the steelhead programs currently covered under the existing Permit 1395 is still necessary if a new permit is not already in place. Gale asked that everyone operating under that permit receive a copy of the letter if it is drafted. Mackey said that he will contact NMFS regarding consultations as they relate to coverage under Permits 1395 and 1347, and will let Schiewe know whether it would helpful for him to contact NMFS on behalf of the Hatchery Committees.
III. Douglas PUD

A. Hatchery M&E Appendices – Meeting of the PUDs (Greg Mackey)

Greg Mackey said that a Hatchery M&E Workgroup meeting was scheduled on July 31, 2013, at Chelan PUD, as described in an email distributed to the Hatchery Committees by Kristi Geris on July 30, 2013. However, due to last-minute scheduling conflicts for key attendees, the meeting was cancelled. Mackey said that the original plan was to prioritize tasks to finalize the M&E Plan reference (appendix) tables and divvy remaining tasks at the workgroup meeting. Mike Schiewe suggested that, in order to move the process forward, Mackey distribute draft tables and request input. Mackey noted that he had already developed table schema for review and populated some tables with example data, which were distributed to the Hatchery Committee for the previously cancelled meeting. Hatchery Committees representatives present agreed that Mackey would further develop draft tables for inclusion in the Hatchery M&E Plan Appendices; and Mackey said that he will provide draft tables to Geris for distribution to the Hatchery Committees for review. Kirk Truscott suggested developing a schedule for review of the tables prior to convening another Hatchery M&E Workgroup meeting. Alene Underwood suggested reviewing the tables via email, and then setting up a more formal meeting during the first week of November 2013. Todd Pearsons agreed with this suggested approach, and said that Grant PUD is willing to help, as needed. Schiewe said that the need for an in-person Hatchery M&E Workgroup meeting can be gauged once the draft tables are distributed and reviewed, and added that these discussions could also be addressed during a regular Hatchery Committees meeting.

B. Draft Douglas PUD 2012 Hatchery M&E Report (Greg Mackey)

Greg Mackey said that the draft Douglas PUD 2012 Hatchery M&E Report is currently under review by WDFW, and that Douglas PUD hopes to have the draft report ready for a 60-day Hatchery Committees review by the next Hatchery Committees meeting on September 18, 2013.

C. Twisp River Reproductive Success Genetic Sample Runs (Greg Mackey)

Greg Mackey said that a preliminary report of the Twisp River Reproductive Success Sampling is expected by Douglas PUD by the end of August, and that the report should be available to the Hatchery Committees shortly thereafter. Mackey said that this report is an
IV. Chelan PUD

A. Hatchery M&E Update (Alene Underwood)

Alene Underwood said that after internal review, one of three proposals submitted in response to the Chelan PUD Hatchery M&E RFP was determined to be complete with all components. Therefore, she said that at this point, Chelan PUD is not planning to engage a technical review panel, as previously discussed. She said that follow-up questions were distributed to the complete proposer, with responses due by September 13, 2013; and tentative follow-up discussions are planned with the proposer on September 17, 2013. Bill Gale asked if Chelan PUD has any contracting requirements that would require going out for another RFP to solicit more than one complete proposal; and Underwood replied that they do not. Keely Murdoch asked if Chelan PUD expects the same timeline for a draft Implementation Plan as discussed during the Hatchery Committees’ conference call on July 17, 2013; and Underwood replied that Chelan PUD still plans to provide their draft 2014 Hatchery M&E Implementation Plan for Hatchery Committees review no later than October 2013.

B. Methow Spring Chinook HGMP Update (Alene Underwood)

Alene Underwood said that Chelan PUD’s draft Methow Spring Chinook HGMP will hopefully go to WDFW for review this week, and then it will be ready for Hatchery Committees’ review. She thanked the Committees for their patience, and said that she plans to contact Craig Busack to update him on the progress of the draft document. Mike Tonseth said that he expects WDFW review of the draft HGMP will take about two days. Underwood said that the Chelan PUD draft Methow Spring Chinook HGMP contains largely the same background information as the Douglas PUD HGMP, with no unique or new information. She also said that everything in the addendum, which was already reviewed by the Hatchery Committees, was included in the full HGMP.

Bill Gale asked, regarding the 2013 broodstock collected at Winthrop, if the progeny were on schedule to go to Eastbank, and also if those releases were still scheduled to go to the Chewuch Acclimation Pond. Underwood replied that juveniles will be overwintered at
Carlton in 2014, and would go to Chewuch in 2015. Gale asked if those fish will be marked differently, given that they are from Winthrop hatchery-origin broodstock. Tonseth replied that he believes that in accordance with the current *U.S. v. Oregon* agreement, fish will be marked adipose fin (ad)-present, with coded wire tag (CWT); and added that the CWT would be unique for those fish. Tonseth also noted that a broader discussion of marking schemes for the Upper Columbia hatchery programs needs to occur no later than March 2014. Gale asked if these fish should instead be marked more in line with the safety net program; and Underwood replied that this would be a Hatchery Committees decision. Kirk Truscott said that the balance of the Chelan PUD Methow program for release in 2015 will not include many progeny of natural origin fish; hence he sees no reason that Chelan PUD’s 61,000 spring Chinook should be marked ad-present. Keely Murdoch said that in terms of developing new marking strategies, focus should be on a long-term strategy—not just a single year. Lynn Hatcher said that he believes that Busack is also thinking along those same lines. Gale said that if all goes as planned, Winthrop will also be releasing ad-clipped plus CWT fish that same year; and asked if marking schemes for these stocks should match. Truscott said that one of the main reasons to ad-clip fish is for adult management; and Gale added that ad-clipping fish also helps with brood collection identification. Tonseth said that, in the context of adult management, in run escapements where very few of the conservation program fish are needed to meet escapement and proportionate natural influence (PNI) objectives, if Wells Dam is the only location to adequately achieve hatchery-origin recruit (HOR) extraction, nearly 100% of the wild fish would need to be handled to remove nearly 100% of the non-ad-clipped hatchery steelhead (unless there was an alternate fin-clip available); Murdoch did not think that would necessarily be the case. Mike Schiewe said that long-term marking is something that has been discussed before, and suggested that the Hatchery Committees may want to address this issue soon.

C. *Okanagan Nations Alliance Sockeye Hatchery Construction Update (Alene Underwood)*

Alene Underwood announced that the Okanagan Nations Alliance (ONA) broke ground in late July on the new Kl cp’elk’ stim Fish Hatchery in Penticton, British Columbia (BC). She said that the site was filled and graded, and that the foundation for two new buildings is already underway. She said that the facility is scheduled to be available to receive sockeye in fall 2014.
V. Yakama Nation

A. Live Spawning Twisp River Steelhead Broodstock (Keely Murdoch)

Keely Murdoch recalled discussing live-spawning Twisp River steelhead broodstock at the Hatchery Committees’ meeting on January 16, 2013. She said that the YN Steelhead Kelt Reconditioning Program has now been up and running at Winthrop NFH for the past two years, where the YN has been working with USFWS to live-spawn natural-origin steelhead (females). Murdoch said that the YN has been working with USFWS to determine if Twisp steelhead could be spawned and early-reared at Winthrop NFH for a kelt program, but use of space at Winthrop NFH is contingent on NMFS issuing the Section 10(j) for the Okanogan spring Chinook program. There will not be enough groundwater or space available until the Okanogan spring Chinook program can be moved off site, which, she added, may mean pushing the schedule back another year. Bill Gale agreed and added that in order for Winthrop NFH to have the space available for the YN program, the hatchery will need to move the Okanogan-bound fish as eyed eggs, and CJH would need to be fully online and with a Section 10(j) in order to transition the eyed eggs to CJH.

Murdoch summarized that in the past, the YN discussed with Douglas PUD incorporating an isoincubation-early rearing facility into their plans for the Wells Hatchery Modernization; however, this option was too expensive. She said that more recently the YN has been working with USFWS and WDFW fish health staff to develop fish health criteria for the program. She provided a quick overview of a plan for spawning, holding, and fish health testing that Joy Evered (USFWS) and Bob Rogers (WDFW) had developed (the “Kelt Plan”). She said that a key element of the plan for Hatchery Committees’ consideration and approval is that if Infectious Pancreatic Necrosis Virus (IPNV) is detected among any adults or progeny, all fish would be need to be destroyed to avoid virus spreading. Murdoch said that she had thought this situation could be avoided by keeping fish in separate troughs, as described in the Kelt Plan. She said, however, that IPNV apparently spreads both vertically and horizontally; so if detected, the entire stock would need to be destroyed (parents and offspring). Murdoch said the YN thinks that this program can be a great opportunity. She said that IPNV was detected with regularity about 20 years ago in the stock above Wells Dam, but then has not been detected since. She said that if IPNV does start to show up again, the YN would discontinue live-spawning of Twisp broodstock. However, as long as IPNV is not detected, the YN would proceed.
Greg Mackey said that Murdoch presented the same information to Douglas PUD a few weeks ago, and that Douglas PUD thought there was potential to carry this program forward at the Methow Hatchery—instead of at Winthrop. Mackey said that Douglas PUD staff met with WDFW fish health staff (Bob Rogers) and hatchery staff at the Methow Hatchery to discuss the possibility of operating the program there. He said that they discussed pooling progeny by spawn week, as found in the Kelt Plan, whereas originally WDFW fish health had required keeping each female’s progeny in separate tanks. However, Bob Rogers said that the progeny should indeed be reared separately for each female parent. Mackey said that Murdoch was correct about IPNV: all fish would need to be destroyed if IPNV is detected. However, for other diseases, such infectious hematopoietic necrosis virus (IHNV), only the families that were found to be infected would be destroyed, reducing the overall numbers of fish and families that would need to be destroyed. This is the critical advantage of keeping families separate. He said that Douglas PUD asked WDFW to write a letter stating that the level of risk imposed by the kelt program was acceptable to provide Douglas PUD and the Hatchery Committee assurance that, from a fish health perspective, the program did not create unacceptable levels of risk; and he said that his impression was that WDFW may not be willing to provide such a letter. Mackey said that considering Methow Hatchery itself, the current equipment and setup may not be ideal, but it still could work; and he added that the current infrastructure would need to be considered in more detail. Mackey said that the bigger question may be about the Hatchery Committees’ comfort level with the fish health concern.

Murdoch said that she appreciates everyone’s consideration on this issue, and she added that the YN plans to complete budgeting exercises in October 2013 and would like to have some idea about a path forward by then.

Tonseth said that the Hatchery Committees need to consider effective population size and what possible crosses will look like. Charlie Snow said that individually sampling females, but pooling males, also results in killing a lot of fish. Therefore, Snow recommended individually sampling males, too. He added that, in general, only a few females are spawned each week. Kirk Truscott said that if progeny were pooled by spawn week, one-third of the females could be spawned in a few takes, which could knock off one-third of the program if
A disease was detected. Tonseth said that at the time that IPNV was last detected, there was brood being collected at Priest Rapids; which Tonseth suggested could have been the cause. He added that with 39 individual families, individual isolation based on parental crosses cannot reasonably be done with three-by-three (3x3) crosses. Gale asked how spring spawning would affect the ability to obtain one-year smolts, and asked if emergence will be delayed. Murdoch said that the original fish health screening plan was to collect two samples: one at swim up and one at 30 days after swim up. She said that it takes an additional 30 days to obtain results, so there is a total of 60 days to transfer after swim-up. She said that, now, there are only 30 days to transfer. She also said that the main concern was developing a more sensitive virus testing protocol that WDFW could support to allow only a single screening. Gale asked if a June transfer matches up with growth at Wells Hatchery. Mackey replied that the temperature profile is in the low 50s at that time of year; and added that he is uncertain if it is different from the Methow. Tonseth said that if there is little temperature difference between Methow, Winthrop, and Wells, then the effect on growth is not likely biologically significant (i.e., size at release of fry transferred to Wells Dam 30 days post-swim up is not likely significantly different than eyed eggs transferred to Wells Dam). Gale noted that Wells fish are spawned earlier; and Tom Kahler said that if Twisp River fish are a bit smaller, they may better match natural fish.

Mackey said that Bob Rogers sees this program as something that would operate for a short period of time, perhaps four years at the most. If the program were to operate longer a dedicated facility should be constructed to house the program. Murdoch said that at this point, the YN is mainly interested in how the kelts will perform. She said that she is not entirely certain what long-term funding looks like; and added that the current funding ends in 2017. She said that she is hoping for continued funding, but that will likely depend on the success of the program. She said that in the interest of moving forward, she will contact WDFW fish health staff to confirm their support of the proposed approach for live spawning Twisp River steelhead broodstock at Methow Hatchery; and based on those discussions, she will determine a path forward to be discussed at the Hatchery Committees meeting on September 18, 2013.
VI. CCT

A. Chief Joseph Hatchery Brood Collection (Kirk Truscott)

Kirk Truscott said that spring Chinook broodstock was successfully transferred from Leavenworth NFH to CJH. He said that the July report is not yet complete, but that fish were on station in June, and he reported no mortalities. He said that 35 pairs were spawned on August 19, 2013, and that eggs are now on station. He said that for summer Chinook, protocols have been met every week, and that collection will continue through next week. He said that the CCT is anticipating meeting full brood for natural and hatchery stocks—about 420 adults (i.e., 60 percent of 700,000). Truscott said that the CCT has not yet operated the weir for brood collection and that all brood collected to date has been by purse seine. Truscott noted that they have collected and successfully released many natural origin fish. Bill Gale recommended keeping open channels of communication with Travis Collier and Steve Croci, in case Leavenworth NFH has extra fish that could potentially be transferred to CJH.

Truscott said that a down side to brood collection is that there was a recent theft of 42 brood fish from CJH—mostly summer natural origin recruits (NORs). He said that based on evidence at the site, it seems that almost all of the fish came out of one pond. He said the up side is that the CCT made up the shortfall with brood collected on August 20, 2013. Mike Tonseth asked what CJH has for security, and Truscott replied that there are a few night-shift staff and real-time security cameras (no recordings). He explained that the ponds are fenced on three sides, and that the fourth side is a steep hill that is unfenced. The loss of broodstock occurred when individuals climbed the hill and came into the compound, snagged the fish and passed them under the gate of the perimeter fence and into a vehicle that was parked at the entrance to the compound. (*Note: The vehicle access to the broodstock compound has now been secured with a locked gate near Chief Joseph Dam [approximately one-half mile from the broodstock compound].*)

Regarding the Okanogan weir, Truscott said that staff completed installing the weir this morning. He said he is unsure whether or not fish have arrived; and added that water temperatures are currently reduced in the Okanogan. He said that pilot broodstock collection will begin immediately—collecting five fish per week—with processing and handling occurring at CJH. He said that six video cameras will be operational this year and
that survival will be evaluated for brood collected at the weir versus the purse seine. He added that he believes most sockeye have already passed.

VII. USFWS

A. USFWS Staff Update (Bill Gale)

Bill Gale announced that Al Jensen will be retiring on September 30, 2013. He said he thinks that position will stay vacant, and he added that Travis Collier is now the main Leavenworth NFH contact.

VIII. HCP Administration

A. Next Meetings

Bill Gale said that there will not be USFWS representation at the Hatchery Committees’ meeting on September 18, 2013. Mike Schiewe said that if any decision items are planned, USFWS will be contacted in advance, as necessary.

The next scheduled Hatchery Committees’ meetings are on September 18, 2013 (Douglas PUD); October 16, 2013 (Chelan PUD); and November 20, 2013 (Douglas PUD).

List of Attachments

Attachment A List of Attendees
<table>
<thead>
<tr>
<th>Name</th>
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<tr>
<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<td>Greg Mackey*</td>
<td>Douglas PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Todd Pearsons</td>
<td>Grant PUD</td>
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<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Charlie Snow†</td>
<td>Washington Department of Fish and Wildlife</td>
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Notes:
* Denotes Hatchery Committees member or alternate
† Joined by phone
This memorandum provides a summary of the Wells Hatchery Modernization Workshop that was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, August 21, 2013, from 1:00 pm to 3:30 pm. Attendees are listed in Attachment A to this memorandum.

I. Wells Hatchery Modernization Workshop

A. Wells Hatchery Modernization Workshop (Greg Mackey)

Greg Mackey welcomed the attendees and introduced Ken Ferjancic, Jason Hill, and Ed Donahue from HDR Engineering, Inc. (HDR). Mackey presented background information on the Wells Hatchery Modernization (Attachment B), which Kristi Geris distributed to the Hatchery Committees on August 23, 2013. He noted that the modernization of Wells Hatchery was not required by the Federal Energy Regulatory Commission (FERC), but rather was a voluntary action by Douglas PUD to update the facility that was constructed in the mid-1960s. Mackey said that there are three major components of the rebuild, including: 1) a new incubation and early rearing building; 2) new circular tanks for the steelhead programs; and 3) a new adult trapping and broodstock holding facility. Lastly, Mackey reviewed the steelhead, summer Chinook, and non-Habitat Conservation Plan (HCP) program numbers that will be supported by the Wells Hatchery facility.

Ferjancic led HDR’s presentation on the Wells Hatchery Modernization (Attachment C), which Geris distributed to the Hatchery Committees on August 23, 2013. He noted that some of the information that is included in his presentation is also included in the appendix of the Wells Fish Hatchery Modernization Master Plan, which was posted to the HCP ftp site by Emily Pizzichemi on May 14, 2013. Ferjancic reviewed metrics that were considered
during the development of design criteria for the modernization, including Wells Hatchery program production numbers (as Mackey also noted), density indices (DIs), adult holding criteria, and water temperature profiles. Bill Gale asked why the DIs were not the same for all programs, and Shane Bickford explained that DIs for conservation programs were one-third compared to standard DIs. Ferjancic was asked if the water temperature data were for one year only, and responded that the water temperature profile data represent means for several years. He also noted the lag between peak well and peak river temperatures, and he added that the goal is to gradually reduce temperatures to the lowest temperature to try to mimic natural temperatures of receiving waters. The idea is to have the fish experience a low temperature prior to and coinciding with acclimation so they can experience naturally increasing water temperatures in the acclimation pond, resulting in a more natural and reliable smolting process. Ferjancic also reviewed planned Wells Hatchery inflow requirements, and noted that the inflow requirements are being used to develop the new and improved well field.

A Wells Hatchery site plan depicting general flow of water through the facility was discussed. Ferjancic identified a number of the physical components of the modernization, including removal of the spawning channel located along the western border of the site; a new hatchery building and 12-circular tank area, also located near the west end of the site; a new contingency area capable of housing eight additional circular tanks, located just east of the new 12-tank area; a new garage shop area just north of the new hatchery building; and a new adult trapping and broodstock holding facility located at the northeast corner of the site. Mackey noted that the modernization also is being planned so that the hatchery could remain fully operational throughout the duration of construction. He said that the approach is to install the new pipes, electrical, etc., in a utility corridor while the facility remains in operation, and then when everything is ready, engage the new systems. Ferjancic also noted that biosecurity has been a driving element in the design process, and that HDR will continue to incorporate biosecurity concepts into the design.

A site plan of the new hatchery building was discussed. Ferjancic said that the new building will house eight separate incubation rooms that are sized differently based on size requirements for the respective programs. He noted an area that has been set aside that will be plumbed in to allow natal water to be brought into the facility in the event that...
imprinting on natal water at the incubation (eyed-egg through alevin) stage is implemented. Bickford added that the area would just be a room that is plumbed in, and tanks can be brought in as needed. Ferjancic also noted that the area would need to be equipped with treatment infrastructure in order to store, treat, and recirculate water, if early imprinting is undertaken. Ferjancic added that the building will include space for offices and feed storage.

A diagram of the circular tank rearing area was discussed. Bickford noted that the enclosed rearing area will allow the fish to experience natural light. Ferjancic said that the area will be enclosed to provide predation control. Gale asked how the tanks will be stocked, and Ed Donahue replied that the tanks will be stocked from outside of the fence via a water-to-water transfer. Mike Tonseth noted that it would be similar to the setup at Chief Joseph Hatchery (CJH). Bickford said that the fish would be transferred from the start tanks to the circulars via water-to-water gravity feed. This is efficient and more fish friendly than using a fish pump or other transfer methods. Subsequent transfer to a fish distribution system, or dirt ponds, would also be water-to-water via gravity feed. He also stressed that the circular ponds will use a flow-through water system and will not be recirculated, and he noted that to achieve the water movement in the circular tanks to allow them to be self-cleaning and to provide the fish with a variety of water velocities in the tanks requires substantially higher flows than would be used in conventional raceways. Therefore, the fish will receive high flow indices and be reared at lower densities in the circular tanks. Gale questioned whether the proposed 3-foot clearance between tanks would be sufficient space for staff. Ferjancic responded that the exact spacing had not yet been addressed, but will be addressed to provide proper clearances for staff and operational needs. Tonseth asked how a tank would be removed if one located in the middle of the room was structurally compromised and need to be replaced. Ferjancic said that a “garage door-like” structure would need to be installed in order to remove a potentially compromised tank. He noted that support columns, as depicted on slide 11 of Attachment B, will need to be located between the tanks to allow room to remove the tanks. Ferjancic also noted that specific tank dimensions are included on slide 13 of Attachment B.

Ferjancic presented example bioprogramming results for Twisp River steelhead to illustrate how space and capacity requirements were developed (for each program) to be used in the design process. He said that typically in January of each year, river water and well water
would be blended to achieve the desired water temperatures. He also noted that in March, when Twisp fingerlings are transferred to the acclimation site, they have already experienced a seasonal low temperature and temperatures at the acclimation site are on the upswing. Ferjancic said that in circulars, a minimum water velocity is needed for sweeping; and Gale asked if the same flow will be running into the circulars all year. Gale also asked if there is concern that flow will be too high at early life stages, and also if there is reason to increase flow when fish get larger. Ferjancic replied that flows can be regulated for early life stages he did not think it would be necessary to increase flow above that indicated in the bioprogram when the fish are larger. Kirk Truscott noted that fish can decide where they want to be in the circulars to regulate the flows they experience (i.e., outside in greater flow, or inside with less flow).

Lastly, Ferjancic presented a series of rearing unit allocations for each month of the year. Mackey said that one reason for this exercise is to identify any scheduling issues, such as where and when extra space or conflicts for space occur. Tonseth asked if and how fish location and rearing vessels affect tagging, and Ferjancic replied that those details have not yet been choreographed. Donahue said that fish can be gravity released from any of the circular tanks to a fish handling/distribution center where marking can occur. Tonseth said that his concern is to be able to mark and tag the conservation steelhead programs when all circulars will be in use. Truscott said that butterfly screens can be used with circulars to open space for tagging efforts, and Tonseth replied that he was not suggesting there would not be capacity; however, he thought the issue deserved early consideration.

Gale asked if Bob Rogers has been involved in modernization discussions, and Bickford replied that he had. Gale also asked if the proposed contingency area is already needed, and Bickford replied that it is not. Gale noted that in the rearing unit allocations that were just reviewed, all of the contingency tanks were filled for each month, and Bickford and Ferjancic clarified that those allocations were hypothetical (i.e., if needed). The allocation scenario showed how the facility would be allocated if the contingency space was in use.

Truscott asked if there is ever a month where there is a pinch-point for water, and Donahue replied that there should not be. Bickford said that the bioprogram indicated that peak consumption is about 13,000 gallons per minute (gpm), and the well field will be developed
to deliver 18,000 gpm. Gale asked about the effluent from the dual drain tanks, and Donahue 
replied that a microstrainer will be installed to the clarifier, and then the water will go to 
overflow. Bickford added that the system will be single-pass water, and that the idea is to try 
to minimize future use of chemicals. He also added that the circulars help minimize effluent 
treatment and discharge concerns.

Tonseth asked about the timeline for the renovation. Bickford said that, originally, the plan 
was to put the project to bid in spring 2014; however, Douglas PUD needs to notify FERC of 
the proposed project and determine their level of desired involvement. He said that, in the 
meantime, Douglas PUD is moving forward with the well field redevelopment. He added 
that the goal is to get to 18,000 gpm as soon as possible so that the well is available prior to 
disruptions at the hatchery during construction. Lynn Hatcher asked if there was anything 
that the Hatchery Committees could do to help move the modernization process forward. 
Bickford suggested that perhaps a Statement of Agreement (SOA), indicating the Committee 
support and approval of the proposed renovations, would help. He added that it may put 
FERC at ease if they know that the plans have also been reviewed and approved by the 
Hatchery Committee. Tonseth asked when the renovations can be expected to be complete 
if everything goes as planned, and Donahue replied that the project would take 2 years to 
complete.

Mike Schiewe asked about adult collection and processing, and Bickford replied that Douglas 
PUD has been working with Bryan Nordlund (NMFS) regarding trap design and fish 
handling. Bickford said that because the volunteer channel and trap is considered a passage 
structure, the Wells HCP requires that the Coordinating Committees approve the structure. 
Tonseth suggested using direct current (DC) for anesthesia in order to keep the fish in water 
the entire time. Mackey said that Douglas PUD is looking into DC electro narcosis units (i.e., 
low voltage DC), and hopes to be able to have a system that can anesthetize multiple fish at 
onece. Gale suggested that, for sacrificing fish, a carbon dioxide (CO2) system is much less 
expensive than an electro anesthesia (EA) system. Tonseth said that the problem with a CO2 
system is the human safety concerns. Gale said that tricaine methane sulfonate (MS 222) is 
also an option, in lieu of an EA system. He also suggested that if an electro narcosis system is 
used that the design also allows other anesthetic options to be used, such as MS 222. Hatcher 
said that National Marine Fisheries Service (NMFS) engineers have historically supported the
use of electro narcosis using DC-based units. Tonseth said that Washington Department of Fish and Wildlife (WDFW) put together a position paper on using DC-based units for electro narcosis; and added that WDFW has data for Chinook and steelhead. He also noted that with DC, there can be human contact with the water. Mackey said that Douglas PUD is still discussing all options.

Keely Murdoch asked about the future use of the east ladder trapping facility, and Bickford replied that the facility is rarely needed anymore. He added that the facility was originally built for the Carlton Chelan PUD program, which is no longer in place. Tonseth said that the facility has also been used for steelhead programs; however, this use also does not occur as much anymore because programs have shifted broodstock collection locations. Tonseth said that the only reason to use the east ladder now would be for adult management, or if a third party wanted to conduct sampling. He added that if the east ladder were to be used in any capacity, it would need improvements. Bickford said that the area is not ideal because of federal security requirements and the uncertainty in getting fish back across the dam during emergency or construction activities, and that the only reason that he could see needing to use it would be if there was a requirement to sample 100 percent of the spring Chinook run.

Gale asked about the feed storage room, and Bickford said that Douglas PUD has been discussing potentially purchasing feed in bulk, as opposed to in individual bags. He said that purchasing bulk feed and using automated feeders would reduce labor, and he added that the feed would be stored in a high-density plastic hopper. Use of bulk feed would reduce the need to handle bags of feed multiple times. Gale asked if using automated feeders would cause concern that fish are not being directly monitored while feeding, and Bickford replied that Douglas PUD has discussed this issue as it relates to the ability to observe fish behavior. Tonseth added that size disparity could also quickly become an issue without close observation. Ferjancic suggested that staff be trained to continue fish behavior observations, despite the fact that they no longer need to physically feed the fish. Todd Pearsons mentioned automated underwater feeding systems that have been implemented to improve feeding, and Gale noted that there are no data to support the claim that underwater feeding systems benefit fish. The group discussed several studies that tested naturalistic rearing treatments and that the studies generally did not find biologically significant differences in the enhanced verses standard rearing approaches. Ferjancic said that he recently came across
a paper out of Norway published in the Proceedings of the Royal Society B titled, “Environmental enrichment promotes neural plasticity and cognitive ability in fish” by Gro Vea Salvanes, Moberg, et al. (2013). He said that the paper had some interesting thoughts on environmental enrichment and that he will email it to Geris for distribution. (Note: Ferjancic provided the paper to Geris, which was distributed to the Hatchery Committees on August 23, 2013.)

Gale noted the importance that enough space is planned for marking trailers to access needed areas, and that there will be easy access to power in those areas. Ferjancic said that these details are not laid out at the master planning level; however, he said that HDR will be sure to incorporate these details in future planning. Gale asked if the Hatchery Committees will be involved in that planning, and Bickford replied that the Committees can be involved if they want. Bickford said that when planning reaches 30 percent design, it will be a good time for another Hatchery Committee review.

Truscott asked, regarding the circulars, if there is a restriction on how many groups can be simultaneously removed at the terminus of the fish conveyance system. He further explained that releasing volitional migrants is desired and that the distribution system should be able to collect separate programs. Donahue replied that sorting details have not yet been worked out. Bickford said that a couple of options have been discussed for efficient fish transfers and releases.

Bickford said that the dirt ponds will be covered with netting to minimize predation, and he added that the biggest problems are small ducks and herons. He said that, last year, about 20,000 fish were lost to predation. Gale asked if the transmission tower in dirt pond 2 will cause problems installing the bird netting. HDR and Bickford responded that the netting can be installed to account for the effects of the tower.

Bickford said that Douglas PUD plans to submit the Part 12 notice to FERC in the fall of 2013. Schiewe suggested that Douglas PUD keep in touch about the letter to FERC, so that the Hatchery Committees can stay involved and possibly help move things forward. Tonseth asked if HDR needs to wait for FERC’s response, and Bickford replied that HDR can keep moving forward. Ferjancic said that 30 percent design will likely be reached by the end of
the year. Bickford reminded everyone that the Wells Hatchery Master Plan was finalized following a 60-day review period, which ended on July 13, 2013, as described in an email distributed to the Hatchery Committees by Geris on August 2, 2013. As noted in the email, no comments were received from Hatchery Committees members on the draft plan.

**List of Attachments**

<table>
<thead>
<tr>
<th>Attachment A</th>
<th>List of Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment B</td>
<td>Wells Hatchery Modernization (Douglas PUD)</td>
</tr>
<tr>
<td>Attachment C</td>
<td>Wells Fish Hatchery Modernization (HDR Engineering, Inc.)</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Shane Bickford</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Greg Mackey*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Kenneth Ferjancic</td>
<td>HDR Engineering, Inc.</td>
</tr>
<tr>
<td>Ed Donahue</td>
<td>HDR Engineering, Inc.</td>
</tr>
<tr>
<td>Jason Hill</td>
<td>HDR Engineering, Inc.</td>
</tr>
<tr>
<td>Todd Pearsons</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
</tbody>
</table>

Notes:
* Denotes Hatchery Committees member or alternate
Background

- Constructed in 1967 as a 6,100’ spawning channel
- Upgraded to complete hatchery
- Produces about 156,000 pounds of steelhead, salmon and trout
Background

- Voluntary Action by DPUD
- Not a FERC Requirement
- DPUD seeks to ensure reliable production of quality fish into the future
<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Type</th>
<th>Number</th>
<th>Grant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steelhead</td>
<td>Twisp NNI</td>
<td>Conservation</td>
<td>8,000</td>
<td></td>
</tr>
<tr>
<td>Steelhead</td>
<td>Twisp Inundation</td>
<td>Conservation</td>
<td>40,000</td>
<td></td>
</tr>
<tr>
<td>Steelhead</td>
<td>Methow Safety-Net Inundation</td>
<td>Conservation/Hasvest</td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td>Steelhead</td>
<td>Columbia Safety-Net Inundation</td>
<td>Conservation/Hasvest</td>
<td>160,000</td>
<td></td>
</tr>
<tr>
<td>Steelhead</td>
<td>Omak Conservation</td>
<td>Conservation</td>
<td>20,000</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Steelhead</td>
<td>Okanogan</td>
<td>Conservation/Hasvest</td>
<td>80,000</td>
<td></td>
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</tbody>
</table>

48,000 total
# Programs – Summer Chinook

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Chinook</td>
<td>Yearling Inundation</td>
<td>Harvest</td>
<td>320,000</td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>Sub-Yearling Inundation</td>
<td>Harvest</td>
<td>484,000</td>
</tr>
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</table>
## Programs – Non-HCP

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Agreement</th>
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</thead>
<tbody>
<tr>
<td>Rainbow</td>
<td>Jumbo Rainbow Rainbows</td>
<td>Catchable</td>
<td>2,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Rainbow</td>
<td>Catchable Rainbow Rainbow</td>
<td>Catchable</td>
<td>32,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Rainbow</td>
<td>Fingerling Rainbow Rainbow</td>
<td>Fingerling</td>
<td>60,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Cutthroat</td>
<td>Lahontan Cutthroat</td>
<td>Eyed Eggs</td>
<td>160,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Cutthroat</td>
<td>Lahontan Cutthroat</td>
<td>Fry</td>
<td>75,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>Lake Chelan Triploid</td>
<td>Eyed Eggs</td>
<td>100,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>Kokanee</td>
<td>Palmer Lake Kokanee</td>
<td>Eyed Eggs</td>
<td>300,000</td>
<td>Off-License</td>
</tr>
<tr>
<td>White Sturgeon</td>
<td>Wells</td>
<td>Juvenile</td>
<td>5,000</td>
<td>Aquatic Settlement</td>
</tr>
</tbody>
</table>
WELLS FISH HATCHERY MODERNIZATION

AUGUST 21, 2013
## Wells Hatchery Programs as of 2013: updated on January 11, 2013

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steelhead</strong></td>
<td><strong>Twisp River</strong></td>
<td>Yearling</td>
<td>8,000</td>
<td>8,000</td>
<td>6 fpp</td>
<td>26 Twisp WxW</td>
<td>Methow Hatchery (Spawn in April)</td>
<td>Wells Hatchery</td>
<td>Twisp Pond</td>
<td>Twisp River</td>
<td>A</td>
<td>Douglas PUD</td>
<td>New Circulars</td>
<td>Broodstock held, spawned, incubated to eyed egg at Methow Hatchery, then moved to Wells Hatchery for grow out.</td>
</tr>
</tbody>
</table>

*The two Twisp steelhead programs act as one program totaling 48,000 smolts, comprised of the two mitigation obligations listed above. Otherwise, the fish are identical and function as one program.*

| Steelhead: Methow River | Metcows-Nat. Conservation/ Harvest | Yearling | 100,000 | 6 fpp | 52 total: Twisp, HxH (up to 25% of the broodstock), WNFH HxW, Methow Safety-Net HxH | Wells Hatchery | Wells Hatchery | Methow Hatchery | Methow River | B | Douglas PUD | Dirt Pond #4 | Brood collected in the Methow Basin from up to 3 locations, in order of priority: Twisp HxH (up to 25% of broodstock), WNFH HxW, Methow Safety-Net HxH. Brood will be held temporarily at Methow Hatchery, and trucked to Wells for long-term holding prior to spawning. May be reduced to 60,000 smolts. |

| Steelhead: Columbia River | Mainstem Columbia Safety-Net Conservation/ Harvest | Yearling | 260,000 | 6 fpp | 104 total: Methow Safety-Net HxH, HxH Wells Stock | Wells Hatchery | Wells Hatchery | Wells Hatchery | Columbia River direct from Wells Hatchery | B | Douglas PUD | Dirt Pond #3 | Brood collected at Methow Hatchery, Wells Hatchery volunteer channel, Wells Dam fishway traps. Current production is 160,000, but could increase to 200,000. |

| Steelhead: Omak: (Okanogan) | Omak: Conservation | Yearling | 0 to 50,000 | 0 to 8,333 | 6 fpp | Omak Creek WxW, HxW | Wells Hatchery | Wells Hatchery | Omak Creek (Okanogan) | C | Grant PUD | New Circulars | Grant/CCT programs. The max combined program is 100,000 (110,000 with 10% average allowance). Goal is to maximize Omak and Salmon Creek programs at the expense of the Okanogan program, but still achieve 100,000 total. Programs can vary in size year to year according to broodstock availability. Brood collected in spring, except Wells Stock-backup would need to be collected the previous summer. These would be surplused as eggs or fry (see Kingold program) or released if Okanogan brood were collected in spring. |

| Steelhead: Okanogan | Okanogan: Conservation | Yearling | 0 to 100,000 | 0 to 16,667 | 6 fpp | Wells Stock (HxH) collected in the Okanogan (spring collection) or Wells Stock (HxH) collected at Wells Dam (autumn collection) | Wells Hatchery | Wells Hatchery | TBD | Okanogan Basin (TBD) | D | Grant PUD | New Circulars | Grant/CCT programs. The max combined program is 100,000 (110,000 with 10% average allowance). Goal is to maximize Omak and Salmon Creek programs at the expense of the Okanogan program, but still achieve 100,000 total. Programs can vary in size year to year according to broodstock availability. Brood collected in spring, except Wells Stock-backup would need to be collected the previous summer. These would be surplused as eggs or fry (see Kingold program) or released if Okanogan brood were collected in spring. |
## PRODUCTION PROGRAM

### Steelhead

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steelhead</td>
<td>Ringold: Harvest</td>
<td>Surplus Eggs or Fry</td>
<td>Up to 120,000</td>
<td>NA</td>
<td>NA</td>
<td>Wells Stock, number is variable</td>
<td>Wells Hatchery</td>
<td>Ringold</td>
<td>Ringold</td>
<td>Columbia River</td>
<td>B</td>
<td>Green Deep Troughs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Summer Chinook

| Summer Chinook | Inundation Yearlings: Harvest | Yearling | 320,000 | 32,000 | 10 fpp | 206 Wells Stock | Wells Hatchery | Wells Hatchery | Columbia River direct from Wells Hatchery: April 15 | E     | Douglas PUD | Dirt Pond #2 | Incubation water chilled to 42 F. No coagulated yolk problem. Adults arrive July/August; spawn in October. |
| Summer Chinook | Inundation Subyearlings: Harvest | Subyearling | 484,000 | 9,680  | 50 fpp | 320 Wells Stock | Wells Hatchery | Wells Hatchery | Columbia River direct from Wells Hatchery: May 15 | E     | Douglas PUD | Dirt Pond #1 | Incubation water not chilled, no coagulated yolk problem. Adults arrive July/August; spawn in October. |

### Off-License Settlement (OLS) Fish: 20,000 Pounds of Rainbow Trout Equivalents

| Rainbow     | Jumbo Rainbow | Catchable | 2,000 | 2,000 | 1 None | Wells Hatchery (spawned off-station, incubation only) | Wells Hatchery | None | Region 2 lowland lakes | F     | WDFW | New Circulars | Catchable trout for Region 2 lowland lakes and kids fishing derby. |
| Rainbow     | Catchable Rainbow | Catchable | 32,000 | 14,545 | 2.2 None | Wells Hatchery (spawned off-station, incubation only) | Wells Hatchery | None | Region 2 lowland lakes | F     | WDFW | Pond 16 | Catchable trout for Region 2 lowland lakes and kids fishing derby. |
| Rainbow     | Fingerling Rainbow | Fingerling | 60,000 | 2,000 | 30 None | Wells Hatchery (spawned off-station, incubation only) | Wells Hatchery | None | Conconully Lake and Reservoir | F     | WDFW | Bureau Raceways or circulars | Fry plants to Conconully Lake and Reservoir. |
| Cutthroat   | Lahontan Cutthroat | Eyed Eggs | 160,000 | 160   | 1,000 None | Wells Hatchery (spawned off-station, incubation only) | Wells Hatchery | None | Transferred to other programs | G     | WDFW | No rearing - eyed eggs only | Brood from Lake Lenore. Eyed eggs are for Omak Hatchery, IDFG, ODFW. |
| Cutthroat   | Lahontan Cutthroat | Fry | 75,000 | 100    | 750 None | Wells Hatchery (spawned off-station, incubation only) | Wells Hatchery | None | Transferred to Columbia Basin Hatchery | G     | WDFW | Shallow Troughs | Fry are transferred to Columbia Basin Hatchery in August. |
| Summer Chinook | Lake Chelan Triploid | Eyed Eggs | 100,000 | 500   | 260 Wells Summer Chinook | Wells Hatchery | Chelan Falls Hatchery | Chelan Falls Hatchery | Lake Chelan | H     | WDFW | No rearing - eyed eggs only | Eggs are taken as part of the Well's summer Chinook program and treated to turn into triploid. |
| Kokanee     | Palmer Lake Kokanee | Eyed Eggs | 300,000 | 300    | 1,000 None | Wells Hatchery to eyed egg. Omak Hatchery for remainder of incubation | Omak Hatchery | None | Falmer Lake | I     | WDFW | No rearing - eyed eggs only | These fish require a high level of biosecurity. |
# PRODUCTION PROGRAM

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sturgeon</td>
<td>DCPUD: Sturgeon: Conservation</td>
<td>Juveniles</td>
<td>5,000 (Build to 6,500)</td>
<td>NA</td>
<td>230 mm up to 300 mm</td>
<td>None</td>
<td>Wells Hatchery</td>
<td>Wells Hatchery</td>
<td>Wells Hatchery</td>
<td>Columbia River</td>
<td>J</td>
<td>Douglas PUD</td>
<td>New Indoor Combis</td>
<td>New program. Facility designed and construction to be finished in 2013.</td>
</tr>
</tbody>
</table>

## Broodstock Collection for Non-Wells Hatchery Programs

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Chinook</td>
<td>USFWS Entiat</td>
<td>Adult</td>
<td>248</td>
<td>NA</td>
<td>NA</td>
<td>Wells Stock</td>
<td>Entiat NFH</td>
<td>Entiat NFH</td>
<td>Entiat River</td>
<td>G</td>
<td>USFWS</td>
<td>Salmon Adult Pond</td>
<td>Interim broodstock collection program for Entiat NFH. Will last a number of years.</td>
<td></td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>Chelan PUD</td>
<td>Adult</td>
<td>373</td>
<td>NA</td>
<td>NA</td>
<td>Wells Stock</td>
<td>Eastbank</td>
<td>Eastbank</td>
<td>Various</td>
<td>G</td>
<td>Chelan PUD</td>
<td>Salmon Adult Pond</td>
<td>Trap and truck operation</td>
<td></td>
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</table>

## Surplus and Adult Management Activities (Occur in the Wells Hatchery Volunteer Channel and Trap)

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steelhead</td>
<td>All Programs</td>
<td>Adult</td>
<td>1,000</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Douglas PUD, USFWS, Grant PUD/CCT</td>
<td>NA</td>
<td>Remove excess hatchery-origin adults for management purposes</td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>All Programs</td>
<td>Adult</td>
<td>700-800</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Douglas PUD, USFWS, CCT</td>
<td>NA</td>
<td>Remove excess hatchery-origin adults for surplus or management purposes</td>
</tr>
<tr>
<td>Spring Chinook</td>
<td>All Programs</td>
<td>Adult</td>
<td>??</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Douglas PUD, USFWS, CCT</td>
<td>NA</td>
<td>Not currently implemented. Remove excess hatchery-origin adults for management purposes</td>
</tr>
</tbody>
</table>

## Programs Likely To Be Discontinued – Do Not Include in Design Until Further Notice

<table>
<thead>
<tr>
<th>Species</th>
<th>Program</th>
<th>Life Stage</th>
<th>Number</th>
<th>Pounds</th>
<th>Size</th>
<th>Broodstock</th>
<th>Spawning/Incubation</th>
<th>Rearing</th>
<th>Acclimation</th>
<th>Release</th>
<th>Biosecurity Group</th>
<th>Owner</th>
<th>Rearing Vessel</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steelhead</td>
<td>WNFH</td>
<td>Eyed Eggs</td>
<td>60,000</td>
<td>NA</td>
<td>NA</td>
<td>32 Wells Stock</td>
<td>Wells Hatchery</td>
<td>Winthrop NFH</td>
<td>Winthrop NFH</td>
<td>Methow River</td>
<td>B</td>
<td>USFWS</td>
<td>Steelhead Adult Pond</td>
<td>Interim broodstock collection program for Winthrop NFH. Will last a number of years.</td>
</tr>
<tr>
<td>Summer Chinook</td>
<td>Yakama Nation</td>
<td>Green Eggs</td>
<td>345,000</td>
<td>NA</td>
<td>NA</td>
<td>167 Wells Stock</td>
<td>Wells Hatchery</td>
<td>Marion Drain</td>
<td>?</td>
<td>?</td>
<td>F</td>
<td>Yakama Nation</td>
<td>NA</td>
<td>YN helps spawn fish.</td>
</tr>
<tr>
<td>Coho</td>
<td>Yakama Nation</td>
<td>Smolts</td>
<td>125,000</td>
<td>NA</td>
<td>NA</td>
<td>Various</td>
<td>Various</td>
<td>Wells Hatchery</td>
<td>Columbia River</td>
<td>M</td>
<td>Yakama Nation</td>
<td>Pond 15</td>
<td>Spring acclimation only. Current program, but unclear if this program will continue. Uses Pond 15.</td>
<td></td>
</tr>
</tbody>
</table>
DENSITY INDICES
(FROM LIST OF SPECIFICATIONS AND ASSUMPTIONS)

Maximum density index for early rearing troughs, raceways, and circulars:

<table>
<thead>
<tr>
<th>Species</th>
<th>Density Index</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinook (0)</td>
<td>0.125 lb/cf/in</td>
<td>WDFW Fish Health July 31, 2012. R. Rogers pers. comm.</td>
</tr>
<tr>
<td>Steelhead Twisp &amp; Contingency Program</td>
<td>0.20 lb/cf/in</td>
<td>WDFW Fish Health July 31, 2012. R. Rogers pers. comm.</td>
</tr>
<tr>
<td>Steelhead-Omak &amp; Okanogan</td>
<td>0.20 lb/cf/in</td>
<td>Client meeting 9/6/12</td>
</tr>
<tr>
<td>Chinook (+1)</td>
<td>0.125 lb/cf/in</td>
<td>WDFW Fish Health July 31, 2012. R. Rogers pers. comm.</td>
</tr>
</tbody>
</table>

Density index for large ponds:

<table>
<thead>
<tr>
<th>Species</th>
<th>Density Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>all species</td>
<td>0.05 lb/cf/in</td>
</tr>
</tbody>
</table>
# ADULT HOLDING

*(FROM LIST OF SPECIFICATIONS AND ASSUMPTIONS)*

<table>
<thead>
<tr>
<th></th>
<th>Area Req.</th>
<th>Inflow Req.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steelhead &amp; Contingency Program</strong></td>
<td>2.5 cubic feet/adult, Rogers, R. WDFW Fish Health 2006</td>
<td><strong>Steelhead &amp; Contingency Program</strong></td>
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<tr>
<td>Chinook</td>
<td>10 cubic feet/adult, Rogers, R. WDFW Fish Health 2006</td>
<td>Chinook</td>
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## WATER TEMPERATURE PROFILE

<table>
<thead>
<tr>
<th>Code</th>
<th>Month</th>
<th>Well °F</th>
<th>FI @ 1000 MSL</th>
<th>River °F</th>
<th>FI @ 1000 MSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dec-14</td>
<td>55</td>
<td>1.45</td>
<td>46</td>
<td>2.09</td>
</tr>
<tr>
<td>2</td>
<td>Jan-14</td>
<td>54</td>
<td>1.50</td>
<td>39</td>
<td>2.61</td>
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<tr>
<td>3</td>
<td>Feb-14</td>
<td>53</td>
<td>1.55</td>
<td>35</td>
<td>2.61</td>
</tr>
<tr>
<td>4</td>
<td>Mar-14</td>
<td>51</td>
<td>1.67</td>
<td>37</td>
<td>2.61</td>
</tr>
<tr>
<td>5</td>
<td>Apr-14</td>
<td>51</td>
<td>1.67</td>
<td>41</td>
<td>2.52</td>
</tr>
<tr>
<td>6</td>
<td>May-14</td>
<td>50</td>
<td>1.74</td>
<td>48</td>
<td>1.91</td>
</tr>
<tr>
<td>7</td>
<td>Jun-14</td>
<td>48</td>
<td>1.91</td>
<td>56</td>
<td>1.40</td>
</tr>
<tr>
<td>8</td>
<td>Jul-14</td>
<td>51</td>
<td>1.67</td>
<td>61</td>
<td>1.21</td>
</tr>
<tr>
<td>9</td>
<td>Aug-14</td>
<td>52</td>
<td>1.61</td>
<td>64</td>
<td>1.12</td>
</tr>
<tr>
<td>10</td>
<td>Sep-14</td>
<td>54</td>
<td>1.50</td>
<td>65</td>
<td>1.12</td>
</tr>
<tr>
<td>11</td>
<td>Oct-14</td>
<td>58</td>
<td>1.32</td>
<td>62</td>
<td>1.18</td>
</tr>
<tr>
<td>12</td>
<td>Nov-14</td>
<td>57</td>
<td>1.36</td>
<td>55</td>
<td>1.45</td>
</tr>
</tbody>
</table>

Temperature profile based on 5/1/12 WDFW-DCPUD data.
Temperatures rounded to the nearest whole number.

Flow index (Fi) maintains minimum of five p.p.m. effluent D.O.
# PLANNED WELLS HATCHERY INFLOW REQUIREMENTS

<table>
<thead>
<tr>
<th>Well (gpm)</th>
<th>Well (cfs)</th>
<th>Surface (gpm)</th>
<th>Surface (cfs)</th>
<th>gpm</th>
<th>cfs</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,390</td>
<td>27.59</td>
<td>363</td>
<td>0.81</td>
<td>12,753</td>
<td>28.40</td>
<td>December</td>
</tr>
<tr>
<td>6,567</td>
<td>14.63</td>
<td>6,152</td>
<td>13.70</td>
<td>12,719</td>
<td>28.33</td>
<td>January</td>
</tr>
<tr>
<td>6,677</td>
<td>14.87</td>
<td>6,251</td>
<td>13.92</td>
<td>12,928</td>
<td>28.79</td>
<td>February</td>
</tr>
<tr>
<td>7,133</td>
<td>15.89</td>
<td>5,793</td>
<td>12.90</td>
<td>12,926</td>
<td>28.79</td>
<td>March</td>
</tr>
<tr>
<td>6,833</td>
<td>15.22</td>
<td>4,899</td>
<td>10.91</td>
<td>11,732</td>
<td>26.13</td>
<td>April</td>
</tr>
<tr>
<td>6,778</td>
<td>15.10</td>
<td>2,527</td>
<td>5.63</td>
<td>9,305</td>
<td>20.72</td>
<td>May</td>
</tr>
<tr>
<td>3,176</td>
<td>7.07</td>
<td>334</td>
<td>0.74</td>
<td>3,510</td>
<td>7.82</td>
<td>June</td>
</tr>
<tr>
<td>3,550</td>
<td>7.91</td>
<td>334</td>
<td>0.74</td>
<td>3,884</td>
<td>8.65</td>
<td>July</td>
</tr>
<tr>
<td>4,361</td>
<td>9.71</td>
<td>434</td>
<td>0.97</td>
<td>4,795</td>
<td>10.68</td>
<td>August</td>
</tr>
<tr>
<td>5,597</td>
<td>12.47</td>
<td>434</td>
<td>0.97</td>
<td>6,031</td>
<td>13.43</td>
<td>September</td>
</tr>
<tr>
<td>8,106</td>
<td>18.05</td>
<td>434</td>
<td>0.97</td>
<td>8,540</td>
<td>19.02</td>
<td>October</td>
</tr>
<tr>
<td>10,999</td>
<td>22.49</td>
<td>363</td>
<td>0.81</td>
<td>10,462</td>
<td>23.30</td>
<td>November</td>
</tr>
</tbody>
</table>
CIRCULAR TANK REARING

20' GA CIRCULAR TANK, (12) PLACES

AREA FOR FEED EQUIPMENT

OPEN SIDE SHelter WITH GRAVEL SURFACE

SHELTER OVERHANG

SHELTER COLUMN, TYPICAL

10' CLEAR MIN

5' CLEAR MIN

1' CLEAR MIN

PLAN

SCALE: 3/32"=1'-0"
## BIOPROGRAMMING RESULTS

### STEELHEAD - Twisp

<table>
<thead>
<tr>
<th>Month Code</th>
<th>Date</th>
<th>Event</th>
<th>Inflow Temp. (F)</th>
<th>Degree Days</th>
<th>Growth Rate</th>
<th>Growth Assumed</th>
<th>Fish per (inches)</th>
<th>Pound</th>
<th>Density Index (lb/cf/in)</th>
<th>Assumed 100% saturation in, minimum 5ppm out (lb/gpm/in)</th>
<th>Flow (gpm)</th>
<th>Probable Water Source</th>
<th>Circular Tank Rearing Provisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Jun-30</td>
<td>First Feeding</td>
<td>48.0</td>
<td>0</td>
<td>100%</td>
<td>0.9</td>
<td>3,759</td>
<td>0.20</td>
<td>1.91</td>
<td>9</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Jul-31</td>
<td>Blend inflow¹</td>
<td>51.0</td>
<td>465</td>
<td>100%</td>
<td>1.6</td>
<td>737</td>
<td>0.20</td>
<td>1.67</td>
<td>29</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Aug-31</td>
<td>Blend inflow¹</td>
<td>52.0</td>
<td>496</td>
<td>100%</td>
<td>2.3</td>
<td>243</td>
<td>0.20</td>
<td>1.61</td>
<td>62</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
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<tr>
<td>10</td>
<td>Sep-30</td>
<td>Blend inflow¹</td>
<td>54.0</td>
<td>540</td>
<td>100%</td>
<td>3.1</td>
<td>102</td>
<td>0.20</td>
<td>1.50</td>
<td>117</td>
<td>Ground</td>
<td>Ground</td>
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</tr>
<tr>
<td>11</td>
<td>Oct-31</td>
<td>Release</td>
<td>58.0</td>
<td>682</td>
<td>140%</td>
<td>4.4</td>
<td>34</td>
<td>0.20</td>
<td>1.32</td>
<td>273</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Nov-30</td>
<td>To Twisp R. Acc.</td>
<td>57.0</td>
<td>630</td>
<td>140%</td>
<td>5.7</td>
<td>16</td>
<td>0.20</td>
<td>1.36</td>
<td>431</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Dec-31</td>
<td>Release</td>
<td>55.0</td>
<td>589</td>
<td>140%</td>
<td>6.9</td>
<td>9</td>
<td>0.20</td>
<td>1.45</td>
<td>581</td>
<td>Ground</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Jan-31</td>
<td>Blend inflow¹</td>
<td>46.0</td>
<td>310</td>
<td>100%</td>
<td>7.3</td>
<td>8</td>
<td>0.20</td>
<td>2.09</td>
<td>451</td>
<td>River / Well</td>
<td>River / Well</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Feb-28</td>
<td>Blend inflow¹</td>
<td>38.0</td>
<td>56</td>
<td>100%</td>
<td>7.4</td>
<td>7.3</td>
<td>0.20</td>
<td>2.61</td>
<td>361</td>
<td>River / Well</td>
<td>River / Well</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mar-31</td>
<td>Release</td>
<td>40.0</td>
<td>124</td>
<td>100%</td>
<td>7.6</td>
<td>6.8</td>
<td>0.20</td>
<td>2.61</td>
<td>370</td>
<td>Twisp</td>
<td>Twisp</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Apr-30</td>
<td>Release</td>
<td>40.0</td>
<td>120</td>
<td>100%</td>
<td>7.7</td>
<td>6.3</td>
<td>0.20</td>
<td>2.61</td>
<td>379</td>
<td>Twisp</td>
<td>Twisp</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>May-14</td>
<td>Release</td>
<td>40.0</td>
<td>56</td>
<td>100%</td>
<td>7.8</td>
<td>6</td>
<td>0.20</td>
<td>2.61</td>
<td>383</td>
<td>Twisp</td>
<td>Twisp</td>
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</tbody>
</table>

1. Inflow blended to reduce temperature, simulate natural seasonal gradients, & prepare fish for remote acclimation site transfer.
VERSION 10 ALT #1
WELLS HATCHERY REARING
UNIT DIMENSIONS &
VOLUMES

SH POND
78' x 10' x 5.8'
4,485 ft³

P15L
118' x 22.3' x 3.6'
9,474 ft³

P15U
217' x 21.3' x 4.2'
19,464 ft³

DP 1
440' x 100' x 4'
176,000 ft³

DP 2
667' x 120' x 4'
320,160 ft³

DP 3
520' x 100' x 4'
208,000 ft³

DP 4
464' x 110' x 4'
204,160 ft³

CONCRETE RWY 1-10
89' x 9.8' x 2.8'
2,442 ft³ ea.

12 - CIRCULAR TANKS
20' x 5' - 4' water
1,256 ft³ ea.
Columbia, Methow, Twisp, &
Contingency

CT 1
CT 2
CT 3
CT 4
CT 5
CT 6
CT 7
CT 8
CT 9
CT 10
CT 11
CT 12
CT 13
CT 14
CT 15
CT 16
CT 17
CT 18
CT 19
CT 20

CONCRETE RWY 18-21
95' x 9.8 x 3.6'
3,352 ft³ ea.

8 - CIRCULAR TANKS
20' x 5' - 3.5' water
1,099 ft³ ea.
Omak, Okanogan

1 Existing vessel dimensions sourced by Wells Pond Volumes data sheet. WDFW 2012.
VERSION 10 ALT #1
EARLY APRIL WELLS HATCHERY
REARING UNIT ALLOCATION
VERSION 10 ALT #1
EARLY MAY WELLS HATCHERY
REARING UNIT ALLOCATION

SH POND
P15L
P15U
SUB CK
DP 1
DP 2
DP 3
DP 4
COL. SH
MET. SH

RBT C RW 18
RBT F RW 20
RBT J - RW 21

CONT
CONT
CONT
CONT

CONT
CONT
CONT
CONT

CT 9
CT 10
CT 11
CT 12

CT 13
CT 14
CT 15
CT 16

CT 17
CT 18
CT 19
CT 20

CK YEARLINGS
CK SUBYRLNG
SH
RB CATCHABLE
RB JUMBO
RB FNGRLNG
CONT CONTINGENCY

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
VERSION 10 ALT #1
EARLY JUNE WELLS HATCHERY
REARING UNIT ALLOCATION
VERSION 10 ALT #1
LATE JULY WELLS HATCHERY
REARING UNIT ALLOCATION
VERSION 10 ALT #1
LATE SEPTEMBER WELLS HATCHERY
REARING UNIT ALLOCATION

Attachment C
VERSION 10 ALT #1
EARLY OCTOBER WELLS HATCHERY
REARING UNIT ALLOCATION

SH ADULTS
P1SL ADULTS
DP 1
DP 2 YEAR CK
DP 3 COL SH
DP 4 MET SH

CT 1 CT 2 CT 3 CONT
CT 5 CT 6 CONT CONT
TWISP SH TWISP SH CT 11 CT 12
OMAK SH OMAK SH CT 15 CT 16
OKAN SH OKAN SH CT 19 CT 20

CK YEARLINGS CK SUBYRLNG SH RB CATCHABLE RB JUMBO RB FNGRLNG CONT CONTINGENCY

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
VERSION 10 ALT #1
EARLY DECEMBER WELLS HATCHERY
REARING UNIT ALLOCATION

SH ADULTS
P15L
P15U
DP 1
DP 2
YEAR CK
DP 3
COL SH
DP 4
MET SH

CT 1
CONT
CT 2
CONT
CT 5
CONT
CONT
CONT
TWISP SH
TWISP SH
TWISP SH
CT 12
OMAK SH
OMAK SH
OMAK SH
CT 16
OKAN SH
OKAN SH
OKAN SH
CT 20

RBT C RW 18
RW 20
RW 19
RBT J - RW 21

CK YEARLINGS
CK SUBYRLNG
SH
RB CATCHABLE
RB JUMBO
RB FNGRLNG
CONT
CONTINGENCY

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
DISCUSSION
This memorandum provides a summary of the Okanagan Nations Alliance (ONA) Sockeye Program Update from the Priest Rapids Coordinating Committee Hatchery Subcommittee (PRCC HSC) meeting that was held at Chelan PUD headquarters in Wenatchee, Washington, on Thursday, August 22, 2013. This update was held from 9:00 am to 11:00 am. Attendees are listed in Attachment A to this memorandum.

I. ONA Sockeye Program Update

A. Okanagan Sockeye Re-Introduction to Skaha Lake: Progress Eight Years into a 12-Year Adaptive Management Experiment (Rich Bussanich)

Rich Bussanich presented Okanagan Sockeye Re-Introduction to Skaha Lake: Progress Eight Years into a 12-Year Adaptive Management Experiment (Attachment B), which was distributed to the Hatchery Committees by Kristi Geris on August 23, 2013. Bussanich said that in 2004, the 12-year experiment to reintroduce sockeye into Skaha Lake was started. He said that the experiment is intended to address both scientific and management goals related to the conservation, protection, and restoration of Okanagan River sockeye stocks.

Bussanich first provided a brief overview on the background of the ONA, including membership, geographical location, and their mission. He then reviewed the historical range of Okanagan sockeye and also key ecosystem-level questions that were considered during the design phase of the project. He said that in 1997, the concept was outlined for reintroducing sockeye into Okanagan Lake; after 7 years of planning, in 2004, the first sockeye salmon were released in Penticton Channel. He highlighted key fish passage events in 2009 and
2010, and discussed that in 2012 there was the largest recorded harvest of sockeye salmon in Osoyoos Lake.

Bussanich provided a brief overview on project design, implementation, and monitoring. He also reviewed key results and paths forward. He noted that, based on results from broodyears (BYs) 2004 to 2010, fry abundance and smolt abundance per hectare for both Osoyoos (natural) and Skaha (hatchery) stocks were literally off the charts—ranging from hundreds of thousands to millions for both populations. He also noted that mysid shrimp were found to be key drivers in the lake food web, and a possible hatchery effect on sockeye fry has been observed. Bussanich said that, as part of the project’s adaptive management strategy, based on results thus far, a decision was made for a fallow year in BY 2013, followed by a truck and transport for BY 2014 adults.

Lastly, Bussanich announced that the Kl cp’elk’ stim Fish Hatchery in Penticton, British Columbia, is expected to be fully operational for BY 2014. *(Note: Attachment B incorrectly reports this date as BY 2015.)*

Casey Baldwin asked about the potential causes of hatchery effects on sockeye fry. Bussanich suggested that causes may include confinement, operational limitations causing deformities (i.e., pinheading), or selective grading. He added that run-time differences were also beginning to be observed. He said that in terms of juveniles, several measurable population characteristics and ratios could be factors. Dr. Kim Hyatt said initial observations were that hatchery-origin fish introduced into Skaha were surviving from fry at a lower rate than those introduced into Osoyoos. Hyatt said that this could mean one of two things: hatchery effect or lake effect. He said that in order to investigate this further, the methods would need to be reversed and then those results evaluated. Hyatt said that this is of interest because results would identify the presence of domestication effects that could affect the wild stocks.

Steve Hemstrom asked about nutrient-loading and its effects on the system. Hyatt replied that nutrient contribution can be estimated, and added that Osoyoos already has high productivity without carcass contributions. He said that some nutrient issues have been identified in Osoyoos; however, none have been associated with a reduction in the smolt growth rate in the lake. Hyatt noted that Osoyoos can support 10,000 smolts per hectare,
and that Skaha is 30% less productive, which translates to 30% less sockeye. Hyatt said that the in-lake productive capacity work is some of the more detailed and firmer knowledge of what is known, to date.

**B. Water Management Tool Update (Dr. Kim Hyatt)**

Dr. Kim Hyatt presented Okanagan Fish-and-Water Management Tools (FWMT) Project Contributions to Stock Rebuilding of Okanagan Sockeye Salmon (Attachment C), which was distributed to the Hatchery Committees by Kristi Geris on August 23, 2013. Hyatt first provided background information on the Columbia River sockeye population, including sockeye return aggregate (1970 to 2011) data, and information on factors that have contributed to the rebuilding of the Okanagan sockeye salmon run since implementation of the FWMT Project. He reviewed information on the Okanagan Lake/River (OLR) System, including geography, water management control points, and hydrology; and also described factors that drive water management decisions in the OLR System and issues that affect water management decisions. Hyatt said that an audit on the Okanagan Basin Agreement indicated that fishery flows prior to 1997 were often noncompliant; he noted that reduced compliance was often the result of competing rules and objectives.

Hyatt described the development of the FWMT, starting with the development of a program to model flow versus water needs during key sockeye salmon life stages. He explained that available spawning habitat was modeled as a function of flow, and that the quantity of habitat and the survival of sockeye eggs and alevins in that habitat could be controlled by flow. He noted the egg scour threshold and the desiccation threshold as two key habitat components to consider. Hyatt presented the results of an evaluation of risks, by life stage, to the Osoyoos Lake sockeye population as a result of a temperature-oxygen “squeeze,” a density-independent rearing limitation in Osoyoos Lake. He said that during a temperature-oxygen “squeeze,” the volume of useable water in Osoyoos Lake can drop to zero and prolonged periods of reduced rearing habitat will result in a loss of population for the current brood year fry/parr.

Hyatt said that early on, it was identified that additional models could be built that supplement current models. Therefore, the FWMT was built as a coupled set of biophysical models of key relationships among climate, water, fish, and property, based on real-time,
prospective, and retrospective data. He reviewed the architecture of the FWMT system, including an overview of the step-wise process for FWMT system users to create fish-and-water management “scenario(s).” He explained that FWMT simulations provide multiple objective hazard assessment (MOHA) reports that evaluate different areas in the OLR System, managing for indicators for fish and human needs, such as flood protection and drought mitigation. Hyatt shared a few example MOHA reports that depicted predicted versus actual flows to demonstrate the precision of the FWMT. He also reviewed examples of how FWMT predictions have been used by water managers to manage water storage and release strategies to minimize density-independent mortality of sockeye and kokanee.

Lastly, Hyatt reviewed Okanagan FWMT results, a weight of evidence summary, and conclusions to date. He noted that increasing escapement is correlated with increased spawning habitat. He also said, however, that the system is potentially vulnerable to density-independent losses that are beyond the control of the FWMT and noted the damaging effects of the 2010 Testalinden Creek landslide that, among other things, dumped significant loads of sediment and pesticide into the OLR System.

Steve Hemstrom asked if pre-historic data have been estimated. Hyatt replied that they have not; however, he added that a colleague has investigated some paleolithic data for different species. Hyatt said that he would be interested in conducting a paleolithic study in Osoyoos, Skaha, and the Okanagan lakes, to reconstruct what their history may have been; however, he speculated that the Province of British Columbia (Province) would not be supportive of such studies. Hyatt said that a paleolithic study could provide further information on the Osoyoos Lake temperature-oxygen “squeeze” problem, and that paleolithic fossils and isotopes would also contain an abundance of information. Hyatt said that, in addition to the many potential studies that could be conducted in this system, there is still a need for continual management of the current stocks—especially with the changing climate. He suggested that Daniel Selbie would likely be the best-suited candidate for continuing coordination and maintaining connections in rebuilding Okanagan sockeye salmon populations.

Lynn Hatcher asked if there is any interest in applying these studies to Vaseux Lake. Hyatt replied that sockeye would not do well in Vaseux Lake due to poor water quality and a high
abundance of predatory fish. He added that, like in the Okanagan, the Province would likely not support these studies in Vaseux Lake either.

Hatcher asked about the views of agricultural businesses and power industries regarding this type of water management, and Hyatt replied that no power industries are involved—only agriculture. He said that agricultural businesses are supportive so long as there are no costs to the businesses and they receive their water. He said that there have been very few cases where all needs have not been met.

Kirk Truscott asked about differences in productivity between Osoyoos versus Skaha, and Hyatt replied that productivity does not always correspond to the top of the food chain, but rather, sometimes refers to the bottom. He said that the food web differs in the two locations and that although mysids are found in both, they occur in higher densities in Skaha.

**List of Attachments**

- Attachment A  List of Attendees
- Attachment B  Okanagan Sockeye Re-Introduction to Skaha Lake: Progress Eight Years into a 12-Year Adaptive Management Experiment
- Attachment C  Okanagan Fish-and-Water Management Tools Project Contributions to Stock Rebuilding of Okanagan Sockeye Salmon Presentation
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth McManus</td>
<td>Ross Strategic</td>
</tr>
<tr>
<td>Ken Ghalambor</td>
<td>Ross Strategic</td>
</tr>
<tr>
<td>Dr. Kim Hyatt</td>
<td>Fisheries and Oceans Canada</td>
</tr>
<tr>
<td>Rich Bussanich</td>
<td>Okanagan Nation Alliance</td>
</tr>
<tr>
<td>Howie Wright</td>
<td>Okanagan Nation Alliance</td>
</tr>
<tr>
<td>Todd Pearsons†</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Shannon Lowry†</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Eric Lauver</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Peter Graf</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>David Duvall</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Lynn Hatcher**†</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Keely Murdoch**†</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Kirk Truscott**†</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Casey Baldwin</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<tr>
<td>Steve Hemstrom</td>
<td>Chelan PUD</td>
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<tr>
<td>Keith Truscott</td>
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<td>Jeff Osborn</td>
<td>Chelan PUD</td>
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<tr>
<td>Becky Gallaher</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Greg Mackey*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Rick Klinge</td>
<td>Douglas PUD (retired)</td>
</tr>
</tbody>
</table>

Notes:
* Denotes Hatchery Committees member or alternate
† Denotes PRCC Hatchery Subcommittee member or alternate
Okanagan Sockeye Re-Introduction to Skaha Lake: Progress 8 Years into a 12-yr Adaptive Management Experiment

Presented by: Howie Wright & Richard Bussanich

Presented to Public Utility Districts (Grant County, Chelan)

22 August, 2013
Okanagan Nation Alliance

Seven member band communities:
1. Osoyoos Indian Band
2. Penticton Indian Band
3. Westbank First Nation
4. Okanagan Indian Band
5. Upper Nicola Band
6. Lower Similkameen Band
7. Upper Similkameen Band

And the Colville Confederated Tribes (USA)
Mission:
To stabilize and rebuild the declining wild Okanagan sockeye population, to return sockeye to their former habitat and migration range, and to revitalize the Okanagan Nation salmon fishery.
Historical Range of Okanagan Sockeye

Historical range extended into Okanagan Lake

Skaha Dam (OK Falls) current migration barrier

Dam at outlet of Okanagan Lake constructed in 1914

McIntyre Dam constructed in 1921 (fish migration barrier until 2009)
Q1: Are re-introduced sockeye produced in significant numbers & condition to warrant continuation?

Q2: What are the effects on resident kokanee stocks?

Q3: What components of food web & physical environment control production?

Q4: What are the effects on existing Osoyoos sox?
## Project History

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Concept outlined to reintroduce sockeye into Okanagan Lake</td>
</tr>
<tr>
<td>1998</td>
<td>ONA and Canadian agencies agreed to investigate feasibility study</td>
</tr>
<tr>
<td>2000</td>
<td>Terms of reference adopted between Canadian tripartite &lt;a href=&quot;www.obtwg.ca&quot; class=&quot;url&quot; title=&quot;www.obtwg.ca&quot;&gt;www.obtwg.ca&lt;/a&gt;</td>
</tr>
<tr>
<td>2000 – 2003</td>
<td>Pre-feasibility risk assessments (disease, life cycle model, habitat, invasive)</td>
</tr>
<tr>
<td>2003</td>
<td>Test adult sockeye collection, egg fertilization and incubation methods</td>
</tr>
<tr>
<td>2004</td>
<td>First sockeye salmon release (June) at Penticton Channel</td>
</tr>
<tr>
<td>2004 – today</td>
<td>Implementation, annual peer review, outreach, communications</td>
</tr>
<tr>
<td>2009</td>
<td>Fish passage at McIntyre Dam</td>
</tr>
<tr>
<td>2010</td>
<td>Sockeye and Chinook volitionally pass upstream of Skaha Dam (high flows)</td>
</tr>
<tr>
<td>2012</td>
<td>Agencies agree (not if, but how many into Skaha)</td>
</tr>
<tr>
<td>2012</td>
<td>Largest recorded harvest in Osoyoos Lake (60,000)</td>
</tr>
</tbody>
</table>
The Skaha Sockeye Reintroduction Program is a 12-year (2004 – 2015) adaptive management experiment designed to assess the feasibility of reintroducing sockeye salmon into their historic range, which includes Okanagan Lake.

Key research questions include:

1. Can reintroduced sockeye be produced in significant numbers and in ‘good’ condition to continue the program?
2. What is the effect on resident kokanee in Skaha Lake?
3. What are the key ‘drivers’ that control sockeye and kokanee production?
4. What are the effects of a hatchery population on the existing Okanagan sockeye population?
Tested experimental treatments:

• Marked sockeye fry released into Skaha Lake (2004 – present)
• Remove fish passage barriers at McIntyre Dam (2009 – present)
• Transport adults into Skaha Lake (2005 pilot; 2011, 2012 voluntary due to high flows)
Monitor

- Juvenile and adult Sockeye and Kokanee
- Water quality
- Phytoplankton, Zooplankton,
- Mysid shrimp
- Bioenergetics = > Productivity

**SOME SURVIVAL UNCERTAINTIES**

**Freshwater: Summer – Fall**
- Low flow
- Cold water refuge
- Degraded habitat
- Poaching

**Freshwater: Winter - Spring**
- Low/High flows
- Predation
- Entrainment
- Degraded habitat
- Non-native species

**Ocean (1 – 3 years)**
- Columbia Flows
- Coastal upwelling (temp. and prey)
- Harvest
- Predation
LEARNING OUTCOMES (BY 2004-2010)

<table>
<thead>
<tr>
<th>Sockeye Population Measurable Characteristics</th>
<th>Osoyoos (Natural)</th>
<th>Skaha (Hatchery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of adult spawners per year</td>
<td>13,500 to 209,000</td>
<td>500 to 20,000*</td>
</tr>
<tr>
<td>Egg-to-fry survival</td>
<td>2 - 7%</td>
<td>8 - 35%</td>
</tr>
<tr>
<td>Fry-to-smolt survival</td>
<td>39 - 82%</td>
<td>10 - 44%</td>
</tr>
<tr>
<td>Smolt-to-adult survival</td>
<td>1 - 11%</td>
<td>2 - 20%</td>
</tr>
<tr>
<td>Smolt size</td>
<td>6 - 9 grams (65 - 100 mm)</td>
<td>13 - 19 grams (100 - 120 mm)</td>
</tr>
<tr>
<td>Adult size (mm)</td>
<td>375 - 585 mm</td>
<td>425 - 605 mm</td>
</tr>
<tr>
<td>Fry abundance (early summer)</td>
<td>1,000,000 - 10,000,000</td>
<td>300,000 - 1,600,000</td>
</tr>
<tr>
<td>Smolt abundance (spring)</td>
<td>800,000 - 7,000,000</td>
<td>100,000 - 200,000</td>
</tr>
<tr>
<td>Peak smolt migration</td>
<td>Late April - early May</td>
<td>Late April - early May</td>
</tr>
<tr>
<td>Peak adult migration</td>
<td>Mid-October</td>
<td>Mid-October</td>
</tr>
</tbody>
</table>
RESULTS

- At tested treatment levels (176-807 fry/ha), sockeye outplanting does not influence growth and survival of the resident kokanee population in Skaha Lake.
- Lake food web driven by Mysid shrimp, which consume 2-3x as much zooplankton as all fish combined.
- Possible hatchery effect on sockeye fry - hatchery origin fry are larger but do not survive as well as wild origin fry.
- Skaha hatchery smolt-to-adult survival is equal or better than the natural sockeye population.
- No disease outbreaks recorded in hatchery stock.
- High proportion of hatchery origin adult sockeye spawners observed upstream (>40%) vs. downstream (<10%) McIntyre Dam.
- Spawning habitat is the limiting factor for sockeye production in Skaha Lake, therefore recommend habitat enhancement and restoration.
Key **Adaptive Management Directions** include:

1. **Modify Skaha Dam to regulate fish passage (known #’s) (2015)**
2. **No Broodstock Collection in BY 2013**
3. **Plan Truck & Transport for adults BY 2014 ***
4. **Penticton Channel Enhancement (& ORRI Phase 2)**
5. **Penticton hatchery fully operational BY 2015**
6. **Evaluate paired-lake fry release (reverse common garden experiment Osoyoos:Skaha)**
7. Eight year synthesis summarizes performance metrics
   a. draft Nov 2013, peer review-workshop in April 2014
   b. Update biological reference points (E.g., Adult escapement for Osoyoos (MSY = 60,000) and Skaha populations (MSY = 6,000)
8. **Out-basin monitoring (PIT juveniles pilot trials (25-35% aggregate survival) & genetic interactions (sockeye-kokanee, 2 years)**
The graphs show the percentage survival of different fish stages across different years for Osoyoos and Skaha lakes.

- **Osoyoos**: The graph shows the percentage survival of wild and stocked egg-to-presmolt stages from 2005 to 2011. The survival rates for wild egg-to-presmolt and stocked egg-to-presmolt are compared.

- **Skaha**: The graphs for Skaha lake display the percentage survival of wild egg-to-presmolt, stocked egg-to-presmolt, and kokanee egg-to-winter stages from 2005 to 2011.

The data suggests that stocked egg-to-presmolt survival rates were consistently higher than wild egg-to-presmolt survival rates in both lakes. The percentage survival of kokanee egg-to-winter stages is also shown for comparison in the Skaha lake graph.
kt c’palk stim’ Hatchery Construction Update

• Hatchery Design Finalized
  April/May 2013

• Ground-breaking ceremony
  May 2013

• Project bid out
  May / June 2013

• Contract Change Order
  July 2013

• Land Lease/well permits signed, Contractor hired
  July 2013
kt c’palk stim’ Hatchery
Construction Update

- Construction start
  week of July 29, 2013
- Site excavation/prep
  completed
  week of August 12, 2013
- Footings and in-stream
  work starting
  week of August 19
- Construction timeline
  52 Weeks
Lim Limp’t (Thank You)
Okanagan Fish-and-Water Management Tools (Ok-FWMT) Project Contributions to Stock Rebuilding of Okanagan Sockeye Salmon

HCP Briefing, Wenatchee, April 18, 2012.

Kim Hyatt and Margot Stockwell
Fisheries and Oceans Canada
Columbia River Sockeye Salmon Populations

Columbia River sub-basins historically accessible to sockeye

Columbia River sub-basins with present day viable sockeye populations
Columbia R. Adult Sockeye Returns 1970 - 2011

Percent Okanagan Sockeye in Columbia River Returns

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Mean (%)</th>
<th>Range (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970 - 2003</td>
<td>54%</td>
<td>15-85%</td>
</tr>
<tr>
<td>2004 - 2011</td>
<td>81%</td>
<td>63-90%</td>
</tr>
</tbody>
</table>

2012 = 515,667 i.e. "off scale"

Start of FWMT deployment
Factors or Events Contributing to Rebuilding of Okanagan Sockeye Salmon Since Inception of FWMT Deployment in 2003-04

- Revised escapement objectives to utilize full carrying capacity of freshwater spawning and rearing environments,
- Development /deployment of FWMT decision support system to facilitate “fish friendly” flows to reduce losses of eggs & fry to density independent mortality events,
- FWMT mitigation of rearing habitat reductions for juvenile sockeye due to oxygen-temperature “squeeze” conditions in Osoyoos L.
- Supplemental production of hatchery-origin sockeye from Skaha L.
- Improvements in juvenile fish-passage in the Columbia River,
- Recent survival-favourable conditions for southern sockeye stocks in coastal marine waters.
OLR-System Management Begins in the Okanagan Lake
Headwaters of the Okanagan River

Drainage area = 6,090 sq km
Surface area = 341 sq km
Average outflow = 14.7 m³/s

Okanagan R: Natural = 8.4 km
Channelized = 16.2 km
Average outflow = 14.7 m³/s
Okanagan Lake Dam at Penticton is the major control point in the system.
OKANAGAN LAKE HYDROLOGY

- Annual inflow hydrograph dominated by snowmelt runoff
- Large range of annual inflows:
  - 78 million to 1.4 billion m$^3$
  - 0.23 m to 4.12 m stage change

Mission Creek
June 1, 1997
Mean Monthly Inflows to Okanagan L.
(85 % of inflow from Apr-Jun )
Inflow Forecasts and Discharge Observations Drive Management Decisions

Inflow forecasts are based on seasonal precipitation, snow packs & tributary inflow data.

2003-04 Mission Ck. Snow Pillow @2F05P

![Graph showing snow water equivalent (in millimetres)]
OLRS OPERATIONS

- OBA rules specify seasonal lake levels and flows.
- Operating plans/decisions reflect inflow forecasts.
- Decisions address competing objectives to satisfy: flood control, fisheries values, water storage/extraction, navigation, tourism, international agreements, etc.

OPERATOR CHALLENGES

- Forecast uncertainty re: freshet inflow volumes and capacity to match lake spill or storage to spring inflows (“bathtub” analogy).
- Effects of environmental variability (water levels, flow, temp.) on risk assessments given competing economic, social & environmental demands of multiple “parties” & authorities.
- OLRS decisions re: water storage or release based on rules of thumb, past experience & incomplete information.
Compliance with OBA Fishery Flows was low prior to 1997.

From 1982-1997 river discharge exceeded OBA fishery flows in:
(a) 13 of 16 yrs for adult migration
(b) 7 of 16 yrs for spawning and
(c) 7 of 16 yrs for egg incubation & fry migration
**Rule 1:** Don’t fill Okanagan Lake above 342.56 meters (i.e. 10 cm rise above 342.56 incurs $5-$10 million in “property” losses!)

**Rule 2:** Try to avoid drafting to lake levels below 341.50 meters. (i.e. problems with docks, water intakes & vessel navigation become severe).

**Rule 3:** Minimize draw-down of Okanagan L. between the time of kokanee spawning and 100% fry emergence (i.e. minimize dewatering kokanee eggs & fry but don’t risk violating of “rules” 1 or 6,7,8, & 9)

**Rule 4:** Minimize the number of buildings flooded at Penticton

**Rule 5:** Provide summer flows for recreation if possible

**Rule 6:** Sox. Migration – maintain flows (@ Oliver) between 8.5 & 12.7 cms during Aug 1 to Sept 15 to allow “easy” passage of VDS.

**Rule 7:** Sox. Spawning – maintain flows between 9.9- 15.6 cms during Sept 16- Oct 31 to maximize “good” spawning habitat.

**Rule 8:** Sox Incubation- flows at 5.0- 28.3 cms during Nov 1- Feb 15 i.e. egg incubation flows greater than or equal to 50 % of spawning flows & must not exceed 28.3 cms to avoid redd desiccation & scouring.

**Rule 9:** Sox. Fry emergence-migration- flows during Feb16- Apr 30 at 5.0- 28.3 cms.
Event timing & natural variations determine whether fish-and-water managers satisfy OBA rules & competing objectives.
Available Spawning Habitat is Controlled by Flow

Recommended flows for Okanagan sockeye spawning are: 9.9 m³/sec to 15.6 m³/sec

Data Sources: Anon. 1983; Hyatt et al. 2005
Discharge and Okanagan Sockeye Incubation

Dewatering/desiccation or flood-and-scour processes control incubation and emergence success of sockeye eggs and alevins.

(a) % Eggs Dewatered

(b) % Alevins Stranded

(c) % Eggs / Alevins Scoured

Data Source: Hyatt et al 2005

photo: www.nbis.org
Temperature-Oxygen “Squeeze” and Density-Independent Rearing Limitations in Osoyoos L.

Hyatt et al (in prep) have established that seasonal temperature and oxygen extremes may operate together to restrict the useable rearing volume of Osoyoos Lake which can induce density-independent mortality processes.
Rearing habitat limits due to temperature-oxygen “squeeze” in Osoyoos L. are partially controlled by summer discharge.

Seasonal temperature and oxygen extremes operate together to restrict the useable rearing volume of Osoyoos Lake.

“Squeeze” induced losses of juvenile

Discharge, habitat & mortality

Osoyoos Lake, Central Basin
Estimated juvenile sockeye numbers in 1998

User specified threshold for DD or DI mortality

Density dependent (DD)
Density independent (DI)
The FWMT System is a coupled set of biophysical models of key relationships (among climate, water, fish & property) used to predict the consequences of water mgt. decisions for fish & other water users.

FWMT may be used to explore water management decision impacts in an operational mode employing real-time data, a prospective-mode going forward or in a retrospective-mode looking back on historic water supply, climate & fish years.
Dispersed delivery of FWMT

Client Layer
- Web Browser
- Microsoft Excel

Deployment Layer
- Internet

Application Layer
- User Interface: .NET Web Forms
- Model: Visual Basic .NET
- Server Computer

Data Layer
- OKFWM SQL Server Database
- Database Administrator / Automation
- Parameters/Lookup data

Data “Feeds”
- RFC 4-casts
- Ok Lake level
- discharge
- water temp.
- sox. eggs

Real-time / historical data
- Lake elevation; temp.
- River flow; temp.
Stepwise process for FWMT-system users to create fish-and-water management “scenario(s)”.

1. Log into the system
2. Name the current scenario
3. Set the current decision date
4. Set year-specific parameters (e.g. peak spawn date, number of spawners, etc.)
5. Enter mean water releases for each future week in the water-year
6. Execute first simulation run for named scenario
7. Review hazard reports for achievement of “balanced” outcomes
   - If Unsatisfactory: Execute next simulation to test for improved water release outcomes
   - If Satisfactory: Adjust water releases in response to hazard report outcomes and share flow release recommendations with FWMT Operations Team
FWMT simulations provide multiple objective hazard assessment (MOHA) reports on human-system and natural-system maintenance needs in each of 5 geographic segments of the Okanagan Lake and River System.

- **Okanagan Lake**
  - Flood control (< 342.75 m)
  - Shore spawning kokanee incubation (Lake draw-down from Oct. 15 to April 1, < 0.2 m)
  - Domestic and agricultural water intakes
  - Recreational navigation

- **Okanagan River at Penticton**
  - Flood control (< 50 cms)
  - River recreation (> 10 cms, Jul-Aug)

- **Okanagan River at Okanagan Falls**
  - Flood control (< 75 cms)

- **Okanagan River at Oliver**
  - Sockeye migration & spawning
  - Flood control (< 96 cms)
  - Sockeye incubation (< 30 cms, Nov-May)
  - Domestic and agricultural intakes (> 6 cms)
  - Recreational navigation

- **Osoyoos Lake**
  - Sockeye juveniles, temperature-oxygen squeeze mitigation (Sept or Aug average inflows > 10 cms)
Screen capture of MOHA indicators at Oliver spawning grounds

- Flood control
- Domestic intakes
- Ag. intakes
- Sockeye Eggs
- Sockeye Alevins

**Okanagan River at Oliver - Average**

- OK River (m$^3$.sec$^{-1}$)

**BC-Washington Co-Operative Plan**
- Minimum flow targets

**Sockeye biologist’s rule of thumb to avoid de-watering**

**Okanagan Basin Agreement**
- Target to min. sox scour
Managing with FWMT to avoid flood risk and redd scour in 2005-2006

(A) Actual and predicted flows at Oliver (sockeye spawning grounds) 9-Feb-06

(B) Final outcome at Oliver (sockeye spawning grounds) 30-Sep-06
Managing with FWMT to avoid drought induced losses of fry in 2008-09

C. Okanagan River at Ok Falls

D. Okanagan River at Oliver
FWMT prediction vs observed “squeeze” in Osoyoos L. 2008 - 2009

Predicted “Squeeze”

Osoyoos Lake - Average

Rearing sockeye fry

All yr depth (m) 17°C isotherm
All yr depth (m) 4ppm O2
4 ppm O2 Isopleth depth (m)

Observed “Squeeze”

17°C Isopleth
4ppm O2 Isopleth

Sampling Date (2009)
Table 1. A summary by location & issue of consequences associated with adoption of three alternate flow scenarios (FWMT-569, 561,568) during Aug-Sept, 2009.

<table>
<thead>
<tr>
<th>Location/Issue ¹, ²</th>
<th>FWMT-569</th>
<th>FWMT-561</th>
<th>FWMT-568</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current (10.7 cms)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OBA max (12.7 cms)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mitigate squeeze (18.3 cms)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ok Lk levels predicted (Sept 30, 2009) ².</td>
<td>341.76</td>
<td>341.72</td>
<td>341.69</td>
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<tr>
<td>Domestic intakes ³.</td>
<td></td>
<td></td>
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<tr>
<td>Agricultural intakes ³.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigation boats ⁴.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navigation docks ⁴.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kokanee spawn/survival ⁵.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ok Lk levels expected by Oct 14, 2009 ⁵.</td>
<td>341.72</td>
<td>341.66</td>
<td>341.64</td>
</tr>
<tr>
<td>Okanagan River</td>
<td></td>
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</tr>
<tr>
<td>Recreation at Penticton ⁶.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Domestic intakes-Oliver ⁷.</td>
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<td></td>
<td></td>
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<tr>
<td>Agricultural intakes-Oliver ⁸.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ok Lk levels expected by April 1, 2010 ¹⁰.</td>
<td>341.48</td>
<td>341.42</td>
<td>341.40</td>
</tr>
</tbody>
</table>
FWMT impact on compliance with “kokanee-friendly” levels at Ok-lake

Pre-FWMT | B-FWMT | U-FWMT

PRI=30 %

PRI=56 %

Drop in Lake Level (cm)


Maximum

Attachment C
FWMT impact on compliance with “sockeye-friendly” flows at Oliver
Ok-FWMT Results to Date

- balances consideration of multiple objectives (i.e. social, economic, cultural, ecological)
- recognizes inflow forecast uncertainties,
- uses “rich” information sources refreshed in real-time (i.e. annual to daily imports of biophysical data),
- facilitates effective input from limited pool of expertise,
- provides record of annual strategy & outcomes to assess performance against multiple objectives.
- since deployment in fall of 2005 we have avoided (a) major drought and desiccation or flood and scour losses of fry production in-river and (b) most temp-O2 induced losses of lake-rearing fry (i.e. reduced density-independent losses of fry & smolt production).
Influence of FWMT plus other factors on sockeye recovery?

Escapement Revisions, Hyatt & Rankin 1996

(a) 135,471
(b) 117,453
(c) 58,730
(d) all year mean

(a) and (b) are upper limits assuming reduced smolt size (Hyatt & Rankin 1999)

(c) current target
Post FWMT deployment, more adult spawners clearly lead to more smolt production as per Hyatt & Rankin (1996) analysis of carrying capacity of river and lake habitats. However, density independent losses of eggs/fry do still occur e.g. spring 2010.
Survival of Ok-sockeye during pre-FWMT and FWMT intervals

**Ok Fresh Water Survival**

- Egg to Fry Survival Estimate (%)
- Osoyoos acoustic “equivalents”
- Osoyoos Lake acoustic estimates
- 1997 flood of record
- 2009 Testalinden Ck slide

**Smolt-to-Adult Survival**

- Marine Survival Estimate (%)

Survival variations in freshwater and marine systems involve >20 to >10 fold change (i.e. > than an order of magnitude) but rarely exhibit synchrony.
No net impact (NNI) objective for Wells dam was to increase smolt production by 7% above historic baseline.

Retrospective analysis we conducted early on in FWMT deployment suggested a theoretical benefit for FWMT use ranging from a 12.3% (median value) to 55% (mean value) increase in smolt production would be possible.

The observed average increase in smolt production during the “use-FWMT” decade has been 137%.

Hatchery origin smolts from the Skaha reintroduction project account for 10% of this increase i.e. 90% of the increased smolt production is attributable to wild production.

Adult production during the pre-FWMT control interval (1967-1998) was 47,463 by contrast with 234,650 adult returns during the FWMT interval.
Okanagan Sockeye Forecasts and Actual Returns

![Graph showing predicted and observed fish returns from 1970 to 2015.](image-url)
Conclusions

• FWMT deployment has stabilized smolt production per spawner by reducing density-independent losses from flood-and-scour or drought-and-desiccation events.

• Higher escapements more fully utilize inherent habitat capacity for spawning, egg incubation and rearing fry with resultant increases in annual smolt production.

• Average annual output of smolts from Osoyoos L. increased 5-10 fold in 1998-2010 relative to the 1970-1997 interval.

• Record returns of Columbia R. sockeye principally reflect wild Okanagan sockeye increases in escapement, fry (from the Okanagan R.), smolt production (from Osoyoos L.) and favourable smolt-to-adult survival (in the Columbia R and Pacific Ocean).
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees  
From: Mike Schiewe, Chair  
Cc: Kristi Geris  
Date: November 20, 2013  
Re: Final Minutes of the October 7, 2013 HCP Hatchery Committees Conference Call

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held by conference call on Monday, October 7, 2013, from 9:30 am to 10:15 am. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Greg Mackey will provide Bob Rogers with Douglas PUD’s suggested edits to the revised draft Twisp River Steelhead Live Spawning Plan memorandum (*Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead*).
- Bob Rogers will remove references about Winthrop National Fish Hatchery (NFH) from the background section of the revised draft Twisp River Steelhead Live Spawning Plan memorandum, and will instead convey that Methow Hatchery can accommodate the program.
- Jayson Wahls and Greg Mackey will provide the Yakama Nation (YN) with a budget of expected costs associated with the YN’s use of the Methow facility for their Steelhead Kelt Reconditioning Program.
- Bob Rogers will have Washington Department of Fish and Wildlife (WDFW) Fish Health staff contact Keely Murdoch regarding the type of sonicator that is needed for processing samples for virus testing of live-spawned Twisp River steelhead at the Methow Hatchery.
- Keely Murdoch and Bob Rogers will contact Lynn Hatcher, once Hatcher becomes available after the government shutdown, to bring him up to speed on the details of the proposed actions for live-spawning Twisp River steelhead at the Methow Hatchery for the YN’s Steelhead Kelt Reconditioning Program.
• Bob Rogers will revise the draft Twisp River Steelhead Live Spawning Plan memorandum, as discussed at the October 7, 2013 conference call, and will provide the updated revised memo to Mike Schiewe and Kristi Geris for distribution to the Hatchery Committees.

I. Welcome, Agenda Review

Mike Schiewe welcomed the Hatchery Committees, and said that the purpose of today’s conference call is to discuss the YN’s proposal for live-spawning Twisp River steelhead at Methow Hatchery. This agenda item was originally planned for the Hatchery Committees meeting on September 18, 2013, before it was canceled due to limited availability for participation; and due to the time-sensitive nature of the topic, the YN requested that the topic be discussed as soon as possible.

II. Yakama Nation

A. Live-Spawning Twisp River Steelhead Update (Keely Murdoch)

Keely Murdoch thanked everyone for joining the call. She explained that this topic is time-sensitive because, if the proposed actions for live-spawning Twisp River steelhead are approved by the Hatchery Committees, costs associated to the program need to be included in a budget that needs to be submitted to the Bonneville Power Administration (BPA) this month. Murdoch recalled that the Hatchery Committees have been discussing the YN Steelhead Kelt Reconditioning Program over the course of several meetings now. She said that a draft Twisp River Steelhead Live Spawning Plan Statement of Agreement (SOA) was distributed to the Hatchery Committees by Kristi Geris on September 12, 2013, and that a revised draft Twisp River Steelhead Live Spawning Plan memorandum (Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead; Attachment B) was distributed to the Hatchery Committees by Geris prior to the conference call on October 7, 2013. Murdoch said that she hoped to reach agreement on the SOA so that program costs can be included in their BPA budget.

Bob Rogers suggested that Hatchery Committees members review the revised draft memorandum (Attachment B), and then he can address any comments or questions. He said
that a revision was made to Planned Action #8 after the revised draft was originally distributed; the revision removed U.S. Fish and Wildlife (USFWS) personnel from involvement in the sampling. He said Planned Action #8 now states that Matt Abrahamse and WDFW will handle all sampling.

Greg Mackey said that Douglas PUD is supportive of the seemingly comprehensive, well-thought out biosecurity plan. He suggested, however, in the interest of informing Douglas PUD and the HCP Hatchery Committee to enable them to make a decision based on WDFW Fish Health Staff’s opinion of risk, inclusion of a statement addressing the level of risk this new program would pose to the ongoing spring Chinook and steelhead programs. He said that Hatchery Committees approval will largely be based on whether this action—which is not a part of the HCPs—is worth the risk to the HCP programs. Rogers agreed to include a statement as requested; and added that the level of risk will be minimal so long as the planned actions to minimize risk, as outlined in the revised draft memorandum (Attachment B), are met. *(Note: Douglas PUD subsequently requested in writing [email to Rodgers] following the phone conference that WDFW provide the statement of their fish health risk assessment of the kelt program in a separate letter.)*

Mackey asked that Planned Action #16 in the revised draft memorandum (Attachment B) be clarified to include the different categories of disease. For example, if Infectious Pancreatic Necrosis Virus (IPNV) is detected, it should be clear what needs to be destroyed to avoid virus spreading. Rogers clarified that during spawning, any pairings displaying evidence of pathogens will be destroyed.

Mackey also suggested for Planned Action #15 in the revised draft memorandum (Attachment B), that the text specify an approximate number of days after swim up that the fish can be released from Wells Hatchery. Rogers said that fish health screening samples are collected at swim up, and then at 30 days after swim up. He said it takes another 28 to 30 days to obtain the results of the second sample; so, fish should be ready to transfer about 60 days after swim up. Mackey said that in addition to edits just discussed, Douglas PUD has other minor edits to the revised draft memo that he will provide to Rogers.
Mike Tonseth said that, as long as WDFW Fish Health staff is satisfied that spring Chinook and steelhead are not at risk, he is supportive of what is proposed.

Bill Gale agreed with Tonseth, and added, however, that the background section of the revised draft memorandum (Attachment B) should be revised to indicate that the reason why Winthrop NFH could not accommodate the program was due to Section 10(j) fish being on station, and the inability to make additional commitments of space. Mike Schiewe suggested removing all references about Winthrop NFH as they do not seem to contribute to the document. Rogers said that he will remove the references, and will instead convey that Methow Hatchery can accommodate the program.

Gale speculated that homing to the Methow may improve if early rearing progeny on Methow River water continues. Mackey said that he believes that homing to the Twisp River could decrease because fish would also home to the Methow Hatchery, having potentially imprinted to the hatchery as alevins, but noted that any difference may be difficult to detect given the challenge steelhead pose in assessing straying. Murdoch asked if early rearing will be on river or well water, and Rogers replied that eggs and alevins will be on groundwater. Tonseth noted that as long as the fish are passive integrated transponder-(PIT-) tagged, homing can be monitored. Murdoch added that if any issues arise, methods will be re-evaluated. Schiewe suggested adding a planned action to PIT-tag fish prior to release. Mackey said that Douglas PUD is currently PIT-tagging 5,000 Twisp River fish for monitoring in the acclimation pond. He said that low detection rates make it difficult to accurately estimate levels of straying; and added that additional fish would likely need to be tagged in order to tease out a stray signal. (Note: There are not sufficient pre-treatment data available to identify an effect on homing and straying that could be related to the kelt program implementation at Methow Hatchery.)

Kirk Truscott said that, like WDFW and USFWS, the Colville Confederated Tribes (CCT) are also supportive of the proposed plan, so long as WDFW Fish Health staff determine the proposed actions pose acceptably low risk to HCP production. He also noted that the fate of reconditioned adults whose progeny come back positive does not seem to be addressed in the planned actions. Tonseth said that if the juvenile is positive, the adults will be destroyed as well. Mackey said that “all fish linked to that sample” as stated in Planned Action #16 seems
to address this issue. Murdoch asked if vertical transmission from a male is common where the result would be euthanizing a reconditioned kelt, and Rogers replied that likelihood is extremely low. Murdoch added that transmission from males can be tracked because all males will be lethally sampled at Methow Hatchery for a full disease workup.

Mackey asked Rodgers if a dedicated steelhead kelt facility will be needed if this program continues in the long-term, and Rogers replied that he could not speak to that. Murdoch said that funding for this program lasts until 2017, and that future funding will be dependent on the success in the next few years. Jayson Wahls said that this year, additional infrastructure such as screens, curtains, and additional tanks, will be needed for bio-security. He added that other things like salaries and benefits will need to be incorporated into a budget. Mackey said that Douglas PUD also needs to develop an agreement with the YN. Murdoch said that Rogers was very clear on what was needed from the YN from the fish health aspect, and that she was unaware that anything beyond his requests were needed; she asked that WDFW and Douglas PUD provide the YN with those requests as soon as possible. Wahls and Mackey agreed to provide the YN with a budget of expected costs associated with the YN’s use of the Methow facility for their Steelhead Kelt Reconditioning Program. Rogers also said that he will have WDFW Fish Health staff contact Murdoch regarding the type of sonicator that is needed for processing samples for virus testing of live-spawned Twisp River steelhead at the Methow Hatchery.

Schiewe said that because this program could affect listed species, the National Marine Fisheries Service (NMFS) also needs to be in on the decision. Murdoch and Rogers agreed to contact Lynn Hatcher, once Hatcher becomes available after the federal government shutdown, to bring him up to speed. Schiewe added that WDFW Fish Health’s statement characterizing the level of risk also needs to be included in the SOA. Murdoch said that the SOA will reference Roger’s revised draft memorandum (Attachment B), which will include the statement about risk. Schiewe said that the SOA will be considered for final approval at the next Hatchery Committees meeting on October 16, 2013, assuming that a full complement of members will be back from the government shutdown. Rogers said that he will revise the draft Twisp River Steelhead Live Spawning Plan memo, as discussed, and will provide the updated revised memo to Schiewe and Geris for distribution to the Hatchery Committees.
III. HCP Administration

A. Next Meetings

The next scheduled Hatchery Committees’ meetings are on October 16, 2013 (Chelan PUD), November 20, 2013 (Douglas PUD), and December 18, 2013 (Chelan PUD).

List of Attachments

<table>
<thead>
<tr>
<th>Attachment A</th>
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<tr>
<td>Attachment B</td>
<td>Memorandum <em>Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead</em></td>
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## List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<tr>
<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<tr>
<td>Greg Mackey*</td>
<td>Douglas PUD</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
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<td>Matt Abrahamse</td>
<td>Yakama Nation</td>
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<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Bob Rogers</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Jayson Wahls</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Charlie Snow</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Guy Wiest</td>
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**Notes:**

* Denotes Hatchery Committees member or alternate
Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead

**Background:** Earlier discussions identified the USFWS Winthrop Hatchery as a site to hold adult female Twisp summer steelhead for Kelt reconditioning as well as associated short term juvenile rearing. Since then, rearing requirements at Winthrop reportedly have increased with a subsequent incubation/rearing capacity decrease. Conversely, the WDFW Methow Hatchery program has decreased, and the site will have spatial and temporal capabilities (with modifications) to short-term rear the progeny of the live-spawned adults from April-June.

**Discussion:** Identify actions to minimize the pathogen risk to endangered Spring Chinook at Methow Hatchery by rearing progeny of incomplete viral sampled live-spawned adult female Twisp summer steelhead. Identify pathogen sampling needs at Methow hatchery. Identify modifications at Methow hatchery to accommodate juvenile rearing, annually, with the potential for the short-term rearing to span 4 years.

**Planned actions to minimize risk to WDFW Methow Hatchery programs:**

1) Adult Twisp stock summer steelhead (13 pairs) will be collected from the Twisp weir and held/spawned at WDFW Methow hatchery (April-May, 2014)

2) Live spawned adult females will be transferred to the USFWS Winthrop Hatchery Kelt site.

3) Ovarian fluid for virology will be collected from each female and individually numbered

4) Ovarian fluid supernatant will be inoculated to CHSE-214 and EPC cells at WDFW Olympia fish health lab
5) Ovarian fluid pellets will be sonicated and inoculated to CHSE-214 and EPC cells at WDFW Olympia fish health lab. **NOTE: REQUIRES PURCHASE OF SONICATOR AND BATH**

6) Kidney/spleen samples for virology will be collected from each male and numbered individually. These samples will be inoculated to CHSE-214 cells at WDFW Olympia lab

7) All mortalities at Methow Hatchery will sampled for virology and submitted to WDFW Olympia lab

8) All post-spawn mortality of female Twisp kelts at USFWS Winthrop Hatchery will be sampled by USFWS fish health personnel for virology if possible. If USFWS personnel are not able to sample mortality, WDFW personnel will be notified and will collect the samples

9) Individual egg incubation/hatching/rearing tanks/tools will be used. Rearing containers (circular tanks) will be separated by curtains (yet to be built/installed). Access to incubation room/rearing tanks will be restricted by physical barriers and signs

10) Additional disinfection pads (virkon) will be added at access points

11) All tools will be disinfected with 1:100 dilution of Virkon Aquatic for a minimum 10 minute contact time

12) Healthy and moribund/mortality fish will be examined periodically and sampled as necessary

13) 150 un-fed fry will be sampled at swim-up for virology. Moribund fish will be sampled at any time as determined needed. Samples will be representative of the total spawn, i.e., equal numbers of fry from each female

14) 150 fed fry will be sampled at approx 30 days after start of feed for virology. Moribund fish will be sampled at any time as determined needed. Samples will be representative of the total spawn, i.e., equal numbers of fry from each female
15) Juveniles will be transferred to Wells Hatchery for rearing and release only after viral assay results are completed and no evidence of virus is found.

16) In the event that any regulated viral pathogen is detected in any juvenile sample, all parties agree in advance that all fish linked to that sample will immediately be euthanized. Subsequent to that, increased monitoring for clinical evidence and/or increased mortality of remaining fish will be implemented with samples taken as appropriate.

17) Hatchery staff will work from known “clean” areas of the facility to areas of “unknown” fish health status. Hatchery staff will set up a “keep-out” perimeter for all non-hatchery personnel.

Robert W Rogers  
WDFW Fish Health, Region 2  
PO Box 856  
421 W 4th Ave  
Omak, WA 98841  
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Robert.Rogers@dfw.wa.gov

Modified September 25, 2013 (Consult with John Kerwin)
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees  
   Date: November 20, 2013

From: Mike Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the October 16, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Chelan PUD headquarters in Wenatchee, Washington, on Wednesday, October 16, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Kristi Geris will follow up with Lynn Hatcher, once he becomes available after the government shutdown, regarding his approval of the Hatchery Committees August 21, 2013 meeting minutes, prior to finalizing and distributing them to the Committees (Item I).  (Note: Hatcher approved the Hatchery Committees August 21, 2013 meeting minutes via email on October 18, 2013, and the final meeting minutes were distributed to the Hatchery Committees by Geris on October 21, 2013.)

- Greg Mackey will follow up with Tom Kahler by October 18, 2013, regarding Douglas PUD’s approval of the Okanagan Nations Alliance (ONA) Sockeye Program Update memorandum, prior to Kristi Geris finalizing and distributing the memorandum to the Committees (Item I).  (Note: Kahler provided minor grammatical edits to and his approval of the ONA Sockeye Program Update memorandum via email on October 18, 2013, as distributed to the Hatchery Committees by Geris on October 21, 2013.)

- Greg Mackey will provide Douglas PUD’s revised edits to the Twisp River Steelhead Live Spawning Plan Statement of Agreement (SOA) to the Yakama Nation (YN; Item II-A).

- The YN will provide a revised Twisp River Steelhead Live Spawning Plan SOA to Kristi Geris for distribution to the Hatchery Committees by October 21, 2013, that includes: 1) Douglas PUD’s suggested revisions; 2) the revised Washington Department of Fish and Wildlife (WDFW) Fish Health risk analysis memorandum.
and the revised Twisp River Steelhead Live Spawning Plan; and 3) a statement indicating that the YN will keep the Hatchery Committees updated on progress and results of their Steelhead Kelt Reconditioning Program (Item II-A).  *(Note: Keely Murdoch provided the final revised SOA to Geris on October 22, 2013, which Geris distributed to the Hatchery Committees, along with the revised WDFW Fish Health risk analysis memorandum and the revised Twisp River Steelhead Live Spawning Plan, on that same day.)*

- The YN will prepare a Chewuch Acclimation Plan SOA, and will provide the SOA to Kristi Geris for distribution to the Hatchery Committees. The YN will be requesting approval of the SOA at the Hatchery Committees’ meeting on November 20, 2013 (Item II-B).
- Keely Murdoch will provide Kirk Truscott with data on adipose-fin-wire (ad-wire) retention (Item II-B).
- The YN will develop a document summarizing their plans for expanding acclimation areas in the upper Methow, and will provide the document to Kristi Geris for distribution to the Hatchery Committees (Item II-B).
- Keely Murdoch will provide the YN’s non-target taxa of concern (NTTOC) model runs to Greg Mackey (Item III-A).
- Greg Mackey will develop a document that summarizes the NTTOC model runs, and will distribute the document in early 2014 (Item III-A).
- The Hatchery Committees representatives will provide comments on the Hatchery Monitoring and Evaluation (M&E) Plan Tables to Greg Mackey no later than November 11, 2013, for discussion at the Hatchery Committees’ meeting on November 20, 2013 (Item III-B).
- Chelan PUD and Grant PUD will incorporate their respective data into the Hatchery M&E Plan Tables, and will provide the updated tables to Greg Mackey no later than November 11, 2013, for discussion at the Hatchery Committees’ meeting on November 20, 2013 (Item III-B).
- **Kristi Geris distributed a meeting invite for a conference call on November 6, 2013, from 10:00 am to 12:00 pm, to discuss Chelan PUD’s draft 2014 M&E Implementation Plan (Item IV-B).**
- Chelan PUD will provide a revised Methow Spring Chinook Hatchery and Genetic Management Plan (HGMP) for review to Kristi Geris for distribution to the Hatchery
STATEMENT OF AGREEMENT DECISION SUMMARY

- No SOAs were approved at today’s meeting.

AGREEMENTS

- The Hatchery Committees representatives present agreed to consider approval of the Twisp River Steelhead Live Spawning Plan SOA by email (Item II-A).
- The Hatchery Committees representatives present agreed to a Chelan PUD request for 3,500 summer Chinook salmon eggs (from those destined for final acclimation and release at the Chelan Falls Acclimation Facility) for use in an egg-fry survival study in the Chelan River Tailrace and habitat channel (Item IV-A).
- The Hatchery Committees representatives present agreed to Chelan PUD’s request for a shortened review period for their draft 2014 Hatchery M&E Implementation Plan, in order to assist Chelan PUD in meeting their contracting deadlines (Item IV-B).

REVIEW ITEMS

- Mike Schiewe sent an email to the Hatchery Committees on September 13, 2013, notifying them that the draft Douglas PUD 2012 M&E Plan Report is available for review for a 60-day period, with comments due to Greg Mackey no later than November 14, 2013 (Item III-D).

FINALIZED REPORTS

- The final Twisp Steelhead Relative Reproductive Success 2012 Genotyping Report was distributed to the Hatchery Committees by Kristi Geris on September 9, 2013 (Item III-E).

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. The following revisions were requested:
• Greg Mackey added: 1) a Chief Joseph Summer Chinook Program update; and 2) an introduction to the Wells and Methow Hatcheries M&E Implementation Strategy for 2014.
• Alene Underwood added: 1) an introduction to the SOA for estimating carrying capacity using juvenile data; 2) a Methow Spring Chinook HGMP update; and 3) a Chelan PUD staff update.

The Hatchery Committees reviewed the revised draft August 21, 2013 meeting minutes. Kristi Geris said that a third revised draft was distributed to the Hatchery Committees on September 17, 2013. She said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that a redline strikeout version was also distributed along with the third revised draft that tracked comments addressed from the first and second revised drafts. She said that there was one outstanding comment remaining to be discussed regarding the Colville Confederated Tribes’ (CCT’s) Hatchery Brood Collection agenda item. Kirk Truscott clarified via email on October 21, 2013, that the fourth side of the broodstock compound at Chief Joseph Hatchery is a steep hill that is unfenced. He said that the loss of broodstock occurred when individuals climbed the hill and came into the compound, took the fish, and passed them under the gate of the perimeter fence and into a vehicle that was parked at the entrance to the compound. He also noted that vehicle access to the broodstock compound has now been secured with a locked gate near Chief Joseph Dam (approximately 0.5 mile from the broodstock compound). Keely Murdoch also clarified a statement that she made during the YN’s live-spawning Twisp River Steelhead broodstock agenda item. She clarified that at the time of the discussion, the plan was to discontinue live-spawning of Twisp broodstock if Infectious Pancreatic Necrosis Virus (IPNV) was detected; and not discontinue the Kelt Reconditioning Program. The Hatchery Committees members present conditionally approved the August 21, 2013 meeting minutes, pending Lynn Hatcher’s approval. Geris will follow up with Hatcher, once he becomes available after the government shutdown, regarding his approval of the minutes, prior to finalizing and distributing them to the Committees. *(Note: Hatcher approved the Hatchery Committees August 21, 2013 meeting minutes via email on October 18, 2013, and the final meeting minutes were distributed to the Hatchery Committees by Geris on October 21, 2013.)*
A memorandum providing a summary of the Wells Hatchery Modernization Workshop that was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, August 21, 2013, from 1:00 pm to 3:30 pm, was distributed to the Hatchery Committees on September 3, 2013. All comments and revisions received from members of the Committees were incorporated in the revised memo, and the final Wells Hatchery Modernization Workshop memo was approved via email by the Wells Hatchery Committee on September 17, 2013, as distributed to the Committees by Geris that same day.

Geris said that a memorandum providing a summary of the ONA Sockeye Program Update from the Priest Rapids Coordinating Committee Hatchery Subcommittee (PRCC HSC) meeting that was held at Chelan PUD headquarters in Wenatchee, Washington, on Thursday, August 22, 2013, from 9:00 am to 11:00 am, was distributed to the Hatchery Committees on September 3, 2013. She said that no comments or revisions were received from members of the Committees. The Hatchery Committees members present conditionally approved the ONA Sockeye Program Update memorandum, pending Douglas PUD’s approval. Greg Mackey said that he will follow up with Tom Kahler regarding Douglas PUD’s approval of the memorandum, prior to Geris finalizing and distributing the memorandum to the Committees. (Note: Kahler provided minor grammatical edits and his approval the ONA Sockeye Program Update memorandum via email on October 18, 2013, as distributed to the Hatchery Committees by Geris on October 21, 2013.)

II. Yakama Nation

A. DECISION: Twisp River Steelhead Live Spawning Plan SOA (Keely Murdoch)

Keely Murdoch said that a revised draft Twisp River Steelhead Live Spawning Plan SOA was distributed to the Hatchery Committees by Kristi Geris on October 15, 2013; and added that edits received from the CCT and WDFW were incorporated into the revised draft. She said that all action items pertaining to the SOA have been completed, including revising the SOA to indicate that the YN will cover additional costs that were identified in the budgets provided by WDFW and Douglas PUD. She said that a WDFW Fish Health risk analysis memorandum and a revised draft Twisp River Steelhead Live Spawning Plan were also distributed to the Hatchery Committees by Geris on October 15, 2013. She noted that the revised draft plan included a reduced number for sampling (i.e., combined total). Mike Tonseth also noted a typo in the WDFW Fish Health risk analysis memorandum. A revised
The memorandum and the revised Twisp River Steelhead Live Spawning Plan (Attachment B) were distributed to the Hatchery Committees by Geris on October 22, 2013.

Bill Gale asked if the YN has received feedback on the SOA or plan from the National Marine Fisheries Service (NMFS), and Murdoch replied that they have not. She said, however, that spawning of Twisp fish is included in permits that have been approved by NMFS; and she added that kelt reconditioning is a Reasonable and Prudent Alternative (RPA) in the Federal Columbia River Power System (FCRPS) Biological Opinion. She said that the Twisp Program (i.e., adult holding and live-spawning, at Methow Hatchery) was accounted for in the HGMP. Mike Schiewe noted that because there are listed species involved, NMFS should be consulted prior to approval of the SOA.

Greg Mackey said that prior to approving the SOA, Douglas PUD will need time for internal review of the revised SOA and the WDFW Fish Health risk analysis memorandum; and also Douglas PUD and the YN need to have a discussion about the budget. Tom Scribner said that he had received Douglas PUD’s budget, and that there are a few pending details to be worked out with WDFW, but all costs will be covered. Murdoch added that those details are largely about timeline. She said, for example, that the YN will purchase items that are needed now, such as a sonicator; however, items that are not needed now will be purchased after the YN’s new Bonneville Power Administration (BPA) budget begins and subcontracting is in place (i.e., likely around late-March or early-April 2014). Mackey said that those details are what Douglas PUD and the YN need to discuss. He added that Douglas PUD has edits to the SOA and that, once updated per today’s discussions, he will provide those edits to the YN.

Murdoch asked what the timeline is for Douglas PUD’s internal process, and Mackey replied that it depends on schedules and availability, but that it would likely be just a few days.

Gale suggested that the YN include language in the SOA or plan that states that they will keep the Hatchery Committees updated on the progress and success of the Steelhead Kelt Reconditioning Program. Kirk Truscott also suggested that aside from results of the Program, the reports should also address any effects on the ongoing HCP programs. Tonseth added that it also seems important to highlight fish health problems, if any, affecting overall hatchery production. Mackey suggested incorporating an update in the monthly Hatchery M&E report that Charlie Snow provides, and Murdoch replied that Matt Abrahamse of the
YN develops a similar report; she suggested that the same fish health update can be included in both publications.

The YN agreed to provide a final revised Twisp River Steelhead Live Spawning Plan SOA to Geris for distribution to the Hatchery Committees by October 21, 2013, that includes: 1) Douglas PUD’s suggested revisions; 2) the revised WDFW Fish Health risk analysis memorandum and the revised Twisp River Steelhead Live Spawning Plan; and 3) a statement indicating that the YN will keep the Hatchery Committees updated on progress and results of their Steelhead Kelt Reconditioning Program.  

(Note: Murdoch provided the final revised SOA [Attachment C] to Geris on October 22, 2013, which Geris distributed to the Hatchery Committees, along with the revised WDFW Fish Health risk analysis memorandum and the revised Twisp River Steelhead Live Spawning Plan, on that same day.) In consideration of time constraints, the Hatchery Committees representatives present agreed to consider approval of the Twisp River Steelhead Live Spawning Plan SOA by email consent.

B. Expanded Acclimation in the Methow (Keely Murdoch)

Chewuch Acclimation Plan

Keely Murdoch said that a draft Chewuch Acclimation Plan (Attachment B) was distributed to the Hatchery Committees by Kristi Geris on October 10, 2013, per the Hatchery Committees’ request. She noted that the plan is limited to acclimation only, and that the other program components will be included in Chelan PUD’s Spring Chinook HGMP. She said that a SOA was not developed because she was unsure if one was needed; and she asked if approval of the acclimation plan would be included under the approval of Chelan PUD’s HGMP. Greg Mackey said that Douglas PUD would not require a SOA regarding how Chelan PUD’s program is managed because it is not Douglas PUD’s program. Mike Tonseth recalled discussing at the Hatchery Committees’ meeting on August 21, 2013, the need for two SOAs: 1) a facility sharing agreement between the YN and Douglas PUD; and 2) an agreement for the use of the facility for Chelan PUD production. Tonseth said, however, that if the YN’s program is included as a long-term program in the Chelan PUD Spring Chinook HGMP, any SOA for that HGMP would probably suffice. Alene Underwood reminded the Hatchery Committees that in 2014, Chelan PUD’s 60,516 spring Chinook obligation will be overwinter reared in Grant PUD’s new Carlton Acclimation Facility. Murdoch suggested that, for now, the Hatchery Committees review and comment on the
draft Chewuch Acclimation Plan, and then a SOA can be developed, if needed, for review at the Hatchery Committees’ meeting on November 20, 2013. Bill Gale said that, logically, brood collection should be discussed prior to acclimation. He added that he does not want to see Winthrop fish taking the place of spring Chinook from the conservation program at Methow FH, Winthrop is to serve as a safety net program and therefore should not be the first choice for use in an acclimation facility. Tonseth said that this acclimation plan is still a step that needs to be completed; and Murdoch added that National Environmental Policy Act (NEPA) processes are required for all expanded acclimation programs, and so approval is needed by BPA. Gale said that he would be supportive of a SOA, and suggested including a caveat statement that the SOA is contingent on brood collection. Murdoch said that the YN will prepare a Chewuch Acclimation Plan SOA, and will provide the SOA to Geris for distribution to the Hatchery Committees. The YN will be requesting approval of the SOA at the Hatchery Committees meeting on November 20, 2013.

Tom Scribner agreed with Gale’s genetic concerns about releasing safety net fish in the Chewuch; and Gale added that he sees no genetic concern for this year. He said, however, that in the long-term, there is concern. Tonseth said the safety net program has many purposes, but the program is intended to be used only when absolutely necessary. He said the program is a stop-gap measure to ensure production targets are met, in the event of unforeseen events. Gale said that if safety net fish are used, in general, his preference would be that they are released from the Methow—not the Chewuch.

**Expanding Acclimation Areas in the Upper Methow**

Murdoch said that the YN is interested in expanding acclimation areas in the upper Methow. Scribner said that a formal plan is not yet developed, but at this point, the YN is hoping to obtain a “concept commitment” from the Hatchery Committees. He said that, in the interest of enhancing natural production, the YN is interested in moving acclimation and release of all conservation production to locations with the best opportunity to spawn and naturally reproduce. He said these areas include places such as Early Winters Creek, Goat Wall, Heath Ranch, and perhaps others; and he added that there are data that favor moving out of the Methow, and into the upper Methow. He said this would involve permitting and NEPA processes, which would first require agreement, or a commitment, in concept. Schiewe asked if the YN planned to develop a draft plan or concept statement, and Scribner replied
that they could. Scribner added that he is interested in gathering feedback from the Hatchery Committees about what is needed to move fish out of Methow Hatchery and into the upper Methow, so that those discussions can take place and issues can be addressed.

Tonseth noted that this concept should also be discussed within the PRCC HSC, and Scribner said that he can present these plans to the HSC as well. Mackey also suggested approaching this concept on a reach-by-reach basis—for example, how many fish should return where—as it relates to spawning abundance thought to be needed in a reach and to percent hatchery origin spawners (pHOS) issues. He said the conservation program also serves as a demographic and genetic buffer, and cautioned that a measured approach should be developed. He said there are data showing spawning distributions, and he asked what those data indicate about available capacity. He said those types of data should indicate how many additional fish should be targeted to return to certain areas. Murdoch noted that some of that information is unknown.

Tonseth added that there are also the added issues of acquiring brood in particular locations. Murdoch asked whether, for hatchery origin fish, it makes sense to trap at Wells. Kirk Truscott said that the CCT will have returning adults from the Section 10(j) releases in the Okanogan that will be adipose-fin-present (ad-present). Murdoch noted that there are marking schemes to distinguish where fish are headed, and asked whether these types of techniques should be employed. Tonseth said that those types of measures are not yet in place, and he added that it takes time to get those measures approved, and that there would be an interim period where origin of fish was indistinguishable. Truscott asked if there are data on ad-wire retention, and Murdoch said that she will provide Truscott with those data.

Tonseth suggested that another option would be passive integrated transponder (PIT)-tagging a large enough group; however, high costs would be associated with that option. Murdoch said that if the goal is to separate Twisp and Methow hatchery fish, she suggested employing Parental Based Tagging (PBT), and she added that this option may be cheaper than coded wire tags. She also added that the YN is considering PBT for their coho program to track parentage and source programs. Mackey noted that PBT delays fish migration for one week, which is not desirable. Gale agreed that PBT may not be a good choice, and
suggested exploring alternatives. He said that it may not be ideal to have all fish in acclimation ponds.

Scriber said that he appreciates the comments, and agreed that it makes biological sense to take a measured approach to expanding acclimation in the upper Methow. Mackey noted that even if fish are released in upper river ponds, there is the possibility that those fish may volunteer back to the Methow Hatchery. He added that if fish are moved upstream, the water may have stronger cues; and Truscott noted that the M&E program should inform those questions. Tonseth said that the Methow has not been operated in a manner to test homing fidelity, and he suggested looking at data from the Chewuch to get a general feel for what may be going on. Gale also suggested looking at data from Winthrop National Fish Hatchery because the same water source is used there as at Methow Hatchery.

Scribner said that the YN will develop a document that analyzes the factors discussed and summarizes their plans for expanding acclimation areas in the upper Methow, and will provide the document to Geris for distribution to the Hatchery Committees. Schiewe asked if this program would go through an Independent Scientific Review Panel (ISRP) review, and Murdoch replied that the program already went through ISRP review in 2008.

III. Douglas PUD

A. NTTOC Update (All)

Mike Schiewe summarized that NTTOC analyses were last discussed about one year ago. He said that at that time, Chelan PUD and the CCT had not run their models; and then he asked if there has been any progress. Greg Mackey said that Douglas PUD, Grant PUD, the U.S. Fish and Wildlife Service (USFWS), Chelan PUD, and the YN have all run their models. He added, however, that he has not yet received the YN’s data. Keely Murdoch said that she will provide the YN’s NTTOC model runs to Mackey. Bill Gale clarified that models have been run for Winthrop, but not for the Entiat; he added that those will be completed. Mackey also said that last fall, Andrew Murdoch ran Chelan PUD’s programs and those data have now been incorporated into the database of model runs. He said that although many model runs have not been completed, there are now hundreds of model runs in the dataset and it is very robust. However, there is still the uncertainty as to why some model runs do not work.
Keely Murdoch and Gale both recalled having the same issue where models would not run if the non-target taxa were larger than the program fish; and Keely Murdoch noted that this was often the case in model runs of coho against steelhead. Gale suggested making the decision to assume the effects are negligible when NTTOC fish are larger than program fish. Mackey said that various people have consulted Craig Busack, but Busack indicated that he did not have the time or the resources to delve into coding issues. Mackey added that Douglas PUD programmers have determined that fixing the program cannot be done easily; and that Andrew Murdoch is in the process of having WDFW programmers look into it, but WDFW has not yet done this. Gale asked if the only issue is what he and Keely Murdoch mentioned. Mackey replied that it is the only major issue; however, that there are also other minor issues.

Mackey recalled that the original intent of the NTTOC modeling was to develop a report summarizing the results. He said the methods are already written in a published paper; and in order to complete this task, he suggested tabulating the results, writing a summary and interpretation of the results, and acknowledging the limitations of the existing model. He added that conclusions can always be revisited if the code ever gets fixed. Keely Murdoch asked about the Delphi review panel, and Mackey said the panel could consist of a more local, accessible group since the problems with the model do not justify a major Delphi panel effort. He added that, now, he is unsure of the value of convening the panel. Keely Murdoch suggested that the Delphi approach, at this point, might be more worthwhile than the model outputs; and she added that the Delphi panelists might address issues or concerns the models cannot address. She said that the Delphi determinations can then be compared to the models. Todd Pearsons suggested that the report might consider the results in terms of high, medium, and low risk. He said that this approach would make evaluating the thousands of comparisons more manageable.

Gale asked if the models indicated any large negative impacts, and Mackey replied that the vast majority of effects were small. Mackey noted that some programs were showing inflated effects due to data entry artifacts. He said he believes that this error was fixed, and that the summary report would include a discussion evaluating the possible source of error.
Mackey volunteered to develop a short report summarizing the modeling results in order to finalize the NTTOC study with the Hatchery Committees. Schiewe agreed that developing a short report is a good first step, and suggested that the report may identify the need for a Delphi review panel. Mike Tonseth also suggested that the Hatchery Committees come to consensus on how to close the loop on the NTTOC SOA. He added that it may be closed as inconclusive, but that is acceptable if that is the outcome. Mackey said that he will develop a document that summarizes the NTTOC model runs, and will distribute the document in early 2014.

B. Hatchery M&E Plan Tables (All)
Greg Mackey said that the draft Hatchery M&E Appendices tables were distributed to the Hatchery Committees by Kristi Geris on September 24, 2013. He noted that the tables are reference tables for the Hatchery M&E Plan, and that the Hatchery Committees agreed at the Hatchery Committees’ meeting on August 21, 2013, that Mackey should develop the tables. He noted that the tables primarily include Douglas PUD data, and that Chelan PUD and Grant PUD still need to populate their respective data. He also noted that he has included an appendix with a collection of carrying capacity estimates that have been done by various authors for populations in this region and much of the information was already compiled in the Quantitative Analytical Report (QAR). He stressed that the carrying capacity estimates are not a metric of the M&E Plan; rather, they are meant to be informational reference numbers.

The Hatchery Committees representatives agreed to provide comments on the Hatchery M&E Plan Tables to Mackey no later than November 11, 2013, for discussion at the Hatchery Committees’ meeting on November 20, 2013. Chelan PUD and Grant PUD also agreed to incorporate their respective data into the tables, and provide the updated tables to Mackey by the November 11, 2013 comment deadline. The Hatchery Committees also agreed that Grant PUD should be invited to participate in the Hatchery M&E Plan Tables discussions at the Hatchery Committees’ meeting on November 20, 2013.

C. Chief Joseph Summer Chinook Program Update  (Greg Mackey)
Greg Mackey said that the summer Chinook from Chief Joseph’s program that were reared at Wells Hatchery will be transferred to Chief Joseph’s acclimation pond at the end of October.
He reminded the Committees that a single year of summer Chinook production was reared at Wells Hatchery to meet Douglas PUD’s mitigation in lieu of Chief Joseph production because Chief Joseph’s facility was not yet ready to accommodate the program.

D. Draft Douglas PUD 2012 Hatchery M&E Report (Greg Mackey)
Greg Mackey reminded the Hatchery Committees that Mike Schiewe sent an email to the Hatchery Committees on September 13, 2013, notifying them that the draft Douglas PUD 2012 M&E Plan Report is available for review for a 60-day period, with comments due to Mackey no later than November 14, 2013.

E. Twisp Steelhead Relative Reproductive Success 2012 Genotyping Report Update (Greg Mackey)
Greg Mackey said that the final Twisp Steelhead Relative Reproductive Success 2012 Genotyping Report was distributed to the Hatchery Committees by Kristi Geris on September 9, 2013. He noted that WDFW has updated the single nucleotide polymorphic loci (SNPs) panel that was used for analysis in this report. He said that the first four years of the study were run with a preliminary SNP panel, but because certain markers were not conforming or meeting genetic statistical expectations, the panel has been updated, with some markers removed and new ones added, to create the final panel that WDFW plans to use. All the analyses from the previous years in the study were rerun with the new SNP panel, so all data are consistent and up to date. He said that results were reanalyzed, and no differences from past analyses were observed.

Alene Underwood asked when the study ends, and Mackey replied that he believes a final report will be developed in 2021. He added that the last parent cohort will be collected around 2017, and then parental analyses will begin to be run on parents and returning adult offspring, while the study awaits the final offspring to return. He also added that the study was designed to include grandchildren from earlier cohorts.

F. Wells and Methow Hatcheries M&E Implementation Strategy for 2014 (Greg Mackey)
Greg Mackey reviewed the Wells and Methow Hatcheries M&E Implementation Strategy for 2014 (Attachment C), which Kristi Geris distributed to the Hatchery Committees on October 17, 2013. He recalled that the Hatchery Committees had agreed that Chelan PUD and
Douglas PUD would provide their respective draft M&E Implementation Plans to the Hatchery Committees for review no later than July 1 of the year preceding the proposed M&E activities. However, as provided in a letter to the Hatchery Committees on July 1, 2013, due to uncertainty in the M&E requirements pending consultation and issuance of Endangered Species Act (ESA) permits for Methow Spring Chinook, Wells Steelhead, and Wells Summer Chinook, Douglas PUD was unable to provide a plan by that deadline. Mackey said that on September 20, 2013, Douglas PUD received a letter from NMFS indicating that the existing ESA permits would be temporarily extended, with no specific end date. He said that because the new permits will contain terms and conditions that will likely affect the M&E program, Douglas PUD plans to develop a compartmentalized M&E implementation plan that can be contracted as separate work orders for each major activity. Mackey said that he will provide this draft plan to the Hatchery Committees as soon as it is complete.

IV. Chelan PUD

A. Summer Chinook Egg Request (Alene Underwood)

Alene Underwood said that a request for 3,500 summer Chinook salmon eggs for Chelan River egg-fry survival studies (Attachment D) was distributed to the Hatchery Committees by Kristi Geris on October 4, 2013. Underwood said that the request is largely the same as the request that was approved by the Hatchery Committees in 2012, only more eggs are being requested this year (3,000 eggs were requested in 2012), and some of the methodologies are slightly different from those used in previous years.

Mike Tonseth asked if there is an end date to these studies, and Underwood replied that there is not, and she added that the evaluation is tied to the Lake Chelan license. She said the studies are addressing egg survival, which the proposal explains in greater detail. Tonseth requested that for future years, the need for additional eggs is requested earlier. He said his concern is that the request is for almost an equivalent of a full female of eggs and collection has already passed. He added that although this will not be an issue this year, he would like to avoid potential issues (i.e., such as precluding meeting Rocky Reach mitigation) in the future.
Kirk Truscott recalled the dissolved oxygen (DO) issue with rearing juveniles at Chelan Falls in 2012, and Underwood clarified that the DO issue arose at the end of rearing which prompted the early release. She added that earlier in rearing, there was also a disease problem. She said that no strong correlations could be made linking the 2012 outcomes to DO issues.

The Hatchery Committees representatives present agreed to Chelan PUD’s request for 3,500 summer Chinook salmon eggs (from those destined for final acclimation and release at the Chelan Falls Acclimation Facility) for use in an egg-fry survival study in the Chelan River Tailrace and habitat channel.

B. Draft Chelan PUD 2014 M&E Implementation Plan (Alene Underwood)

Alene Underwood said that a draft Chelan PUD 2014 M&E Implementation Plan was distributed to the Hatchery Committees by Kristi Geris on October 15, 2013. She noted that the draft plan was distributed by the October deadline as promised at the Hatchery Committees meeting on July 17, 2013. She said that the draft plan includes only Chelan PUD’s programs, and explained that because contracting will be completed separately from the other PUDs, it was decided that they will develop separate plans. She said a section was added to the introduction that explains what methods in the plan differ from previous year’s methodologies. She also said that the plan is organized differently than in the past. She said it is organized in a similar fashion as the Request for Proposal, which, Underwood said, seems to be more user-friendly. She said the draft plan does not include sockeye, and that Chelan PUD hoped to have a discussion regarding proposed sockeye activities at the November 20, 2013 meeting. She said the plan includes adult monitoring in the Methow although there is an understanding with Grant PUD that this work will be shared.

Mike Tonseth noted that the draft Chelan PUD 2014 M&E Implementation Plan no longer included Table 1 that assigns tasks and responsible parties; and Underwood said that she can re-incorporate Table 1 into a revised draft plan and provide the revised plan to Geris for distribution to the Hatchery Committees. Chelan PUD re-incorporated Table 1 and also added language for the Chelan Falls summer Chinook and Methow spring Chinook aquaculture monitoring component into a revised draft plan (Attachment E), and provided
the updated plan to Geris on October 17, 2013, which she distributed to the Hatchery Committees that same day.

Underwood requested a conference call in two weeks to discuss comments on the plan, and added that she hoped to obtain the Hatchery Committees’ approval of the plan within 2 to 3 weeks in order to continue with contracting. She said that the plan will serve as the scope of work, and so Chelan PUD plans to attach the approved plan to the contract. Tonseth asked if contracting deadlines are driving this expedited process, and Underwood replied that they are. The Hatchery Committees representatives present agreed to Chelan PUD’s request for a shortened review period for their draft 2014 Hatchery M&E Implementation Plan to facilitate meeting contracting deadlines. Geris distributed a meeting invite for a conference call on November 6, 2013, from 10:00 am to 12:00 pm, to discuss Chelan PUD’s draft 2014 M&E Implementation Plan.

C. **SOA for Estimating Carrying Capacity Using Existing Juvenile Data (Catherine Willard)**

Catherine Willard said Chelan PUD and Grant PUD are considering developing a SOA to use juvenile data in future habitat carrying capacity estimates in the Wenatchee Basin and target tributaries, and HCP No-Net-Impact (NNI) recalculations. She said that within the next week, Andrew Murdoch will meet with the Joint Fisheries Parties (JFP) to discuss how these data can be used to estimate carrying capacity. Mike Tonseth further explained that there has been a lot of discussion regarding the use of existing data—a lot of which has evolved around juvenile data. He said that recently Murdoch began developing a conceptual approach for how to use existing juvenile data to manage adult activities, and how to define carrying capacity in tributaries and in the basin as a whole. Tonseth added that, currently, Andrew Murdoch is mainly looking at spring Chinook in the basin. He said that Andrew Murdoch’s conceptual approach should be available next week, and that the SOA will describe how these data will be used in the future.

Keely Murdoch expressed concern that commitments are already being sought on what data are used for the next recalculations when they are still so far in the future (10 years). Alene Underwood urged collecting data that have a specific use. She said the SOA is not defining methodologies; rather, it is an attempt to be more proactive in preparing for the next recalculations. Keely Murdoch said that according to an article by Williamson et al. (2010),
the two driving factors that lower reproductive success are spawning location and fish size at return, and she added that these two factors are different for hatchery versus wild fish. She also added that estimates vary because of how the hatchery program is operated, in addition to natural conditions. Tonseth agreed with Keely Murdoch’s recollection of the Williamson et al. (2010) article, but he added that Andrew Murdoch’s analyses produced different results. He also added that Andrew Murdoch’s findings are a stark contrast to what has been presented in the past, and he recommended keeping an open mind until Andrew Murdoch’s findings can be discussed. Tonseth said that once these discussions have taken place in the JFP, the SOA will be presented to the Hatchery Committees for discussion.

D. Methow Spring Chinook HGMP Update (Alene Underwood)

Alene Underwood said that all comments have been received on their Methow Spring Chinook HGMP, and that a revised HGMP for review will be provided to Kristi Geris for distribution to the Hatchery Committees no later than October 25, 2013.

E. Chelan PUD Staff Update (Alene Underwood)

Alene Underwood announced that Catherine Willard, the new Chelan PUD Senior Fisheries Biologist, is now on board. Willard was formerly with the U.S. Forest Service Entiat Ranger District. Underwood said that she will be transitioning many Hatchery Committees topics to Willard, and Underwood encouraged the Hatchery Committees members to contact Willard at any time.

V. HCP Administration

A. Next Meetings

The next scheduled Hatchery Committees’ meetings are on November 20, 2013 (Douglas PUD); December 18, 2013 (Chelan PUD); and January 15, 2014 (Douglas PUD).

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## List of Attendees

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<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
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<td>Alene Underwood*</td>
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<td>Todd Pearsons</td>
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<td>Tom Scribner*††</td>
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<td>Keely Murdoch*</td>
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<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
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<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<td>Charlie Snow†</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
- †† Joined by phone for the Yakama Nation agenda items and the Non-Target Taxa of Concern Update
TO: Mike Tonseth
FROM: John Kerwin
Fish Health Unit Leader

SUBJECT: Proposed Methow Hatchery Steelhead Kelt Rehabilitation Program

Twisp River steelhead are one of many steelhead stocks in the middle Columbia River that have experienced low stock abundance and are listed under the Endangered Species Act. This has resulted in considerable interest in the question of steelhead kelt reconditioning programs by numerous governmental and non-governmental organizations. It is generally recognized that a successful kelt reconditioning program presents potential boosts to low stock abundance and gene flow between brood years.

However, the reconditioning adult steelhead also presents some inherent fish health risks because of the inability to adequately sample the adult broodstock for serious fish pathogens using standard sampling protocols. Fish health risks are also present for the offspring of these adults because some fish pathogens, notably Infectious Pancreatic Necrosis Virus (IPNV) (transmitted vertically (from parent to progeny)) and Infectious Hematopoietic Necrosis Virus (IHNV) can both cause epidemic juvenile fish losses.

The Washington Department of Fish and Wildlife’s (WDFW) Fish Health Unit, staff from the Methow Hatchery, and representatives from Douglas PUD has created the attached document titled: “Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead”.

Both IPNV and IHNV are of the greatest concern because of their ability to be transmitted vertically (from parent to progeny) and the lack of any therapeutant treatment programs if juvenile salmonids become infected. IPNV can be detected inside the ova and is not accessible to any known methods of egg disinfection while IHNV is associated with the surface of the ova and the ova can be successfully surface disinfected if the correct procedures are followed. In the Columbia River Basin in Washington State, IPNV has been isolated from summer steelhead stocks at three hatchery facilities (Wells, Yakima, and Leavenworth hatcheries). For WDFW operated hatcheries in the Upper Columbia River Basin, IPNV has been isolated from adult summer steelhead at the Wells Hatchery in 1988, 1989, 1991, 1993, 1996, and 1997.

Essentially the attached document is a risk assessment and a suite of planned actions designed to minimize risks to the progeny from the unsampled kelts and other salmonids reared at the Methow Hatchery.
WDFW has for over thirty years based fish health protection on avoidance based protocols. Because standard fish pathogen detection protocols that are avoidance based cannot be utilized with steelhead kelt reconditioning programs, the attached strategy should be implemented to reduce the risk of a viral based epidemic at any hatchery facility where a kelt reconditioning program is initiated.

The attached document also includes the following assumptions:

- HSRG recommendations, if any, will be followed;
- A juvenile testing program designed with a minimum sample size for each lot of fish with two sample periods for each specific lot that provides 95% confidence that infected specimens will be sampled, assuming a minimum prevalence of infection equal to or greater than 5% will be approved. For this program, a lot is defined as progeny of a single days spawning. In addition, the males utilized for fertilization will be considered part of the lot.
- All involved natural resource agencies and affected parties will agree to, in advance, the euthanasia of juvenile steelhead that exhibit clinical symptoms of regulated pathogens; confirmed by plaque assay and/or Polymerase Chain Reaction (PCR).

It is our opinion that by following the recommendations made above in this memo and in the attached document that risks associated with the kelt reconditioning program to other salmonid species being reared at the Methow Hatchery will be minimal.

Attachment
Incubation and early rearing of juvenile Twisp summer steelhead at Methow Hatchery from incomplete viral sampled adult female summer steelhead

Shane Bickford, Greg Mackey, Guy Wiest, Dave Dinsmore, Jason Wahls, and Bob Rogers

October 11, 2013

**Background:** Earlier discussions identified the USFWS Winthrop Hatchery (WNFH) as a site to hold adult female Twisp summer steelhead for Kelt reconditioning as well as associated short term juvenile rearing. However, WNFH cannot provide early juvenile rearing in support of the kelt program at this time. Conversely, the Methow Hatchery has spatial and temporal capabilities (with modifications as described below) to short-term rear the progeny of the live-spawned adults from April-June.

**Discussion:** Identify actions to minimize the pathogen risk to endangered Spring Chinook at Methow Hatchery by rearing progeny of incomplete viral sampled live-spawned adult female Twisp summer steelhead. Identify pathogen sampling needs at Methow hatchery. Identify modifications at Methow hatchery to accommodate juvenile rearing, annually, with the potential for the short-term rearing to occur for up to 4 brood years (2014-2017).

**Planned actions to minimize risk to WDFW Methow Hatchery programs:**

1) Adult Twisp stock summer steelhead (13 pairs) will be collected from the Twisp weir March-May and held/spawned at Methow Hatchery (April-May)

2) Live spawned adult females will be double tagged with both a PIT tag and VI tag prior to being transferred to the USFWS Winthrop Hatchery Kelt site.

3) Ovarian fluid for virology will be collected from each female and individually numbered
4) Ovarian fluid supernatant will be inoculated to CHSE-214 and EPC cells at WDFW Olympia fish health lab

5) Ovarian fluid pellets will be sonicated and inoculated to CHSE-214 and EPC cells at WDFW Olympia fish health lab.

6) Kidney/spleen samples for virology will be collected from each male and numbered individually. These samples will be inoculated to CHSE-214 cells at WDFW Olympia lab

7) All mortalities at Methow Hatchery will be sampled for virology and submitted to WDFW Olympia Fish Health lab.

8) All post-spawn mortality of female Twisp kelts at USFWS Winthrop Hatchery will be sampled by YN personnel for virology and samples submitted to the WDFW Olympia Fish Health lab. Sampling protocols will be developed and provided to samplers. WDFW personnel will be notified.

9) The progeny from each female (family) will be incubated and reared in biosecure isolation from other steelhead families and all spring Chinook. Each family will have separate egg incubation/hatching/rearing tanks/tools. Rearing containers (circular tanks) will be separated by curtains. Access to incubation room/rearing tanks will be restricted by physical barriers and signs.

10) Additional disinfection pads (Virkon Aquatic) will be added at all access points.

11) All tools will be disinfected with 1:100 dilution of Virkon Aquatic, or other suitable disinfectant, for a minimum 10 minute contact time.

12) Healthy and moribund/mortality fish will be examined periodically and sampled as necessary.

13) 60 un-fed fry (targeting any moribund or fresh dead fish) will be sampled at swim-up for virology. Moribund fish will be sampled at any time as determined needed. Samples will be representative of the total spawn, i.e., equal numbers of fry from each female.
14) 60 fed fry (targeting any moribund or fresh dead fish) will be sampled at approximately 30 days after start of feed for virology. Moribund fish will be sampled at any time as determined needed. Samples will be representative of the total spawn, i.e., equal numbers of fry from each female.

15) Juveniles will be transferred to Wells Hatchery for rearing and release only after viral assay results are completed approximately 60 days after swim-up and no evidence of virus is found.

16) In the event that any regulated viral pathogen is detected in any juvenile sample, all parties agree in advance that all fish linked to that sample will immediately be euthanized. Linked fish include parents, siblings, and other fish that shared a common environment where disease transmission may have occurred. Subsequent to that, increased monitoring for clinical evidence and/or increased mortality of remaining fish will be implemented with samples taken as appropriate.

17) Hatchery staff will work from known “clean” areas of the facility to areas of “unknown” fish health status. Hatchery staff will set up a “keep-out” perimeter for all non-hatchery personnel.

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WDFW Fish Health, Region 2  
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cell 509-429-8208  
Robert.Rogers@dfw.wa.gov

Modified September 25, 2013 (Consult with John Kerwin).  
Modified October 11, 2013 by John Kerwin (WDFW) and agreed to by Bob Rogers on October 11, 2013.  
Further modified by John Kerwin on October 14, 2013 and agreed to by Bob Rogers on October 14, 2013.
Wells HCP Hatchery Committee  
Statement of Agreement  
Twisp River Steelhead Live Spawning Plan  
October 22, 2013  

Statement  
The Wells HCP Hatchery Committee agrees to live-spawn Twisp River NOR female steelhead broodstock, supported by a letter from WDFW Fish Health director dated October 15, 2013 indicating that the proposed live spawning program will not pose undue risk to the ESA listed spring Chinook and steelhead programs taking place at the Methow Hatchery, provided that the additional costs incurred as a result of live spawning would be paid for by the YN’s Upper Columbia Kelt Reconditioning Project and provided that WDFW agrees to fully implement all of the necessary facility improvements at Methow Hatchery following guidelines provided by Bob Rogers (WDFW Fish Health Specialist; Attachment 1).  

Live-spawned females will be reconditioned in YN’s Upper Columbia Kelt Reconditioning Facility located at Winthrop NFH. YN personnel will be responsible for transferring the live spawned kelts to the reconditioning facility. Twisp River steelhead will be spawned, incubated, and early reared until fish health testing is completed at the Methow Fish Hatchery. Once progeny have been cleared through the fish health screening, steelhead fry testing negative for regulated viruses will be transferred to Wells FH for rearing. Any juveniles or adults associated with any sample testing positive for regulated viruses will be euthanized immediately. YN staff will provide annual reports and updates from the Upper Columbia Kelt Reconditioning Project to the HCP HC.  

Background  
The YN operates a kelt reconditioning facility in the Methow basin. Beginning in 2012, YN began working closely with the USFWS to recondition live-spawned steelhead from Winthrop National Fish Hatchery, so that NOR broodstock have the opportunity to spawn in the wild, maximizing their contribution to increasing abundance. YN is also working closely with CRITFC to learn and build upon reconditioning efforts throughout the Columbia Basin. As part of these efforts Dworshak NFH has also begun live spawning steelhead so that NOR broodstock may be reconditioned.  

YN is requesting that NOR females from DCPUD’s Twisp River steelhead supplementation program be live-spawned and reconditioned (in YN’s facility) to help increase the abundance of NOR spawners and work towards recovery goals in the Methow Basin.  

YN has been working closely with WDFW and USFWS fish health staff to develop a plan which meets fish health needs to proceed with live spawning as described in the attachment. YN’s kelt reconditioning program will provide any necessary equipment or staff time to support virology testing and segregation.
during rearing as required for live spawning. Similarly YN staff is trained in live-spawning and can assist with live-spawning operations.
Chewuch Acclimation Plan  
9 October 2013

1.0 Background

1.1 YN’s Expanded Acclimation Project
YN’s Expanded Acclimation Project (Project) is based on the premise that acclimating salmon and steelhead in a manner that mimics natural systems can increase the effectiveness of integrated (conservation) hatchery programs and can be used to improve the Viable Salmonid Population (VSP) status of ESA listed spring Chinook and steelhead.

The Columbia River Basin Fish Accords (MOA) recognize that hatchery actions can provide important benefits to ESA listed species and to the Tribes, supporting treaty fishing rights. This Project seeks to improve the efficacy of current supplementation programs by providing additional short-term acclimation sites with the purpose of improving the spawning distribution of adult returns and/or homing fidelity, which may contribute to improved productivity and survival.

The concept of acclimating salmon smolts in ‘natural’ ponds has been thoroughly tested over the last decade as part of YN’s coho restoration project in the Wenatchee and Methow Rivers. The coho restoration project has demonstrated both high survival rates (juvenile and adults) as well as adult returns with SARs comparable or higher than established supplementation programs in the Upper Columbia (YN 2010). More recently YN has demonstrated that the technique of short term acclimation and co-mingling species is a viable method of acclimating smolts (Kamphaus 2011). However adult return data (SARs, etc.) from the comingled releases are still being collected and are not yet available.

Beginning in 2014, as a result of the HCP No-Net-Impact (NNI) recalculation, smolt release numbers from most conservation hatchery programs in the Methow and Wenatchee basins will be significantly reduced. Because of this reduction, we believe it is crucially important that each program be operated in a manner which maximizes efficacy of the supplementation effort.

1.2 Chewuch Acclimation Pond
The Chewuch Acclimation Pond (Chewuch AP) is owned by Douglas County PUD and has been operated by the Washington Department of Fish and Wildlife (WDFW) since 1994 (Brood Year 1992). In 2014, recalculated hatchery mitigation objectives for DCPUD, CCPUD and GCPUD will take effect. Recalculated values have significantly reduced the number of spring Chinook
reared for conservation purposes and as a result, 2014 will mark the first year that no spring Chinook will be released from the Chewuch AP.

YN believes that continued releases in the Chewuch are an important part of salmon recovery in the Methow Basin. YN is seeking to lease the facility from DCPUD for the acclimation of coho salmon (Coho Reintroduction Project) and spring Chinook (Expanded Acclimation Project). This lease would begin in 2015.

2.0 Chewuch Acclimation Plan
YN proposes to acclimate approximately 60,516 spring Chinook in the Chewuch AP beginning in 2015. These fish would represent CCPUD’s Methow Spring Chinook production.

2.1 Fish Transportation Procedures
Spring Chinook pre-smolts would be transported in March (by WDFW tanker truck) from the Carlton over-winter site to the Chewuch AP for final acclimation. Current fish-transport procedures include crowding and loading into distribution trucks via a fish pump. Water will be tempered as appropriate. Fish are tempered to within 3°C of the receiving water prior to release into the ponds. Loading densities may range from 0.3 to 0.5 pounds of fish per gallon of water.

2.2 Acclimation Procedures

Density Criteria
The following table represents current density criteria for HCP spring Chinook rearing and acclimation. The HCP Hatchery Committee may adjust criteria as necessary

<table>
<thead>
<tr>
<th>Acclimation Criteria</th>
<th>ELISA≤0.119&lt;sup&gt;a&lt;/sup&gt;</th>
<th>ELISA≥0.12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density Index (lbs/cf-in)</td>
<td>0.10</td>
<td>0.06</td>
</tr>
<tr>
<td>Flow Index (lbs/gpm-in)</td>
<td>1.00</td>
<td>0.60</td>
</tr>
</tbody>
</table>

<sup>a</sup>The 0.119 threshold was developed jointly by the USFWS and WDFW. Fish with an ELISA>0.19 would be culled.

In 2015, only Chinook would be present in-pond with a density index well below the limits described in Table 1. In 2016, the pond may be shared with coho smolts but density criteria described above would not be exceeded (Table 1).

Co-acclimation with Coho Salmon
Beginning in 2016, it is likely that spring Chinook pre-smolts could be co-acclimated alongside coho salmon pre-smolts in the Chewuch AP. Numbers of coho salmon acclimated would depend on the densities chosen for any given year (Table 1) and would likely be between
66,000 to 151,000 coho pre-smolts. Coho could be co-mingled with, or separated from Chinook with a barrier net depending upon similarities in fish size at transfer.

**Fish Condition, Growth, and Health Monitoring**

A pre-transfer fish health examination will be conducted by WDFW fish health specialists. Once in the pond, fish will be monitored daily by staff for signs of disease symptoms (lethargic behavior, skin coloration, visible lesions, caudal fungus, etc.) through observation of feeding behavior and monitoring of daily mortality trends. Additionally staff will collect data from a random sample of approximately 100 fish (of each species when applicable) on a weekly basis. Weekly sampling will include a general assessment of fish condition, stage of smoltification, fish length, and fish weight so that growth rates and condition factors maybe be assessed. A fish health specialist will be contacted if any disease symptoms are noted. If required, YN staff under the direction of the fish health specialist will provide treatment for disease.

**Release**

Spring Chinook would be released as close as possible to the agreed upon size target (15-18 fpp). Targets are subject to change at the discretion of the HCP Hatchery Committees. Spring Chinook will be volitionally released from the acclimation site into the Chewuch River (RKM 12.9) in mid-to-late April. If necessary, any remaining fish will be force released by May 1st.

**3.0 Adult Return Rates and Adult Management**

Historic adult return rates from the Chewuch Pond can be found in Table 2 below.

<table>
<thead>
<tr>
<th>Brood Year</th>
<th>Smolt Released</th>
<th>Adult Returns</th>
<th>SAR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>40881</td>
<td>39</td>
<td>0.001</td>
</tr>
<tr>
<td>1993</td>
<td>284165</td>
<td>116</td>
<td>0.0004</td>
</tr>
<tr>
<td>1994</td>
<td>11854</td>
<td>2</td>
<td>0.0002</td>
</tr>
<tr>
<td>1996</td>
<td>91,672</td>
<td>37</td>
<td>0.0004</td>
</tr>
<tr>
<td>1997</td>
<td>132,759</td>
<td>295</td>
<td>0.0022</td>
</tr>
<tr>
<td>2001</td>
<td>261,284</td>
<td>738</td>
<td>0.0028</td>
</tr>
<tr>
<td>2002</td>
<td>254,238</td>
<td>699</td>
<td>0.0027</td>
</tr>
<tr>
<td>2003</td>
<td>127,614</td>
<td>61</td>
<td>0.0005</td>
</tr>
<tr>
<td>2004</td>
<td>204,906</td>
<td>194</td>
<td>0.0009</td>
</tr>
<tr>
<td>2005</td>
<td>232,811</td>
<td>308</td>
<td>0.0013</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>164,218</strong></td>
<td><strong>289</strong></td>
<td><strong>0.0012</strong></td>
</tr>
</tbody>
</table>

Based on the minimum, mean, and maximum SARs (%) from previous releases, we would expect an average of 73 adults to return to the Chewuch River from a release of 60,516 smolts (Table 3).
Table 3. Anticipated number of returning spring Chinook adults from a release size of 60,516 at the Chewuch Acclimation Pond.

<table>
<thead>
<tr>
<th>Target Number of Smolts</th>
<th>Anticipated Number of Adults Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum SAR</td>
</tr>
<tr>
<td>Chewuch (60,516)</td>
<td>169 (0.28%)</td>
</tr>
</tbody>
</table>

The historic SARs for hatchery fish (Table 2) along with historic estimates of natural origin spawners in the Chewuch can be used to provide a retrospective analysis of what PNI would have been had 60,516 had been released annually and SARs remained the same. This retrospective analysis provides insight into what PNI values could be in the future (Table 4). Based on this analysis, it is unlikely that adult management will be needed to achieve a PNI of 0.67 in the Chewuch River. Additionally, pHOS in the retrospective analysis averages 0.25 (Table 4). Should future SAR rates exceed historic SARs and adult management becomes advisable in the future, uniquely marked hatchery fish (PIT tag, body tag, etc) could be removed at Rocky Reach Dam Trap, Wells Dam, or another location as determined by the Co-managers.

Table 4. Forecast of adult returns and PNI using a retrospective analysis of SARs and NOR spawning escapement.

<table>
<thead>
<tr>
<th>Return Year&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Chewuch NOR spawning Escapement</th>
<th>Hatchery SAR&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Hypothetical Hatchery Return</th>
<th>Hypothetical Proportion of Run</th>
<th>PNI (pNOB = 1)</th>
<th>PNI (pNOB = 0.5)</th>
<th>PNI (pNOB = 0.25)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hatchery Natural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>123</td>
<td>0.0004</td>
<td>24</td>
<td>0.16</td>
<td>0.84</td>
<td>0.86</td>
<td>0.75</td>
</tr>
<tr>
<td>2000</td>
<td>83</td>
<td>0.0004</td>
<td>24</td>
<td>0.23</td>
<td>0.77</td>
<td>0.82</td>
<td>0.69</td>
</tr>
<tr>
<td>2001</td>
<td>732</td>
<td>0.0022</td>
<td>133</td>
<td>0.15</td>
<td>0.85</td>
<td>0.87</td>
<td>0.76</td>
</tr>
<tr>
<td>2005</td>
<td>289</td>
<td>0.0028</td>
<td>169</td>
<td>0.37</td>
<td>0.63</td>
<td>0.73</td>
<td>0.57</td>
</tr>
<tr>
<td>2006</td>
<td>378</td>
<td>0.0027</td>
<td>163</td>
<td>0.30</td>
<td>0.70</td>
<td>0.70</td>
<td>0.62</td>
</tr>
<tr>
<td>2007</td>
<td>203</td>
<td>0.0005</td>
<td>30</td>
<td>0.13</td>
<td>0.87</td>
<td>0.89</td>
<td>0.79</td>
</tr>
<tr>
<td>2008</td>
<td>86</td>
<td>0.0009</td>
<td>54</td>
<td>0.39</td>
<td>0.61</td>
<td>0.72</td>
<td>0.56</td>
</tr>
<tr>
<td>2009</td>
<td>271</td>
<td>0.0013</td>
<td>79</td>
<td>0.22</td>
<td>0.78</td>
<td>0.82</td>
<td>0.69</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>271</strong></td>
<td><strong>86</strong></td>
<td></td>
<td><strong>0.25</strong></td>
<td><strong>0.75</strong></td>
<td><strong>0.75</strong></td>
<td><strong>0.68</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup> Years not included in this analysis either had no NOR spawners data (1996, 1998) or had no Chewuch hatchery release SAR data (BY 1995, 1998, 1999, 2000).

<sup>b</sup> For the purposes of this exercise hatchery SARs were matched with return year NORs based on a 4-year age class return.

4.0 Monitoring and Evaluation

With the exception of fish condition and growth sampling conducted in-pond, Chelan PUD will be responsible for all M&E associated with the proposed release of spring Chinook from their mitigation program. M&E objectives and metrics applicable to this release can be found in the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update.
MEMORANDUM

TO: Wells HCP Hatchery Committee

FROM: Greg Mackey

DATE: October 16, 2013

SUBJECT: Wells and Methow Hatcheries M&E Implementation Strategy for 2014

Douglas PUD and Washington Department of Fish and Wildlife prepared an M&E implementation plan for 2014 that was ready for distribution to the HC for review by July 1, 2013. Unfortunately, we were unable to distribute this plan for HC review due to uncertainty in the M&E requirements pending consultation and issuance of ESA permits for Methow Spring Chinook, Wells Steelhead, and Wells Summer Chinook (July 1, 2013 letter to the HC). We expected the steelhead BiOp and permitting process to be completed by now (original permit expired Oct 2, 2013), and the spring Chinook consultation with NMFS to be very far along now, as well (current permit expires Jan. 20, 2014). However, on Sept 20, 2013 NMFS sent a letter to Douglas, Grant, and Chelan PUDs notifying us that the existing ESA permits would be temporarily extended (in order to give NMFS time to perform the consultations and issue permits) with no specific end date. We anticipate receiving new permits in 2014, date unknown, that contain terms and conditions likely to affect the M&E program. Do to the continued uncertainty in M&E requirements for the Douglas PUD-operated programs, and the pending requirements and implementation that are anticipated for Chelan PUD and USFWS programs in the Methow Basin, and in order to allow the M&E program to be able to adapt to as yet unknown requirements in 2014, we plan to construct an M&E implementation plan that allows us to contract the plan as separate work orders for each major activity. We have not yet worked out the details of this approach, but will shortly develop an M&E implementation plan for HC review.
Request for 3,500 summer Chinook salmon eggs for Chelan River egg-fry survival studies

For the past two years, Chelan PUD has requested and received 2,500 summer Chinook salmon eyed-eggs for egg-fry survival studies in the Chelan River tailrace and Habitat Channel. The studies in 2011 and 2012 have been concurrent with studies to determine the relationship between intra-gravel dissolved oxygen in Chinook salmon redds and operation of the Chelan Hydroelectric Project. The intra-gravel dissolved oxygen study in 2011 provided information to develop a regime of minimum powerhouse operation to protect incubating Chinook salmon eggs in the tailrace. That operation regime was tested in 2012 and intra-gravel dissolved oxygen was maintained under that operating regime. That operating regime will be tested again during the 2013-2014 incubation season to confirm that it provides adequate protection of Chinook eggs.

Results from the egg-fry survival tests have been equivocal. These studies followed a protocol successfully used by Battelle in the Columbia River Hanford Reach, with eyed-eggs placed in cylindrical egg tubes (CETs) that are placed by SCUBA divers in simulated redds. This methodology has given good, consistent results in the Chelan River Habitat Channel, but results in the tailrace have been inconsistent. In 2012, none of the eggs in the CETs in the tailrace, not even eggs in the control CETs (placed on clean rock substrate and barely covered with cobble to prevent periphyton from clogging screens), survived to hatch. This information was inconsistent with the good oxygen levels maintained in the Chinook salmon redds and inconsistent with egg survivals in the tailrace CETs in 2011. The 2012-2013 results are particularly puzzling because the powerhouse was operated at full flow through the end of January, with the exception of minimum generation (800 cfs) and a single 2-hour period of no flow during CET installation. Examination of the dead eggs in the CETs showed very little development past the eyed-egg stage had occurred, but egg-fry survival in the Habitat Channel exceeded 90 percent.

The high egg-fry survivals achieved in the Habitat Channel and similar results using CETs in the Hanford Reach indicate that the CET technique works well in areas with strong water velocities. Water velocities in the Chelan tailrace are also strong during full powerhouse generation, but considerably lower at 800 cfs since SCUBA divers were able (barely) to hold position during CET installation. The CETs have a double layer of plastic mesh to prevent fry from escaping the CETs prior to retrieval and enumeration. We suspect that this mesh may present too much resistance to flow for the CET environment to provide adequate water exchange and dissolved oxygen in areas where stream velocities are low.

The 2013-2014 tests will incorporate measures to test whether the CET technique presents an experimental bias in the tailrace environment that prevents its use for estimating egg-fry survival in naturally-spawned redds. The 2013-14 protocol will include sampling of egg survival in natural redds at several intervals following CET installation. Also, we will replicate the CET eyed-egg experiment with some eyed-egg placements using mesh bags or baskets with greater mesh porosity. For this reason we are requesting 3,500 eyed-eggs rather than the 2,500 requested in previous years. As in the past, the request is for summer Chinook eggs from those destined for final acclimation and release at the Chelan Falls Acclimation Facility.

October 4, 2013
Chelan County PUD Hatchery Monitoring and Evaluation Implementation Plan
2014

Prepared by:
Alene Underwood and Catherine Willard

Draft October 2013
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1. INTRODUCTION

The Habitat Conservation Plan (HCP) specifies that a monitoring and evaluation plan will be developed for the hatchery program. The approach to monitoring the hatchery programs was guided by the “Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update” (Hillman et al. 2013) and the “Conceptual Approach to Monitoring and Evaluating the Chelan County Public Utility District Programs” (Murdoch and Peven 2005).

The purpose of this document is to define the tasks associated with the approved scope of work to implement Chelan PUD’s (CPUD’s) hatchery monitoring and evaluation (M&E) plan for 2014. Monitoring and evaluation activities for Lake Wenatchee sockeye in 2014 have not yet been determined. Chelan PUD will submit an addendum to this implementation Plan by February 2014 to address these activities. The work described in this plan has ESA coverage provided by ESA permits 18121, 1347, and 1395. All activities conducted under this Implementation Plan shall adhere to all terms and conditions as specified in the referenced permits. These permits allow for changes to monitoring or research protocols with the caveat that such modifications are approved by NMFS prior to implementing those changes.

The Implementation Plan includes all four components of the M&E Program including: (1) aquaculture monitoring; (2) juvenile monitoring; (3) adult monitoring; and (4) data, analysis and reporting. Under each component are study design elements that will be used to inform the overarching program components. Figure 1 illustrates the relationship of the components and study design elements used to address each component. Table 1 depicts which study design element is being performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

The methods described in this plan differ from previous methodologies in the following ways:

- Emigrant abundance estimates will use newly derived analytical approaches that reduce bias and increase precision to include estimates of emigration during the winter non-trapping periods.
- The yearling smolt production estimates at the lower Wenatchee smolt trap will be apportioned into summer and spring Chinook. Spring Chinook will be apportioned by major spawning areas (i.e., Chiwawa, Nason, White, Little Wenatchee, Icicle and other).
- Spring Chinook spawner abundance estimates will be adjusted for observer efficiency and include estimates of precision.
- Summer Chinook spawner abundance will be based on census counts and be adjusted for observer efficiency and include estimates of precision.
- Steelhead run and spawning escapement estimates will be based on a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates.
Figure 1. The four components of the hatchery monitoring and evaluation program and the study design elements within each component.
Table 1. Study design elements performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

<table>
<thead>
<tr>
<th>Monitoring and evaluation component</th>
<th>Objectives</th>
<th>Study Design Elements</th>
<th>Chiwawa spring Chinook</th>
<th>Wenatchee summer Chinook</th>
<th>Chelan summer Chinook(^2)</th>
<th>Methow spring Chinook(^3)</th>
<th>Wenatchee Steelhead</th>
<th>Wenatchee Sockeye</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaculture Monitoring</td>
<td>3,5,6,8,9</td>
<td>Stock assessment and broodstock collection</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-hatchery monitoring</td>
<td>WDFW CPUD(^1)</td>
<td>WDFW CPUD(^1)</td>
<td>WDFW CPUD(^1)</td>
<td>WDFW CPUD(^1)</td>
<td>WDFW</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Release monitoring</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>WDFW</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-release monitoring and smolt survival analysis</td>
<td>WDFW</td>
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<td>Juvenile monitoring</td>
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</tr>
</tbody>
</table>

1CPUD crews will PIT tag in-hatchery fish.
2Because the Chelan summer Chinook program is primarily an augmentation program, monitoring and evaluation efforts focus on straying, release characteristics, and harvest.
3Monitoring and evaluation in 2014 will be shared by Grant and Chelan PUDs.
2. AQUACULTURE MONITORING

The Aquaculture monitoring component is comprised of two basic elements: (1) stock assessment and broodstock collection at adult trapping locations and (2) in-hatchery monitoring including spawning, rearing, and release of juveniles. Data collected during these elements primarily support monitoring questions 5.1.1, 8.1.1, 8.2.1, 8.3.1, 8.3.2, 8.4.1, 9.1.1, 9.2.1, 9.3.1 and 9.4.1, but also contribute data to monitoring questions 3.2.1, 3.2.2, 6.1.1, 6.2.1, and 6.3.1 (Hillman et al. 2013). These monitoring questions support the following objectives:

**Objective 3:** Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

**Objective 5:** Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

**Objective 6:** Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.

**Objective 8:** Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

**Objective 9:** Determine if hatchery fish were released at the programmed size and number.

2.1 Stock Assessment and Broodstock Collection

Broodstock collection for Wenatchee summer steelhead, Wenatchee summer Chinook, Methow summer Chinook, Chelan Falls summer Chinook, and Chiwawa River spring Chinook, hatchery programs will occur consistent with the Broodstock Collection Protocol approved annually by the Hatchery Committee (e.g., Tonseth 2013). Trapping locations and timing will be dictated by the annual broodstock collection protocol and the relevant permits. Data collection during broodstock collection will be consistent with Murdoch and Peven (2005). A representative sample of all fish trapped, collected for broodstock, or released back to the river, will be sampled for origin, age, sex, size, and migration timing. Biological sampling of all fish trapped will include presence of internal (CWT or PIT) and external (VIE) tags or marks, scales, length, and sex (determined by ultrasound). PIT tags will be injected into all target species (Chinook and steelhead), whether collected or released. All non-target species will be enumerated daily. Measures of central tendency and spread will be calculated and reported for each metric.

2.2 In-Hatchery Monitoring

The in-hatchery monitoring component will begin when adult fish are collected and retained for broodstock, and ends when juvenile fish are released. Life stage specific in-hatchery survival and growth rates, disease monitoring, and an estimate of the number of fish released will be collected and analyzed according to Murdoch and Peven (2005). Additional data to be collected includes individual lengths and weights of juveniles during monthly sampling, and the weight of
gonadal mass and body of spawned broodstock. Measures of the central tendency and spread will be calculated and reported for each metric.

_Fish Marking_

All of Chelan PUD’s hatchery fish will be coded-wire tagged (CWT) and externally marked or marked as otherwise agreed to by the HCP-HC. The identification of these hatchery-produced fish is needed for a suite of adult metrics and may be used for adult management and/or fisheries as contemplated by the co-managers.

Using methods described in Keller and Murauskas (2012), hatchery fish will be PIT-tagged (Table 1) at Eastbank Fish Hatchery approximately two to four weeks before the fish are transferred to acclimation ponds (Table 2). Additional PIT-tagging may occur for program specific studies/comparisons as approved by the HSC. The data collected from the PIT-tags will assist in release monitoring, migration timing, juvenile survival, and smolt-to-smolt survival. For all fish marking, quality control check will be performed during and immediately following tagging and prior to release.

Table 1. Wenatchee River basin hatchery program release goals and recommended number of fish PIT tagged.

<table>
<thead>
<tr>
<th>Program</th>
<th>Release goals</th>
<th>Number of fish PIT tagged</th>
<th>PIT tag rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiwawa River spring Chinook</td>
<td>144,026</td>
<td>5,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Wenatchee River steelhead</td>
<td>247,500</td>
<td>15,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Wenatchee River summer Chinook</td>
<td>318,816 (CPUD Program) 181,184 (GPUD Program)</td>
<td>20,600^2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

^1 Additional PIT tagging may take place for Chelan PUD approved studies and/or comparisons.

^2 Includes a component of PIT-tagged fish for the NOAA size target study and a component for Grant PUD’s program.

2.3 Release Monitoring

Hatchery fish will be released during smoltification in the spring, typically between 15 April and 1 June. Whenever possible, the exact release dates will coincide with environmental conditions that promote a rapid emigration that minimizes both the potential negative ecological interactions of hatchery fish with naturally produced fish and predation on hatchery fish by avian or other predators. The monitoring data collected for each stock are described below.

_Spring Chinook — Chiwawa River_

Pre-release sampling data will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring
questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan (Hillman et al. 2013). PIT tag monitoring of spring Chinook released in the Chiwawa River will occur during the release period (April). Juvenile Chinook will pass through two 92-cm diameter PIT-tag antennas connected to Allflex 310 readers and Quantitative Sampling Technologies (QST) QuBE data logger. The release location and type (i.e., volitional, forced, or trucked) are recorded for each observation file created and uploaded to the PTAGIS database maintained by the Pacific States Marine Fisheries Commission after each year of release. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Spring Chinook – Methow**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Steelhead–Wenatchee River Basin**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Monitoring of steelhead released in the Wenatchee River basin will occur during loading of fish into transport trucks, unless fish are released directly into the Chiwawa River. Steelhead will pass through a series of PIT-tag antennas, each connected to a data logger, thereby allowing the creation of a PIT-tag observation file for each truckload of steelhead consisting of unique tag records. The release location (stream and rkm), release type (volitional or forced), and hatchery group (HxH or WxW) will be recorded for each tag file created. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. However, because PIT-detection efficiency during loading will not be 100%, the number of fish in each truckload will be estimated using volumetric displacement. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Chinook – Wenatchee River and Chelan Falls**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions
9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

2.4 Post-Release Monitoring and Survival Analysis
Data will be collected during rearing, acclimation, release, and the emigration period that may prove valuable in explaining variability in adult survival (Murdoch and Peven 2005). Rearing densities have been reported to influence the survival of hatchery fish (Martin and Wertheimer 1989; Banks 1994) and may also be linked to disease prevalence during rearing (Banks 1994; Ogut and Reno 2004). Acclimation of hatchery fish before release has been found to increase survival and reduce stray rates when the duration of the acclimation period is sufficient (Clarke et al. 2010, 2012; Rosenberger et al. 2013). These metrics (i.e., rearing density and acclimation period) will be collected annually to determine their influence on fish survival.

PIT-tagged groups of hatchery fish will be used to estimate survival during their emigration. Variation in survival during the emigration period may also inform observed adult survival rates. Survival during emigration or smolt-to-smolt survival and travel will be estimated using interrogation or release files and the standard Cormack-Jolly-Seber (CJS) estimator. CJS estimates are termed apparent survival estimates because it is unknown whether fish suffered mortality (e.g., size or time of release) or simply failed to emigrate (i.e., residualized or were precocial males). In the latter case, the proportion of PIT-tagged fish detected in the Wenatchee or Columbia rivers after the emigration period is complete may explain variation in smolt-to-smolt survival rates. The post-release performance of PIT-tag groups will be estimated and monitored annually, consistent with methods in Murdoch and Peven (2005).

3. Juvenile Monitoring
Data collected during these elements primarily support monitoring questions 2.1.1 and 2.2.1. These monitoring questions support the following objective:

**Objective 2:** Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

3.1 Freshwater productivity of Supplemented Stocks
Steelhead, Spring Chinook, and Summer Chinook
The freshwater productivity of supplemented stocks in the Wenatchee Basin will be monitored using smolt traps in the Chiwawa River and the lower Wenatchee River consistent with historical trapping efforts. Additionally, a newly derived analytical method which uses PIT-tag mark-recapture data will be utilized that reduces bias and increases precision by including
estimates of emigration during the winter non-trapping periods. Parr will be PIT tagged in the fall, based on the spatial distribution and abundance estimated during parr snorkel surveys, to generate estimates of migration during the non-trapping periods in Chiwawa River. Using PIT tagged parr detections at the lower PIT array during the non-trapping period, the total number of PIT-tagged parr that emigrated will be estimated, and then expanded by the tag rate. PIT-tag mark-recapture trials conducted during the trapping period in the fall will also be used to estimate detection probabilities of the PIT-tag array at a given discharge level. Abundance and variance will be estimated using the same methods as those used in the smolt trap estimate. The estimated abundance and variance from each method and time period (trapping and non-trapping periods) will be summed to estimate a total production estimate. Under the proposed methodology, unbiased estimates of abundance during the entire migration period will be generated with relatively high precision (PSE < 15%), which is consistent with NOAA Fisheries’ recommendations (Crawford and Rumsey 2011). Historical estimates will be revised using the new estimation techniques.

All captured spring Chinook that are trapped at the lower Wenatchee trap will be assigned to stocks using genetic techniques. The results from the genetic stock partitioning will be applied to the overall estimated number of migrating spring Chinook to generate freshwater productivity by stock.

3.2 Tributary Evaluations

Chiwawa River

Snorkel surveys will be utilized to estimate summer parr abundance within the Chiwawa River basin. This approach has been used in the Chiwawa River basin since 1992. In parallel to addressing Objective 2 additional juvenile data can help to assess the habitat carrying capacity in each tributary. This information can add value to the overall M&E plans and help inform management decisions.

Sampling will follow a stratified random sampling design. Landscape classification will be used to stratify streams in the Chiwawa basin that support juvenile Chinook salmon. In the Chiwawa River basin, WDFW found that classification "explained" most of the variability in fish numbers caused by geology, land type, valley bottom type, stream state condition, and habitat type (Hillman 2013). The same classification method was used to identify sections of the Little Wenatchee River (reference area) that corresponded to discrete reaches in the supplemented basins, but that had no release of hatchery Chinook. Consistent with previous efforts, habitat types within each land-class or reach will be identified and quantified annually. At least three units of each habitat type within each reach will be randomly selected for estimating densities of salmon and trout. Thus, overall sampling consists of a stratified-random sampling design, which increases the accuracy and precision of population estimates.
Densities of salmon and trout will be estimated in August and September by direct underwater observation within the randomly-selected habitat units. Underwater methods will follow those described by Thurow (1994), Dolloff et al. (1996), and O’Neal (2007). Habitat surface areas and volumes will be estimated during fish sampling. Numbers of fish counted will be adjusted for detection probabilities using the models published in Hillman et al. (1992). For each habitat type within a state type and reach stratum, the mean density of salmon and trout will be calculated as the ratio of mean numbers to mean area or volume sampled (Cochran 1977).

Total numbers of fish will be estimated per habitat type within a state type and reach stratum as the product of mean density of fish in a given habitat type, times total area or volume of that habitat type within the stratum (Cochran 1977). Total numbers of fish within the supplemented basin will be estimated as the sum of all population numbers per habitat type in state type/reach strata. Bootstrapping methods will be utilized to estimate variance and percent errors (based on 95% confidence interval) for total numbers of fish.

4. **ADULT MONITORING**

The Adult monitoring component is comprised of two basic elements: (1) estimating spawning escapement and (2) harvest monitoring. Data collected during these elements primarily support monitoring questions 1.1.1, 1.2.1, 2.1.1, 2.2.1, 3.2.1, 3.2.2, 4.1.1, 5.2.1, 5.3.1, 5.3.2, 6.3.1, but also contribute data to monitoring questions 6.1.1, 6.2.1, 8.1.1, 8.2.1, 8.4.1, 10.1.1, 10.1.2, 10.1.3 and 10.1.4 (Hillman et al. 2013). These monitoring questions support the following objectives:

**Objective 1:** Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.

**Objective 2:** Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

**Objective 3:** Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

**Objective 4:** Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.

**Objective 5:** Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

**Objective 6:** Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.
Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

Objective 10: Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

4.1 Spawning Escapement Estimates

Chelan and Methow Summer/Fall Chinook
Chinook spawning ground surveys will be conducted in the Chelan River and Methow subbasin (see Appendix A for survey reaches). Spawning ground surveys will be conducted via foot or raft beginning late September and continuing until spawning has ended (usually mid-November). Frequency of surveys will vary depending on method.

Summer Chinook carcass surveys will be conducted in the Chelan and Methow subbasins beginning in September and ending in November consistent with methods described in Murdoch and Peven (2005). A representative sample (i.e., 20%) of spawners as determined by spawner abundance and distribution (typically 100% of the carcasses encountered in the Chelan and Methow) will be sampled. Biological data will include collection of scale samples for age analysis, length measurements (POH and FKL), gender, egg voidance, and a check for tags or marks. DNA samples (five-hole punches from operculum) will be collected as needed to address different objectives. These data will be used to assess length-at-age, size-at-age, egg voidance, origin (hatchery or naturally produced), stray rates, and genetics. All carcass surveys will be conducted within the historical reaches.

Wenatchee Steelhead
The number of hatchery and naturally produced steelhead returning to the Wenatchee Basin will be estimated using a PIT tag mark recapture model. The estimated spawner abundance for the Wenatchee steelhead population will be a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates. Steelhead redd counts will be conducted weekly in all major spawning areas in the mainstem Wenatchee River (see Appendix A for survey reaches); minor spawning areas in the mainstem Wenatchee River will be surveyed once, based on the spawn timing in adjacent major spawning areas, to estimate redd abundance at peak spawning. The estimated total number of redds in the Wenatchee River mainstem will be expanded by the sex ratio of the population to estimate spawner abundance. Spawner abundance in tributaries of the Wenatchee River will be estimated using a PIT tag mark recapture model.

Chiwawa Spring Chinook
Chiwawa spring Chinook spawning escapement will be estimated based on the total number of redds found in each tributary (Murdoch et al. 2010) using methods described in Murdoch and Peven (2005). Redd and carcass surveys will be conducted simultaneously from the first week of
August through September (see Appendix A for survey reaches). Redd-based estimates assume that each female constructs one redd, which WDFW has found to be appropriate for this population (Murdoch et al. 2009). Redd counts will be expanded and the number of hatchery and naturally produced fish will be estimated using methods in Murdoch et al. (2010). Carcasses encountered during surveys will be sampled according to methods outlined in Murdoch and Peven (2005). In addition, all redds and female carcasses will be geo-referenced using hand-held GPS devices. Carcass recovery bias has been detected in the Chiwawa spring Chinook population (Murdoch et al. 2010) and if not corrected will bias estimates of hatchery and naturally produced fish on the spawning grounds. While it may be appropriate to correct for carcass recovery bias for some monitoring questions (e.g., 2.2), when comparisons to reference populations are made in monitoring questions 1.1 and 1.2, carcass bias will not be corrected because other monitoring programs have not corrected for a similar bias.

**Wenatchee Summer Chinook**

Wenatchee summer Chinook spawning ground counts will begin the last week in September and continue through the end of spawning in November (see Appendix A for survey reaches). Redd counts will be conducted by foot or raft depending on stream size, flow, and density of spawners within the stream reach. All stream reaches will be surveyed once per week. Redd data will be collected using methods described in Murdoch and Peven (2005). Salmon carcass data collected during spawning ground surveys will be consistent with Murdoch and Peven (2005).

**Redd Observer Efficiency and Fish per Redd Value**

Estimating redd observer efficiency is a costly and laborious task. Models generated for spring Chinook salmon are not applicable for summer Chinook because of differences in river characteristics of spawning locations. Small unmanned air systems (e.g., four blade helicopter) have been used successfully to document the abundance and distribution of fall Chinook redds in the Snake River (P. Groves, Idaho Power, Pers. comm.). We intend to use this technology to determine the true number of summer Chinook redds in selected reaches of the Wenatchee River. Weekly aerial photos of selected reaches will be digitally overlaid to document existing and newly constructed redds. Weekly ground-based estimates and the true number of redds will be compared in order to determine observer efficiency. Weekly river characteristics (e.g., channel width, water depth, discharge, visibility, and habitat complexity), observer experience, and survey effort will be incorporated into a model to predict observer efficiency in all river reaches. Predicted redd observer efficiency for each river reach will be used to expand ground-based redd counts to estimate the total reach redd count. Aerial photographs and ground-based surveys will also be used to estimate redd life for each river reach. The estimated spawner abundance in the Wenatchee River and an associated level of precision will be calculated using the estimated total redd count.
for each reach, mean redd life, and the sex ratio of the population similar to methods described in Millar et al. (2012).

4.2 Harvest Reporting
In years when the expected hatchery adult returns are in excess of the levels needed to meet the hatchery program goals (i.e., broodstock and/or escapement), surplus fish may be available for harvest. Harvesting or removal of surplus hatchery fish may have benefits to the natural populations by reducing potential negative ecological and genetic impacts (e.g., density dependent effects, loss of fitness, and loss of genetic variation). The contribution of hatchery fish to fisheries will be monitored using CWT recoveries on a brood-year basis supporting Objective 10.

To obtain the necessary data to determine if the harvest rates are meeting objectives, a statistically valid creel program will be designed and implemented for all sport and/or conservation fisheries in the Upper Columbia River to estimate harvest of hatchery fish from both Chelan and Grant County PUD funded hatchery programs (Murdoch and Peven 2005). Information collected during creel surveys are an integral component to calculating the HRR (Objective 3), particularly given most CWT recoveries for PUD mitigation programs occur in the Upper Columbia River and its tributaries, with the exception of summer Chinook where most CWT recoveries occur in ocean fisheries. Because of considerable time lags in reporting of CWT’s to the Regional Marking Information System (RMIS) database, it requires an ongoing query of recovery data until the number of estimated fish does not change.

5. Data Management, Analysis, and Reporting

5.1 Data Management
A database system has been developed in Microsoft Access that manages all the monitoring data collected for hatchery evaluations. The database will contain and manage all data associated with aquaculture monitoring, juvenile monitoring, and adult monitoring.

All data entered into the database are evaluated for quality control and quality assurance. Quality control checks using analyses such as modified Z-scores, boxplots, and the Generalized Extreme Studentized Deviate Procedure (Iglewicz and Hoaglin 1993) will be conducted for all data entry. In the event outliers are identified, discussion will occur on whether identified outliers are true data points or transcription errors. This process ensures that the data used to test statistical hypotheses are correct and accurate.

5.2 Data Analysis
The analyses proposed are consistent with the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update (Hillman et al. 2013). Each of the objectives will be addressed
using the appropriate statistical tests, as well as graphic analyses that convey relevant information.

5.3 Reporting
An annual M&E report will be generated following the completion of each calendar year and will be available for HCP HC review by June 1 of the following year. Additionally, monthly progress reports will be made available to the HCP HC.
6. REFERENCES


### APPENDIX A

**Designated survey reaches for Methow subbasin summer Chinook spawning ground surveys.**

<table>
<thead>
<tr>
<th>River</th>
<th>Reach</th>
<th>Code</th>
<th>RM</th>
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<tr>
<td>Methow</td>
<td>Methow to Methow Bridge</td>
<td>M1</td>
<td>0.0-14.78</td>
</tr>
<tr>
<td></td>
<td>Methow Bridge to Carlton Bridge</td>
<td>M2</td>
<td>14.78-27.17</td>
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<tr>
<td></td>
<td>Carlton Bridge to Twisp Bridge</td>
<td>M3</td>
<td>27.17-39.55</td>
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<tr>
<td></td>
<td>Twisp Bridge to MVID</td>
<td>M4</td>
<td>39.55-44.85</td>
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<td></td>
<td>MVID to Winthrop Bridge</td>
<td>M5</td>
<td>44.85-49.80</td>
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<tr>
<td></td>
<td>Winthrop Bridge to Hatchery Dam</td>
<td>M6</td>
<td>49.80-51.55</td>
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**Designated survey reaches for Wenatchee River basin summer Chinook spawning grounds surveys.**

Asterisks denotes reaches where redd observer efficiency will be assessed.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
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<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Bridge</td>
<td>54.20-53.58</td>
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<tr>
<td></td>
<td>Bridge to Swamp *</td>
<td>53.58-52.66</td>
</tr>
<tr>
<td></td>
<td>Swamp to Chiwawa River</td>
<td>52.66-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Schugart Flats</td>
<td>48.39-47.93</td>
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<tr>
<td></td>
<td>Schugart Flats to Old Plain Bridge</td>
<td>47.93-46.21</td>
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<td>46.21-41.91</td>
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<td></td>
<td>RR Bridge to RR Tunnel</td>
<td>41.91-39.28</td>
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<td></td>
<td>RR Tunnel to Swing Pool *</td>
<td>39.28-36.67</td>
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<td>Swing Pool to Tumwater Br</td>
<td>36.67-35.55</td>
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<td>W8</td>
<td>Tumwater Br to Swiftwater Campground *</td>
<td>35.55-33.50</td>
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<td></td>
<td>Swiftwater Campground to Unimproved Campground</td>
<td>33.50-33.08</td>
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<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
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<td>W7</td>
<td>Tumwater Dam to Penstock Br</td>
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<td>Penstock Br to Icicle Road Br *</td>
<td>28.66-26.43</td>
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<td>Icicle Road Br to Icicle Mouth</td>
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<td></td>
<td>Icicle Mouth to Boat Takeout *</td>
<td>25.61-24.49</td>
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<tr>
<td></td>
<td>Boat Takeout to Leavenworth Br</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Br to Irrigation Flume *</td>
<td>23.90-22.77</td>
</tr>
<tr>
<td></td>
<td>Irrigation Flume to Peshastin Br</td>
<td>22.77-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Br to Dryden Dam *</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Williams Canyon</td>
<td>17.76-15.54</td>
</tr>
<tr>
<td></td>
<td>Williams Canyon to Upper Cashmere Br</td>
<td>15.54-10.22</td>
</tr>
<tr>
<td></td>
<td>Upper Cashmere Br to Lower Cashmere Br</td>
<td>10.22-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Br to Old Monitor Br *</td>
<td>9.49-7.12</td>
</tr>
<tr>
<td></td>
<td>Old Monitor Br to Sleepy Hollow Br</td>
<td>7.12-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Br to River Bend *</td>
<td>3.27-1.73</td>
</tr>
<tr>
<td></td>
<td>River Bend to Siphon</td>
<td>1.73-1.29</td>
</tr>
<tr>
<td></td>
<td>Siphon to Mouth</td>
<td>1.29-0.45</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee Basin spring Chinook spawning grounds surveys.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td>Buck Cr to Phelps Cr</td>
<td>36.39-33.46</td>
</tr>
<tr>
<td>C6</td>
<td>Phelps Cr (Trinity) to Maple Cr Br</td>
<td>33.46-29.64</td>
</tr>
<tr>
<td>C5</td>
<td>Maple Cr Br to Atkinson Flats</td>
<td>29.64-26.59</td>
</tr>
<tr>
<td>C4</td>
<td>Atkinson Flats to Schaefer Cr</td>
<td>26.59-24.24</td>
</tr>
<tr>
<td>C3</td>
<td>Schaefer Cr to Rock Cr Campground</td>
<td>24.24-22.97</td>
</tr>
<tr>
<td>R1 - Rock</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-1.05</td>
</tr>
<tr>
<td>C2</td>
<td>Rock Cr Campground to Grouse Cr</td>
<td>22.97-12.27</td>
</tr>
<tr>
<td>K1 - Chikamin</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-0.68</td>
</tr>
<tr>
<td>C1</td>
<td>Grouse Cr to Mouth</td>
<td>12.27-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N4</td>
<td>White Pine Creek to Lower R.R. Bridge</td>
<td>16.09-13.68</td>
</tr>
<tr>
<td>N3</td>
<td>Lower R.R. Bridge to Hwy 2 Bridge</td>
<td>13.68-9.13</td>
</tr>
<tr>
<td>N2</td>
<td>Hwy 2 Bridge to Kahler Cr</td>
<td>9.13-4.46</td>
</tr>
<tr>
<td>N1</td>
<td>Kahler Cr to Mouth</td>
<td>4.46-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H4</td>
<td>Falls to Grasshopper Meadows</td>
<td>21.16-19.78</td>
</tr>
<tr>
<td>T1 - Panther</td>
<td>Boulder field to Mouth</td>
<td>0.43-0.00</td>
</tr>
<tr>
<td>H3</td>
<td>Grasshopper Meadows to Napequa River</td>
<td>19.78-17.59</td>
</tr>
<tr>
<td>Q1 - Napequa</td>
<td>Take out to Mouth</td>
<td>0.91-0.00</td>
</tr>
<tr>
<td>H2</td>
<td>Napequa River to Sears Cr Bridge</td>
<td>17.59-11.97</td>
</tr>
<tr>
<td>H1</td>
<td>Sears Cr Bridge to Mouth</td>
<td>11.97-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>Rainy Cr to Lost Cr</td>
<td>10.78-6.74</td>
</tr>
<tr>
<td>L2</td>
<td>Lost Cr to Old Fish Weir</td>
<td>6.74-2.13</td>
</tr>
<tr>
<td>L1</td>
<td>Old Fish Weir to Mouth</td>
<td>2.13-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U1</td>
<td>Metal bridge to Mouth</td>
<td>1.0 – 0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I1</td>
<td>Hatchery to Mouth</td>
<td>3.02-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D1 - Ingalls</td>
<td>Trailhead to mouth</td>
<td>0.64-0.00</td>
</tr>
<tr>
<td>P2</td>
<td>Ingalls Creek to Camas Cr</td>
<td>9.14-5.63</td>
</tr>
<tr>
<td>P1</td>
<td>Camas Cr to Mouth</td>
<td>5.63-0.00</td>
</tr>
</tbody>
</table>

2014 M&E Implementation Plan
Chelan PUD Hatchery Program
Designated survey reaches for Wenatchee River basin steelhead spawning grounds surveys. Asterisks denote index reaches. Spawning escapements in tributaries will be estimates using PIT-tag arrays.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River*</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Tumwater Bridge*</td>
<td>48.39-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground*</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Icicle Road Bridge</td>
<td>30.91-26.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Leavenworth boat ramp*</td>
<td>26.43-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Bridge</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Bridge to Peshastin Bridge</td>
<td>23.90-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Bridge to Dryden Dam</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Lower Cashmere Bridge</td>
<td>17.76-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Bridge to Sleepy Hollow Bridge *</td>
<td>9.49-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Bridge to Mouth</td>
<td>3.27-0.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tributary</th>
<th>River mile of PIT tag array</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Creek</td>
<td>0.54</td>
</tr>
<tr>
<td>Peshastin Creek</td>
<td>1.91</td>
</tr>
<tr>
<td>Chumstick Creek</td>
<td>0.31</td>
</tr>
<tr>
<td>Icicle River</td>
<td>0.26</td>
</tr>
<tr>
<td>Chuwaukum Creek</td>
<td>0.24</td>
</tr>
<tr>
<td>Chiwawa River</td>
<td>0.58</td>
</tr>
<tr>
<td>Nason Creek</td>
<td>0.52</td>
</tr>
<tr>
<td>Little Wenatchee River</td>
<td>1.74</td>
</tr>
<tr>
<td>White River</td>
<td>1.65</td>
</tr>
</tbody>
</table>
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees

From: Mike Schiewe, Chair

Cc: Kristi Geris

Re: Final Minutes of the November 6, 2013 HCP Hatchery Committees Conference Call

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held by conference call on Wednesday, November 6, 2013, from 10:00 am to 11:30 am. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- The Hatchery Committees will review the draft Juvenile Carrying Capacity Statement of Agreement (SOA) prior to the Hatchery Committees meeting on November 20, 2013, when Chelan PUD will be requesting approval of the SOA (Item II-A).

The following action items relate to revisions discussed for the draft Chelan PUD 2014 Monitoring and Evaluation (M&E) Implementation Plan (Item II-B): *(Note: references to comments following each action item [e.g., “kdt2” or “GW3”] correlate to comments received from the U.S. Fish and Wildlife Service [USFWS] and the Colville Confederated Tribes [CCT] on Chelan PUD’s draft plan, as distributed to the Hatchery Committees by Kristi Geris on October 31, 2013.)*

- Chelan PUD will revise a section to include more explicit details regarding how each objective will be achieved for each species; the revised section will be provided to Kristi Geris for distribution to the Hatchery Committees for further discussion and decisions regarding the organization and level of detail to include throughout the entire document (Yakama Nation [YN] general comment).
• Chelan PUD will revise Section 2.1 Stock Assessment and Broodstock Collection to clarify that stock assessment and broodstock collection are not always concurrent activities (CCT comment [kdt2]).
• Chelan PUD will incorporate language regarding plans to address precocity, residualism, and early maturation where appropriate (CCT comment [kdt3]; USFWS comment [GW3]).
• Chelan PUD will reference specific permit terms and conditions as they relate to hatchery M&E where appropriate (USFWS comment [GW3]).
• The YN will internally discuss marking strategy language (CCT comment [kdt4]).
• Chelan PUD will follow-up with Andrew Murdoch regarding how he estimated winter mortality (USFWS comment [GW4]).
• Chelan PUD will revise the draft Chelan PUD 2014 M&E Implementation Plan, as discussed, and will provide the revised draft to Kristi Geris for distribution to the Hatchery Committees by Friday, November 8, 2013.

STATEMENT OF AGREEMENT DECISION SUMMARY
• No SOAs were approved at this meeting.

AGREEMENTS
• Hatchery Committees representatives present agreed to continue discussions about fish marking at the Hatchery Committees meeting on November 20, 2013, including developing a timeline and outlining what needs to be done in terms of developing a marking strategy (Item II-B).

REVIEW ITEMS
• There are no items that are currently out for review.

FINALIZED REPORTS
• The final 2013 Broodstock Collection Protocols were distributed to the Hatchery Committees by Kristi Geris on November 4, 2013.
I. Welcome, Agenda Review

Mike Schiewe welcomed the Hatchery Committees and said that the purpose of today’s conference call, as agreed to at the last Hatchery Committees’ meeting on October 16, 2013, is to continue discussions and address comments received on the Chelan PUD 2014 Hatchery M&E Implementation Plan. Schiewe said that a draft Juvenile Carrying Capacity SOA (Attachment B) was also distributed for discussion purposes only. Schiewe said that the Priest Rapids Coordinating Committees Hatchery Sub Committee (PRCC HSC) has also been discussing Hatchery M&E implementation and because of the similarity between certain issues, there was a request to combine the Hatchery Committees’ call and the PRCC HSC’s call. Schiewe reminded everyone that while it is efficient to work through selected issues together, decisions and agreements will ultimately be made in the respective committees. (Note: Due to the limited time and in the interest of continuity in Grant PUD’s discussion, Grant PUD chose to postpone their participation in discussions until the PRCC HSC call scheduled for later in the day.)

II. Chelan PUD

A. Draft Juvenile Carrying Capacity Statement of Agreement (Alene Underwood)

Alene Underwood said that a draft Juvenile Carrying Capacity SOA (Attachment B) was distributed to the Hatchery Committees by Kristi Geris on November 5, 2013. She said that she would like to introduce the concepts of the SOA today, and then hold discussions about the SOA until the Hatchery Committees’ meeting on November 20, 2013. She added that Grant PUD has also developed a similar SOA (for discussion purposes only).

Bill Gale asked how the SOA links to finalizing the M&E Plan, and added that he was concerned that the SOA was not relevant to the purpose of this call. Underwood said that it is not her intention to have a robust discussion about the SOA during today’s call; rather, she felt it was prudent to introduce the SOA as it pertains to a portion of the juvenile component of the M&E Plan. She added that the SOA is intended to clarify how some of the M&E data are used. Underwood noted that Chelan PUD has extended the timeline for approving a new contract; therefore, instead of requesting approval of their 2014 Hatchery M&E Implementation Plan during today’s conference call, as discussed at the Hatchery Committees’ meeting on October 16, 2013, they now have more time and will be requesting
approval of their plan at the Hatchery Committees’ meeting on November 20, 2013. Gale asked if the M&E Plan is contingent on the SOA, and Underwood replied that it is not. She noted that in terms of process, the SOA needs to be presented to the Hatchery Committees at least 10 days prior to the next Hatchery Committees meeting in order to request a vote.

Underwood briefly reviewed the draft Juvenile Carrying Capacity SOA (Attachment B). She said the SOA sets guidelines for estimating carrying capacity and outlines its uses as described in the first three bullets in Attachment B. She noted the four conditions that need to be met for estimating carrying capacity, as described in the second set of bullets in Attachment B. Underwood said that Chelan PUD is open to discuss additional or alternate conditions at the Hatchery Committees’ meeting on November 20, 2013. She said that, currently, the Hatchery Committees do not have an agreed-upon estimate of carrying capacity, and that carrying capacity is an important metric that can be used to inform important management issues.

Underwood reiterated that Chelan PUD will be requesting approval of the SOA at the Hatchery Committees’ meeting on November 20, 2013. Gale suggested including information in the background section of the SOA so that the linkage between the SOA and the M&E Plan is clear. Keely Murdoch agreed, and said that since the M&E Plan has not yet been discussed, it is unclear how the two documents relate.

The Hatchery Committees agreed to review the draft Juvenile Carrying Capacity SOA prior to the Hatchery Committees meeting on November 20, 2013, when Chelan PUD will be requesting approval of the SOA.

B. Chelan PUD 2014 Hatchery M&E Implementation Plan (Alene Underwood)

Alene Underwood displayed a revised draft Chelan PUD 2014 M&E Implementation Plan via WebEx, which included comments received from the USFWS and the CCT (USFWS and CCT comments on the draft M&E Plan were distributed to the Hatchery Committees by Kristi Geris on October 31, 2013). Underwood said that the draft being displayed on WebEx had not yet been distributed because she planned on addressing pending comments and making further revisions based on today’s discussions. Discussions were as follows:
Section 1 Introduction

> **USFWS comment [GW1]**: Will sockeye monitoring be done under a separate contract or as a change order to the existing contract with Washington Department of Fish and Wildlife (WDFW)? How might this affect current contracting deadlines/activities?

Underwood said that she cannot answer these questions at this time. She said the plan is to have a draft addendum for sockeye ready for discussion at the Hatchery Committees meeting on November 20, 2013 (as discussed at the Hatchery Committees meeting on October 16, 2013). Bill Gale asked if sockeye monitoring will be a separate Request for Proposal, and Underwood replied that it would not. She added that at this time, it is unknown who will do the work—first agreement needs to be reached on what the work will be. Mike Tonseth asked if development of the M&E Plan is a requirement of Chelan PUD’s Federal Energy Regulatory Commission license, and Underwood replied that it is not.

Section 1 Introduction

> **CCT comment [kdt1]**: Based on our recent experience during 2013 of unsuccessful genotyping adults to stream of origin, I do not think this is a viable option. Even if it were, genotyping will not provide production estimates for sub-watersheds, as strays spawning in those watersheds (e.g. Chiwawa fish in Nason Creek) will be typed as Chiwawa production when they were actually produced in Nason Creek.

> **USFWS comment [GW2]**: If this is the main mechanism for determining juvenile abundance by major spawning area it needs further discussion in committee, I am not convinced that the genetic approach will work, nor that it is appropriate.

Underwood said that this topic is tied to the Grant PUD M&E Plan, and recommended deferring this discussion until after Chelan PUD has addressed comments specific to their plan.

YN General Comment

Keely Murdoch said that organizing the plan by components makes sense; however, compared to previous approved M&E implementation plans, the plan seems vague regarding what is being done for each objective for each species. She suggested indicating how each objective will be addressed for each species; for example, in Section 2 Aquaculture Monitoring, there are a list of tasks and a list of objectives. She said, however, there is no indication of how each task will address, or achieve, each objective. She added that as
currently written, the reader needs to make assumptions that may, or may not, be correct. Underwood said that Chelan PUD will revise a section to include more explicit details regarding how each objective will be achieved for each species; the revised section will be provided to Geris for distribution to the Hatchery Committees for further discussion and decisions regarding the organization and level of detail to include throughout the entire document.

Section 2.1 Stock Assessment and Broodstock Collection

> CCT comment [kdt2]: This section is titled “Stock Assessment and Broodstock Collection” yet the text does not reference any tasks associated with “Stock Assessment.” This section infers, but does not state, that stock assessment and broodstock collection are concurrent activities with concurrent data collection. Please revise to clarify if brood collection and stock assessment are concurrent activities.

Underwood reviewed edits in redline strikeout (RLSO) that were incorporated to address this comment. Murdoch also noted that in the past, stock assessment and brood collection have not always been run concurrently. Underwood said that Chelan PUD will revise the text to clarify that stock assessment and broodstock collection are not always concurrent activities.

Section 2.2 In-Hatchery Monitoring

> CCT comment [kdt3]: Will precocity be evaluated? This could be useful in assessing optimal growth rates/size to reduce precocity and minimize mini-jack and jack rates.

> USFWS comment [GW3]: What about the residualism/early maturation work that has been funded in the past, how are we assessing this?

Underwood said there are components of ongoing studies for Dryden summer Chinook and Chelan Falls summer Chinook that may address these issues; however, she said that Chelan PUD is not supposing these types of activities as M&E objectives. Gale asked if components of the Biological Opinion (BiOp) require hatchery programs to assess when fish are ready to migrate, or what fish do not migrate, etc. Underwood said that some language about monitoring residualism is already included, but additional language can be incorporated where appropriate. Kirk Truscott added that it seems it would be important to correlate growth rates and size at release to precocity and some of the earlier investigations to indicate that growth rate and size have effects on jacking rates. He added that it seems to be a prudent hatchery component to monitor. Underwood said that Chelan PUD has not
proposed that level of work for all stocks; and added that this type of work would need to be considered in terms of M&E objectives. Gale said that the National Marine Fisheries Service (NMFS) BiOp for spring Chinook has certain requirements to implement an M&E Plan. He said he thinks it is important to link the BiOp to the M&E Plan to ensure that all requirements are being addressed. Underwood said that permits are already referenced in the M&E Plan and that requirements are also included in the document. She added that the language calls out the importance of each component as it relates to the permit. Gale said, however, that specific terms and conditions of the permit are not called out. He added that the language could be more explicit. Underwood said that she does not consider the M&E Plan the appropriate document for that, and added that there are other documents that track permit compliance. She said, although, that components in the M&E Plan can be called out more clearly that are related to permit compliance. Gale said that he feel like it is the Hatchery Committees’ responsibility to provide oversight to the PUDs to make sure they are addressing the terms and conditions within their respective permits. He asked what other documents there are that track permit compliance where the Hatchery Committees have input; Underwood said, for example, the monthly M&E Reports and the annual reports. Gale said that he was looking to provide input on what is planned—not on what has already occurred. Mike Schiewe noted that it is the responsibility of the permitee and NMFS (as the issuer of the permit) to monitor compliance. He then suggested the possible use of a matrix to show the linkage between components of the permit and the M&E Plan. Underwood said that a matrix could be developed; however, based on the language in the permit, she was uncertain of the usefulness. She added that the permit is broad, and includes only a provision to implement an M&E Plan. She said that Chelan PUD will reference specific permit terms and conditions as they relate to hatchery M&E where appropriate.

Section 2.2 In-Hatchery Monitoring > Fish Marking

> CCT comment [kdt4]: As “Fish Marking” is included in this Implementation Plan, a table should be included that details the marking/tagging strategy by production program. Although external marks may not be fully vetted in the Hatchery Committees, a table detailing the current mark/tag strategy would prompt the committee to decide on the mark/tag strategy for 2014.

Underwood said that Chelan PUD’s permit requires that fish will be externally marked. She added that while this topic is important to discuss further, she suggested continuing this
discussion at another time, separate from the M&E Plan discussion. Truscott said that his comment was intended to tee up a process to reach concurrence on a marking strategy. He said, however, if this takes too much time and impedes the progress of the M&E Plan, he will withdraw his comment. Tonseth suggested developing a basic foundation to work with based on the current *U.S. v. Oregon* marking agreement. Underwood said this may be possible; however, the permit may not be consistent with the *U.S. v. Oregon* agreement. Schiewe agreed this information should be made available; however, the question is whether this information is needed in the M&E plan. He added that the point that marking has been continually put off is valid; and suggested planning a discussion for the next Hatchery Committees meeting. Hatchery Committees representatives present agreed to continue discussions about fish marking at the Hatchery Committees meeting on November 20, 2013, including developing a timeline and outlining what needs to be done in terms of developing a marking strategy. Truscott suggested addressing his comment by adding to the end of the first sentence of the *Fish Marking* section, “...and will be included as an addendum to this Plan.” Underwood incorporated the revision, as requested. Gale endorsed the idea of an addendum, and added that when further discussion takes place, he requested that someone speak specifically to NMFS permit requirements as they relate to marking. He added that if the NMFS permit is advising something contrary, or conflicts, with the *U.S. v. Oregon* agreement, it needs to be highlighted now. Murdoch said that this also seems to be in conflict with the Hatchery and Genetic Management Plans, which indicate that conservation plan fish will be adipose fin (ad-) present and safety net fish will be ad-clipped. Underwood said that the HCP indicates that all fish will be externally marked. She said Chelan PUD’s M&E Plan reflects this, and also states, “…or marked as otherwise agreed to by the HCP-HC.” Murdoch said that she will internally discuss acceptable marking strategy language.

Section 3.1 In Freshwater productivity of Supplemented Stocks

> *CCT comment [kdt5]*: How will passive integrated transponder (PIT) tag loss be accounted for?

> *USFWS comment [GW4]*: How is mortality during the winter to spring period accounted for to convert winter migrants to smolts?

> *USFWS comment [GW5]*: How many will be tagged?

> *USFWS comment [GW6]*: How is tag loss accounted for?
USFWS comment [GW7]: Will genetics be utilized to validate the differentiation between summer and spring Chinook smolts…

USFWS comment [GW8]: How many samples are we talking about?

USFWS comment [GW9]: In the case of spring Chinook salmon (SCS) this is confounded by straying that occurs between the tributaries. I.e., a Chiwawa fish that spawns in Nason would produce progeny that will be typed to Chiwawa though the fish was produced elsewhere…

Underwood said that Andrew Murdoch provided additional information to address these comments, and she reviewed the edits that were incorporated in RLSO. Gale asked how Murdoch estimated winter mortality. Underwood said that she did not know, but that she would follow-up with Murdoch to find out.

Section 4.1 Spawning Escapement Estimates > Chiwawa Spring Chinook

CCT comment [kdt7]: So, will carcass recovery bias be used to correct carcass recovery data where it is appropriate? Also, will observer efficiency be accounted for in the redd surveys? If so, will they be based on existing efficiency models or new models? It appears if Chelan PUD staff will be conducting the spring Chinook surveys, which is a departure from the past 10 years or so, making a strong case for a newly developed observer efficiency model.

USFWS comment [GW10]: Who is responsible for reading coded wire tags (CWTs) from SCS carcasses, who reports this data to Regional Mark Information System, what is the timeframe under which this will be done?

Underwood reviewed edits about total number of redds and clarification about who is responsible for data that were incorporated in RLSO. Keely Murdoch noted that the observer efficiency model was based on naïve surveys, and questioned how transferable these data would be. She asked if ground-truthing the model with a new crew might be worthwhile. Tonseth said that the model took into account a broad range of survey experience, from novice to experienced, and regular to seasonal, etc.; and he added, therefore, that the model was designed to account for survey biases. He suggested that it may be worth inviting Andrew Murdoch to present an overview and background about the model to the Hatchery Committees.

Section 4.1 Spawning Escapement Estimates > Wenatchee Summer Chinook
> **CCT comment [kdt8]:** Based on the Introduction Section, this is a census based methodology and should be reiterated in this section.
Underwood reviewed edits in RLSO that were incorporated to address this comment.

### Section 5.1 Data Management

> **CCT comment [kdt10]:** Who is responsible for data entry, data management and quality assurance/quality check (QA/QC)?
Underwood reviewed edits in RLSO that were incorporated to address this comment.

Underwood said that Chelan PUD plans to revise the draft Chelan PUD 2014 M&E Implementation Plan, as discussed, and will provide the revised draft to Geris for distribution to the Hatchery Committees by Friday, November 8, 2013. She said that Chelan PUD will be requesting approval of the revised draft plan at the Hatchery Committees meeting on November 20, 2013.

### III. HCP Administration

#### A. Next Meetings

The next scheduled Hatchery Committees’ meetings are on November 20, 2013 (Douglas PUD); December 18, 2013 (Chelan PUD); and January 15, 2014 (Douglas PUD).

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<tr>
<td>Attachment C</td>
<td>USFWS comments on the revised draft Chelan PUD 2014 M&amp;E Implementation Plan</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
## Attachment A
### List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
</tr>
<tr>
<td>Alene Underwood*</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Catherine Willard</td>
<td>Chelan PUD</td>
</tr>
<tr>
<td>Tom Kahler*</td>
<td>Douglas PUD</td>
</tr>
<tr>
<td>Todd Pearsons</td>
<td>Grant PUD</td>
</tr>
<tr>
<td>Peter Graf</td>
<td>Grant PUD</td>
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<tr>
<td>Shannon Lowry</td>
<td>Grant PUD</td>
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<tr>
<td>Keely Murdoch*</td>
<td>Yakama Nation</td>
</tr>
<tr>
<td>Kirk Truscott*</td>
<td>Colville Confederated Tribes</td>
</tr>
<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
</tbody>
</table>

**Notes:**
* Denotes Hatchery Committees member or alternate
Statement

The Rock Island and Rocky Reach Habitat Conservation Plans’ (HCP) Hatchery Committees (HC) agree that:

1) An estimate of spring Chinook carrying capacity in the Wenatchee Basin and target tributaries is needed to inform management decisions such as spawning escapement and hatchery production.

2) Spring Chinook juvenile productivity data funded under Chelan PUD’s hatchery Monitoring and Evaluation Program will be used to generate an HC approved estimate of carrying capacity provided that the data meet conditions described below.

3) An HC approved estimate of carrying capacity will be used to inform management decisions such as spawning escapement and set the upper limit of mitigation requirements for naturally produced spring Chinook salmon.

Part 2 and 3 of the previous statements will be modified if any of the following occur:

1) The quality of the data collected within the next 5 years have lower precision or accuracy than data collected in previous years using similar methods;

2) The data suggest that survival is density independent or there is insufficient contrast (e.g., variation) in the annual number of spawners;

3) An alternative data set generates a more accurate estimate of carrying capacity (if this occurs, then the HC will use it as the approved estimate of carrying capacity);

4) The estimated carrying capacity of a later life-stage (e.g., smolt or adult) is of sufficient quality (if this occurs, then the HC will use it as the approved estimate of carrying capacity).

Background

Currently, the HC does not have an approved estimate of carrying capacity. Carrying capacity is an important metric that can be used to inform the size of hatchery supplementation programs, spawning escapement, adult management, and other important management issues. The collection of juvenile fish data can help to generate or refine science based estimates of carrying capacity.
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1. INTRODUCTION

The Habitat Conservation Plan (HCP) specifies that a monitoring and evaluation plan will be developed for the hatchery program. The approach to monitoring the hatchery programs was guided by the “Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update” (Hillman et al. 2013) and the “Conceptual Approach to Monitoring and Evaluating the Chelan County Public Utility District Programs” (Murdoch and Peven 2005).

The purpose of this document is to define the tasks associated with the approved scope of work to implement Chelan PUD’s (CPUD’s) hatchery monitoring and evaluation (M&E) plan for 2014. Monitoring and evaluation activities for Lake Wenatchee sockeye in 2014 have not yet been determined. Chelan PUD will submit an addendum to this implementation Plan by February 2014 to address these activities. The work described in this plan has ESA coverage provided by ESA permits 18121, 1347, and 1395. All activities conducted under this Implementation Plan shall adhere to all terms and conditions as specified in the referenced permits. These permits allow for changes to monitoring or research protocols with the caveat that such modifications are approved by NMFS prior to implementing those changes.

The Implementation Plan includes all four components of the M&E Program including: (1) aquaculture monitoring; (2) juvenile monitoring; (3) adult monitoring; and (4) data, analysis and reporting. Under each component are study design elements that will be used to inform the overarching program components. Figure 1 illustrates the relationship of the components and study design elements used to address each component. Table 1 depicts which study design element is being performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

The methods described in this plan differ from previous methodologies in the following ways:

- Emigrant abundance estimates will use newly derived analytical approaches that reduce bias and increase precision to include estimates of emigration during the winter non-trapping periods.
- The yearling smolt production estimates at the lower Wenatchee smolt trap will be apportioned into summer and spring Chinook. Spring Chinook will be apportioned by major spawning areas (i.e., Chiwawa, Nason, White, Little Wenatchee, Icicle and other).
- Spring Chinook spawner abundance estimates will be adjusted for observer efficiency and include estimates of precision.
- Summer Chinook spawner abundance will be based on census counts and be adjusted for observer efficiency and include estimates of precision.
- Steelhead run and spawning escapement estimates will be based on a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates.
Figure 1. The four components of the hatchery monitoring and evaluation program and the study design elements within each component.
Table 1. Study design elements performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

<table>
<thead>
<tr>
<th>Monitoring and evaluation component</th>
<th>Objectives</th>
<th>Study Design Elements</th>
<th>Chiwawa spring Chinook</th>
<th>Wenatchee summer Chinook</th>
<th>Chelan summer Chinook</th>
<th>Methow spring Chinook</th>
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<td></td>
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<td>WDFW CPUD(^1)</td>
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<td>WDFW</td>
<td>WDFW</td>
<td>TBD</td>
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<td>Data management</td>
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<td>WDFW BioAnalysts</td>
<td>WDFW BioAnalysts</td>
<td>TBD</td>
</tr>
</tbody>
</table>

\(^1\)CPUD crews will PIT tag in-hatchery fish.

\(^2\)Because the Chelan summer Chinook program is primarily an augmentation program, monitoring and evaluation efforts focus on straying, release characteristics, and harvest.

\(^3\)Monitoring and evaluation in 2014 will be shared by Grant and Chelan PUDs.
2. AQUACULTURE MONITORING

The Aquaculture monitoring component is comprised of two basic elements: (1) stock assessment and broodstock collection at adult trapping locations and (2) in-hatchery monitoring including spawning, rearing, and release of juveniles. Data collected during these elements primarily support monitoring questions 5.1.1, 8.1.1, 8.2.1, 8.3.1, 8.3.2, 8.4.1, 9.1.1, 9.2.1, 9.3.1 and 9.4.1, but also contribute to monitoring questions 3.2.1, 3.2.2, 6.1.1, 6.2.1, and 6.3.1 (Hillman et al. 2013). These monitoring questions support the following objectives:

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

Objective 6: Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.

Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

Objective 9: Determine if hatchery fish were released at the programmed size and number.

2.1 Stock Assessment and Broodstock Collection

Broodstock collection for Wenatchee summer steelhead, Wenatchee summer Chinook, Methow summer Chinook, Chelan Falls summer Chinook, and Chiwawa River spring Chinook, hatchery programs will occur consistent with the Broodstock Collection Protocol approved annually by the Hatchery Committee (e.g., Tonseth 2013). Trapping locations and timing will be dictated by the annual broodstock collection protocol and the relevant permits. Data collection during broodstock collection will be consistent with Murdoch and Peven (2005). A representative sample of all fish trapped, collected for broodstock, or released back to the river, will be sampled for origin, age, sex, size, and migration timing. Biological sampling of all fish trapped will include presence of internal (CWT or PIT) and external (VIE) tags or marks, scales, length, and sex (determined by ultrasound). PIT tags will be injected into all target species (Chinook and steelhead), whether collected or released. All non-target species will be enumerated daily. Measures of central tendency and spread will be calculated and reported for each metric.

2.2 In-Hatchery Monitoring

The in-hatchery monitoring component will begin when adult fish are collected and retained for broodstock, and ends when juvenile fish are released. Life stage specific in-hatchery survival and growth rates, disease monitoring, and an estimate of the number of fish released will be collected and analyzed according to Murdoch and Peven (2005). Additional data to be collected includes individual lengths and weights of juveniles during monthly sampling, and the weight of
gonadal mass and body of spawned broodstock. Measures of the central tendency and spread will be calculated and reported for each metric.

Fish Marking

All of Chelan PUD’s hatchery fish will be coded-wire tagged (CWT) and externally marked or marked as otherwise agreed to by the HCP-HC. The identification of these hatchery-produced fish is needed for a suite of adult metrics and may be used for adult management and/or fisheries as contemplated by the co-managers.

Using methods described in Keller and Murauskas (2012), hatchery fish will be PIT-tagged (Table 1) at Eastbank Fish Hatchery approximately two to four weeks before the fish are transferred to acclimation ponds (Table 2). Additional PIT-tagging may occur for program specific studies/comparisons as approved by the HSC. The data collected from the PIT-tags will assist in release monitoring, migration timing, juvenile survival, and smolt-to-smolt survival. For all fish marking, quality control check will be performed during and immediately following tagging and prior to release.

Table 1. Wenatchee River basin hatchery program release goals and recommended number of fish PIT tagged.

<table>
<thead>
<tr>
<th>Program</th>
<th>Release goals</th>
<th>Number of fish PIT tagged</th>
<th>PIT tag rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiwawa River spring Chinook</td>
<td>144,026</td>
<td>5,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Wenatchee River steelhead</td>
<td>247,500</td>
<td>15,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Wenatchee River summer Chinook</td>
<td>318,816 (CPUD Program)</td>
<td>20,600²</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td>181,184 (GPUD Program)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional PIT tagging may take place for Chelan PUD approved studies and/or comparisons.

Includes a component of PIT-tagged fish for the NOAA size target study and a component for Grant PUD’s program.

2.3 Release Monitoring

Hatchery fish will be released during smoltification in the spring, typically between 15 April and 1 June. Whenever possible, the exact release dates will coincide with environmental conditions that promote a rapid emigration that minimizes both the potential negative ecological interactions of hatchery fish with naturally produced fish and predation on hatchery fish by avian or other predators. The monitoring data collected for each stock are described below.

Spring Chinook – Chiwawa River

Pre-release sampling data will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring...
questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan (Hillman et al. 2013). PIT tag monitoring of spring Chinook released in the Chiwawa River will occur during the release period (April). Juvenile Chinook will pass through two 92-cm diameter PIT-tag antennas connected to Allflex 310 readers and Quantitative Sampling Technologies (QST) QuBE data logger. The release location and type (i.e., volitional, forced, or trucked) are recorded for each observation file created and uploaded to the PTAGIS database maintained by the Pacific States Marine Fisheries Commission after each year of release. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Spring Chinook – Methow**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Steelhead–Wenatchee River Basin**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Monitoring of steelhead released in the Wenatchee River basin will occur during loading of fish into transport trucks, unless fish are released directly into the Chiwawa River. Steelhead will pass through a series of PIT-tag antennas, each connected to a data logger, thereby allowing the creation of a PIT-tag observation file for each truckload of steelhead consisting of unique tag records. The release location (stream and rkm), release type (volitional or forced), and hatchery group (HxH or WxW) will be recorded for each tag file created. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. However, because PIT-detection efficiency during loading will not be 100%, the number of fish in each truckload will be estimated using volumetric displacement. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Chinook – Wenatchee River and Chelan Falls**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions
9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

2.4 Post-Release Monitoring and Survival Analysis

Data will be collected during rearing, acclimation, release, and the emigration period that may prove valuable in explaining variability in adult survival (Murdoch and Peven 2005). Rearing densities have been reported to influence the survival of hatchery fish (Martin and Wertheimer 1989; Banks 1994) and may also be linked to disease prevalence during rearing (Banks 1994; Ogut and Reno 2004). Acclimation of hatchery fish before release has been found to increase survival and reduce stray rates when the duration of the acclimation period is sufficient (Clarke et al. 2010, 2012; Rosenberger et al. 2013). These metrics (i.e., rearing density and acclimation period) will be collected annually to determine their influence on fish survival.

PIT-tagged groups of hatchery fish will be used to estimate survival during their emigration. Variation in survival during the emigration period may also inform observed adult survival rates. Survival during emigration or smolt-to-smolt survival and travel will be estimated using interrogation or release files and the standard Cormack-Jolly-Seber (CJS) estimator. CJS estimates are termed apparent survival estimates because it is unknown whether fish suffered mortality (e.g., size or time of release) or simply failed to emigrate (i.e., residualized or were precocial males). In the latter case, the proportion of PIT-tagged fish detected in the Wenatchee or Columbia rivers after the emigration period is complete may explain variation in smolt-to-smolt survival rates. The post-release performance of PIT-tag groups will be estimated and monitored annually, consistent with methods in Murdoch and Peven (2005).

3. Juvenile Monitoring

Data collected during these elements primarily support monitoring questions 2.1.1 and 2.2.1. These monitoring questions support the following objective:

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

3.1 Freshwater productivity of Supplemented Stocks

Steelhead, Spring Chinook, and Summer Chinook

The freshwater productivity of supplemented stocks in the Wenatchee Basin will be monitored using smolt traps in the Chiwawa River and the lower Wenatchee River consistent with historical trapping efforts. Additionally, a newly derived analytical method which uses PIT-tag mark-recapture data will be utilized that reduces bias and increases precision by including...
estimates of emigration during the winter non-trapping periods. Parr will be PIT tagged in the fall, based on the spatial distribution and abundance estimated during parr snorkel surveys, to generate estimates of migration during the non-trapping periods in Chiwawa River. Using PIT tagged parr detections at the lower Chiwawa (?) PIT array during the non-trapping period, the total number of PIT-tagged parr that emigrated will be estimated, and then expanded by the tag rate. PIT-tag mark-recapture trials conducted during the trapping period in the fall will also be used to estimate detection probabilities of the PIT-tag array at a given discharge level.

Abundance and variance will be estimated using the same methods as those used in the smolt trap estimate. The estimated abundance and variance from each method and time period (trapping and non-trapping periods) will be summed to estimate a total production estimate. Under the proposed methodology, unbiased estimates of abundance during the entire migration period will be generated with relatively high precision (PSE < 15%), which is consistent with NOAA Fisheries’ recommendations (Crawford and Rumsey 2011). Historical estimates will be revised using the new estimation techniques.

All captured spring Chinook that are trapped at the lower Wenatchee trap will be assigned to stocks using genetic techniques. The results from the genetic stock partitioning will be applied to the overall estimated number of migrating spring Chinook to generate freshwater productivity by stock.

3.2 Tributary Evaluations

Chiwawa River

Snorkel surveys will be utilized to estimate summer parr abundance within the Chiwawa River basin. This approach has been used in the Chiwawa River basin since 1992. In parallel to addressing Objective 2 additional juvenile data can help to assess the habitat carrying capacity in each tributary. This information can add value to the overall M&E plans and help inform management decisions.

Sampling will follow a stratified random sampling design. Landscape classification will be used to stratify streams in the Chiwawa basin that support juvenile Chinook salmon. In the Chiwawa River basin, WDFW found that classification "explained" most of the variability in fish numbers caused by geology, land type, valley bottom type, stream state condition, and habitat type (Hillman 2013). The same classification method was used to identify sections of the Little Wenatchee River (reference area) that corresponded to discrete reaches in the supplemented basins, but that had no release of hatchery Chinook. Consistent with previous efforts, habitat types within each land-class or reach will be identified and quantified annually. At least three units of each habitat type within each reach will be randomly selected for estimating densities of salmon and trout. Thus, overall sampling consists of a stratified-random sampling design, which increases the accuracy and precision of population estimates.
Densities of salmon and trout will be estimated in August and September by direct underwater observation within the randomly-selected habitat units. Underwater methods will follow those described by Thurow (1994), Dolloff et al. (1996), and O’Neal (2007). Habitat surface areas and volumes will be estimated during fish sampling. Numbers of fish counted will be adjusted for detection probabilities using the models published in Hillman et al. (1992). For each habitat type within a state type and reach stratum, the mean density of salmon and trout will be calculated as the ratio of mean numbers to mean area or volume sampled (Cochran 1977). Total numbers of fish will be estimated per habitat type within a state type and reach stratum as the product of mean density of fish in a given habitat type, times total area or volume of that habitat type within the stratum (Cochran 1977). Total numbers of fish within the supplemented basin will be estimated as the sum of all population numbers per habitat type in state type/reach strata. Bootstrapping methods will be utilized to estimate variance and percent errors (based on 95% confidence interval) for total numbers of fish.

4. ADULT MONITORING

The Adult monitoring component is comprised of two basic elements: (1) estimating spawning escapement and (2) harvest monitoring. Data collected during these elements primarily support monitoring questions 1.1.1, 1.2.1, 2.1.1, 2.2.1, 3.2.1, 3.2.2, 4.1.1, 5.2.1, 5.3.1, 5.3.2, 6.3.1, but also contribute data to monitoring questions 6.1.1, 6.2.1, 8.1.1, 8.2.1, 8.4.1, 10.1.1, 10.1.2, 10.1.3 and 10.1.4 (Hillman et al. 2013). These monitoring questions support the following objectives:

Objective 1: Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 4: Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

Objective 6: Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.
Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

Objective 10: Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

4.1 Spawning Escapement Estimates

Chelan and Methow Summer/Fall Chinook
Chinook spawning ground surveys will be conducted in the Chelan River and Methow subbasin (see Appendix A for survey reaches). Spawning ground surveys will be conducted via foot or raft beginning late September and continuing until spawning has ended (usually mid-November). Frequency of surveys will vary depending on method.

Summer Chinook carcass surveys will be conducted in the Chelan and Methow subbasins beginning in September and ending in November consistent with methods described in Murdoch and Peven (2005). A representative sample (i.e., 20%) of spawners as determined by spawner abundance and distribution (typically 100% of the carcasses encountered in the Chelan and Methow) will be sampled. Biological data will include collection of scale samples for age analysis, length measurements (POH and FKL), gender, egg voidance, and a check for tags or marks. DNA samples (five-hole punches from operculum) will be collected as needed to address different objectives. These data will be used to assess length-at-age, size-at-age, egg voidance, origin (hatchery or naturally produced), stray rates, and genetics. All carcass surveys will be conducted within the historical reaches.

Wenatchee Steelhead
The number of hatchery and naturally produced steelhead returning to the Wenatchee Basin will be estimated using a PIT tag mark recapture model. The estimated spawner abundance for the Wenatchee steelhead population will be a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates. Steelhead redd counts will be conducted weekly in all major spawning areas in the mainstem Wenatchee River (see Appendix A for survey reaches); minor spawning areas in the mainstem Wenatchee River will be surveyed once, based on the spawn timing in adjacent major spawning areas, to estimate redd abundance at peak spawning. The estimated total number of redds in the Wenatchee River mainstem will be expanded by the sex ratio of the population to estimate spawner abundance. Spawner abundance in tributaries of the Wenatchee River will be estimated using a PIT tag mark recapture model.

Chiwawa Spring Chinook
Chiwawa spring Chinook spawning escapement will be estimated based on the total number of redds found in each tributary (Murdoch et al. 2010) using methods described in Murdoch and Peven (2005). Redd and carcass surveys will be conducted simultaneously from the first week of...
August through September (see Appendix A for survey reaches). Redd-based estimates assume that each female constructs one redd, which WDFW has found to be appropriate for this population (Murdoch et al. 2009). Redd counts will be expanded and the number of hatchery and naturally produced fish will be estimated using methods in Murdoch et al. (2010). Carcasses encountered during surveys will be sampled according to methods outlined in Murdoch and Peven (2005). In addition, all redds and female carcasses will be geo-referenced using hand-held GPS devices. Carcass recovery bias has been detected in the Chiwawa spring Chinook population (Murdoch et al. 2010) and if not corrected will bias estimates of hatchery and naturally produced fish on the spawning grounds. While it may be appropriate to correct for carcass recovery bias for some monitoring questions (e.g., 2.2), when comparisons to reference populations are made in monitoring questions 1.1 and 1.2, carcass bias will not be corrected because other monitoring programs have not corrected for a similar bias.

**Wenatchee Summer Chinook**

Wenatchee summer Chinook spawning ground counts will begin the last week in September and continue through the end of spawning in November (see Appendix A for survey reaches). Redd counts will be conducted by foot or raft depending on stream size, flow, and density of spawners within the stream reach. All stream reaches will be surveyed once per week. Redd data will be collected using methods described in Murdoch and Peven (2005). Salmon carcass data collected during spawning ground surveys will be consistent with Murdoch and Peven (2005).

**Redd Observer Efficiency and Fish per Redd Value**

Estimating redd observer efficiency is a costly and laborious task. Models generated for spring Chinook salmon are not applicable for summer Chinook because of differences in river characteristics of spawning locations. Small unmanned air systems (e.g., four blade helicopter) have been used successfully to document the abundance and distribution of fall Chinook redds in the Snake River (P. Groves, Idaho Power, Pers. comm.). We intend to use this technology to determine the true number of summer Chinook redds in selected reaches of the Wenatchee River. Weekly aerial photos of selected reaches will be digitally overlaid to document existing and newly constructed redds. Weekly ground-based estimates and the true number of redds will be compared in order to determine observer efficiency. Weekly river characteristics (e.g., channel width, water depth, discharge, visibility, and habitat complexity), observer experience, and survey effort will be incorporated into a model to predict observer efficiency in all river reaches. Predicted redd observer efficiency for each river reach will be used to expand ground-based redd counts to estimate the total reach redd count. Aerial photographs and ground-based surveys will also be used to estimate redd life for each river reach. The estimated spawner abundance in the Wenatchee River and an associated level of precision will be calculated using the estimated total redd count.
for each reach, mean redd life, and the sex ratio of the population similar to methods described in Millar et al. (2012).

4.2 Harvest Reporting
In years when the expected hatchery adult returns are in excess of the levels needed to meet the hatchery program goals (i.e., broodstock and/or escapement), surplus fish may be available for harvest. Harvesting or removal of surplus hatchery fish may have benefits to the natural populations by reducing potential negative ecological and genetic impacts (e.g., density dependent effects, loss of fitness, and loss of genetic variation). The contribution of hatchery fish to fisheries will be monitored using CWT recoveries on a brood-year basis supporting Objective 10.

To obtain the necessary data to determine if the harvest rates are meeting objectives, a statistically valid creel program will be designed and implemented for all sport and/or conservation fisheries in the Upper Columbia River to estimate harvest of hatchery fish from both Chelan and Grant County PUD funded hatchery programs (Murdoch and Peven 2005). Information collected during creel surveys are an integral component to calculating the HRR (Objective 3), particularly given most CWT recoveries for PUD mitigation programs occur in the Upper Columbia River and its tributaries, with the exception of summer Chinook where most CWT recoveries occur in ocean fisheries. Because of considerable time lags in reporting of CWT’s to the Regional Marking Information System (RMIS) database, it requires an ongoing query of recovery data until the number of estimated fish does not change.

5. Data Management, Analysis, and Reporting

5.1 Data Management
A database system has been developed in Microsoft Access that manages all the monitoring data collected for hatchery evaluations. The database will contain and manage all data associated with aquaculture monitoring, juvenile monitoring, and adult monitoring.

All data entered into the database are evaluated for quality control and quality assurance. Quality control checks using analyses such as modified Z-scores, boxplots, and the Generalized Extreme Studentized Deviate Procedure (Iglewicz and Hoaglin 1993) will be conducted for all data entry. In the event outliers are identified, discussion will occur on whether identified outliers are true data points or transcription errors. This process ensures that the data used to test statistical hypotheses are correct and accurate.

5.2 Data Analysis
The analyses proposed are consistent with the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update (Hillman et al. 2013). Each of the objectives will be addressed
using the appropriate statistical tests, as well as graphic analyses that convey relevant information.

5.3 Reporting
An annual M&E report will be generated following the completion of each calendar year and will be available for HCP HC review by June 1 of the following year. Additionally, monthly progress reports will be made available to the HCP HC.
6. References


APPENDIX A

Designated survey reaches for Methow subbasin summer Chinook spawning ground surveys.

<table>
<thead>
<tr>
<th>River</th>
<th>Reach</th>
<th>Code</th>
<th>RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methow</td>
<td>Mouth to Methow Bridge</td>
<td>M1</td>
<td>0.0-14.78</td>
</tr>
<tr>
<td></td>
<td>Methow Bridge to Carlton Bridge</td>
<td>M2</td>
<td>14.78-27.17</td>
</tr>
<tr>
<td></td>
<td>Carlton Bridge to Twisp Bridge</td>
<td>M3</td>
<td>27.17-39.55</td>
</tr>
<tr>
<td></td>
<td>Twisp Bridge to MVID</td>
<td>M4</td>
<td>39.55-44.85</td>
</tr>
<tr>
<td></td>
<td>MVID to Winthrop Bridge</td>
<td>M5</td>
<td>44.85-49.80</td>
</tr>
<tr>
<td></td>
<td>Winthrop Bridge to Hatchery Dam</td>
<td>M6</td>
<td>49.80-51.55</td>
</tr>
</tbody>
</table>

Designated survey reaches for Wenatchee River basin summer Chinook spawning grounds surveys. Asterisks denotes reaches where redd observer efficiency will be assessed.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Bridge</td>
<td>54.20-53.58</td>
</tr>
<tr>
<td></td>
<td>Bridge to Swamp *</td>
<td>53.58-52.66</td>
</tr>
<tr>
<td></td>
<td>Swamp to Chiwawa River</td>
<td>52.66-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Schugart Flats</td>
<td>48.39-47.93</td>
</tr>
<tr>
<td></td>
<td>Schugart Flats to Old Plain Bridge</td>
<td>47.93-46.21</td>
</tr>
<tr>
<td></td>
<td>Old Plain Bridge to RR Bridge</td>
<td>46.21-41.91</td>
</tr>
<tr>
<td></td>
<td>RR Bridge to RR Tunnel</td>
<td>41.91-39.28</td>
</tr>
<tr>
<td></td>
<td>RR Tunnel to Swing Pool *</td>
<td>39.28-36.67</td>
</tr>
<tr>
<td></td>
<td>Swing Pool to Turnwater Br</td>
<td>36.67-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground *</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Turnwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Penstock Br</td>
<td>30.91-28.66</td>
</tr>
<tr>
<td></td>
<td>Penstock Br to Icicle Road Br *</td>
<td>28.66-25.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Icicle Mouth</td>
<td>26.43-25.61</td>
</tr>
<tr>
<td></td>
<td>Icicle Mouth to Boat Takeout *</td>
<td>25.61-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Br</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Br to Irrigation Flume *</td>
<td>23.90-22.77</td>
</tr>
<tr>
<td></td>
<td>Irrigation Flume to Peshastin Br</td>
<td>22.77-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Br to Dryden Dam *</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Williams Canyon</td>
<td>17.76-15.54</td>
</tr>
<tr>
<td></td>
<td>Williams Canyon to Upper Cashmere Br</td>
<td>15.54-10.22</td>
</tr>
<tr>
<td></td>
<td>Upper Cashmere Br to Lower Cashmere Br</td>
<td>10.22-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Br to Old Monitor Br *</td>
<td>9.49-7.12</td>
</tr>
<tr>
<td></td>
<td>Old Monitor Br to Sleepy Hollow Br</td>
<td>7.12-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Br to River Bend *</td>
<td>3.27-1.73</td>
</tr>
<tr>
<td></td>
<td>River Bend to Siphon</td>
<td>1.73-1.29</td>
</tr>
<tr>
<td></td>
<td>Siphon to Mouth</td>
<td>1.29-0.45</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee Basin spring Chinook spawning grounds surveys.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td>Buck Cr to Phelps Cr</td>
<td>36.39-33.46</td>
</tr>
<tr>
<td>C6</td>
<td>Phelps Cr (Trinity) to Maple Cr Br</td>
<td>33.46-29.64</td>
</tr>
<tr>
<td>C5</td>
<td>Maple Cr Br to Atkinson Flats</td>
<td>29.64-26.59</td>
</tr>
<tr>
<td>C4</td>
<td>Atkinson Flats to Schaefer Cr</td>
<td>26.59-24.24</td>
</tr>
<tr>
<td>C3</td>
<td>Schaefer Cr to Rock Cr Campground</td>
<td>24.24-22.97</td>
</tr>
<tr>
<td>R1 - Rock</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-1.05</td>
</tr>
<tr>
<td>K1 - Chikamin</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-0.68</td>
</tr>
<tr>
<td>C1</td>
<td>Grouse Cr to Mouth</td>
<td>12.27-0.00</td>
</tr>
</tbody>
</table>

**Chiwawa River and Tributaries (Rock and Chikamin)**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>N4</td>
<td>White Pine Creek to Lower R.R. Bridge</td>
<td>16.09-13.68</td>
</tr>
<tr>
<td>N3</td>
<td>Lower R.R. Bridge to Hwy 2 Bridge</td>
<td>13.68-9.13</td>
</tr>
<tr>
<td>N2</td>
<td>Hwy 2 Bridge to Kahler Cr</td>
<td>9.13-4.46</td>
</tr>
<tr>
<td>N1</td>
<td>Kahler Cr to Mouth</td>
<td>4.46-0.00</td>
</tr>
</tbody>
</table>

**Nason Creek**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>H4</td>
<td>Falls to Grasshopper Meadows</td>
<td>21.16-19.78</td>
</tr>
<tr>
<td>T1</td>
<td>Boulder field to Mouth</td>
<td>0.43-0.00</td>
</tr>
<tr>
<td>H3</td>
<td>Grasshopper Meadows to Napequa River</td>
<td>19.78-17.59</td>
</tr>
<tr>
<td>Q1 - Napequa</td>
<td>Take out to Mouth</td>
<td>0.91-0.00</td>
</tr>
<tr>
<td>H2</td>
<td>Napequa River to Sears Cr Bridge</td>
<td>17.59-11.97</td>
</tr>
<tr>
<td>H1</td>
<td>Sears Cr Bridge to Mouth</td>
<td>11.97-0.00</td>
</tr>
</tbody>
</table>

**White River and Tributaries (Panther and Napequa)**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3</td>
<td>Rainy Cr to Lost Cr</td>
<td>10.78-6.74</td>
</tr>
<tr>
<td>L2</td>
<td>Lost Cr to Old Fish Weir</td>
<td>6.74-2.13</td>
</tr>
<tr>
<td>L1</td>
<td>Old Fish Weir to Mouth</td>
<td>2.13-0.00</td>
</tr>
</tbody>
</table>

**Little Wenatchee River**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River</td>
<td>54.20-48.39</td>
</tr>
</tbody>
</table>

**Upper Wenatchee River**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>Metal bridge to Mouth</td>
<td>1.0 – 0.0</td>
</tr>
</tbody>
</table>

**Chiwaukum Creek**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>Hatchery to Mouth</td>
<td>3.02-0.00</td>
</tr>
</tbody>
</table>

**Icicle River**

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1 - Ingalls</td>
<td>Trailhead to mouth</td>
<td>0.64-0.00</td>
</tr>
<tr>
<td>P2</td>
<td>Ingalls Creek to Camas Cr</td>
<td>9.14-5.63</td>
</tr>
<tr>
<td>P1</td>
<td>Camas Cr to Mouth</td>
<td>5.63-0.00</td>
</tr>
</tbody>
</table>

**Peshastin Creek and Tributaries (Ingalls Creek)**
Designated survey reaches for Wenatchee River basin steelhead spawning grounds surveys. Asterisks denote index reaches. Spawning escapements in tributaries will be estimates using PIT-tag arrays.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River*</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Tumwater Bridge*</td>
<td>48.39-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground*</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Icicle Road Bridge</td>
<td>30.91-26.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Leavenworth boat ramp*</td>
<td>26.43-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Bridge</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Bridge to Peshastin Bridge</td>
<td>23.90-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Bridge to Dryden Dam</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Lower Cashmere Bridge</td>
<td>17.76-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Bridge to Sleepy Hollow Bridge *</td>
<td>9.49-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Bridge to Mouth</td>
<td>3.27-0.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tributary</th>
<th>River mile of PIT tag array</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Creek</td>
<td>0.54</td>
</tr>
<tr>
<td>Peshastin Creek</td>
<td>1.91</td>
</tr>
<tr>
<td>Chumstick Creek</td>
<td>0.31</td>
</tr>
<tr>
<td>Icicle River</td>
<td>0.26</td>
</tr>
<tr>
<td>Chiwaukum Creek</td>
<td>0.24</td>
</tr>
<tr>
<td>Chiwawa River</td>
<td>0.58</td>
</tr>
<tr>
<td>Nason Creek</td>
<td>0.52</td>
</tr>
<tr>
<td>Little Wenatchee River</td>
<td>1.74</td>
</tr>
<tr>
<td>White River</td>
<td>1.65</td>
</tr>
</tbody>
</table>
Chelan County PUD Hatchery Monitoring and Evaluation Implementation Plan 2014

Prepared by:
Alene Underwood and Catherine Willard

Draft October 2013
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1. **INTRODUCTION**

The Habitat Conservation Plan (HCP) specifies that a monitoring and evaluation plan will be developed for the hatchery program. The approach to monitoring the hatchery programs was guided by the "Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update" (Hillman et al. 2013) and the “Conceptual Approach to Monitoring and Evaluating the Chelan County Public Utility District Programs” (Murdoch and Peven 2005).

The purpose of this document is to define the tasks associated with the approved scope of work to implement Chelan PUD's (CPUD's) hatchery monitoring and evaluation (M&E) plan for 2014. Monitoring and evaluation activities for Lake Wenatchee sockeye in 2014 have not yet been determined. Chelan PUD will submit an addendum to this implementation Plan by February 2014 to address these activities. The work described in this plan has ESA coverage provided by ESA permits 18121, 1347, and 1395. All activities conducted under this Implementation Plan shall adhere to all terms and conditions as specified in the referenced permits. These permits allow for changes to monitoring or research protocols with the caveat that such modifications are approved by NMFS prior to implementing those changes.

The Implementation Plan includes all four components of the M&E Program including: (1) aquaculture monitoring; (2) juvenile monitoring; (3) adult monitoring; and (4) data, analysis and reporting. Under each component are study design elements that will be used to inform the overarching program components. Figure 1 illustrates the relationship of the components and study design elements used to address each component. Table 1 depicts which study design element is being performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

The methods described in this plan differ from previous methodologies in the following ways:

- Emigrant abundance estimates will use newly derived analytical approaches that reduce bias and increase precision to include estimates of emigration during the winter non-trapping periods.
- The yearling smolt production estimates at the lower Wenatchee smolt trap will be apportioned into summer and spring Chinook. **Spring Chinook will be apportioned by major spawning areas (i.e., Chiwawa, Nason, White, Little Wenatchee, Icicle and other).**
- Spring Chinook spawner abundance estimates will be adjusted for observer efficiency and include estimates of precision.
- Summer Chinook spawner abundance will be based on census counts and be adjusted for observer efficiency and include estimates of precision.

Comment [kdt1]: Based on our recent experience during 2013 of unsuccessful genotyping adults to stream of origin I don't think this is a viable option. Even if it were, genotyping will not provide production estimates for sub-watersheds, as strays spawning in those watersheds (e.g. Chiwawa fish in Nason Creek) will be typed as Chiwawa production when they were actually produced in Nason Creek.
• Steelhead run and spawning escapement estimates will be based on a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates.

Figure 1. The four components of the hatchery monitoring and evaluation program and the study design elements within each component.
Table 1. Study design elements performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

<table>
<thead>
<tr>
<th>Monitoring and evaluation component</th>
<th>Objectives</th>
<th>Study Design Elements</th>
<th>Chiwawa spring Chinook</th>
<th>Wenatchee summer Chinook</th>
<th>Chelan summer Chinook</th>
<th>Methow spring Chinook</th>
<th>Wenatchee Steelhead</th>
<th>Wenatchee Sockeye</th>
</tr>
</thead>
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<td>WDFW CPUD²</td>
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</table>

¹CPUD crews will PIT tag in-hatchery fish.
²Because the Chelan summer Chinook program is primarily an augmentation program, monitoring and evaluation efforts focus on straying, release characteristics, and harvest.
³Monitoring and evaluation in 2014 will be shared by Grant and Chelan PUDs.
2. AQUACULTURE MONITORING

The Aquaculture monitoring component is comprised of two basic elements: (1) stock assessment and broodstock collection at adult trapping locations and (2) in-hatchery monitoring including spawning, rearing, and release of juveniles. Data collected during these elements primarily support monitoring questions 5.1.1, 8.1.1, 8.2.1, 8.3.1, 8.3.2, 8.4.1, 9.1.1, 9.2.1, 9.3.1 and 9.4.1, but also contribute to monitoring questions 3.2.1, 3.2.2, 6.1.1, 6.2.1, and 6.3.1 (Hillman et al. 2013). These monitoring questions support the following objectives:

**Objective 3:** Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

**Objective 5:** Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

**Objective 6:** Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.

**Objective 8:** Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

**Objective 9:** Determine if hatchery fish were released at the programmed size and number.

2.1 Stock Assessment and Broodstock Collection

Broodstock collection for Wenatchee summer steelhead, Wenatchee summer Chinook, Methow summer Chinook, Chelan Falls summer Chinook, and Chiwawa River spring Chinook, hatchery programs will occur consistent with the Broodstock Collection Protocol approved annually by the Hatchery Committee (e.g., Tonseth 2013). Trapping locations and timing will be dictated by the annual broodstock collection protocol and the relevant permits. Data collection during broodstock collection will be consistent with Murdoch and Peven (2005). A representative sample of all fish trapped, collected for broodstock, or released back to the river, will be sampled for origin, age, sex, size, and migration timing. Biological sampling of all fish trapped will include presence of internal (CWT or PIT) and external (VIE) tags or marks, scales, length, and sex (determined by ultrasound). PIT tags will be injected into all target species (Chinook and steelhead), whether collected or released. All non-target species will be enumerated daily. Measures of central tendency and spread will be calculated and reported for each metric.

2.2 In-Hatchery Monitoring

The in-hatchery monitoring component will begin when adult fish are collected and retained for broodstock, and ends when juvenile fish are released. Life stage specific in-hatchery survival and growth rates, disease monitoring, and an estimate of the number of fish released will be collected and analyzed according to Murdoch and Peven (2005). Additional data to be collected includes individual lengths and weights of juveniles during monthly sampling, and the weight of...
gonadal mass and body of spawned broodstock. Measures of the central tendency and spread will be calculated and reported for each metric.

**Fish Marking**

All of Chelan PUD’s hatchery fish will be coded-wire tagged (CWT) and externally marked or marked as otherwise agreed to by the HCP-HC. The identification of these hatchery-produced fish is needed for a suite of adult metrics and may be used for adult management and/or fisheries as contemplated by the co-managers.

Using methods described in Keller and Murauskas (2012), hatchery fish will be PIT-tagged (Table 1) at Eastbank Fish Hatchery approximately two to four weeks before the fish are transferred to acclimation ponds (Table 2). Additional PIT-tagging may occur for program specific studies/comparisons as approved by the HSC. The data collected from the PIT-tags will assist in release monitoring, migration timing, juvenile survival, and smolt-to-smolt survival. For all fish marking, quality control check will be performed during and immediately following tagging and prior to release.

Table 1. Wenatchee River basin hatchery program release goals and recommended number of fish PIT tagged.

<table>
<thead>
<tr>
<th>Program</th>
<th>Release goals</th>
<th>Number of fish PIT tagged</th>
<th>PIT tag rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiwawa River spring Chinook</td>
<td>144,026</td>
<td>5,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Wenatchee River steelhead</td>
<td>247,500</td>
<td>15,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Wenatchee River summer Chinook</td>
<td>318,816 (CPUD Program) 181,184 (GPUD Program)</td>
<td>20,600^2</td>
<td>4.1</td>
</tr>
</tbody>
</table>

^1 Additional PIT tagging may take place for Chelan PUD approved studies and/or comparisons.
^2 Includes a component of PIT-tagged fish for the NOAA size target study and a component for Grant PUD’s program.

### 2.3 Release Monitoring

Hatchery fish will be released during smoltification in the spring, typically between 15 April and 1 June. Whenever possible, the exact release dates will coincide with environmental conditions that promote a rapid emigration that minimizes both the potential negative ecological interactions of hatchery fish with naturally produced fish and predation on hatchery fish by avian or other predators. The monitoring data collected for each stock are described below.

**Spring Chinook – Chiwawa River**

Pre-release sampling data will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring
questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan (Hillman et al. 2013). PIT tag monitoring of spring Chinook released in the Chiwawa River will occur during the release period (April). Juvenile Chinook will pass through two 92-cm diameter PIT-tag antennas connected to Allflex 310 readers and Quantitative Sampling Technologies (QST) QuBE data logger. The release location and type (i.e., volitional, forced, or trucked) are recorded for each observation file created and uploaded to the PTAGIS database maintained by the Pacific States Marine Fisheries Commission after each year of release. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Spring Chinook – Methow**
Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Steelhead–Wenatchee River Basin**
Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Monitoring of steelhead released in the Wenatchee River basin will occur during loading of fish into transport trucks, unless fish are released directly into the Chiwawa River. Steelhead will pass through a series of PIT-tag antennas, each connected to a data logger, thereby allowing the creation of a PIT-tag observation file for each truckload of steelhead consisting of unique tag records. The release location (stream and rkm), release type (volitional or forced), and hatchery group (HxH or WxW) will be recorded for each tag file created. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. However, because PIT-detection efficiency during loading will not be 100%, the number of fish in each truckload will be estimated using volumetric displacement. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Chinook – Wenatchee River and Chelan Falls**
Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions
9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

2.4 Post-Release Monitoring and Survival Analysis
Data will be collected during rearing, acclimation, release, and the emigration period that may prove valuable in explaining variability in adult survival (Murdoch and Peven 2005). Rearing densities have been reported to influence the survival of hatchery fish (Martin and Wertheimer 1989; Banks 1994) and may also be linked to disease prevalence during rearing (Banks 1994; Ogut and Reno 2004). Acclimation of hatchery fish before release has been found to increase survival and reduce stray rates when the duration of the acclimation period is sufficient (Clarke et al. 2010, 2012; Rosenberger et al. 2013). These metrics (i.e., rearing density and acclimation period) will be collected annually to determine their influence on fish survival.

PIT-tagged groups of hatchery fish will be used to estimate survival during their emigration. Variation in survival during the emigration period may also inform observed adult survival rates. Survival during emigration or smolt-to-smolt survival and travel will be estimated using interrogation or release files and the standard Cormack-Jolly-Seber (CJS) estimator. CJS estimates are termed apparent survival estimates because it is unknown whether fish suffered mortality (e.g., size or time of release) or simply failed to emigrate (i.e., residualized or were precocial males). In the latter case, the proportion of PIT-tagged fish detected in the Wenatchee or Columbia rivers after the emigration period is complete may explain variation in smolt-to-smolt survival rates. The post-release performance of PIT-tag groups will be estimated and monitored annually, consistent with methods in Murdoch and Peven (2005).

3. JUVENILE MONITORING
Data collected during these elements primarily support monitoring questions 2.1.1 and 2.2.1. These monitoring questions support the following objective:

**Objective 2:** Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

3.1 Freshwater productivity of Supplemented Stocks
Steelhead, Spring Chinook, and Summer Chinook
The freshwater productivity of supplemented stocks in the Wenatchee Basin will be monitored using smolt traps in the Chiwawa River and the lower Wenatchee River consistent with historical trapping efforts. Additionally, a newly derived analytical method which uses PIT-tag mark-recapture data will be utilized that reduces bias and increases precision by including
estimates of emigration during the winter non-trapping periods. Parr will be PIT tagged in the fall, based on the spatial distribution and abundance estimated during parr snorkel surveys, to generate estimates of migration during the non-trapping periods in Chiwawa River. Using PIT tagged parr detections at the lower PIT array during the non-trapping period, the total number of PIT-tagged parr that emigrated will be estimated, and then expanded by the tag rate. PIT-tag mark-recapture trials conducted during the trapping period in the fall will also be used to estimate detection probabilities of the PIT-tag array at a given discharge level. Abundance and variance will be estimated using the same methods as those used in the smolt trap estimate. The estimated abundance and variance from each method and time period (trapping and non-trapping periods) will be summed to estimate a total production estimate. Under the proposed methodology, unbiased estimates of abundance during the entire migration period will be generated with relatively high precision (PSE < 15%), which is consistent with NOAA Fisheries’ recommendations (Crawford and Rumsey 2011). Historical estimates will be revised using the new estimation techniques.

All captured spring Chinook that are trapped at the lower Wenatchee trap will be assigned to stocks using genetic techniques. The results from the genetic stock partitioning will be applied to the overall estimated number of migrating spring Chinook to generate freshwater productivity by stock.

3.2 Tributary Evaluations

Chiwawa River
Snorkel surveys will be utilized to estimate summer parr abundance within the Chiwawa River basin. This approach has been used in the Chiwawa River basin since 1992. In parallel to addressing Objective 2 additional juvenile data can help to assess the habitat carrying capacity in each tributary. This information can add value to the overall M&E plans and help inform management decisions.

Sampling will follow a stratified random sampling design. Landscape classification will be used to stratify streams in the Chiwawa basin that support juvenile Chinook salmon. In the Chiwawa River basin, WDFW found that classification "explained" most of the variability in fish numbers caused by geology, land type, valley bottom type, stream state condition, and habitat type (Hillman 2013). The same classification method was used to identify sections of the Little Wenatchee River (reference area) that corresponded to discrete reaches in the supplemented basins, but that had no release of hatchery Chinook. Consistent with previous efforts, habitat types within each land-class or reach will be identified and quantified annually. At least three units of each habitat type within each reach will be randomly selected for estimating densities of salmon and trout. Thus, overall sampling consists of a stratified-random sampling design, which increases the accuracy and precision of population estimates.
Densities of salmon and trout will be estimated in August and September by direct underwater observation within the randomly-selected habitat units. Underwater methods will follow those described by Thurow (1994), Dolloff et al. (1996), and O‘Neal (2007). Habitat surface areas and volumes will be estimated during fish sampling. Numbers of fish counted will be adjusted for detection probabilities using the models published in Hillman et al. (1992). For each habitat type within a state type and reach stratum, the mean density of salmon and trout will be calculated as the ratio of mean numbers to mean area or volume sampled (Cochran 1977). Total numbers of fish will be estimated per habitat type within a state type and reach stratum as the product of mean density of fish in a given habitat type, times total area or volume of that habitat type within the stratum (Cochran 1977). Total numbers of fish within the supplemented basin will be estimated as the sum of all population numbers per habitat type in state type/reach strata. Bootstrapping methods will be utilized to estimate variance and percent errors (based on 95% confidence interval) for total numbers of fish.

4. ADULT MONITORING

The Adult monitoring component is comprised of two basic elements: (1) estimating spawning escapement and (2) harvest monitoring. Data collected during these elements primarily support monitoring questions 1.1.1, 1.2.1, 2.1.1, 2.2.1, 3.2.1, 3.2.2, 4.1.1, 5.2.1, 5.3.1, 5.3.2, 6.3.1, but also contribute data to monitoring questions 6.1.1, 6.2.1, 8.1.1, 8.2.1, 8.4.1, 10.1.1, 10.1.2, 10.1.3 and 10.1.4 (Hillman et al. 2013). These monitoring questions support the following objectives:

Objective 1: Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 4: Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of both the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

Objective 6: Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.
Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

Objective 10: Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

4.1 Spawning Escapement Estimates

Chelan and Methow Summer/Fall Chinook

Chinook spawning ground surveys will be conducted in the Chelan River and Methow subbasin (see Appendix A for survey reaches). Spawning ground surveys will be conducted via foot or raft beginning late September and continuing until spawning has ended (usually mid-November). Frequency of surveys will vary depending on method.

Summer Chinook carcass surveys will be conducted in the Chelan and Methow subbasins beginning in September and ending in November consistent with methods described in Murdoch and Peven (2005). A representative sample (i.e., 20%) of spawners as determined by spawner abundance and distribution (typically 100% of the carcasses encountered in the Chelan and Methow) will be sampled. Biological data will include collection of scale samples for age analysis, length measurements (POH and FKL), gender, egg voidance, and a check for tags or marks. DNA samples (five-hole punches from operculum) will be collected as needed to address different objectives. These data will be used to assess length-at-age, size-at-age, egg voidance, origin (hatchery or naturally produced), stray rates, and genetics. All carcass surveys will be conducted within the historical reaches.

Wenatchee Steelhead

The number of hatchery and naturally produced steelhead returning to the Wenatchee Basin will be estimated using a PIT tag mark recapture model. The estimated spawner abundance for the Wenatchee steelhead population will be a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates. Steelhead redd counts will be conducted weekly in all major spawning areas in the mainstem Wenatchee River (see Appendix A for survey reaches); minor spawning areas in the mainstem Wenatchee River will be surveyed once, based on the spawn timing in adjacent major spawning areas, to estimate redd abundance at peak spawning. The estimated total number of redds in the Wenatchee River mainstem will be expanded by the sex ratio of the population to estimate spawner abundance. Spawner abundance in tributaries of the Wenatchee River will be estimated using a PIT tag mark recapture model.

Chiwawa Spring Chinook

Chiwawa spring Chinook spawning escapement will be estimated based on the total number of redds found in each tributary (Murdoch et al. 2010) using methods described in Murdoch and Peven (2005). Redd and carcass surveys will be conducted simultaneously from the first week of
August through September (see Appendix A for survey reaches). Redd-based estimates assume that each female constructs one redd, which WDFW has found to be appropriate for this population (Murdoch et al. 2009). Redd counts will be expanded and the number of hatchery and naturally produced fish will be estimated using methods in Murdoch et al. (2010). Carcasses encountered during surveys will be sampled according to methods outlined in Murdoch and Peven (2005). In addition, all reds and female carcasses will be geo-referenced using hand-held GPS devices. Carcass recovery bias has been detected in the Chiwawa spring Chinook population (Murdoch et al. 2010) and if not corrected will bias estimates of hatchery and naturally produced fish on the spawning grounds. While it may be appropriate to correct for carcass recovery bias for some monitoring questions (e.g., 2.2), when comparisons to reference populations are made in monitoring questions 1.1 and 1.2, carcass bias will not be corrected because other monitoring programs have not corrected for a similar bias.

Wenatchee Summer Chinook

Wenatchee summer Chinook spawning ground counts will begin the last week in September and continue through the end of spawning in November (see Appendix A for survey reaches). Redd counts will be conducted by foot or raft depending on stream size, flow, and density of spawners within the stream reach. All stream reaches will be surveyed once per week. Redd data will be collected using methods described in Murdoch and Peven (2005). Salmon carcass data collected during spawning ground surveys will be consistent with Murdoch and Peven (2005).

Redd Observer Efficiency and Fish per Redd Value

Estimating redd observer efficiency is a costly and laborious task. Models generated for spring Chinook salmon are not applicable for summer Chinook because of differences in river characteristics of spawning locations. Small unmanned air systems (e.g., four blade helicopter) have been used successfully to document the abundance and distribution of fall Chinook redds in the Snake River (P. Groves, Idaho Power, Pers. comm.). We intend to use this technology to determine the true number of summer Chinook redds in selected reaches of the Wenatchee River. Weekly aerial photos of selected reaches will be digitally overlaid to document existing and newly constructed redds. Weekly ground-based estimates and the true number of redds will be compared in order to determine observer efficiency. Weekly river characteristics (e.g., channel width, water depth, discharge, visibility, and habitat complexity), observer experience, and survey effort will be incorporated into a model to predict observer efficiency in all river reaches. Predicted redd observer efficiency for each river reach will be used to expand ground-based redd counts to estimate the total reach redd count. Aerial photographs and ground-based surveys will also be used to estimate redd life for each river reach. The estimated spawner abundance in the Wenatchee River and an associated level of precision will be calculated using the estimated total redd count.
for each reach, mean redd life, and the sex ratio of the population similar to methods described in Millar et al. (2012).

**4.2 Harvest Reporting**

In years when the expected hatchery adult returns are in excess of the levels needed to meet the hatchery program goals (i.e., broodstock and/or escapement), surplus fish may be available for harvest. Harvesting or removal of surplus hatchery fish may have benefits to the natural populations by reducing potential negative ecological and genetic impacts (e.g., density dependent effects, loss of fitness, and loss of genetic variation). The contribution of hatchery fish to fisheries will be monitored using CWT recoveries on a brood-year basis supporting Objective 10.

To obtain the necessary data to determine if the harvest rates are meeting objectives, a statistically valid creel program will be designed and implemented for all sport and/or conservation fisheries in the Upper Columbia River to estimate harvest of hatchery fish from both Chelan and Grant County PUD funded hatchery programs (Murdoch and Peven 2005). Information collected during creel surveys are an integral component to calculating the HRR (Objective 3), particularly given most CWT recoveries for PUD mitigation programs occur in the Upper Columbia River and its tributaries, with the exception of summer Chinook where most CWT recoveries occur in ocean fisheries. Because of considerable time lags in reporting of CWT’s to the Regional Marking Information System (RMIS) database, it requires an ongoing query of recovery data until the number of estimated fish does not change.

**5. DATA MANAGEMENT, ANALYSIS, AND REPORTING**

**5.1 Data Management**

A database system has been developed in Microsoft Access that manages all the monitoring data collected for hatchery evaluations. The database will contain and manage all data associated with aquaculture monitoring, juvenile monitoring, and adult monitoring.

All data entered into the database are evaluated for quality control and quality assurance. Quality control checks using analyses such as modified Z-scores, boxplots, and the Generalized Extreme Studentized Deviate Procedure (Iglewicz and Hoaglin 1993) will be conducted for all data entry. In the event outliers are identified, discussion will occur on whether identified outliers are true data points or transcription errors. This process ensures that the data used to test statistical hypotheses are correct and accurate.

**5.2 Data Analysis**

The analyses proposed are consistent with the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update (Hillman et al. 2013). Each of the objectives will be addressed
using the appropriate statistical tests, as well as graphic analyses that convey relevant information.

5.3 Reporting
An annual M&E report will be generated following the completion of each calendar year and will be available for HCP HC review by June 1 of the following year. Additionally, monthly progress reports will be made available to the HCP HC.
6. REFERENCES


### APPENDIX A

**Designated survey reaches for Methow subbasin summer Chinook spawning ground surveys.**

<table>
<thead>
<tr>
<th>River</th>
<th>Reach</th>
<th>Code</th>
<th>RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methow</td>
<td>Mouth to Methow Bridge</td>
<td>M1</td>
<td>0.0-14.78</td>
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<tr>
<td></td>
<td>Methow Bridge to Carlton Bridge</td>
<td>M2</td>
<td>14.78-27.17</td>
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<td>Carlton Bridge to Twisp Bridge</td>
<td>M3</td>
<td>27.17-39.55</td>
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<tr>
<td></td>
<td>Twisp Bridge to MVID</td>
<td>M4</td>
<td>39.55-44.85</td>
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<td></td>
<td>MVID to Winthrop Bridge</td>
<td>M5</td>
<td>44.85-49.80</td>
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<tr>
<td></td>
<td>Winthrop Bridge to Hatchery Dam</td>
<td>M6</td>
<td>49.80-51.55</td>
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**Designated survey reaches for Wenatchee River basin summer Chinook spawning grounds surveys.**

Asterisks denotes reaches where redd observer efficiency will be assessed.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
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<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Bridge</td>
<td>54.20-53.58</td>
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<tr>
<td></td>
<td>Bridge to Swamp *</td>
<td>53.58-52.66</td>
</tr>
<tr>
<td></td>
<td>Swamp to Chiwawa River</td>
<td>52.66-48.39</td>
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<tr>
<td>W9</td>
<td>Chiwawa River to Schugart Flats</td>
<td>48.39-47.93</td>
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<td>Schugart Flats to Old Plain Bridge</td>
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<td>Old Plain Bridge to RR Bridge</td>
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<td>RR Bridge to RR Tunnel</td>
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<td>Swing Pool to Tumwater Br</td>
<td>36.67-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground *</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Penstock Br</td>
<td>30.91-28.66</td>
</tr>
<tr>
<td></td>
<td>Penstock Br to Icicle Road Br *</td>
<td>28.66-26.43</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Mileage Range</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Icicle Mouth</td>
<td>26.43-25.61</td>
</tr>
<tr>
<td></td>
<td>Icicle Mouth to Boat Takeout *</td>
<td>25.61-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Br</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Br to Irrigation Flume *</td>
<td>23.90-22.77</td>
</tr>
<tr>
<td></td>
<td>Irrigation Flume to Peshastin Br</td>
<td>22.77-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Br to Dryden Dam *</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Williams Canyon</td>
<td>17.76-15.54</td>
</tr>
<tr>
<td></td>
<td>Williams Canyon to Upper Cashmere Br</td>
<td>15.54-10.22</td>
</tr>
<tr>
<td></td>
<td>Upper Cashmere Br to Lower Cashmere Br</td>
<td>10.22-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Br to Old Monitor Br *</td>
<td>9.49-7.12</td>
</tr>
<tr>
<td></td>
<td>Old Monitor Br to Sleepy Hollow Br</td>
<td>7.12-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Br to River Bend *</td>
<td>3.27-1.73</td>
</tr>
<tr>
<td></td>
<td>River Bend to Siphon</td>
<td>1.73-1.29</td>
</tr>
<tr>
<td></td>
<td>Siphon to Mouth</td>
<td>1.29-0.45</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee Basin spring Chinook spawning grounds surveys.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td>Buck Cr to Phelps Cr</td>
<td>36.39-33.46</td>
</tr>
<tr>
<td>C6</td>
<td>Phelps Cr (Trinity) to Maple Cr Br</td>
<td>33.46-29.64</td>
</tr>
<tr>
<td>C5</td>
<td>Maple Cr Br to Atkinson Flats</td>
<td>29.64-26.59</td>
</tr>
<tr>
<td>C4</td>
<td>Atkinson Flats to Schaefer Cr</td>
<td>26.59-24.24</td>
</tr>
<tr>
<td>C3</td>
<td>Schaefer Cr to Rock Cr Campground</td>
<td>24.24-22.97</td>
</tr>
<tr>
<td>R1 - Rock</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-1.05</td>
</tr>
<tr>
<td>C2</td>
<td>Rock Cr Campground to Grouse Cr</td>
<td>22.97-12.27</td>
</tr>
<tr>
<td>K1 - Chikamin</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-0.68</td>
</tr>
<tr>
<td>C1</td>
<td>Grouse Cr to Mouth</td>
<td>12.27-0.00</td>
</tr>
<tr>
<td>N4</td>
<td>White Pine Creek to Lower R.R. Bridge</td>
<td>16.09-13.68</td>
</tr>
<tr>
<td>N3</td>
<td>Lower R.R. Bridge to Hwy 2 Bridge</td>
<td>13.68-9.13</td>
</tr>
<tr>
<td>N2</td>
<td>Hwy 2 Bridge to Kahler Cr</td>
<td>9.13-4.46</td>
</tr>
<tr>
<td>N1</td>
<td>Kahler Cr to Mouth</td>
<td>4.46-0.00</td>
</tr>
<tr>
<td>H4</td>
<td>Falls to Grasshopper Meadows</td>
<td>21.16-19.78</td>
</tr>
<tr>
<td>T1 - Panther</td>
<td>Boulder field to Mouth</td>
<td>0.43-0.00</td>
</tr>
<tr>
<td>H3</td>
<td>Grasshopper Meadows to Napequa River</td>
<td>19.78-17.59</td>
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<tr>
<td>Q1 - Napequa</td>
<td>Take out to Mouth</td>
<td>0.91-0.00</td>
</tr>
<tr>
<td>H2</td>
<td>Napequa River to Sears Cr Bridge</td>
<td>17.59-11.97</td>
</tr>
<tr>
<td>H1</td>
<td>Sears Cr Bridge to Mouth</td>
<td>11.97-0.00</td>
</tr>
<tr>
<td>L3</td>
<td>Rainy Cr to Lost Cr</td>
<td>10.78-6.74</td>
</tr>
<tr>
<td></td>
<td>Location</td>
<td>Length (miles)</td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>L2</td>
<td>Lost Cr to Old Fish Weir</td>
<td>6.74-2.13</td>
</tr>
<tr>
<td>L1</td>
<td>Old Fish Weir to Mouth</td>
<td>2.13-0.00</td>
</tr>
<tr>
<td></td>
<td><strong>Upper Wenatchee River</strong></td>
<td></td>
</tr>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td></td>
<td><strong>Chiwaukum Creek</strong></td>
<td></td>
</tr>
<tr>
<td>U1</td>
<td>Metal bridge to Mouth</td>
<td>1.0 – 0.0</td>
</tr>
<tr>
<td></td>
<td><strong>Icicle River</strong></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td>Hatchery to Mouth</td>
<td>3.02-0.00</td>
</tr>
<tr>
<td></td>
<td><strong>Peshastin Creek and Tributaries (Ingalls Creek)</strong></td>
<td></td>
</tr>
<tr>
<td>D1 - Ingalls</td>
<td>Trailhead to mouth</td>
<td>0.64-0.00</td>
</tr>
<tr>
<td>P2</td>
<td>Ingalls Creek to Camas Cr</td>
<td>9.14-5.63</td>
</tr>
<tr>
<td>P1</td>
<td>Camas Cr to Mouth</td>
<td>5.63-0.00</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee River basin steelhead spawning grounds surveys. Asterisks denote index reaches. Spawning escapements in tributaries will be estimates using PIT-tag arrays.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River*</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Tumwater Bridge*</td>
<td>48.39-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground*</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Icicle Road Bridge</td>
<td>30.91-26.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Leavenworth boat ramp*</td>
<td>26.43-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Bridge</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Bridge to Peshastin Bridge</td>
<td>23.90-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Bridge to Dryden Dam</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Lower Cashmere Bridge</td>
<td>17.76-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Bridge to Sleepy Hollow Bridge *</td>
<td>9.49-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Bridge to Mouth</td>
<td>3.27-0.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tributary</th>
<th>River mile of PIT tag array</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Creek</td>
<td>0.54</td>
</tr>
<tr>
<td>Peshastin Creek</td>
<td>1.91</td>
</tr>
<tr>
<td>Chumstick Creek</td>
<td>0.31</td>
</tr>
<tr>
<td>Icicle River</td>
<td>0.26</td>
</tr>
<tr>
<td>Chiwaukum Creek</td>
<td>0.24</td>
</tr>
<tr>
<td>Chiwawa River</td>
<td>0.58</td>
</tr>
<tr>
<td>Nason Creek</td>
<td>0.52</td>
</tr>
<tr>
<td>Little Wenatchee River</td>
<td>1.74</td>
</tr>
<tr>
<td>White River</td>
<td>1.65</td>
</tr>
</tbody>
</table>
FINAL MEMORANDUM

To: Wells, Rocky Reach, and Rock Island HCPs Hatchery Committees
From: Mike Schiewe, Chair
Cc: Kristi Geris
Re: Final Minutes of the November 20, 2013 HCP Hatchery Committees Meeting

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Douglas PUD headquarters in East Wenatchee, Washington, on Wednesday, November 20, 2013, from 9:30 am to 1:00 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Keely Murdoch will provide Kirk Truscott with data on adipose fin coded-wire-tag (CWT) retention (carried forward from the Hatchery Committees’ meeting on October 16, 2013; Item I).
- The Yakama Nation (YN) will develop a document summarizing their proposed plans for expanding acclimation areas in the upper Methow, and will provide the document to Kristi Geris for distribution to the Hatchery Committees (carried forward from the Hatchery Committees’ meeting on October 16, 2013; Item I).
- Chelan PUD will take the lead on moving forward with development of the Hatchery Monitoring and Evaluation (M&E) Plan Appendices and incorporating information on carrying capacity estimates (Item III-A).
- Chelan PUD will provide redline strikeout (RLSO) and final versions of the final Chelan PUD 2014 Hatchery M&E Implementation Plan to Kristi Geris for distribution to the Hatchery Committees (Item III-B).
- Chelan PUD will provide reports comparing and evaluating sockeye salmon escapement estimates based on spawning ground surveys and passive integrated transponder (PIT)-tag detections of returning adults to Kristi Geris for distribution to the Hatchery Committees (Item III-C).
- Chelan PUD will provide a draft Sockeye Addendum to the final Chelan PUD 2014 Hatchery M&E Implementation Plan to Kristi Geris for distribution to the Hatchery Committees.
Committees (Item III-C).

- Chelan PUD will discuss the Rocky Reach Adult Trap Pilot Study Results at the Hatchery Committees’ meeting on December 18, 2013 (Item III-E).
- Chelan PUD will provide a revised Methow Spring Chinook Hatchery and Genetic Management Plan (HGMP) for review to Kristi Geris for distribution to the Hatchery Committees (Item III-E).
- Lynn Hatcher will check on permit coverage for new activities conducted at Winthrop National Fish Hatchery (NFH; Item IV-A).
- Hatchery Committees representatives will submit comments on the draft Douglas PUD 2014 Hatchery M&E Implementation Plan to Greg Mackey no later than Friday, December 6, 2013; Douglas PUD will be requesting approval of the draft plan at the Hatchery Committees’ meeting on December 18, 2013 (Item V-A).
- Mike Tonseth will provide a letter notifying the National Marine Fisheries Service (NMFS) of the Wells Hatchery adult steelhead loss that occurred on Sunday, November 17, 2013 (Item V-C).

STATEMENT OF AGREEMENT DECISION SUMMARY

- The Twisp River Steelhead Live Spawning Plan Statement of Agreement (SOA) was approved, as revised, by the Wells HCP Hatchery Committee via email on November 4, 2013 (Item I).
- The Chewuch Acclimation Plan SOA was approved, as revised, by the HCP Hatchery Committees representatives present (Item II-A).
- The Hatchery Committees representatives present approved the Chelan PUD 2014 Hatchery M&E Implementation Plan, contingent upon incorporating revisions as discussed during today’s meeting (Item III-B).

AGREEMENTS

- The Hatchery Committees representatives present agreed to continue discussions on fish marking schemes after the Joint Fishery Parties (JFP) develop a document summarizing the current status of marking for each program (Item VI-A).
REVIEW ITEMS

- Kristi Geris sent an email to the Hatchery Committees on November 21, 2013, notifying them that the draft Douglas PUD 2014 Hatchery M&E Implementation Plan is available for review, with comments due to Greg Mackey no later than December 6, 2013 (Item V-A).

FINALIZED REPORTS

- The final 2013 Broodstock Collection Protocols were distributed to the Hatchery Committees by Kristi Geris on November 4, 2013.

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other changes to the agenda. The following revisions were requested:

- Alene Underwood added: 1) a Similkameen Pond production update; and 2) a Spring Chinook HGMP update.
- Greg Mackey added: 1) a Wells steelhead broodstock update; and 2) a Wells modernization update.
- Mike Tonseth added a fish marking discussion update.

The Hatchery Committees reviewed the revised draft October 7, 2013 conference call minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. Hatchery Committees members present approved the draft October 7, 2013 conference call minutes, as revised. Geris will finalize the conference call minutes and distribute them to the Committees.

The Hatchery Committees reviewed the revised draft October 16, 2013 meeting minutes. Three outstanding comments were discussed, as follows:

- Regarding the Chewuch Acclimation Plan, Bill Gale clarified that he did not support acclimating spring Chinook derived from Winthrop broodstock in Chewuch Pond—Winthrop is to serve as a safety net program and therefore should not be the first choice for use in conservation program.
• Regarding expanding acclimation areas in the Upper Methow, Gale clarified that he suggested looking at data from Winthrop NFH because the same water source is used there as at Methow Hatchery—not Chewuch.

• Regarding the discussion about a carrying capacity SOA, Keely Murdoch clarified a statement that she made that reproductive success estimates vary because of how the hatchery program is operated, in addition to natural conditions.

Geris said that all other comments and revisions received from members of the Committees were incorporated in the revised minutes, and the Hatchery Committees members present approved the draft October 16, 2013 meeting minutes, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

Action items from the last Hatchery Committees meeting on October 16, 2013, and follow-up discussions were as follows: (Note: italicized item numbers below correspond to agenda items from the October 16, 2013 meeting.)

• Kristi Geris will follow up with Lynn Hatcher, once he becomes available after the government shutdown, regarding his approval of the Hatchery Committees August 21, 2013 meeting minutes, prior to finalizing and distributing them to the Committees (Item I).

Hatcher approved the Hatchery Committees August 21, 2013 meeting minutes via email on October 18, 2013, and the final meeting minutes were distributed to the Hatchery Committees by Geris on October 21, 2013.

• Greg Mackey will follow up with Tom Kahler by October 18, 2013, regarding Douglas PUD’s approval of the Okanagan Nations Alliance (ONA) Sockeye Program Update memorandum, prior to Kristi Geris finalizing and distributing the memorandum to the Committees (Item I).

Kahler provided minor grammatical edits to, and his approval of, the ONA Sockeye Program Update memorandum via email on October 18, 2013, as distributed to the Hatchery Committees by Geris on October 21, 2013.

• Greg Mackey will provide Douglas PUD’s revised edits to the Twisp River Steelhead Live Spawning Plan SOA to the YN (Item II-A).

Edits were provided.

• The YN will provide a revised Twisp River Steelhead Live Spawning Plan SOA to
Kristi Geris for distribution to the Hatchery Committees by October 21, 2013, that includes: 1) Douglas PUD’s suggested revisions; 2) the revised Washington Department of Fish and Wildlife (WDFW) Fish Health risk analysis memorandum and the revised Twisp River Steelhead Live Spawning Plan; and 3) a statement indicating that the YN will keep the Hatchery Committees updated on progress and results of their Steelhead Kelt Reconditioning Program (Item II-A).

Keely Murdoch provided the final revised SOA to Geris on October 22, 2013, which Geris distributed to the Hatchery Committees, along with the revised WDFW Fish Health risk analysis memorandum and the revised Twisp River Steelhead Live Spawning Plan, on that same day. The Twisp River Steelhead Live Spawning Plan SOA was approved, as revised, by the Wells HCP Hatchery Committee via email on November 4, 2013.

- **The YN will prepare a Chewuch Acclimation Plan SOA, and will provide the SOA to Kristi Geris for distribution to the Hatchery Committees. The YN will be requesting approval of the SOA at the Hatchery Committees’ meeting on November 20, 2013 (Item II-B).**

Keely Murdoch provided a draft Chewuch Acclimation Plan SOA to Geris on October 30, 2013, which Geris distributed to the Hatchery Committees on that same day.

- **Keely Murdoch will provide Kirk Truscott with data on adipose-fin-wire (ad-wire) retention (Item II-B).**

This action item was carried forward.

- **The YN will develop a document summarizing their plans for expanding acclimation areas in the upper Methow, and will provide the document to Kristi Geris for distribution to the Hatchery Committees (Item II-B).**

This action item was carried forward.

- **Keely Murdoch will provide the YN’s non-target taxa of concern (NTTOC) model runs to Greg Mackey (Item III-A).**

Murdoch provided Mackey with YN’s model runs.

- **Greg Mackey will develop a document that summarizes the NTTOC model runs, and will distribute the document in early 2014 (Item III-A).**

In progress.

- **The Hatchery Committees representatives will provide comments on the Hatchery M&E Plan Tables to Greg Mackey no later than November 11, 2013, for discussion at**
the Hatchery Committees’ meeting on November 20, 2013 (Item III-B).  
No comments were received; will discuss further during planned agenda item below.

- **Chelan PUD and Grant PUD will incorporate their respective data into the Hatchery M&E Plan Tables, and will provide the updated tables to Greg Mackey no later than November 11, 2013, for discussion at the Hatchery Committees’ meeting on November 20, 2013 (Item III-B).**
  Complete.

- **Kristi Geris distributed a meeting invite for a conference call on November 6, 2013, from 10:00 am to 12:00 pm, to discuss Chelan PUD’s draft 2014 M&E Implementation Plan (Item IV-B).**
  The conference call was held. Catherine Willard provided the revised draft Chelan PUD 2014 M&E Implementation Plan to Geris on November 14, 2013, which Geris distributed to the Hatchery Committees on that same day.

- **Chelan PUD will provide a revised Methow Spring Chinook HGMP for review to Kristi Geris for distribution to the Hatchery Committees no later than October 25, 2013 (Item IV-D).**
  This action item was carried forward and is discussed further below.

II. **Yakama Nation**

A. **DECISION: Chewuch Acclimation Plan SOA (Keely Murdoch)**

Keely Murdoch said that the draft Chewuch Acclimation Plan SOA was distributed to the Hatchery Committees by Kristi Geris on October 30, 2013. Greg Mackey said that Douglas PUD had since incorporated the statement, “…contingent upon the subsequent approval by the Hatchery Committees for the use of the pond for coho and Chelan PUD spring Chinook.” He said he wanted the SOA to be clear about the Hatchery Committees approving the use of the pond for coho and Chelan PUD spring Chinook. Bill Gale said he thought the SOA was also supposed to be contingent on the development of broodstock collection and protocols to ensure that Chelan PUD’s program is part of the conservation program, and does not use safety net fish. Murdoch said she understood that broodstock collection would be addressed in Chelan PUD’s Spring Chinook HGMP; and therefore, did not need to be included in the Chewuch Acclimation Plan SOA. Mike Tonseth agreed there is still the issue of how Chelan PUD will acquire broodstock in future years; however, he said this does not preclude the use of safety net fish. He added that if insufficient fish are obtained for a program, safety net fish
have been identified as the fallback—to say that safety net fish will not be used at all is incorrect. Gale agreed, but recommended that the SOA should still be contingent upon developing concurrence on details of the HGMP. He added that the SOA is agreeing on a portion of the HGMP, while agreement has not yet been reached on other components. He said it seems that the agreements are not in sequence. Murdoch acknowledged that the timeline is somewhat disjointed and explained that this is how permitting and contracting came together. The Hatchery Committees also agreed to incorporate the statement, “…contingent upon the YN and Douglas PUD arriving at a lease agreement…,” into the draft SOA.

Lynn Hatcher asked if it had been determined whether coho and spring Chinook would be commingled or separated by a net. Murdoch said that coho will not be ready for acclimation until 2016 and so those types of decisions will be discussed based on numbers and size of each species at that time. Murdoch also recalled that two SOAs had previously been discussed—the other regarding the use of Douglas PUD’s facility. She noted that the second SOA would memorialize a change in use for the facility following a final lease agreement between Douglas PUD and the YN.

Jayson Wahls asked, regarding Section 2.1 Fish Transportation Procedures of the Chewuch Acclimation Plan, if the YN anticipated that WDFW would be hauling and pumping the fish. He added that currently, WDFW is not equipped for these tasks at Carlton. Alene Underwood said that the lease agreement between Chelan PUD and Grant PUD will detail how the transfers will occur.

The Chewuch Acclimation Plan SOA was approved, as revised, by the HCP Hatchery Committees representatives present. Mackey distributed the edits to the SOA as discussed during the meeting, and the YN provided the final Chewuch Acclimation Pond SOA (Attachment B) to Geris on November 21, 2013, which Geris distributed to the Hatchery Committees that same day.
III. Chelan PUD

A. DECISION: Carrying Capacity SOA (Alene Underwood)

Alene Underwood said that a memorandum from the JFP (Attachment C) regarding their concerns about the draft SOA on the use of juvenile M&E data for estimating carrying capacity was distributed to the Hatchery Committees by Kristi Geris on November 18, 2013. She also reminded the Hatchery Committees that Chelan PUD provided a draft Juvenile Carrying Capacity SOA that was distributed to the Hatchery Committees by Geris on November 5, 2013. She said although it has been made clear that there is no interest in moving forward with the SOA, because the SOA has already been distributed, she requested an official vote for the record. She said she would also like to discuss the JFP concerns regarding the SOA in more detail to be sure she is clear on their reasoning.

Keely Murdoch said that the YN is not opposed to collecting and using juvenile salmonid data to develop a carrying capacity estimate. She said the main issue is the proposed linkage made to mitigation levels, considering that carrying capacity estimates will likely increase in the next years. She added that if the link to mitigation is removed, an SOA would not be needed. Murdoch also added that if the goal is to capture how carrying capacity can help adaptively manage programs, she suggested that the M&E Plan would be the appropriate avenue to address the issue. She said that as currently written, the YN does not support the draft Juvenile Carrying Capacity SOA. Catherine Willard asked if Murdoch could provide examples of how carrying capacity data have been used to adaptively manage in the past. Murdoch said, for example, that carrying capacity data were used when considering adult spawning escapement to establish the split between safety net and conservation fish in the Chiwawa. She said that Tracy Hillman also used carrying capacity estimates during the 5-year analysis to correct for density dependence when comparing Chiwawa to reference streams. She added that while developing the Spring Chinook Management Plan carrying capacity was discussed, including how carrying capacity could be used to estimate escapement goals. She said they discussed that, as more data are obtained, escapement goals should be modified, and that conservation program splits may also be revisited.

Kirk Truscott said that the Colville Confederated Tribes (CCT) does not support the draft Juvenile Carrying Capacity SOA; and added that the CCT’s primary concerns are similar to those expressed by the YN. He also added that hatchery mitigation levels based on juvenile
production is inconsistent with the HCP that utilizes average adult returns and SARs as the basis for calculating mitigation obligations and agreed that using carrying capacity to help structure hatchery programs is a better use of those data.

Mike Tonseth said that WDFW does not support the draft Juvenile Carrying Capacity SOA and agreed with the YN’s and CCT’s sentiments regarding the linkage to mitigation. He also noted that the SOA speaks to a single approved estimate for a non-specified program, rather than describing a method for estimating carrying capacity.

Lynn Hatcher said that NMFS does not support the draft Juvenile Carrying Capacity SOA and he agreed with the concerns regarding the link to mitigation. However, he noted that he liked the possibility of the monitoring program that required handling fewer fish. He said the proposed genetics work in the combined Chelan PUD and Grant PUD plan would be covered under the current permit; however, it could not be completed in lieu of individual trapping within the tributaries. Underwood clarified that Chelan PUD is not proposing to remove the Chiwawa smolt trap and added that at this point in time, references to genetics have been removed from the draft Chelan PUD 2014 Hatchery M&E Implementation Plan. Tonseth said the proposed genetics work would require a proof of concept period. He added that the Hatchery Committees would probably be supportive of a genetics sampling program running concurrent with the tributary trapping effort; however, as Hatcher indicated, not in lieu of the tributary effort. Murdoch agreed that a feasibility study would be needed. She also cautioned that losing data on parr migrants versus yearling migrants in the tributaries may result in some loss of resolution regarding differential survival and how to adaptively manage based on those data.

Bill Gale said that the U.S. Fish and Wildlife Service (USFWS) does not support the draft Juvenile Carrying Capacity SOA and agreed that the link to mitigation was an issue for everyone. He said another pressing issue is that the SOA does not link to M&E. He added that the methodology in the SOA is integral in M&E; however, he would prefer to first have a robust discussion on M&E, and then discuss how the SOA fits in—not the other way around.
Truscott suggested making carrying capacity a task in the M&E Plan, and Underwood said that estimating carrying capacity is already covered under Objective 2 of the M&E Plan. She said the purpose of the SOA was intended to address the next step—how will these data be best used. Tonseth said that certain program areas can be identified where these data may be applied, such as setting adult escapement levels in tributaries and resizing conservation programs. He added that carrying capacity is a moving target, and Underwood agreed that carrying capacity is dynamic. Tonseth said, however, he is concerned that an SOA does not allow things to be dynamic because it locks those in agreement into a single position; whereas, the M&E Plan allows more flexibility.

Underwood summarized that several ideas have been shared regarding carrying capacity, and now agreement needs to be reached that addresses the collective views. Murdoch suggested developing carrying capacity further in Objective 2 of the M&E Plan. She said for example, that in the Analytical Framework, monitoring questions were identified, and from those questions and hypotheses were developed. She also suggested that carrying capacity could be addressed in a stand-alone document because it relates directly to the hatchery program.

Underwood asked if carrying capacity is based around questions, will that limit the flexibility of estimating carrying capacity? Murdoch said that she thinks the questions could be stated to allow flexibility. Underwood said that ultimately, Chelan PUD would like assurance that those data planned to be collected, as outlined in the draft Chelan PUD 2014 Hatchery M&E Implementation Plan, will be used as intended. She also asked how this can be structured to show that progress is being made.

Greg Mackey said that the hypotheses in the M&E Plan are set up in terms of how a hatchery program is performing. He added that estimating carrying capacity is not a hypothesis; rather, it is more like an action. He said he believes that estimating carrying capacity is already embedded in Objective 1 of the M&E Plan and added, however, that he does not believe the M&E Plan is structured to state how data will be used. He suggested inserting a separate objective stating that carrying capacity will be estimated. He said that in the recent recalculation of hatchery production, methods derived from the Biological Assessment and Management Plan (BAMP 1998) were known as the “BAMP approach.” He explained the BAMP approach as a “thought experiment,” where SARs of hatchery programs were used to back-calculate how many natural-origin smolts must have passed through a given project to
produce the number of natural-origin adult returns that were observed. This estimate of natural origin smolts as derived through the BAMP approach must always be below the carrying capacity of juvenile production for a population. Therefore, if all the data are correct, the carrying capacity should be equivalent to the upper limit of an estimate of smolts that are calculated using the BAMP approach. Murdoch questioned whether this was true, and Mackey said that it is mathematically true and that carrying capacity and SARs are hard to estimate—neither are perfect. Gale said all of those caveats are the reasons why he is reluctant to link carrying capacity to mitigation levels.

Gale said that in terms of moving forward for Chelan PUD, he suggested tabling this topic for now, as it does not need to be resolved for 2014, and addressing other M&E actions that need to be addressed. Underwood said that she does not want to lose momentum on this issue and added that Chelan PUD is trying to determine the most efficient data collection methods. She also added that knowing how these data will be used may inform how to better collect these data in the future. She said that with every month that goes by there is less time to adaptively manage these things; in order to realistically meet the July 2014 deadline for the 2015 Implementation Plan, this discussion needs to continue.

Tonseth said the JFP’s recommended path forward is to move in the direction of incorporating carrying capacity into the M&E Plan. He added that he understands that Chelan PUD is still interested in establishing an agreement regarding how those data will be used. Underwood said that if incorporating carrying capacity into the M&E Plan does not work, she would like to discuss what other options are available.

Murdoch said she believes that the M&E Plan goes to great lengths to describe how data are used. She added, however, that the part that was missing following the last Comprehensive Report, was going back through the results of the 5-Year Comprehensive Report, and making changes to the hatchery program, as needed. She recalled that the consensus was that since the hatchery programs were substantially reduced in size after recalculation, the reduction alone may address identified problems in the 5-year Analytical Report, such as the reduction of stray rates that might correspond to reductions in mitigation programs. Murdoch recommended that the results of the 5-year reports should be reviewed, as initially intended, and as needed, make adaptive changes to the hatchery programs.
Mike Schiewe said that the general consensus seems to be leaning towards incorporating carry capacity in the context of the M&E Plan. He recalled that the current revision of the M&E Plan was a combination of the former Hatchery M&E Analytical Framework and Conceptual Plan, and suggested starting there. Mackey noted that a compilation of carrying capacity estimates from the literature with analyses specific to these populations is already included in the M&E Plan Appendices, and he said that Hillman’s analysis of Upper Columbia spring Chinook is also included in the appendices. Hatcher asked if a few other items were inserted into the appendices including recovery goals and Thomas Cooney’s work on intrinsic potential. Mackey said that yes, these were included and he was seeking that type of input so that a collection of knowledge-to-date can be incorporated into the M&E Plan Appendices.

Schiewe recalled the key people who were involved in developing the current iteration of the M&E Plan, including Mackey, Andrew Murdoch, Hillman, Keely Murdoch, Todd Pearsons, and Josh Murauskas; he asked if it makes sense that this same group, to the extent possible, convene to incorporate carrying capacity. He added that at this time, this is a Chelan PUD document and the Grant PUD document on carrying capacity to be presented in their Hatchery Subcommittee meeting needs to be acknowledged as separate. Todd Pearsons suggested combining everything related to carrying capacity into the appendix, so that the body of the M&E Plan does not need to be revised. Schiewe suggested convening a small group including Catherine Willard, Mackey, Keely Murdoch, Hillman, Andrew Murdoch, Matt Cooper, and Pearsons. Gale requested that the entire Hatchery Committees are also included on meeting requests for this small group. Chelan PUD agreed to take the lead on moving forward with development of the Hatchery M&E Plan Appendices and incorporating information on carrying capacity estimates. The Committees agreed that the M&E workgroup would be open to all Committees members, as had been previously done.

B. **DECISION: Chelan PUD 2014 Hatchery M&E Implementation Plan (Alene Underwood)**

Alene Underwood said that the revised draft Chelan PUD 2014 M&E Implementation Plan was distributed to the Hatchery Committees by Kristi Geris on November 14, 2013. This version addresses comments discussed during the Hatchery Committees’ conference call that was held on November 6, 2013. She reminded the Hatchery Committees that page 2 of the
revised plan explains what methods in the plan differ from previous years; and that the plan was also organized differently than in the past. She noted that Catherine Willard and Keely Murdoch worked together on reformatting, as recommended during the Hatchery Committees’ conference call on November 6, 2013. Murdoch said that after working with Willard, the new revisions adequately addressed her concerns regarding the new format. Underwood reviewed the other revisions made to the plan and a few additional, minor revisions were requested that were made in the draft. Since the changes discussed during the meeting were not substantial, the Hatchery Committees representatives present approved the Chelan PUD 2014 Hatchery M&E Implementation Plan, contingent upon incorporating revisions as discussed. Chelan PUD provided a RLSO and final version (Attachment D) of the final Chelan PUD 2014 Hatchery M&E Implementation Plan to Geris on November 22, 2013, which Geris distributed to the Hatchery Committees that same day.

C. Sockeye M&E Discussion (Alene Underwood)
Alene Underwood recalled the commitment that Chelan PUD made during recalculation to monitor the natural sockeye population. She said that Viable Salmonid Population (VSP) parameters were used to develop the most appropriate M&E program in moving forward and that based on preliminary feedback, a draft addendum will be developed and distributed. Mike Tonseth asked about the timeline for approval, and Underwood said that the addendum needs approval by February 2014. Tonseth expressed concern that the M&E Implementation Plan is being fragmented. He explained that there are new requirements for inclusion in the annual broodstock protocols, which include all M&E activities, release locations/plans, and site based operational protocols (e.g., Tumwater Dam), and are also due to the Hatchery Committees for review in February 2014. Underwood said that she does not believe there is anything drastic that will affect the protocols.

Catherine Willard reviewed a draft table of Chelan PUD’s proposed Lake Wenatchee sockeye salmon M&E activities (Attachment E). Underwood said that Chelan PUD has not yet determined who will complete the work and added that in the past, the proposed work has been completed by WDFW in coordination with other work they were already doing.

Lynn Hatcher asked if PIT-tag detection arrays would be used to monitor adult escapement, and Underwood said that they would not propose anything other than PIT-tags. Bill Gale
asked if redd surveys have been conducted that could be used for comparison, and Mike Schiewe recalled that Chelan PUD has developed a report that speaks to this. Underwood said that Chelan PUD will provide reports comparing and evaluating sockeye salmon escapement estimates based on spawning ground surveys and PIT-tag detections of returning adults to Kristi Geris for distribution to the Hatchery Committees. Keely Murdoch recalled that at the time of those surveys, there were questions about detection efficiency and the need for multiple detection arrays. She suggested gaining a better idea of the current array configurations to determine if they need updating in terms of detection efficiency. Kirk Truscott suggested that adult monitoring metrics such as pre-spawn mortality, timing, and success do not need to be collected each year; rather, those are important metrics to monitor every few years. Tonseth also noted that gender composition needs to be collected.

Murdoch recalled that when the decision was made to discontinue the sockeye hatchery program, it was agreed that sufficient M&E would continue to determine if sockeye need to be supplemented. She suggested considering what data are needed to make those types of decisions in a decade. Willard noted that those data that are being proposed to be collected will allow estimation of the same metrics used to determine supplementation levels in the past.

Tonseth said that the big change for 2014 is the change in location of the White River array, and added that the detection efficiency of the new location needs to be ground-truthed with ground surveys. Schiewe asked if the array in the Little Wenatchee River is also changing, and Tonseth replied that it is not. Tom Kahler noted that the Columbia River Inter-Tribal Fish Commission (CRITFC) data on sockeye smolt production are also available; Murdoch said that she is unsure how those data will fit into this effort. She explained that monthly collections of zooplankton and phytoplankton are ongoing (excluding during the winter). She added that those data being collected speak more to food base and densities. She said that also, three times each year, Department of Fisheries and Oceans (DFO) Canada conducts hydroacoustic surveys and trawls to obtain densities and distributions of fry in Lake Wenatchee. She said that DFO is investigating factors that affect productivity, and then they compare these factors to other sockeye lakes. Underwood said that she understood that DFO was planning to obtain estimates of outmigrants from Lake Wenatchee; last year, they indicated that funding may be discontinued. Murdoch said that at this point, efforts are still
moving forward. Kahler added that the DFO acoustic and trawl surveys for fry, parr, and pre-smolt abundance estimates are the source of the CRITFC data on smolt production that he mentioned (above). He said that those surveys correspond with the surveys that ONA conducts in Osoyoos Lake (for DFO) and that DFO conducts in sockeye lakes throughout Canada; and thus, those data should provide reliable and acceptable smolt-production estimates. He believes CRITFC has five more years of funding for these surveys and the limnology work.

Underwood said that as a next step, Chelan PUD will provide a draft Sockeye Addendum to the final Chelan PUD 2014 Hatchery M&E Implementation Plan to Geris for distribution to the Hatchery Committees.

D. **Similkameen Pond Production Update (Alene Underwood)**

Alene Underwood announced that there had been high mortality in Chelan PUD’s 166,000 (166k) summer Chinook program being reared at Similkameen Pond. She said that staff culled roughly 8,000 of the 2012 broodstock due to high enzyme-linked immunosorbent assay (ELISA) titers and about 160k were transferred to Similkameen from Eastbank in October 2013; then over the past week and a half, an additional 30k to 35k were lost to unknown causes. Jayson Wahls explained that the fish were bloated, but no diagnosis had been made. Mike Tonseth asked if staff looked at the feed, and Wahls replied that they did. He added that the fish were not eating well. Underwood said that Chelan PUD is now at about 78% of the program. *(Note: Underwood provided an update via email on December 3, 2013, that the program was estimated to be around 117k total, or 43k loss.)* She said she will update the Hatchery Committees as more information becomes available.

E. **Methow Spring Chinook HGMP Update (Alene Underwood)**

Alene Underwood said that the Methow Spring Chinook HGMP is still under development. She estimated that it will be another month before Chelan PUD will have a draft ready. She said a suite of long-term options are being considered for their 60k Methow spring Chinook program, including potential options with Douglas PUD, or maybe conducting another pilot study at the Rocky Reach Adult Trap for broodstock. Keely Murdoch asked about the results from the Rocky Reach Adult Trap Pilot Study that was conducted in May 2013, and Underwood said that Chelan PUD will discuss the Rocky Reach Adult Trap Pilot Study.
Results at the Hatchery Committees’ meeting on December 18, 2013. Mike Schiewe recalled the Coordinating Committees’ and Hatchery Committees’ concerns with the pilot as they related to passage issues and genetic appropriateness, respectively. Bill Gale recalled that at one point a sort-by-code system was discussed and noted that if Chelan PUD is considering moving in that direction, discussions should take place soon to allow adequate time to install infrastructure, if needed. Keely Murdoch noted that a sort-by-code system may be a work-around for turbidity issues; Gale added that the system would also help alleviate USFWS’s concerns with handling Entiat fish. Murdoch also suggested coordinating with U.S. Geological Survey (USGS) who is already PIT-tagging fish originating in the Methow. Underwood said that Chelan PUD has multiple options to consider and hopes to have a discussion at the next committee meeting. Underwood said she will provide a revised Methow Spring Chinook HGMP for review to Kristi Geris for distribution to the Hatchery Committees as soon as it is available.

IV. NMFS

A. HGMP Update (Lynn Hatcher)

Lynn Hatcher said that on September 20, 2013, Permits 1196, 1395, and 1497 were extended with an indefinite end date. He said that hatchery consultations are scheduled to be complete by summer 2014. He said that Craig Busack is now working only on spring Chinook programs in the Okanogan and Methow. Amilee Wilson is working on the steelhead programs in those basins.

Hatcher said for Okanogan spring Chinook, the Section 10(j) Environmental Assessment (EA) will be complete by spring 2014; currently, Busack is working on the Biological Opinion (BiOp) for holding and transporting spring Chinook from the Methow to the Okanogan. Hatcher said that the Federal Register Notice (FRN) will be out in December 2013. He said that because Chelan PUD’s Methow Spring Chinook HGMP is not completed, it will not be included in the FRN. He said the time schedule for completion of the Methow spring Chinook and steelhead permits is set for June 2014, and added that the Okanagan spring Chinook 10(j) will be completed by April 2014.

Mike Tonseth said, regarding the Section 10(j) EA, he thought since 200k spring Chinook were released this fall, there would be no spring Chinook to release in spring 2014. Hatcher
said that NMFS promised the CCT the Section 10j would be complete in spring 2014, regardless, and confirmed, however, that the Section 10j would have no implication for 2014 releases.

Hatcher said that the Wenatchee steelhead draft BiOp and Section 10 permits have been reviewed and should be complete by December 2013. He added that a Fishery Plan still needs to be completed, and Tonseth said that the JFP is still working on it. Hatcher said that Amilee Wilson indicated that the non-listed summer/fall Chinook programs are now the lowest priority for consultation after a recent meeting with the HGMP applicants in the upper Columbia stressed the need to address the steelhead and spring Chinook permits.

Bill Gale asked about Methow steelhead. Gale said that USFWS is concerned about permit coverage for Winthrop NFH steelhead winter and spring activities prior to receiving a new permit. He added that the Service’s steelhead program coverage had lapsed and was concerned that the Service would be without coverage until the new permit was issued. Hatcher said that he will check on permit coverage for new activities conducted at Winthrop NFH.

Hatcher said that NMFS is planning to complete USFWS’s Leavenworth program by December 31, 2013, and noted that there was an issue with the terms and conditions. He said the coho BiOp was distributed on November 15, 2013, and added that the coho program should be complete by the end of January 2014.

V. Douglas PUD

A. Douglas PUD 2014 Hatchery M&E Implementation Plan (Greg Mackey)

Greg Mackey said that the draft Douglas PUD 2014 Hatchery M&E Implementation Plan should be ready for distribution by the end of the day. (Note: Mackey provided the draft Douglas PUD 2014 Hatchery M&E Implementation Plan to Kristi Geris on November 21, 2013, which Geris distributed to the Hatchery Committees that same day.) He said Douglas PUD has been working closely with Grant PUD on the plan; particularly spring Chinook, which is a departure from the past. He added that, previously, the implementation plan was developed by WDFW and Douglas PUD; however, Grant PUD, as a major sharing partner in the Methow Hatchery, was now more involved in developing the M&E plan. Mackey said
that this year, he and Charlie Snow developed a technical change for steelhead redd counts. He explained that the objectives related to spawning in the M&E Plan are to compare hatchery- versus natural-origin fish. He said that in the Twisp, the M&E crews can collect good data on hatchery and natural origin spawning distribution of steelhead because the fish are Floy-tagged at the weir and can be visually detected on the spawning grounds. In addition, the Twisp is a smaller river and spawner surveys are more effective because visibility tends to hold up longer as the flows increase in the spring. However, in the large rivers such as the Methow mainstem, there is no way to visually identify the origin (hatchery or natural) of spawners, and poor visibility greatly limits the efficiency of finding redds or fish and also curtails the length of time surveys can be accomplished as the flows increase. He said that Andrew Murdoch provided a report where fish are PIT-tagged at Priest Rapids and instream arrays are used to extrapolate how many steelhead of known-origin are coming up different parts of the rivers. He said that Snow proposed to conduct index redd surveys in the lower river, where fish may hold through the winter and not be fully accounted for by PIT-detection arrays. Snow said that standard methods would be employed, and added that the hope is that USGS arrays in the Methow at Winthrop can be used similarly to how the Chewuch and Twisp arrays are used.

Bill Gale asked if only natural-origin fish would be PIT-tagged at Priest Rapids, and Snow clarified that both hatchery- and wild-origin fish would be PIT-tagged. Gale asked how harvest would be accounted for; Snow said that the report that Murdoch provided, which also used Priest Rapids data, accounted for harvest based on creel census estimates. Kirk Truscott asked if steelhead are still PIT-tagged at Wells Dam for stock assessment; Snow confirmed this and added that 6 to 8% of the steelhead run is typically sampled at Wells Dam. He added that those fish should assist in augmenting escapement data sets, but the model used to estimate spawning escapement using the Priest Rapids tagged fish may not allow incorporation of fish tagged at other locations.

Mackey said that Douglas PUD will be developing a new contract with WDFW, and added that the current contract ends December 31, 2013. He said that Douglas PUD was hoping to obtain preliminary comments soon to facilitate completion of the new contract by the end of the year. Gale asked how long the contract would be, and Mackey said it would be a 1-year contract. Hatchery Committees representatives agreed to submit comments on the draft
Douglas PUD 2014 Hatchery M&E Implementation Plan to Mackey no later than Friday, December 6, 2013, and Douglas PUD will be requesting approval of the draft plan at the Hatchery Committees’ meeting on December 18, 2013.

B. Hatchery M&E Appendices Tables (Douglas PUD, Chelan PUD, Grant PUD)
This agenda item was previously discussed under review of action items from the last Hatchery Committees’ meeting on October 16, 2013, and also under Chelan PUD’s carrying capacity agenda item.

C. Wells Steelhead Broodstock Update (Greg Mackey)
Greg Mackey announced that there was a steelhead broodstock loss at Wells Hatchery on November 17, 2013. He explained that Biomark was on-site PIT-tagging fish, and treated water used to disinfect the tagging equipment was discharged to the parking lot where it ran into a parking lot drain that led into the steelhead holding pond. The drain was thought to be tied into the main drain of the hatchery, but unbeknownst to everyone familiar with the hatchery, this drain had been inadvertently tied into the source water for the steelhead holding pond at some point in the past. Mackey said that 178 of the 200 fish were lost. He said all fish were hatchery-origin, and that the broodstock were for the Columbia Safety-Net and the Okanogan program, and also served as backup collections for the Methow Safety-Net, Twisp and Omak programs, with unneeded backup fish available for the Ringold program. He said Permit 1395 allows trapping of fish from the Wells fishways through November; so to recover the fish, he said Douglas PUD plans to trap as many fish from the Wells fishways and hatchery volunteer channel this fall as possible. Jayson Wahls confirmed that they have already commenced outfall trapping at Wells Hatchery for this purpose, but would not use the Wells ladder traps as they have already winterized them. Mackey cautioned that the Wells programs will be prioritized for broodstock, and that brood would be supplied to Winthrop NFH only once the Wells programs were fulfilled. Bill Gale said he was unsure if steelhead will be volunteering at the Winthrop NFH outfall now, and added that he would be interested in looking at the escapement numbers. He asked Mackey if he thought there will be enough fish to broodstock Douglas PUD’s program and Winthrop NFH’s program. Mackey said that some surplus steelhead may be trapped at the Twisp weir in spring 2014, and also broodstock may be trapped at the Methow and Winthrop NFH hatchery outfalls in spring 2014. Keely Murdoch asked if it is possible to postpone shutting
down Methow Hatchery collection to obtain more fish, and Mike Tonseth said that shutting down the fishery is already being considered as early as next week. Gale said that he will touch base with Winthrop NFH.

Tonseth asked if NMFS has been notified, and explained that the permit requires that NMFS is immediately notified for any fish kill larger than 10%. Tonseth said that he will provide a letter notifying NMFS of the Wells Dam steelhead fish loss that occurred on Sunday, November 17, 2013. *(Update: Douglas PUD had the drain welded shut to prevent further contaminants from entering the steelhead pond.)*

D. **NTTOC Report Status (Greg Mackey)**

Greg Mackey said that all model data have been received. He said he still needs to incorporate these data into the database, and will develop a report as previously discussed.

E. **Wells Modernization Update (Greg Mackey)**

Greg Mackey announced that the Wells modernization will be at 30% design by December 2013. He recalled that a workshop was planned for when the modernization reached 30% design, which he confirmed is still the plan, but has yet to be scheduled.

**VI. WDFW**

A. **Fish Marking Discussion Update (Mike Tonseth)**

Mike Tonseth said that he is developing a document summarizing the current status of marking for each Upper Columbia hatchery program, including where agreements currently lie within *U.S. v Oregon* and other management plans. He said the JFP agreed to use this document as a starting point for discussion. The Hatchery Committees representatives present agreed to continue discussions on fish marking schemes after the JFP develop a document summarizing the current status of marking for each program.

**VII. HCP Administration**

A. **Next Meetings**

The next scheduled Hatchery Committees’ meetings are on December 18, 2013 (Chelan PUD); January 15, 2014 (Douglas PUD); and February 19, 2014 (Chelan PUD).
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<td>Final Chewuch Acclimation Plan SOA</td>
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<td>Attachment C</td>
<td>JFP Memorandum regarding their concerns about the Chelan draft SOA on the use of juvenile M&amp;E data for estimating carrying capacity</td>
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<td>Attachment D</td>
<td>Final Chelan PUD 2014 M&amp;E Implementation Plan</td>
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<td>Attachment E</td>
<td>Chelan PUD’s proposed Lake Wenatchee sockeye salmon monitoring and evaluation activities</td>
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## List of Attendees

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<td>Mike Schiewe</td>
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<td>Kristi Geris</td>
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<td>Alene Underwood*</td>
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<td>Catherine Willard</td>
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<td>Greg Mackey*</td>
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<td>Todd Pearsons</td>
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<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<td>Kirk Truscott*</td>
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<td>Bill Gale*</td>
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<td>Charlie Snow†</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
Statement

The Rock Island and Rocky Reach HCP Hatchery Committees agree to acclimate Chelan PUD’s Methow spring Chinook mitigation obligation (60,516 smolts) in the Chewuch Acclimation Pond as part of YN’s Expanded Acclimation Project beginning with the 2015 release (BY2013) contingent upon the YN and Douglas PUD arriving at a lease agreement and subsequent approval by the HC for the use of the pond for coho and Chelan PUD spring Chinook. The smolts would be short-term acclimated between March and May. Starting in 2016 spring Chinook may be co-acclimated with coho salmon pre-smolts. Annual reports and monthly updates will be provided to the HCP HC.

Background

YN’s Expanded Acclimation Project is based on the premise that acclimating and releasing salmon and steelhead smolts in select locations can increase the effectiveness of integrated (conservation) programs. YN intends to lease the Chewuch Acclimation Pond from DCPUD for the purpose of acclimating coho and spring Chinook salmon. Continued releases of spring Chinook in the Chewuch are an important part of salmon recovery in the Methow Basin. Additional details can be found in Attachment 1 (Chewuch Acclimation Plan). This SOA is contingent upon approval of an SOA from the Wells HCP HC allowing the use of the facility.
To: Rock Island and Rocky Reach HCP Hatchery Committee (HCP-HC), Priest Rapids Project Salmon and Steelhead Settlement Agreement Hatchery Sub-Committee (PRCC-HSC).

From: Upper Columbia River Joint Fisheries Parties

Re: Efficacy of Draft SOAs concerning the use of juvenile data for estimating carrying capacity.

This memorandum is to convey the results of discussions between the Joint Fisheries Parties (JFP; consisting of representatives from the Yakama Nation, Confederated Tribes of the Colville Reservation, National Marine Fisheries Service, US Fish and Wildlife Service and Washington Department of Fish and Wildlife) during a meeting on Nov 8, 2013. These discussions were in regards to SOAs submitted to the HCP-HC and the PRCC-HSC by Chelan and Grant PUDs, respectively. This summary should be considered the consensus JFP view on this topic.

On November 5, 2013 two draft SOAs, one circulated by email to the members of the PRCC-HSC (email from Elizabeth McManus) and the other to the members of the HCP-HC (email from Alene Underwood forwarded to the committee by Kristi Geris). These SOAs were largely identical and for the purposes of this discussion are considered as a single document circulated within two separate committees. As understood by the JFP, the intent of these SOAs are to 1) provide committee support for the use of juvenile abundance data as a means to estimate juvenile carrying capacity within tributaries of interest (e.g., Nason Creek, White River, Chiwawa River), 2) establish a link between estimates of carrying capacity and subsequent management decisions such as setting an upper limit to mitigation requirements for naturally produced spring Chinook salmon, and 3) institute criteria for the evaluation of the quality and robustness of resulting carrying capacity estimates, with the caveat that failure to meet these requirements/criteria could then be used as a means to limit or modify the use of this data in future decision making processes.

The use of M&E data to better estimate metrics such as carrying capacity has broad support within the JFP. It is recognized that carrying capacity data can be integral to inform effective adaptive management of hatchery programs and provide key scientific support for decisions. The JFP maintains that the most effective way to support this type of data analysis and exploration is by establishing a clear and direct linkage between M&E objectives (as identified in the M&E Plans and Analytical Frameworks) and program management concerns/issues. The JFP assert that the SOAs, as proposed by the PUDs, are not the appropriate avenue to establish this linkage, rather it should be considered and integrated as a standalone M&E Objective or linked to an existing objective. The JFP proposes that the respective committees amend the recently developed and approved (2013) 5-year Monitoring & Evaluation Plan to include a new objective addressing carrying capacity estimates and work toward refining the objective and any associated analytical framework. If carrying capacity and its ability to inform the adaptive management process, is truly important, then we should all be able agree that development of a new objective addressing carrying capacity is the best path forward.

Upper Columbia River Joint Fisheries Parties: Bill Gale, USFWS; Lynn Hatcher, NMFS; Keely Murdoch, Yakama Nation; Mike Tonseth, WDFW; Kirk Truscott, Confederated Tribes of the Colville Reservation
Furthermore, the JFP are emphatically opposed to any stated linkage in the SOA between this data analysis activity and the establishment of PUD mitigation requirements. Setting aside any facts indicating that use of the lower Wenatchee trap to develop juvenile production estimates for the supplemented spawning aggregates is wholly inconsistent with the program descriptions provided in the Committee(s) approved HGMPs for the respective programs, there is significant concern that this proposed action is also inconsistent with the effects analysis conducted during the Biological Opinion development process for Section 10 coverage. Additionally, both the HCP and the Settlement Agreement contain language (shown below) which appears to contradict the sole use of a juvenile based estimate for recalculation of mitigation levels and instead references the use of methods that rely on adult based equivalents.

8.4.3 Periodic Adjustment of District Hatchery Levels. Hatchery production levels, except for original inundation mitigation, shall be adjusted in 2013 and every 10 years thereafter as is required to adjust for changes in the average adult returns of Plan Species and for changes in the adult-to-smolt survival rate, and for changes to smolt-to-adult survival rate from the hatchery production facilities, considering methodologies described in the BAMP. The Hatchery Committee will be responsible for determining program adjustments considering the methodology described in BAMP and providing recommended implementation plans to the District. The District will be responsible for funding the implementation plan. From the Anadromous Fish Agreement and Habitat Conservation Plan Rock Island Hydroelectric Project

13.1.2 Adjustments in Production Levels. Grant PUD shall maintain the initial production levels until 2013 unless modified by agreement of the Parties and after consultation with the other members of the PRCC. The initial production levels, except for original inundation mitigation, shall be reviewed in 2013 and every 10 years thereafter to determine if adjustments are appropriate to achieve and maintain NNI. Adjustments will be made if necessary based on changes in average adult returns, adult-to-smolt survival rate and smolt-to-adult survival rates from the hatcheries relative to the survival rates utilized to establish the initial production levels via the BAMP. Adjustments in production levels may also be based upon changes in the estimates of unavoidable Project adult or juvenile mortalities underlying these initial NNI calculations. The Parties will be responsible for recommending adjustments in program levels and strategies considering the methodologies described in the BAMP and recommending modified implementation plans for Grant PUD funding. From the Priest Rapids Project Salmon and Steelhead Agreement.

As stated earlier, while the JFP support development and use of carrying capacity estimates to adaptively manage the hatchery programs, for the above reasons the JFP do not agree that an SOA is the correct avenue. At this time the JFP does not support nor do we desire to further consider the draft SOAs circulated to the Committees.

Upper Columbia River Joint Fisheries Parties: Bill Gale, USFWS; Lynn Hatcher, NMFS; Keely Murdoch, Yakama Nation; Mike Tonseth, WDFW; Kirk Truscott, Confederated Tribes of the Colville Reservation
Chelan County PUD Hatchery Monitoring and Evaluation Implementation Plan 2014

Prepared by:
Alene Underwood and Catherine Willard

November 2013
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1. INTRODUCTION

The Habitat Conservation Plan (HCP) specifies that a monitoring and evaluation plan will be developed for the hatchery program. The approach to monitoring the hatchery programs was guided by the “Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update” (Hillman et al. 2013) and the “Conceptual Approach to Monitoring and Evaluating the Chelan County Public Utility District Programs” (Murdoch and Peven 2005).

The purpose of this document is to define the tasks associated with the approved scope of work to implement Chelan PUD’s (CPUD’s) hatchery monitoring and evaluation (M&E) plan for 2014. Monitoring and evaluation activities for Lake Wenatchee sockeye in 2014 have not yet been determined. Chelan PUD will submit an addendum to this implementation Plan by February 2014 to address these activities. Additionally, specific activities to address Objective 7 of the M&E Plan have not yet been determined. As these become available, this Plan will be amended.

The work described in this plan has Endangered Species Act (ESA) coverage provided by NFMS Section 10(a)(1)(A) permits 18121 and 1395 and Section 10(a)(1)(B) permit 1347. All activities conducted under this Implementation Plan shall adhere to all terms and conditions as specified in the referenced permits. These permits allow for changes to monitoring or research protocols with the caveat that such modifications are approved by NMFS prior to implementing those changes. Terms and conditions relevant to monitoring and evaluating the hatchery programs have been used to inform the various measurements below and associated scopes of work with entities performing the work. A report summarizing compliance with the terms and conditions set forth under the above-references permits is required for submittal to NMFS; a copy of this completed report will be provided to the HCP HC.

The Implementation Plan includes all four components of the M&E Program including: (1) aquaculture monitoring; (2) juvenile monitoring; (3) adult monitoring; and (4) data, analysis and reporting. Under each component are study design elements that will be used to inform the overarching program components. Figure 1 illustrates the relationship of the components and study design elements used to address each component. Table 1 depicts which study design element is being performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

The methods described in this plan differ from previous methodologies in the following ways:

- Emigrant abundance estimates will use newly derived analytical approaches that reduce bias and increase precision to include estimates of emigration during the winter non-trapping periods.
- Spring Chinook spawner abundance estimates will be adjusted for observer efficiency and include estimates of precision.
- Summer Chinook spawner abundance will be based on census counts and be adjusted for observer efficiency and include estimates of precision.
- Steelhead run and spawning escapement estimates will be based on a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates.
Figure 1. The four components of the hatchery monitoring and evaluation program and the study design elements within each component.
Table 1. Study design elements performed by entity, and the associated objectives for each study design element as referred to in Hillman et al. 2013.

<table>
<thead>
<tr>
<th>Study Design Elements</th>
<th>Chelan Falls</th>
<th>Methow summer Chinook</th>
<th>Wenatchee Steelhead</th>
<th>Wenatchee summer Chinook</th>
<th>Chiwawa spring Chinook</th>
<th>Stock assessment and broodstock collection</th>
<th>In-hatchery monitoring</th>
<th>Post-release monitoring and smolt survival analysis</th>
<th>Juvenile monitoring</th>
<th>Adult monitoring</th>
<th>Data, analysis, and reporting</th>
<th>Monitoring and evaluation components</th>
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<tbody>
<tr>
<td>Monitoring and evaluation component</td>
<td>Objective 1</td>
<td>Objective 2</td>
<td>Objective 3</td>
<td>Objective 4</td>
<td>Objective 5</td>
<td>Objective 6</td>
<td>Objective 7</td>
<td>Objective 8</td>
<td>Objective 9</td>
<td>Objective 10</td>
<td>Objective 11</td>
<td>Objective 12</td>
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<tr>
<td>Stock assessment and broodstock collection</td>
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<td>CPUD2</td>
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<td>In-hatchery monitoring</td>
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<tr>
<td>Post-release monitoring and smolt survival analysis</td>
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<tr>
<td>Juvenile monitoring</td>
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<td>Adult monitoring</td>
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<tr>
<td>Data, analysis, and reporting</td>
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<tr>
<td>Reporting</td>
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</tbody>
</table>

1 Specific activities to address Objective 7 have not yet been identified.
2 CPUD crews will PIT tag in-hatchery fish.
3 Because the Chelan summer Chinook program is primarily an augmentation program, monitoring and evaluation efforts focus on straying, release characteristics, and harvest.
4 Monitoring and evaluation in 2014 will be shared by Grant and Chelan PUDs.
2. AQUACULTURE MONITORING

The Aquaculture monitoring component is comprised of two basic elements: (1) stock assessment and broodstock collection at adult trapping locations and (2) in-hatchery monitoring including spawning, rearing, and release of juveniles. Data collected during these elements primarily support monitoring questions 5.1.1, 5.2.1, 8.1.1, 8.2.1, 8.3.1, 8.3.2, 8.4.1, 9.1.1, 9.2.1, 9.3.1 and 9.4.1, but also contribute data to monitoring questions 3.2.1, and 3.2.2 (Hillman et al. 2013). Table 2 below provides a summary of the variables to be measured in 2014 under the Aquaculture monitoring component and what objective the measure(s) supports. The text that follows in this section further describes the activities.

Table 2. Monitoring and Evaluation Plan (Hillman et al. 2013) objectives and the associated measured variables for the aquaculture monitoring component.

<table>
<thead>
<tr>
<th>Objective 3:</th>
<th>Measured Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if the hatchery adult-to adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.</td>
<td></td>
</tr>
<tr>
<td>- Number of hatchery and naturally produced fish collected for broodstock (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
<tr>
<td>- Number of broodstock used by brood year (hatchery and naturally produced fish) (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 5:</th>
<th>Measured Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.</td>
<td></td>
</tr>
<tr>
<td>- Ages of hatchery and naturally produced fish sampled via PIT tags or stock assessment monitoring (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
<tr>
<td>- Time (Julian date) of ripeness of hatchery and natural origin steelhead captured for broodstock (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 8:</th>
<th>Measured Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if hatchery programs have caused changes in phenotypic characteristics of the natural populations.</td>
<td></td>
</tr>
<tr>
<td>- Size (length), gender, and total/salt age of broodstock (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
<tr>
<td>- Assess age of fish (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
<tr>
<td>- Length, weight, and age (covariate) of hatchery and natural-origin broodstock after eggs have been removed (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
<tr>
<td>- Number and weight of eggs (Broodstock Collection and Stock Assessment)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 9:</th>
<th>Measured Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine if hatchery fish were released at the programmed size and number.</td>
<td></td>
</tr>
<tr>
<td>- Fork length and weights of random samples of hatchery juveniles at release (Release Monitoring)</td>
<td></td>
</tr>
<tr>
<td>- Monthly individual lengths and weights of random samples of hatchery juveniles (In-Hatchery Monitoring)</td>
<td></td>
</tr>
<tr>
<td>- Numbers of smolts released from the hatchery (Release Monitoring)</td>
<td></td>
</tr>
</tbody>
</table>
2.1 Broodstock Collection and Stock Assessment
Broodstock collection and stock assessment for Wenatchee summer steelhead, Wenatchee summer Chinook, Methow summer Chinook, Chelan Falls summer Chinook, and Chiwawa River spring Chinook, hatchery programs will, in most instances, occur concurrent to and consistent with the Broodstock Collection Protocol approved annually by the Hatchery Committee (e.g., Tonseth 2013) and relevant permits. Data collection during broodstock collection will be consistent with Murdoch and Peven (2005). A representative sample of fish trapped throughout the entire run, either collected for broodstock or released back to the river, will be sampled for origin, age, sex, size, and migration timing. Biological sampling of all fish trapped will include presence of internal (CWT or PIT) and external (VIE) tags or marks, scales, length, and sex (determined by ultrasound). PIT tags will be injected into all target species (Chinook and steelhead), whether collected for broodstock or released back to the river to monitor for potential fallbacks. All non-target species will be enumerated daily. Measures of central tendency and spread will be calculated and reported for each metric.

2.2 In-Hatchery Monitoring
The in-hatchery monitoring component will begin when adult fish are collected and retained for broodstock and ends when juvenile fish are released. Life stage specific in-hatchery survival and growth rates, disease monitoring, and an estimate of the number of fish released will be collected and analyzed according to Murdoch and Peven (2005). Additional data to be collected includes individual lengths and weights of juveniles during monthly sampling, and the weight of gonadal mass and body of spawned broodstock. Measures of the central tendency and spread will be calculated and reported for each metric.

Fish Marking
All of Chelan PUD’s hatchery fish will be coded-wire tagged (CWT) and externally marked or marked as otherwise agreed to by the HCP HC. A comprehensive marking strategy will be developed by the HCP HC and included as an Addendum to this Plan. The identification of these hatchery-produced fish is needed for a suite of adult metrics and may be used for adult management and/or fisheries as contemplated by the co-managers.

Using methods described in Keller and Murauskas (2012), hatchery fish will be PIT-tagged (Table 3) at Eastbank Hatchery approximately two to four weeks before the fish are transferred to acclimation ponds. Additional PIT-tagging may occur for program specific studies/comparisons as approved by the HC. The data collected from the PIT-tags will assist in release monitoring, migration timing, juvenile survival, and smolt-to-smolt survival. For all fish marking, quality control check will be performed during and immediately following tagging and prior to release.
Table 3. Wenatchee River basin hatchery program release goals and recommended number of fish PIT tagged.

<table>
<thead>
<tr>
<th>Program</th>
<th>Release goals</th>
<th>Number of fish PIT tagged(^1)</th>
<th>PIT tag rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiwawa River spring Chinook</td>
<td>144,026</td>
<td>5,000</td>
<td>3.5</td>
</tr>
<tr>
<td>Wenatchee River steelhead</td>
<td>247,300</td>
<td>15,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Wenatchee River summer Chinook</td>
<td>318,816 (CPUD Program) 181,184 (GPUD Program)</td>
<td>20,600(^2)</td>
<td>4.1</td>
</tr>
</tbody>
</table>

\(^1\) Additional PIT tagging may take place for Chelan PUD approved studies and/or comparisons.

\(^2\) Includes a component of PIT-tagged fish for the NOAA size target study and a component for Grant PUD’s program.

### 2.3 Release Monitoring

Hatchery fish will be released during smoltification in the spring, typically between 15 April and 1 June. Whenever possible, the exact release dates will coincide with environmental conditions that promote a rapid emigration that minimizes both the potential negative ecological interactions of hatchery fish with naturally produced fish and predation on hatchery fish by avian or other predators. The default release method will incorporate a volitional approach, as approved by the HCP HC, unless it can be demonstrated other approaches are better. The monitoring data collected for each stock are described below.

**Spring Chinook – Chiwawa River**

Pre-release sampling data will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan (Hillman et al. 2013). PIT tag monitoring of spring Chinook released in the Chiwawa River will occur during the release period (April). Juvenile Chinook will pass through two 92-cm diameter PIT-tag antennas connected to Allflex 310 readers and Quantitative Sampling Technologies (QST) QuBE data logger. The release location and type (i.e., volitional, forced, or trucked) are recorded for each observation file created and uploaded to the PTAGIS database maintained by the Pacific States Marine Fisheries Commission after each year of release. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Steelhead–Wenatchee River Basin**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions
9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Monitoring of steelhead released in the Wenatchee River basin will occur during loading of fish into transport trucks, unless fish are released directly into the Chiwawa River. Steelhead will pass through a series of PIT-tag antennas, each connected to a data logger, thereby allowing the creation of a PIT-tag observation file for each truckload of steelhead consisting of unique tag records. The release location (stream and rkm), release type (volitional or forced), and hatchery group (HxC or WxCC) will be recorded for each tag file created. PIT-tagged fish in each observation (release) file are assumed to represent untagged fish. However, because PIT-detection efficiency during loading will not be 100%, the number of fish in each truckload will be estimated using volumetric displacement. Observation files contain the PIT tags associated with the original tag files and will be used for analysis (see Post-release Monitoring Section). The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

**Summer Chinook – Wenatchee River and Chelan Falls**

Pre-release sampling will be conducted consistent with Murdoch and Peven (2005), including individual weights to the nearest 0.1 gram. Data collected will support monitoring questions 9.1, 9.2, 9.3 and 9.4 in the updated monitoring and evaluation plan. Should PIT tagging occur, a monitored release strategy consistent with other Chinook stocks (i.e., Chiwawa Spring Chinook) will be implemented. The total number of fish released will be based on the population size at CWT tagging (100%), subtracting mortality enumerated by hatchery staff that occurred from tagging to release.

### 2.4 Post-Release Monitoring and Survival Analysis

Data will be collected during rearing, acclimation, release, and the emigration period that may prove valuable in explaining variability in adult survival (Murdoch and Peven 2005). Rearing densities have been reported to influence the survival of hatchery fish (Martin and Wertheimer 1989; Banks 1994) and may also be linked to disease prevalence during rearing (Banks 1994; Ogut and Reno 2004). Acclimation of hatchery fish before release has been found to increase survival and reduce stray rates when the duration of the acclimation period is sufficient (Clarke et al. 2010, 2012; Rosenberger et al. 2013). These metrics (i.e., rearing density and acclimation period) will be collected annually to determine their influence on fish survival.

PIT-tagged groups of hatchery fish will be used to estimate survival during their emigration. Variation in survival during the emigration period may also inform observed adult survival rates. Survival during emigration or smolt-to-smolt survival and travel will be estimated using interrogation or release files and the standard Cormack-Jolly-Seber (CJS) estimator. CJS estimates are termed apparent survival estimates because it is unknown whether fish suffered mortality (e.g., size or time of release) or simply failed to emigrate (i.e., residualized or were precocial males). In the latter case, the proportion of PIT-tagged fish detected in the Wenatchee or Columbia rivers after the emigration period is complete may explain variation in smolt-to-smolt survival rates. The post-release performance of PIT-tag groups will be estimated and monitored annually, consistent with methods in Murdoch and Peven (2005). Additionally, precocity of hatchery releases will be evaluated by examining the proportion of PIT tag releases detected in adult fish ladders and tributaries within the same year as release.
3. **Juvenile Monitoring**

Data collected during these elements primarily support monitoring questions 2.1.1 and 2.2.1. and the monitoring objectives described in Table 4 (Hillman et al. 2013). Table 4 below provides a summary of the variables to be measured in 2014 under the Juvenile monitoring component and what objective the measure supports. The text that follows in this section further describes the activities.

Table 4. Monitoring and Evaluation Plan (Hillman et al. 2013) objectives and the associated measured variables for the juvenile monitoring component.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Measured Variables (Applicable Study Component(s))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.</td>
<td>• Number of juveniles (smolts, parr [where appropriate], and emigrants) <em>(Freshwater Productivity of Supplemented Stocks)</em></td>
</tr>
</tbody>
</table>

3.1 **Freshwater productivity of Supplemented Stocks**

*Steelhead, Spring Chinook, and Summer Chinook*

The freshwater productivity of supplemented stocks in the Wenatchee Basin will be monitored using smolt traps in the Chiwawa River and the lower Wenatchee River consistent with historical trapping efforts. Additionally, a newly derived analytical method which uses PIT-tag mark-recapture data will be utilized that reduces bias and increases precision by including estimates of emigration during the winter non-trapping periods. Up to 3,000 parr will be PIT tagged in the Chiwawa River in the fall, based on the spatial distribution and abundance estimated during parr snorkel surveys, to generate estimates of migration during the non-trapping periods. A random sample of a minimum of 10 percent of fish per remote site will be held in a live box for 24 hours to evaluate tag loss and delayed mortality. Using PIT tagged parr detections at the lower Chiwawa PIT array during the non-trapping period, the total number of PIT-tagged parr that emigrated will be estimated, and then expanded by the tag rate. Overwinter mortality of PIT-tagged parr is assumed to be the same as non-PIT-tagged parr. Overwinter survival estimates of Chiwawa River parr will be derived by estimating survival to the lower Wenatchee PIT tag array and analyses with the TribPit Survival software program and/or estimating survival of fall parr and spring smolts to McNary. PIT-tag mark-recapture trials conducted during the trapping period in the fall will also be used to estimate detection probabilities of the PIT-tag array at a given discharge level. Abundance and variance will be estimated using the same methods as those used in the smolt trap estimate. The estimated abundance and variance from each method and time period (trapping and non-trapping periods) will be summed to estimate a total production estimate. Under the proposed methodology, unbiased estimates of abundance during the entire migration period will be generated with relatively high precision (PSE < 15%), which is consistent with NOAA Fisheries’ recommendations (Crawford and Rumsey 2011). Historical estimates will be revised using the new estimation techniques.
### 3.2 Tributary Evaluations

**Chiwawa River**

Snorkel surveys will be utilized to estimate summer parr abundance within the Chiwawa River basin. This approach has been used in the Chiwawa River basin since 1992. In parallel to addressing Objective 2, additional juvenile data can help to assess the habitat carrying capacity in each tributary. This information can add value to the overall M&E plans and help inform management decisions.

Sampling will follow a stratified random sampling design. Landscape classification will be used to stratify streams in the Chiwawa basin that support juvenile Chinook salmon. In the Chiwawa River basin, WDFW found that classification "explained" most of the variability in fish numbers caused by geology, land type, valley bottom type, stream state condition, and habitat type (Hillman 2013). The same classification method was used to identify sections of the Little Wenatchee River (reference area) that corresponded to discrete reaches in the supplemented basins, but that had no release of hatchery Chinook. Consistent with previous efforts, habitat types within each land-class or reach will be identified and quantified annually. At least three units of each habitat type within each reach will be randomly selected for estimating densities of salmon and trout. Thus, overall sampling consists of a stratified-random sampling design, which increases the accuracy and precision of population estimates.

Densities of salmon and trout will be estimated in August and September by direct underwater observation within the randomly-selected habitat units. Underwater methods will follow those described by Thurow (1994), Dolloff et al. (1996), and O’Neal (2007). Habitat surface areas and volumes will be estimated during fish sampling. Numbers of fish counted will be adjusted for detection probabilities using the models published in Hillman et al. (1992). For each habitat type within a state type and reach stratum, the mean density of salmon and trout will be calculated as the ratio of mean numbers to mean area or volume sampled (Cochran 1977). Total numbers of fish will be estimated per habitat type within a state type and reach stratum as the product of mean density of fish in a given habitat type, times total area or volume of that habitat type within the stratum (Cochran 1977). Total numbers of fish within the supplemented basin will be estimated as the sum of all population numbers per habitat type in state type/reach strata. Bootstrapping methods will be utilized to estimate variance and percent errors (based on 95% confidence interval) for total numbers of fish.

### 4. Adult Monitoring

The Adult monitoring component is comprised of two basic elements: (1) estimating spawning escapement and (2) harvest monitoring. Data collected during these elements primarily support monitoring questions 1.1.1, 1.2.1, 2.1.1, 2.2.1, 3.2.1, 3.2.2, 4.1.1, 5.1.1, 5.2.1, 5.3.1, 5.3.2, 6.3.1, but also contribute data to monitoring questions 6.1.1, 6.2.1, 8.1.1, 8.2.1, 8.4.1, 10.1.1, 10.1.2, 10.1.3 and 10.1.4. Table 5 below provides a summary of the variables to be measured in 2014 under the Adult monitoring component and what objective the measure(s) supports. The text that follows in this section further describes the activities.
Table 5. Monitoring and Evaluation Plan (Hillman et al. 2013) objectives and the associated measured variables for the adult monitoring component.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Measured Variables</th>
</tr>
</thead>
</table>
| **Objective 1:** Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population. | • Number of hatchery and naturally produced fish on spawning grounds (Spawning Escapement Estimates)  
  • Number of hatchery and naturally produced fish taken for broodstock (Broodstock Collection and Stock Assessment)  
  • Number of hatchery and naturally produced fish taken in harvest (if recruitment is to the Columbia) (Harvest Reporting) |
| **Objective 2:** Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks. | • Number of hatchery and naturally produced fish on the spawning grounds (Spawning Escapement Estimates)  
  • Number of redds (Spawning Escapement Estimates) |
| **Objective 3:** Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate. | • Number of hatchery and naturally produced fish on spawning grounds (Spawning Escapement Estimates)  
  • Number of hatchery and naturally produced fish harvested (Harvest Reporting) |
| **Objective 4:** Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target. | • Number of hatchery and naturally produced fish on spawning grounds (Spawning Escapement Estimates) |
| **Objective 5:** Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives. | • Time (Julian date) of hatchery and naturally produced salmon carcasses or marked steelhead detected on spawning grounds within defined reaches (Spawning Escapement Estimates)  
  • Time (Julian date) of arrival at mainstem projects and within tributaries (e.g., traps, PIT arrays) with the intent to identify biologically significant differences (Spawning Escapement Estimates)  
  • Location (GPS coordinates) of female salmon carcasses observed on spawning grounds (Spawning Escapement Estimates) |
<table>
<thead>
<tr>
<th>Objective</th>
<th>Measured Variables (Applicable Study Component(s))</th>
</tr>
</thead>
</table>
| **Objective 6:** Determine if stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks. | • Number of hatchery fish collected for broodstock *(Broodstock Collection and Stock Assessment)*  
• Number of hatchery fish taken in fishery *(Harvest Reporting)*  
• Locations of live and dead strays (used to tease out overshoot) *(Spawning Escapement Estimates)*  
• Number of hatchery carcasses (PIT-tagged and/or CWT) found in non-target and target spawning areas or number of returning spawners counted via PIT-tag detection or at weirs in close temporal proximity to spawning areas (stray data into the Entiat subbasin will be obtained from USFWS Fisheries Resource Office-Leavenworth) *(Spawning Escapement Estimates)* |
| **Objective 8:** Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations. | • Total and salt (ocean) age and gender of hatchery and naturally produced salmon carcasses collected on spawning grounds *(Spawning Escapement Estimates)*  
• Whenever possible, age at maturity and sex ratio will be measured at weirs or dams near the spawning stream to avoid the size-related carcass recovery bias on spawning grounds (carcass sampling or ultrasound on live fish) *(Spawning Escapement Estimates)*  
• Assess age of fish, including harvested fish *(Spawning Escapement Estimates and Harvest Reporting)* |
| **Objective 10:** Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations. | • Numbers of hatchery fish taken in harvest *(Harvest Reporting)*  
• Numbers of natural-origin fish taken in harvest *(Harvest Reporting)* |

### 4.1 Spawning Escapement Estimates

**Chelan and Methow Summer/Fall Chinook**

Chinook spawning ground surveys will be conducted in the Chelan River and Methow subbasin (see Appendix A for survey reaches). Spawning ground surveys will be conducted via foot or raft beginning late September and continuing until spawning has ended (usually mid-November). Frequency of surveys will vary depending on method.
Summer Chinook carcass surveys will be conducted in the Chelan and Methow subbasins beginning in September and ending in November consistent with methods described in Murdoch and Peven (2005). A representative sample (i.e., 20%) of spawners as determined by spawner abundance and distribution (typically 100% of the carcasses encountered in the Chelan and Methow) will be sampled. Biological data will include collection of scale samples for age analysis, length measurements (POH and FKL), gender, egg voidance, and a check for tags or marks. DNA samples (five-hole punches from operculum) will be collected as needed to address different objectives. These data will be used to assess length-at-age, size-at-age, egg voidance, origin (hatchery or naturally produced), stray rates, and genetics. All carcass surveys will be conducted within the historical reaches.

Wenatchee Steelhead
The number of hatchery and naturally produced steelhead returning to the Wenatchee Basin will be estimated using a PIT tag mark recapture model. The estimated spawner abundance for the Wenatchee steelhead population will be a combination of PIT tag-based tributary and redd-based mainstem Wenatchee River estimates. Steelhead redd counts will be conducted weekly in all major spawning areas in the mainstem Wenatchee River (see Appendix A for survey reaches); minor spawning areas in the mainstem Wenatchee River will be surveyed once, based on the spawn timing in adjacent major spawning areas, to estimate redd abundance at peak spawning. The estimated total number of redds in the Wenatchee River mainstem will be expanded by the sex ratio of the population to estimate spawner abundance. Spawner abundance in tributaries of the Wenatchee River will be estimated using a PIT tag mark recapture model.

Chiwawa Spring Chinook
Chiwawa spring Chinook spawning escapement will be estimated based on the total number of redds found in each tributary (Murdoch et al. 2010) using methods described in Murdoch and Peven (2005). Weekly redd and carcass surveys will be conducted simultaneously from the first week of August through September (see Appendix A for survey reaches). Redd-based estimates assume that each female constructs one redd, which WDFW has found to be appropriate for this population (Murdoch et al. 2009). The total number of redds in each reach will be estimated using methods described in Millar et al. (2012) and using the observer efficiency model currently under development by WDFW. Redd counts will be expanded and the number of hatchery and naturally produced fish will be estimated using methods in Murdoch et al. (2010). Carcasses encountered during surveys will be sampled according to methods outlined in Murdoch and Peven (2005). All CWTs (i.e., snout or adipose) from carcasses will be sent to the WDFW lab in Olympia. The CWT lab will extract and read CWTs and submit all required information to RMIS within one year of collection. In addition, all redds and female carcasses will be geo-referenced using hand-held GPS devices. Carcass recovery bias has been detected in the Chiwawa spring Chinook population (Murdoch et al. 2010) and if not corrected will bias estimates of hatchery and naturally produced fish on the spawning grounds. While it may be appropriate to correct for carcass recovery bias for some monitoring questions (e.g., 2.2), when comparisons to reference populations are made in monitoring questions 1.1 and 1.2, carcass
bias will not be corrected because other monitoring programs have not corrected for a similar bias.

Wenatchee Summer Chinook
Wenatchee summer Chinook spawning ground counts will begin the last week in September and continue through the end of spawning in November (see Appendix A for survey reaches). Total census redd counts will be conducted by foot or raft depending on stream size, flow, and density of spawners within the stream reach (see Appendix A for survey reaches). All stream reaches will be surveyed once per week. Redd data will be collected using methods described in Murdoch and Peven (2005). Salmon carcass data collected during spawning ground surveys will be consistent with Murdoch and Peven (2005). All CWTs (i.e., snout or adipose) from carcasses will be sent to the WDFW lab in Olympia. The CWT lab will extract and read CWTs and submit all required information to RMIS within one year of collection.

Redd Observer Efficiency and Fish per Redd Value
Estimating redd observer efficiency is a costly and laborious task. Models generated for spring Chinook salmon are not applicable for summer Chinook because of differences in river characteristics of spawning locations. Small unmanned air systems (e.g., four blade helicopter) have been used successfully to document the abundance and distribution of fall Chinook redds in the Snake River (P. Groves, Idaho Power, Pers. comm.). We intend to use this technology to determine the true number of summer Chinook redds in selected reaches of the Wenatchee River. Weekly aerial photos of selected reaches will be digitally overlaid to document existing and newly constructed redds. Weekly ground-based estimates and the true number of redds will be compared in order to determine observer efficiency. Weekly river characteristics (e.g., channel width, water depth, discharge, visibility, and habitat complexity), observer experience, and survey effort will be incorporated into a model to predict observer efficiency in all river reaches. Predicted redd observer efficiency for each river reach will be used to expand ground-based redd counts to estimate the total reach redd count. Aerial photographs and ground-based surveys will also be used to estimate redd life for each river reach. The estimated spawner abundance in the Wenatchee River and an associated level of precision will be calculated using the estimated total redd count for each reach, mean redd life, and the sex ratio of the population similar to methods described in Millar et al. (2012).

4.2 Harvest Reporting
In years when the expected hatchery adult returns are in excess of the levels needed to meet the hatchery program goals (i.e., broodstock and/or escapement), surplus fish may be available for harvest. Harvesting or removal of surplus hatchery fish may have benefits to the natural populations by reducing potential negative ecological and genetic impacts (e.g., density dependent effects, loss of fitness, and loss of genetic variation). The contribution of hatchery fish to fisheries will be monitored using CWT recoveries on a brood-year basis supporting Objective 10.

To obtain the necessary data to determine if the harvest rates are meeting objectives, a statistically valid creel program will be designed and implemented for all sport and/or conservation fisheries in the Upper Columbia River to estimate harvest of hatchery fish from
both Chelan and Grant County PUD funded hatchery programs (Murdoch and Peven 2005). Information collected during creel surveys are an integral component to calculating the HRR (Objective 3), particularly given most CWT recoveries for PUD mitigation programs occur in the Upper Columbia River and its tributaries, with the exception of summer Chinook where most CWT recoveries occur in ocean fisheries. Because of considerable time lags in reporting of CWT’s to the Regional Marking Information System (RMIS) database, it requires an ongoing query of recovery data until the number of estimated fish does not change.

5. **DATA MANAGEMENT, ANALYSIS, AND REPORTING**

5.1 **Data Management**
A Microsoft Access database maintained by WDFW will contain all the monitoring data collected for hatchery evaluations. The database will contain and manage all data associated with aquaculture monitoring, juvenile monitoring, and adult monitoring.

All data entered into the database are evaluated for quality control and quality assurance by WDFW. Quality control checks using analyses such as modified Z-scores, boxplots, and the Generalized Extreme Studentized Deviate Procedure (Iglewicz and Hoaglin 1993) will be conducted for all data entry. In the event outliers are identified, discussion will occur on whether identified outliers are true data points or transcription errors. This process ensures that the data used to test statistical hypotheses are correct and accurate.

5.2 **Data Analysis**
The analyses proposed are consistent with the Monitoring and Evaluation Plan for PUD Hatchery Programs: 2013 Update (Hillman et al. 2013). Each of the objectives will be addressed using the appropriate statistical tests, as well as graphic analyses that convey relevant information.

5.3 **Reporting**
An annual M&E report will be generated following the completion of each calendar year and will be available for HCP HC review by June 1 of the following year. Additionally, monthly progress reports will be made available to the HCP HC.
6. REFERENCES


Appendix A

Designated survey reaches for Methow subbasin summer Chinook spawning ground surveys.

<table>
<thead>
<tr>
<th>River</th>
<th>Reach</th>
<th>Code</th>
<th>RM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methow</td>
<td>Methow to Methow Bridge</td>
<td>M1</td>
<td>0.0-14.78</td>
</tr>
<tr>
<td></td>
<td>Methow Bridge to Carlton Bridge</td>
<td>M2</td>
<td>14.78-27.17</td>
</tr>
<tr>
<td></td>
<td>Carlton Bridge to Twisp Bridge</td>
<td>M3</td>
<td>27.17-39.55</td>
</tr>
<tr>
<td></td>
<td>Twisp Bridge to MVID</td>
<td>M4</td>
<td>39.55-44.85</td>
</tr>
<tr>
<td></td>
<td>MVID to Winthrop Bridge</td>
<td>M5</td>
<td>44.85-49.80</td>
</tr>
<tr>
<td></td>
<td>Winthrop Bridge to Hatchery Dam</td>
<td>M6</td>
<td>49.80-51.55</td>
</tr>
</tbody>
</table>

Designated survey reaches for Wenatchee River basin summer Chinook spawning grounds surveys. Asterisks denotes reaches where redd observer efficiency will be assessed.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Bridge</td>
<td>54.20-53.58</td>
</tr>
<tr>
<td></td>
<td>Bridge to Swamp *</td>
<td>53.58-52.66</td>
</tr>
<tr>
<td></td>
<td>Swamp to Chiwawa River</td>
<td>52.66-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Schugart Flats</td>
<td>48.39-47.93</td>
</tr>
<tr>
<td></td>
<td>Schugart Flats to Old Plain Bridge</td>
<td>47.93-46.21</td>
</tr>
<tr>
<td></td>
<td>Old Plain Bridge to RR Bridge</td>
<td>46.21-41.91</td>
</tr>
<tr>
<td></td>
<td>RR Bridge to RR Tunnel</td>
<td>41.91-39.28</td>
</tr>
<tr>
<td></td>
<td>RR Tunnel to Swing Pool *</td>
<td>39.28-36.67</td>
</tr>
<tr>
<td></td>
<td>Swing Pool to Tumwater Br</td>
<td>36.67-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground</td>
<td>35.55-33.50</td>
</tr>
<tr>
<td></td>
<td>Swiftwater Campground to Unimproved Campground</td>
<td>33.50-33.08</td>
</tr>
<tr>
<td></td>
<td>Unimproved Campground to Tumwater Dam</td>
<td>33.08-30.91</td>
</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Penstock Br</td>
<td>30.91-28.66</td>
</tr>
<tr>
<td></td>
<td>Penstock Br to Icicle Road Br *</td>
<td>28.66-26.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Icicle Mouth</td>
<td>26.43-25.61</td>
</tr>
<tr>
<td></td>
<td>Icicle Mouth to Boat Takeout *</td>
<td>25.61-24.49</td>
</tr>
<tr>
<td></td>
<td>Boat Takeout to Leavenworth Br</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Br to Irrigation Flume *</td>
<td>23.90-22.77</td>
</tr>
<tr>
<td></td>
<td>Irrigation Flume to Peshastin Br</td>
<td>22.77-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Br to Dryden Dam *</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Williams Canyon</td>
<td>17.76-15.54</td>
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<tr>
<td></td>
<td>Williams Canyon to Upper Cashmere Br</td>
<td>15.54-10.22</td>
</tr>
<tr>
<td></td>
<td>Upper Cashmere Br to Lower Cashmere Br</td>
<td>10.22-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Br to Old Monitor Br *</td>
<td>9.49-7.12</td>
</tr>
<tr>
<td></td>
<td>Old Monitor Br to Sleepy Hollow Br</td>
<td>7.12-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Br to River Bend *</td>
<td>3.27-1.73</td>
</tr>
<tr>
<td></td>
<td>River Bend to Siphon</td>
<td>1.73-1.29</td>
</tr>
<tr>
<td></td>
<td>Siphon to Mouth</td>
<td>1.29-0.45</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee Basin spring Chinook spawning grounds surveys.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td>Buck Cr to Phelps Cr</td>
<td>36.39-33.46</td>
</tr>
<tr>
<td>C6</td>
<td>Phelps Cr (Trinity) to Maple Cr Br</td>
<td>33.46-29.64</td>
</tr>
<tr>
<td>C5</td>
<td>Maple Cr Br to Atkinson Flats</td>
<td>29.64-26.59</td>
</tr>
<tr>
<td>C4</td>
<td>Atkinson Flats to Schaefer Cr</td>
<td>26.59-24.24</td>
</tr>
<tr>
<td>C3</td>
<td>Schaefer Cr to Rock Cr Campground</td>
<td>24.24-22.97</td>
</tr>
<tr>
<td>R1 - Rock</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-1.05</td>
</tr>
<tr>
<td>C2</td>
<td>Rock Cr Campground to Grouse Cr</td>
<td>22.97-12.27</td>
</tr>
<tr>
<td>K1 - Chikamin</td>
<td>Mouth to Chiwawa River Road Bridge</td>
<td>0.00-0.68</td>
</tr>
<tr>
<td>C1</td>
<td>Grouse Cr to Mouth</td>
<td>12.27-0.00</td>
</tr>
<tr>
<td>N4</td>
<td>White Pine Creek to Lower R.R. Bridge</td>
<td>16.09-13.68</td>
</tr>
<tr>
<td>N3</td>
<td>Lower R.R. Bridge to Hwy 2 Bridge</td>
<td>13.68-9.13</td>
</tr>
<tr>
<td>N2</td>
<td>Hwy 2 Bridge to Kahler Cr</td>
<td>9.13-4.46</td>
</tr>
<tr>
<td>N1</td>
<td>Kahler Cr to Mouth</td>
<td>4.46-0.00</td>
</tr>
<tr>
<td>H4</td>
<td>Falls to Grasshopper Meadows</td>
<td>21.16-19.78</td>
</tr>
<tr>
<td>T1 - Panther</td>
<td>Boulder field to Mouth</td>
<td>0.43-0.00</td>
</tr>
<tr>
<td>H3</td>
<td>Grasshopper Meadows to Napequa River</td>
<td>19.78-17.59</td>
</tr>
<tr>
<td>Q1 - Napequa</td>
<td>Take out to Mouth</td>
<td>0.91-0.00</td>
</tr>
<tr>
<td>H2</td>
<td>Napequa River to Sears Cr Bridge</td>
<td>17.59-11.97</td>
</tr>
<tr>
<td>H1</td>
<td>Sears Cr Bridge to Mouth</td>
<td>11.97-0.00</td>
</tr>
<tr>
<td>L3</td>
<td>Rainy Cr to Lost Cr</td>
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<td>Lost Cr to Old Fish Weir</td>
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<td>Old Fish Weir to Mouth</td>
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</tr>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td>U1</td>
<td>Metal bridge to Mouth</td>
<td>1.0-0.00</td>
</tr>
<tr>
<td>I1</td>
<td>Hatchery to Mouth</td>
<td>3.02-0.00</td>
</tr>
<tr>
<td>D1 - Ingalls</td>
<td>Trailhead to mouth</td>
<td>0.64-0.00</td>
</tr>
<tr>
<td>P2</td>
<td>Ingalls Creek to Camas Cr</td>
<td>9.14-5.63</td>
</tr>
<tr>
<td>P1</td>
<td>Camas Cr to Mouth</td>
<td>5.63-0.00</td>
</tr>
</tbody>
</table>
Designated survey reaches for Wenatchee River basin steelhead spawning grounds surveys. Asterisks denote index reaches. Spawning escapements in tributaries will be estimates using PIT-tag arrays.

<table>
<thead>
<tr>
<th>Reach Code</th>
<th>Reach Section</th>
<th>River Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>W10</td>
<td>Lake Wenatchee to Chiwawa River*</td>
<td>54.20-48.39</td>
</tr>
<tr>
<td>W9</td>
<td>Chiwawa River to Tumwater Bridge*</td>
<td>48.39-35.55</td>
</tr>
<tr>
<td>W8</td>
<td>Tumwater Br to Swiftwater Campground</td>
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<tr>
<td>W8</td>
<td>Swiftwater Campground to Unimproved Campground*</td>
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</tr>
<tr>
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<td>Unimproved Campground to Tumwater Dam</td>
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</tr>
<tr>
<td>W7</td>
<td>Tumwater Dam to Icicle Road Bridge</td>
<td>30.91-26.43</td>
</tr>
<tr>
<td>W6</td>
<td>Icicle Road Br to Leavenworth boat ramp*</td>
<td>26.43-24.49</td>
</tr>
<tr>
<td>W6</td>
<td>Boat Takeout to Leavenworth Bridge</td>
<td>24.49-23.90</td>
</tr>
<tr>
<td>W5</td>
<td>Leavenworth Bridge to Peshastin Bridge</td>
<td>23.90-20.00</td>
</tr>
<tr>
<td>W4</td>
<td>Peshastin Bridge to Dryden Dam</td>
<td>20.00-17.76</td>
</tr>
<tr>
<td>W3</td>
<td>Dryden Dam to Lower Cashmere Bridge</td>
<td>17.76-9.49</td>
</tr>
<tr>
<td>W2</td>
<td>Lower Cashmere Bridge to Sleepy Hollow Bridge *</td>
<td>9.49-3.27</td>
</tr>
<tr>
<td>W1</td>
<td>Sleepy Hollow Bridge to Mouth</td>
<td>3.27-0.45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tributary</th>
<th>River mile of PIT tag array</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Creek</td>
<td>0.54</td>
</tr>
<tr>
<td>Peshastin Creek</td>
<td>1.91</td>
</tr>
<tr>
<td>Chumstick Creek</td>
<td>0.31</td>
</tr>
<tr>
<td>Icicle River</td>
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<tr>
<td>Chiwaukum Creek</td>
<td>0.24</td>
</tr>
<tr>
<td>Chiwawa River</td>
<td>0.58</td>
</tr>
<tr>
<td>Nason Creek</td>
<td>0.52</td>
</tr>
<tr>
<td>Little Wenatchee River</td>
<td>1.74</td>
</tr>
<tr>
<td>White River</td>
<td>1.65</td>
</tr>
</tbody>
</table>
Chelan PUD’s proposed Lake Wenatchee sockeye salmon monitoring and evaluation activities.

<table>
<thead>
<tr>
<th>Life History Stage</th>
<th>M&amp;E Activity</th>
<th>Related analysis</th>
<th>VSP parameter addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juvenile</td>
<td>Concurrent operation of the lower Wenatchee smolt trap to collect juvenile outmigration data</td>
<td>Generate distribution of outmigration timing and determine average smolt size.</td>
<td>Diversity</td>
</tr>
<tr>
<td>Juvenile</td>
<td>PIT tagging smolts at lower Wenatchee smolt trap (up to 5,000 fish annually)</td>
<td>Estimate smolt-to-adult returns</td>
<td>Productivity</td>
</tr>
<tr>
<td>Juvenile</td>
<td>Develop spawner-smolt production estimates</td>
<td>Use previously collected data to quantify the relationship between spawner abundance and smolt production</td>
<td>Productivity</td>
</tr>
<tr>
<td>Adult</td>
<td>Rock Island and Rocky Reach Dam adult counts</td>
<td>Initial spawner abundance (Okanogan stock separation)</td>
<td>Abundance and spatial structure</td>
</tr>
<tr>
<td>Adult</td>
<td>PIT tag subsample of returning adults at Tumwater Dam to support mark-recapture evaluation</td>
<td>Calculate spawner abundance and relative distribution in tributaries</td>
<td>Abundance and spatial structure</td>
</tr>
<tr>
<td>Adult</td>
<td>Collect and age scales(^1) from returning adults at Tumwater Dam</td>
<td>Estimate age-at-return and relative productivity of contributing spawner cohorts</td>
<td>Productivity and diversity</td>
</tr>
<tr>
<td>Adult</td>
<td>Tumwater Dam adult counts</td>
<td>Estimate potential spawner abundance (pre Lake-Wenatchee harvest), potential productivity (recruits/spawner), and run timing distribution</td>
<td>Abundance and diversity</td>
</tr>
<tr>
<td>Adult</td>
<td>Operate PIT detection arrays on Little Wenatchee and White River</td>
<td>Calculate spawner abundance (post-Lake Wenatchee harvest and other mortality), actual productivity (recruits/spawner), and entry-to-spawning-habitat timing distribution, and spatial spawner distribution</td>
<td>Abundance, productivity, spatial structure, and diversity</td>
</tr>
</tbody>
</table>

\(^1\) Scales would be collected concurrently from adults that are PIT tagged at Tumwater Dam
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans (HCPs) Hatchery Committees’ meeting was held at Chelan PUD headquarters in Wenatchee, Washington, on Wednesday, December 18, 2013, from 9:30 am to 12:30 pm. Attendees are listed in Attachment A to these meeting minutes.

ACTION ITEM SUMMARY

- Kristi Geris will review the administrative record to compile a summary of how containment levels were established for Non-Target Taxa of Concern (NTTOC) modeling (Item II-B).
- The Hatchery Evaluation Technical Team (HETT) will review the technical approach identified by HETT to address cutthroat trout NTTOC risk assessment, focusing on the use of spatial overlap as a proxy for risk (Item II-B).
- Greg Mackey, Keely Murdoch, and Todd Pearsons will investigate how fry predation was handled in the NTTOC modeling (Item II-B).
- Douglas PUD Information Systems (IS) Staff will provide a presentation on the Douglas PUD Extranet Site at the Hatchery Committees’ meeting on January 15, 2014 (Item II-E).
- Public comments on the Okanogan and Methow Spring Chinook Hatchery and Genetic Management Plans (HGMPs) are due on January 9, 2014 by 5:00 pm. The Federal Register Notice (FRN) and HGMPs for review can be accessed here: http://www.westcoast.fisheries.noaa.gov/hatcheries/hgmp/Okanogan_and_Methow_salmon_hatchery_applications.html (Item III-A).
- Chelan PUD will provide a formal Rocky Reach Trap Pilot Study report for consideration at the Hatchery Committees’ meeting on January 15, 2014 (Item IV-B).
- Hatchery Committees representatives will submit edits and comments on the draft
Chelan PUD Spring Chinook HGMP to Alene Underwood by January 10, 2014, for discussion at the Hatchery Committees’ meeting on January 15, 2014 (Item IV-C).

- Chelan PUD will provide the draft Chelan PUD 2014 HCP Rocky Reach and Rock Island Action Plan to Kristi Geris for distribution to the Hatchery Committees (Item IV-F).

- Mike Tonseth will provide a brief written request from Washington Department of Fish and Wildlife (WDFW) and the National Marine Fisheries Service (NMFS) for a change in the scope of work for the Bonneville Power Administration (BPA)-funded Wenatchee Spring Chinook Reproductive Success Study, to Kristi Geris for distribution to the Hatchery Committees (Item V-A).

STATEMENT OF AGREEMENT DECISION SUMMARY

- The Hatchery Committees representatives present approved the Douglas PUD 2014 Hatchery Monitoring and Evaluation (M&E) Implementation Plan, as revised (Item II-A).

- The Hatchery Committees representatives present approved the sacrifice of 375 Chelan PUD Chiwawa spring Chinook juveniles for Grant PUD’s White River Size Target Study (Item IV-D).

AGREEMENTS

- The Hatchery Committees representatives present agreed, in principle, to the Colville Confederated Tribes’ (CCT’s) Wells Steelhead Broodstock Replacement proposal, pending further discussion at the Hatchery Committees’ meeting on January 15, 2014 (Item II-C).

REVIEW ITEMS

- Kristi Geris sent an email to the Hatchery Committees on December 18, 2013, notifying them that the draft Douglas PUD 2014 HCP Wells Action Plan is available for review. Douglas PUD will be requesting approval of the draft plan at the Hatchery Committees’ meeting on January 15, 2014 (Item II-D).

- The draft Sockeye Addendum to the final Chelan PUD 2014 Hatchery M&E Implementation Plan that was distributed to the Hatchery Committees by Kristi Geris
on December 11, 2013, is out for review. Chelan PUD will be requesting approval of
the draft addendum at the Hatchery Committees’ meeting on January 15, 2014 (Item
IV-A).

- Kristi Geris sent an email to the Hatchery Committees on December 18, 2013,
  notifying them that the draft Chelan PUD Spring Chinook HGMP is available for
  review, with comments due to Alene Underwood by January 10, 2014, for discussion
  at the Hatchery Committees’ meeting on January 15, 2014 (Item IV-C).

FINALIZED REPORTS

- The revised draft Chelan PUD 2014 Hatchery M&E Implementation Plan that was
  approved by the Hatchery Committees on November 20, 2013, was finalized and
  distributed to the Hatchery Committees by Kristi Geris on November 22, 2013.
- The draft Douglas PUD 2012 M&E Plan Report was approved by the Hatchery
  Committees on November 14, 2013, following a 60-day review period, and was
  finalized and distributed to the Hatchery Committees by Kristi Geris on December 13,
  2013.
- The revised draft Douglas PUD 2014 Hatchery M&E Implementation Plan, as
  approved at the Hatchery Committees’ December 18, 2013 meeting, was finalized and
  distributed to the Hatchery Committees by Kristi Geris on December 19, 2013 (Item
  II-A).

I. Welcome, Agenda Review, Meeting Minutes, and Action Items

Mike Schiewe welcomed the Hatchery Committees and asked for any additions or other
changes to the agenda. The following revisions were requested:

- Douglas PUD added: 1) the CCT’s Wells Steelhead Broodstock Replacement
  Memorandum to the Douglas PUD Steelhead Broodstock at Wells Hatchery Update;
  2) an update on the draft Douglas PUD 2014 HCP Wells Action Plan; and 3) a
  discussion on the Douglas PUD Extranet site.
- Chelan PUD added: 1) a request regarding Grant PUD’s White River Size Target
  Study; 2) a Similkameen Update; and 3) an update on the draft Chelan PUD 2014 HCP
  Rocky Reach and Rock Island Action Plan.
• WDFW added a request regarding the BPA-funded Wenatchee Spring Chinook Reproductive Success Study.

The Hatchery Committees reviewed the revised draft November 6, 2013 conference call minutes. Kristi Geris said that all comments and revisions received from members of the Committees were incorporated in the revised minutes, and that there were no outstanding edits or questions to discuss. Kirk Truscott provided the CCT’s approval of the revised minutes via email on December 17, 2013. The Hatchery Committees members present approved the draft November 6, 2013 conference call minutes, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

The Hatchery Committees reviewed the revised draft November 20, 2013 meeting minutes. Kristi Geris said that a third revised draft was distributed to the Hatchery Committees on December 17, 2013. She said the third revised draft included additional edits, tracked in redline strikeout, which addressed all pending comments in the first and second drafts; there are no outstanding comments to be discussed. Kirk Truscott provided the CCT’s approval of the revised minutes via email on December 17, 2013. The Hatchery Committees members present approved the draft November 20, 2013 meeting minutes, as revised. Geris will finalize the meeting minutes and distribute them to the Committees.

II. Douglas PUD

A. DECISION: Douglas PUD 2014 Hatchery M&E Implementation Plan (Greg Mackey)

Greg Mackey said that a revised draft Douglas PUD 2014 Hatchery M&E Implementation Plan (Attachment B) was distributed to the Hatchery Committees by Mackey and Kristi Geris on December 17, 2013. He said the revised draft included comments from the CCT, which were also distributed to the Hatchery Committees on December 10, 2013. He said he discussed the CCT’s comments with Charlie Snow, and that comments from Snow are also included in the revised draft. Mackey reviewed the edits in the revised draft plan, as follows:

Module 1: In-Hatchery Metrics – Steelhead (page 5)
Mackey explained that historically, the CCT have not sampled Omak broodstock at Wells Hatchery during spawning; therefore, that sentence was omitted.
Module 2: Steelhead Adult Stock Assessment (page 7)
Mackey explained that in the Douglas PUD 2013 Hatchery M&E Implementation Plan, the proportion of hatchery origin spawners (pHOS) was calculated for conservation programs; however, for safety net programs, pHOS metrics were not as relevant. He added that because pHOS was already being documented for the conservation program, it was not needed for safety net programs. He said that pHOS and proportionate natural influence metrics will be estimated for the Twisp; however, the data necessary to estimate pHOS in the mainstem Methow and Chewuch will be collected and reported. Mackey said that Snow indicated that field activities are largely the same as in previous years.

Module 4: Steelhead Spawning Distribution and Timing (page 8)
Mackey explained that run-timing, spawn-timing, and spawning distribution need to be determined for steelhead. He said that passive integrated transponder (PIT)-tag arrays are located in key locations to help address these metrics. He added that steelhead spawner surveys (except in the Twisp where fish can be Floy-tagged and survey conditions are favorable) cannot address the objectives in the M&E plan because hatchery and wild fish cannot be differentiated, and steelhead surveys are typically curtailed due to high water and poor visibility. He said that Andrew Murdoch and Snow would still like to conduct index reach redd surveys in both the lower and upper Methow. He said in the lower Methow, there is the possibility that fish will overwinter, so Murdoch and Snow would like to survey redds and use stock assessments to parse out what was observed. Mackey said that Snow would also like to conduct index surveys in the upper Methow to augment the PIT-tag detection data. He said that it is important to begin shifting towards PIT-tag detections for estimating steelhead spawner distribution and timing rather than continuing to implement spawner surveys that do not provide reliable estimates. The PIT-tag detection method will continue to be supplemented with index reach counts in the mainstem Methow until a more accurate PIT-tag detection arrays can be installed in the lower Methow Basin.

Module 5: Estimation of Steelhead Stray Rates (page 9)
Mackey explained that he had suggested using March as a cutoff for strays; however, after discussion, it was decided that this would be addressed during analysis and did not pertain to implementation, and so it was omitted.
The continued use of screw traps was planned for 2014, but in addition, the use of PIT-tagging juveniles in-stream coupled with juvenile population estimates and survival models was planned to provide population estimates at the parr and smolt stages, as well as survival estimates to key life history stages. He said it was decided to set up the Twisp with a sampling scheme involving General Random Tessellation Sampling and also PIT-tagging (i.e., “Approach 2”). Keely Murdoch asked if “Approach 2” is a pilot study for implementation in 2014 in addition to rotary smolt trapping, and Mackey said that is correct. He added that this pilot will offer a comparison, but importantly, will also help gauge how feasible this approach will be in terms of what level of effort is required for catching and PIT-tagging fish. He said fish are PIT-tagged in a stream while conducting a population estimate and their survival tracked through the system, which will provide data for population estimates at later life stages (smolts) and survival to key life stages. Murdoch suggested that it may be important to compare methods. Mackey responded that it is not necessarily informative to expect a correlation between two methods if one method provides poor estimates. Smolt trapping experiences many missed days which cannot be corrected statistically and the lower river trap, in particular, has very low efficiency which makes extrapolating population estimates prone to error. Mackey added that a key for evaluating juvenile fish performance in the Methow is the Rocky Reach Juvenile Bypass (RRJB) detector. He said that the survival studies conducted for the Wells Project provide excellent estimates of survival that can be used to adjust the survival and population estimates obtained at the RRJB detector to determine how many fish are emigrating from the Methow. Mike Schiewe asked how many detection systems are installed upstream from Rocky Reach. Mackey said that systems are installed in the lower Methow near Pateros, lower Twisp, lower Chewuch, mainstem Methow near Winthrop, at the base of the Lost River, and in a number of the tributaries. Bill Gale noted the difficulty with poor detection efficiency for juveniles at certain times of the year; Tom Kahler said the same issue exists with screw traps. Kahler also noted that instream arrays during the summer have much higher detection efficiency. Mackey added that Douglas PUD would also look into upgrading key arrays to improve performance of this approach if it is adopted; Kahler noted the vast improvements that have been developed for arrays. Mackey said that to satisfy Truscott’s comments to this section, “in the Twisp River” was added to “Approach 2.”
Module 11: Spring Chinook Spawners Surveys (page 16)
Mackey said that to address Truscott’s comment, Table 4 was copied from the Douglas PUD 2013 Hatchery M&E Implementation Plan and inserted in this section.

Module 12: Estimation of Spring Chinook Stray Rates (page 16)
Gale requested clarification regarding how soon coded-wire-tag (CWT) data will be uploaded to the Regional Mark Information System (RMIS) database. Mike Tonseth said that WDFW Olympia staff handles uploading data to RMIS, which typically is completed within 12 months; however, Snow receives those CWT data earlier and he recommended that Gale coordinate with Snow if he was in need of those data sooner. Mackey added that Douglas PUD receives a draft report from Snow by July 1, and so Mackey estimated that Snow has those data by about June. Gale asked if a deadline could be added, for example, “data will be available within 12 months.” Tonseth explained that there is no guarantee of the timing when the WDFW lab will process tags and when those data are subsequently uploaded to RMIS. Furthermore, uploading data to RMIS by a certain date is not part of the M&E obligations under the HCP. He said the timing of CWT extraction and uploading to RMIS is a built-in cost of tagging that Douglas PUD and WDFW have no control over. Gale said he was fine with leaving the text as is.

Module 13: Juvenile Spring Chinook Population Assessment (page 17)
Mackey said this comment was the same as the previous comment regarding “Approach 2.”

Schiewe said that he spoke with Truscott on December 17, 2013, and Truscott indicated that unless there were major revisions made to the plan during today’s meeting, the CCT approves the revised draft Douglas PUD 2014 Hatchery M&E Implementation Plan. The Hatchery Committees representatives present also approved the Douglas PUD 2014 Hatchery M&E Implementation Plan, as revised; the final plan was distributed to the Hatchery Committees by Geris on December 19, 2013.

B. NTTOC Update and Discussion (Greg Mackey)
Greg Mackey said that development of the summary report is underway, and that all model data are now uploaded in a database and can be extracted. He said, in summary, the analyses started with 50 hatchery programs and 25 NTTOC populations, which resulted in 526
possible interactions. He said that 416 of 526 interactions were suitable for Predation, Competition, and Disease (PCD) Risk1 modeling, and that 110 of 526 interactions involved lamprey and cutthroat, which could not be modeled. He said that 80 of 416 interactions were Chief Joseph Hatchery program interactions that were not modeled, which resulted in 336 interactions that were modeled. He said that 202 of 336 interactions were run to completion (about two-thirds), and that 134 would not run to completion. He said he was uncertain about the cause for why each of the 134 did not run to completion, although he noted that modeling runs crashed and some modeling runs ran too slowly to complete.

Mackey recalled that the original plan was to use a panel to address lamprey and cutthroat trout. He said if the Hatchery Committees still wish to finish lamprey and cutthroat, a few panelists need to be identified to review those interactions. Todd Pearsons recalled that cutthroat were going to be assessed based on distributional overlap with the hatchery programs, and the assumption would be that the risk of that population would be under containment level given the small spatial overlap (i.e., low risk). Bill Gale said he thought only ecological impacts were being evaluated—not program impacts as a whole, such as trapping operations. Mike Schiewe indicated he thought the objective was to determine the effects of hatchery fish on NTTOC, but suggested that the language of the objective should be reviewed to confirm. Gale suggested that if the focus included the program then a panel should be convened to evaluate lamprey because there may be facility impacts.

Schiewe suggested revisiting the objectives and reviewing the compiled, summarized data prior to making further decisions. Keely Murdoch said that it seems if a panel is convened for lamprey, one may need to be convened for all interactions. Schiewe suggested revisiting Objective 10, and also the Statement of Agreement dating back to using the modeling approach.

Murdoch recalled cases where there were issues with fry predation where it should have been excluded, for example, with releases in Nason Creek preying on Wenatchee Sockeye fry. She said she tried eliminating that age class and the models would not run, so the plan was to go back through these data following the modeling because there was no way to address this issue while running the models. Pearsons added that he recalled that the plan was to run the models and then subtract fry predation losses from the total. Mackey
suggested that once these data are summarized more, a few people should convene and discuss a suitable work-around to address this issue.

Mackey noted that the containment objective for Chiwawa and Nason spring Chinook was 10%, and all other listed populations were lower at 5%. He asked if anyone remembered the reasoning behind this, or if it was an oversight. Pearsons said it would make sense that all listed species had the same containment objective. Schiewe said any differences would have been decided early in the process. Kristi Geris said she will review the administrative record to compile a summary of how containment levels were established for NTTOC modeling. The HETT agreed to investigate the extent of spatial overlap for cutthroat trout in the NTTOC modeling. Mackey, Murdoch, and Pearsons agreed to investigate how fry predation was handled in the earlier NTTOC modeling.

C. Steelhead Broodstock at Wells Hatchery Update (Jayson Wahls)

Jayson Wahls said that since the last Hatchery Committees meeting, 16 marked steelhead have been obtained from Ringold Hatchery, including 9 males and 7 females, which will be used for the 160,000 Columbia Safety-Net Program. Mike Tonseth added that between all of the different methods being employed to replace the broodstock, and combined with the CCT’s proposal, he is fairly certain brood will be replaced for all programs. Tonseth said that the CCT will be collecting both natural-origin (NO) broodstock and if supported by the Committees, hatchery-origin (HO) broodstock for the Omak program, and hopes to collect HO broodstock for the Okanogan program (see below); Greg Mackey added that Kirk Truscott informed him that the CCT has a permit to install a weir at Wild Horse Springs. Bill Gale asked what the total broodstock need is, and Wahls replied that 200 fish are needed. Wahls added that this amount would cover the 50,000 needed for Winthrop National Fish Hatchery (NFH), and he also added that 5 pairs are needed for the Omak program and 20 pairs are needed for the Okanogan program. Mike Schiewe asked how the efforts to collect fish at Wells and in the Methow tie in with the CCT’s proposal, and Tonseth replied that it dovetails into making sure production requirements can be met. He added that if the CCT already has a permit to install a temporary weir in the Omak or Okanagan, there are no additional impacts.  (Note: Tom Kahler later noted that the CCT has a permanent weir in Omak Creek.) Gale asked if the mainstem Columbia River is closed between Rocky Reach Dam and Wells Dam, and Tonseth replied that it is. He added that it may open back up for
angling in March 2014. Gale asked if the fisheries located above Wells Dam are open, and Tonseth replied that they are; however, efforts are low and catch is very low. Schiewe noted that one provision in the CCT’s proposal is to replace one-for-one, and he asked if this was agreeable to the Committees. Tonseth replied that he believes it is reasonable, and added that the HO fish are returns from Okanogan Basin releases. Mackey noted that this means holding and rearing 80,000 fish separately, and added that assurances would need to be made that there is adequate space to accommodate this arrangement. Wahls said that he believes there should be no issues with space.

Wells Steelhead Broodstock Replacement (the CCT’s proposal)

The CCT provided a Wells Steelhead Broodstock Replacement Memorandum (Attachment C) that was distributed to the Hatchery Committees by Kristi Geris on December 17, 2013. Tonseth explained the CCT’s proposal as including operating the weir in Omak Creek, in addition to another proposed weir in Wild Horse Springs that the CCT is already permitted for. He said this presents options to obtain HO steelhead in the Okanogan. Mackey added that Douglas PUD would continue to collect Wells stock; however, fish would also be collected in the Methow in the spring. He said that fish obtained in the spring would normally replace fall-caught fish, with the excess fish going toward Ringold production. Wahls asked if the CCT’s excess fish could be used at Ringold, and Tonseth said that the CCT will likely prefer to keep those fish in the Okanogan. Tonseth later clarified that regardless if the excess fish were adults collected or juveniles produced, he believes that the CCT would prefer to prioritize HO adults collected in the Okanogan and their subsequent progeny be used for the Okanogan based releases. He added that any excess HO adults collected at Wells or in the Methow not needed to meet the Okanogan production could be used for Ringold as well as any excess juveniles produced from HO adults collected in the Okanogan. Schiewe asked if the Hatchery Committees would be willing to approve the CCT’s proposal, or approve in principle pending additional discussion at the Hatchery Committees meeting on January 15, 2014. Mackey said that Douglas PUD would like to know additional details regarding Wells Hatchery, in terms of the CCT’s proposal and asked to wait until January 2014 for a final approval vote. The Hatchery Committees representatives present agreed, in principle, to the CCT’s Wells Steelhead Broodstock Replacement proposal, pending further discussion at the Hatchery Committees’ meeting on January 15, 2014.
D. Douglas PUD 2014 HCP Wells Action Plan (Tom Kahler)

Kristi Geris sent an email to the Hatchery Committees following the meeting on December 18, 2013, notifying them that the draft Douglas PUD 2014 HCP Wells Action Plan is available for review. Mike Schiewe reminded the Hatchery Committees that the action plan summarizes a list of activities planned for the coming year, which is distributed to the HCP Hatchery Committees, Coordinating Committees, and Tributary Committees for approval each year. Tom Kahler asked the Hatchery Committees to review the draft action plan and to note anything that may be missing. He said that Douglas PUD will be requesting approval of the draft plan at the Hatchery Committees’ meeting on January 15, 2014.

E. Douglas PUD Extranet Site (Tom Kahler)

Tom Kahler said that HCP-related documents are currently housed on an ftp site hosted by Anchor QEA. He said that Douglas PUD’s new license agreement now requires Douglas PUD to maintain their own system that also houses HCP documents, which must be made available to the HCP Committees. He said that developing a new system has been discussed over the past year or so, and Douglas PUD has settled on a SharePoint option. He explained that the system is an extranet site with secure access. He said that documents are searchable and easy to work with, and that the site has customizable views. He noted that the Aquatic SWG has also adopted an extranet site that is now live and has been working out fairly well. He said that the Coordinating Committees are also discussing moving document archiving to an extranet site; however, there are pending issues regarding whether all HCP documents or only Douglas PUD HCP documents will be housed on the site. He added that Steve Hemstrom, the HCP Coordinating Committees Technical Representative for Chelan PUD, is assisting with coordination between Douglas PUD and Chelan PUD management to resolve pending issues. Kahler said that Douglas PUD IS Staff will provide a presentation on the Douglas PUD Extranet Site at the Hatchery Committees’ meeting on January 15, 2014.

III. NMFS

A. HGMP Update (Lynn Hatcher)

Okanogan spring Chinook and Methow spring Chinook

Lynn Hatcher said that the Section 10(j) public process is complete. The Section 10(j) FRN was released on October 24, 2013, and closed on December 10, 2013. He said that eight
comments were received, including six positive comments. He said the Finding of No Significant Impact is scheduled to be released in March 2014.

He said the Okanogan and Methow spring Chinook HGMPs FRN was released on December 10, 2013, with comments due by January 9, 2014. The completion date is set for June 2014. Bill Gale requested that the hyperlink to access the FRN be distributed, and Kristi Geris included the requested information in the meeting actions items and minutes, as follows:

public comments on the Okanogan and Methow Spring Chinook HGMPs are due on January 9, 2014 by 5:00 pm. The FRN and HGMPs for review can be accessed here: http://www.westcoast.fisheries.noaa.gov/hatcheries/hgmp/Okanogan_and_Methow_salmon_hatchery_applications.html.

Okanogan Steelhead
Hatcher said that NMFS and the CCT met on December 9, 2013, to discuss the steelhead timeline. He said the FRN will be posted on February 1, 2014, and permits are scheduled for summer 2014. He said that Amilee Wilson is working on this portion.

Wenatchee
Hatcher said that NMFS is still waiting for Joint Fisheries Parties approval of a fisheries harvest plan. He said permitting will be completed after the first of the year.

Leavenworth
Hatcher said that USFWS and NMFS are working on this, and plan to meet in January 2014 to discuss terms and conditions.

Mike Tonseth noted that the deadline to submit all project descriptions to Wilson for permit extensions is December 31, 2013. Keely Murdoch asked if NMFS needs a program description for the coho program as well. Tonseth replied that this requirement is specific to outstanding PUD programs. Murdoch added that the Yakama Nation (YN) received the Mid-Columbia Coho Draft Biological Opinion from Craig Busack, and said that the YN is working on the comments now. Hatcher said that the coho completion date is expected to be the end of January 2013.
IV. Chelan PUD

A. Sockeye Implementation Plan Discussion (Catherine Willard)

Catherine Willard said that a draft Sockeye Addendum to the final Chelan PUD 2014 Hatchery M&E Implementation Plan (Attachment D) was distributed to the Hatchery Committees by Kristi Geris on December 11, 2013, along with a summary of HCP Hatchery Committees meeting minutes regarding the use of mark-recapture methodology to estimate Wenatchee sockeye escapement (Attachment E), and also the study *Use of PIT Technology to Estimate Adult Sockeye Salmon Escapement in the Upper Wenatchee River Basin, 2009-2010* by Murauskas et al. (2011; Attachment F). Willard also handed out a summary of sockeye salmon escapement estimates based on spawning ground surveys and PIT-tag detections of returning adults in 2009 to 2012 (Attachment G), which Geris distributed to the Hatchery Committees following the meeting on December 19, 2013.

Willard reviewed the draft Sockeye Addendum (Attachment D). She noted that the draft addendum is divided into a juvenile and adult component. She then reviewed the summary of sockeye salmon escapement estimates based on spawning ground surveys and PIT-tag detections of returning adults in 2009 to 2012 (Attachment F), noting Tables 1 and 2 which outline results of the area-under-the-curve method versus the mark-recapture method.

The Hatchery Committees requested additional time to review the draft addendum prior to making a decision. Alene Underwood agreed and said that Chelan PUD will be requesting approval of the draft addendum at the Hatchery Committees’ meeting on January 15, 2014.

B. 2013 Rocky Reach Trap Results (Alene Underwood)

Alene Underwood handed out a summary of Rocky Reach ladder trapping of adipose fin (ad)-clipped spring Chinook from mid-May through mid-June 2013 (Attachment H); which Kristi Geris also distributed electronically to the Hatchery Committees following the meeting on December 18, 2013. Underwood summarized that the objective of the pilot was to capture five fish per week over a 4-week sampling period during the months of May and June. She reviewed the totals as outlined at the bottom of Attachment H. She said that turbidity posed problems throughout the study, and noted one particular trapping event on May 17, 2013, where operators were unable to see that a fish had been trapped due to turbid waters. She said that trapping protocols were changed after this event to ensure that no fish...
remained in the hopper after the door was operated. She said that most fish observed were
ad-present fish, as expected. She said that recommendations to improve future trapping
efforts are being discussed, including: 1) replacing the solid trap door with a grated or
perforated trap door that would not displace the water column as much when operated; 2)
adding underwater lighting; 3) installing additional cameras to obtain footage from different
angles; 4) painting the trap floor white to provide greater contrast to see when a fish is
present; and 5) installing an electrical control pendant to give the two operators the
opportunity to operate the door depending on visibility. Underwood explained that the trap
is currently set up where the trap operator communicates via radio to another staff member
who has a direct view of the trap.

Mike Tonseth asked if only ad-clipped fish were trapped, and Underwood replied, yes, that
the goal was to evaluate the efficacy of trapping a target fish. Tonseth asked about the width
of the trap structure, and said that he is thinking in terms of what is at Tumwater Dam. He
added that some widths can reduce the effects of turbidity, and asked if that can be modified
at Rocky Reach. Underwood said the board has been modified in the past, and staff found
that fish appeared to behave differently due to the changes; therefore, she said Chelan PUD
would not likely modify the width again. Mike Schiewe reminded the Hatchery Committees
that the HCP Coordinating Committees will also be evaluating this very closely if it moves
forward.

Bill Gale asked if any more thought has been put into a sort-by-code system. Underwood
said that Chelan PUD investigated that option and obtained cost estimates that, she added,
were not exorbitant. She said that if the Hatchery Committees want to move forward with
the Rocky Reach trap, Chelan PUD would like to conduct a second pilot year with the
proposed improvements prior to installing a sort-by-code system. Gale noted that the
strength of a sort-by-code system is that fish of known origin can be targeted, while the
proposed improvements cannot. Keely Murdoch added that with a sort-by-code system, not
only could HOs be collected for programs, but there would also be an opportunity to target
NOs in the tributaries, which, she said, seems to make sense if fish will be acclimated in the
Chewuch. She also added that as a result of being able to target NOs, there may be an
opportunity to combine efforts with the U.S. Geological Survey (USGS) and their rotary
trapping and PIT-tagging efforts in the Chewuch to increase the number of PIT-tagged NO
juveniles, which would increase the likelihood of meeting the adult requirements for Chelan PUD’s Methow spring Chinook conservation program obligation. Underwood agreed with Murdoch, and said that Chelan PUD has discussed the same thing. She added that they are looking at what would be needed to make a sort-by-code system work.

Tonseth asked, in terms of assessment, if Chelan PUD is looking at historical numbers in the Methow and Chewuch, and then monitoring PIT-tags passing Rocky Reach; Underwood replied that they have. She added that only 38 fish are needed; at this point, Chelan PUD is still exploring all options. She said that Chelan PUD is also planning to conduct a bull trout study in 2018, and the recommended trap improvements will benefit that study. She said the improvements are already planned to be installed during the 2013/2014 winter maintenance outage.

Underwood said that Chelan PUD plans to present a pilot proposal at the Hatchery Committees’ meeting on January 15, 2014. Murdoch asked if broodstock can be collected while also conducting the pilot study. Underwood said Chelan PUD can do so if that is what the Hatchery Committees want; however, in terms of a sort-by-code, at this point, she said that Chelan PUD cannot commit. Tonseth asked about installing a downstream array and Tom Kahler noted that Chelan PUD already has adult antennas located downstream, and suggested monitoring those. He added that installing additional downstream antennas is no easy task, and noted in particular interference from noise. Underwood said that installing additional antennas would require the ladders to be dewatered. Gale noted, however, that all equipment would need to be running in order to accurately test the noise levels; Schiewe said that Biomark has temporary test equipment to evaluate noise. Tonseth said that it seems as though interference may be an issue for any sort-by-code system; Underwood said that depending on the type of antenna, there are some defenses against noise.

Greg Mackey noted that Twisp emigrants are caught and PIT-tagged at the Methow screw trap, which means that returning adults identified by PIT-tags and taken for broodstock could inadvertently incorporate Twisp stock fish. Murdoch said that it would be beneficial to touch base with all entities operating area fish traps to make sure different efforts are not confounding other studies. Underwood said that Chelan PUD will provide a formal Rocky
Reach Trap Pilot Study for consideration at the Hatchery Committees’ meeting on January 15, 2014.

C. Methow Spring Chinook Program (Alene Underwood)

Alene Underwood said that the draft Chelan PUD Methow Spring Chinook HGMP is complete. Kristi Geris distributed the draft HGMP to the Hatchery Committees following the meeting on December 18, 2013. Bill Gale asked if the draft HGMP identifies alternative approaches to meet program goals, and Underwood replied that it does. She added that she is confident with where the program is headed in 2014 as it relates to brood year 2013. She said Chelan PUD has an agreement with Grant PUD to overwinter at Carlton, and final acclimation is proposed in the Chewuch. She said she would like to discuss options for broodstock collection, and added that Chelan PUD is interested in more tributary-based options, such as tangle netting or hook-and-line. She said that only 38 fish need to be obtained to meet the program goals. She said she discussed options with Kirk Truscott, and he indicated that he would be willing to discuss other options as well. Gale said he expects that the U.S. Fish and Wildlife Service (USFWS) will want to understand bull trout impacts, and recommended that Chelan PUD is prepared to describe how impacts will be minimized. Underwood said that Chelan PUD will be prepared, and that language on potential bull trout impacts was borrowed from the USFWS-issued letter approving tangle netting in Nason Creek in 2013. Mike Tonseth said that in terms of Chelan PUD meeting their broodstock obligation in 2014, he recommended considering the tangle netting option. Underwood agreed and asked, however, if that option would be feasible in the Chewuch. Gale said he believes it would be following the Nason Creek model. Tonseth also suggested developing a contingency plan, anticipating that the June deadline for a new Section 10 permit may not be met. He added that the agreement with USFWS for Nason Creek was for 1 year only. He said the new Nason Creek permit does not exclude tangle netting; however, it may be considered on a case-by-case scenario. He said that he agreed tangle netting may not be the best option, but with limited options, it is not a bad plan. Underwood said that Chelan PUD would like to have planning complete by March 2014. Gale noted that Tom Scribner had some issues with tangle netting near spawning grounds, and Underwood said that she would contact him. Tonseth said that Amilee Wilson and other key people are meeting in January 2014, and suggested that Chelan PUD have a plan drafted prior to their meeting. Lynn Hatcher suggested talking to Wilson first, and Underwood said she told Craig Busack that she
would contact him. Gale said that another consideration with tangle netting is that transportation to Eastbank Hatchery is farther, and he asked what the difference is between Nason to Eastbank versus Chewuch to Eastbank. Underwood said a couple of hours, and Gale noted that consideration needs to be taken regarding that additional stress. Underwood said that another option would be to take the fish to Winthrop NFH. Gale asked about the stress associated with change in water temperature, and Tonseth replied that Eastbank would be cooler. Keely Murdoch noted that there was discomfort about tangle netting in Nason Creek, and that it was understood that the arrangement was temporary—not part of a permanent program. She said she will discuss this further with Scribner, but she suspects there may be issues with making this a permanent part of the program.

Mike Schiewe asked about the timeline for feedback on the draft HGMP. Underwood said the HGMP is largely the same as what has been reviewed in the past: 1) the HGMP is closely based on the Methow Hatchery HGMP that was distributed to the Hatchery Committees by Douglas PUD in 2010 and reviewed and approved by the Wells Hatchery Committee; and 2) the Addendum developed by Chelan PUD that was approved by the Hatchery Committees in June 2013. She said the proposed tributary broodstock collection is the only new piece that was not in the Addendum, and added that the final acclimation piece was discussed in the Addendum. (Note: to clarify, the Chelan PUD Methow Spring Chinook HGMP and review process are separate from the Douglas PUD Methow Hatchery HGMP and review process.)

Hatchery Committees representatives present agreed to submit edits and comments on the draft Chelan PUD Spring Chinook HGMP to Alene Underwood by January 10, 2014, for discussion at the Hatchery Committees’ meeting on January 15, 2014.

D. Grant PUD’s White River Size Target Study (Alene Underwood)

Alene Underwood said that Grant PUD has been discussing with the Priest Rapids Coordinating Committee Hatchery Subcommittee a change in their White River Size Target Study involving the sacrifice of a sample of Chelan PUD Chiwawa spring Chinook juveniles. She said that Grant PUD is proposing for Chelan PUD to raise fish to 18 fish per pound as usual, and then sacrifice the same amount from both programs, which would equal 375 Chiwawa spring Chinook juveniles. Todd Pearsons said that the CCT inquired about the possibility of placing two different fish sizes on the same fish growth timeline. Underwood
said that Hatchery Staff indicated that they believe they can mirror the growth regimes, as requested. The Hatchery Committees representatives present approved the sacrifice of 375 Chelan PUD Chiwawa spring Chinook juveniles for Grant PUD’s White River Size Target Study.

E. Similkameen Update (Jayson Wahls)
Jayson Wahls reported a total loss of 44,000 Chelan PUD summer Chinook from the Similkameen Program. He said that about 115,000 to 116,000 remain. He said that 8,800 eyed eggs were culled at Eastbank Hatchery due to medium-to-high enzyme-linked immunosorbent assay (ELISA) titers levels, and added that, ultimately, losses have slowed at Similkameen.

F. Chelan PUD 2014 HCP Rocky Reach and Rock Island Action Plan (Alene Underwood)
Alene Underwood said that Chelan PUD will provide the draft Chelan PUD 2014 HCP Rocky Reach and Rock Island Action Plan to Kristi Geris for distribution to the Hatchery Committees prior to the January meeting.

V. WDFW
A. Wenatchee Spring Chinook Reproductive Success Study (Mike Tonseth)
Mike Tonseth said that both WDFW and NMFS are requesting an extension from BPA on the BPA-funded Wenatchee Spring Chinook Reproductive Success Study. He clarified that the request is not for additional money; rather, it is a request to change the scope of work. He explained that in the original scope of work, the last year of adult sampling at Tumwater Dam (for HO and NO adults) was completed in 2013, and genetic sampling of NOs would take place from 2014 to 2018. He said the request is for an extension to include genetic sampling of HOs, as well as NOs passed upstream of Tumwater Dam. He added that samples would be taken from HORs that are already being trapped, so the request would not require additional handling; it would just take data collection further out. Additionally, with the change in scope, the last brood year included in the study would only be monitored through the smolt stage in 2020. Tonseth said that he will provide a written summary of the request from WDFW and NMFS for a change in the scope of work for the BPA-funded Wenatchee Spring Chinook Reproductive Success Study, to Kristi Geris for distribution to the Hatchery
Committees. Tonseth said that WDFW will be requesting approval of the request at the Hatchery Committees’ meeting on January 15, 2014.

**VI. HCP Administration**

**A. Next Meetings**

The next scheduled Hatchery Committees’ meetings are on January 15, 2014 (Douglas PUD); February 19, 2014 (Chelan PUD); and March 19, 2014 (Douglas PUD).

**List of Attachments**

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<td>List of Attendees</td>
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<tr>
<td>Attachment B</td>
<td>Revised Draft Douglas PUD 2014 Hatchery M&amp;E Implementation Plan</td>
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<td>Attachment C</td>
<td>The CCT’s Wells Steelhead Broodstock Replacement Memorandum</td>
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<tr>
<td>Attachment D</td>
<td>Draft Sockeye Addendum to the final Chelan PUD 2014 Hatchery M&amp;E Implementation Plan</td>
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<td>Attachment E</td>
<td>Summary of HCP Hatchery Committees meeting minutes regarding the use of mark-recapture methodology to estimate Wenatchee sockeye escapement</td>
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<td>Use of PIT Technology to Estimate Adult Sockeye Salmon Escapement in the Upper Wenatchee River Basin, 2009-2010 (Murauskas et al. 2011)</td>
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<tr>
<td>Attachment G</td>
<td>Summary of sockeye salmon escapement estimates based on spawning ground surveys and PIT-tag detections of returning adults in 2009-2012</td>
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<tr>
<td>Attachment H</td>
<td>Summary of Rocky Reach ladder trapping of ad-clipped spring Chinook mid-May through mid-June 2013</td>
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## List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Mike Schiewe</td>
<td>Anchor QEA, LLC</td>
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<td>Kristi Geris</td>
<td>Anchor QEA, LLC</td>
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<td>Alene Underwood*</td>
<td>Chelan PUD</td>
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<td>Catherine Willard</td>
<td>Chelan PUD</td>
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<td>Greg Mackey*</td>
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<td>Tom Kahler*</td>
<td>Douglas PUD</td>
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<td>Todd Pearsons</td>
<td>Grant PUD</td>
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<td>Lynn Hatcher*</td>
<td>National Marine Fisheries Service</td>
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<td>Keely Murdoch†</td>
<td>Yakama Nation</td>
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<tr>
<td>Bill Gale*</td>
<td>U.S. Fish and Wildlife Service</td>
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<tr>
<td>Mike Tonseth*</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Jayson Wahls</td>
<td>Washington Department of Fish and Wildlife</td>
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<tr>
<td>Chris Moran†</td>
<td>Washington Department of Fish and Wildlife</td>
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**Notes:**
- * Denotes Hatchery Committees member or alternate
- † Joined by phone
IMPLEMENTATION OF COMPREHENSIVE MONITORING AND EVALUATION OF WELLS HATCHERY AND METHOW HATCHERY PROGRAMS IN 2014

Greg Mackey
Douglas County PUD

Todd Pearsons
Grant County PUD

Charlie Snow
Andrew Murdoch

Methow Research Team
Hatchery/Wild Interactions Unit, Science Division
Washington Department of Fish and Wildlife
20268 Hwy 20, Suite 7
Twisp, WA 98856

November 2013
Introduction

The contractor for the M&E Implementation Plan will conduct the field work, data collection, and data management. Reporting will be a collaborative effort between the contractor, Douglas PUD, and Grant PUD.

The Douglas County PUD and Grant County PUD Monitoring and Evaluation Plans (M&E Plan; Wells HCP Hatchery Committee 2007) described eight objectives specific to the hatchery programs funded by Douglas County PUD and Grant County PUD, and two regional objectives that were related to artificial propagation in general. These objectives were designed to address key questions regarding the use of supplementation as mitigation for unavoidable mortality associated with the operation of the Wells Hydroslectric Project (Douglas PUD) and the Priest Rapids Hydroelectric Project (Grant PUD). In 2013, these M&E Plans were reviewed and updated (HCP HC and PRCC Hatchery Sub-Committee) to reflect shifting management paradigms and to incorporate data collection and analysis from the first five years of hatchery program monitoring (Murdoch et al. 2012) conducted under the original M&E Plans. The updated M&E Plan (hereafter referred to as the M&E Plan) contains ten objectives specific to hatchery programs funded by PUDs and two regional objectives, all of which have specific metrics that will be measured and compared against target values or reference conditions as established in the M&E Plan.

The primary focus of this proposal is the first ten objectives outlined in the M&E Plan, but two additional regional objectives are addressed here. Both disease (Objective 11) and non-target taxa (Objective 12) assessment are regional objectives that require participation from state and federal agencies and tribes. A study design for Objective 11 has not yet been established and this objective is not currently being addressed by the regional group. Objective 12 is currently being addressed by the Hatchery and Evaluation Technical Team (HETT), a sub-committee under the HCP Hatchery Committee and is not addressed in this plan.

Successful implementation of the M&E Plan requires relationships between the PUDs, M&E contractor, and other entities conducting similar field work in the Upper Columbia River Basin. Certain objectives require the collection of data from both target populations and non-target populations, such as reference populations. This proposal does not include field activities conducted by other entities to collect data for reference non-target populations required to implement the M&E Plan.

Addressing all the objectives within the M&E Plan requires multiple years of data collection. This is year one under the 2013 update of the M&E Plan and year nine of the plan under the HCP. Objectives 5, 7, 8, and 10 are designed to be addressed after one year or five years (Table 1), and may require only periodic monitoring. Statistical analyses will be conducted consistent with the M&E Plan, revisions thereof, or the 5-year M&E report (Murdoch et al. 2012) as applicable. The Implementation Plan is presented in a format where species, programs, and the associated M&E Objectives are presented in separate sections that are subdivided into modules to clearly define actions under the M&E Plan and allow flexibility in administering budgets.
Table 1. A potential long-term implementation schedule of objectives outlined in the Douglas County PUD M&E Plan. The M&E plan, its objectives, and implementation may be changed by the HCP HC in future years. Monitoring and evaluation of hatchery programs in years prior to the years 6-9 period have been completed and are included here for reference only. The work conducted within this proposal would be implementation year nine. HETT = Hatchery Evaluation Technical Team.

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<thead>
<tr>
<th>Objective</th>
<th>Year of implementation</th>
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<td>X</td>
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<tr>
<td>10</td>
<td>X</td>
</tr>
<tr>
<td>11</td>
<td>Experimental design not established</td>
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<tr>
<td>12</td>
<td>HETT is currently conducting this assessment</td>
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</table>

This proposal encompasses one year of work to implement the updated Monitoring and Evaluation Plan for PUD Hatchery Programs operated at the Wells Hatchery and Methow Hatchery, as described in the work plan, below.
Introduction 2014 Wells Hatchery and Methow Hatchery Programs M&E Implementation Plan
Summer Steelhead

Module 1: In-Hatchery Metrics - Steelhead

Required to meet:

**Objective 3**: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

**Objective 8**: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

**Objective 9**: Determine if hatchery fish were released at the programmed size and number.

Biological data for origin, sex, age, size, fecundity, and survival of broodstock will be recorded for all steelhead hatchery programs: Twisp Conservation, Methow Safety-Net, Columbia Safety-Net, Okanogan Safety-Net, Omak Creek Conservation. Number of fish, stage-specific survivals, size, coefficient of variation, condition factor, and fish health issues will be recorded. An annual review of size, number and supporting statistics of fish from each program will be compared to those values defined in the M&E Plan Appendix 6, or adjusted values agreed to by the Wells HCP Hatchery Committee. If release targets were achieved within acceptable levels (i.e., +/-10% of HCP defined values) then the programs will be considered within acceptable parameters for the program. If release targets are not achieved then causation will be determined and recommendations made based upon the results of the evaluation.

Fecundity of spawned females is assessed by hatchery personnel when fertilized eggs are at the eyed stage, and data are provided to evaluation staff. To assess overall egg mass, we will collect total egg weight samples just after removal from spawned females, and will record the weight of female fish after egg removal.

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**Comment [kdt2]**: Currently CCT samples Omak Creek Broodstock at collection for origin, sex, age and size, but not at Wells Hatchery during spawning. These data at spawning are important to provide specifics on adults comprising the broodstock spawned. Because CCT’s SOW with GPUD for the Omak program does not include sampling during spawning, these data collections need to be conducted by hatchery and WDFW M&E staff participating in the spawning events at Wells Hatchery. Any additional expenses associated with sampling Omak Creek broodstock at spawning should be addressed in the contract between DPUD and GPUD for the contracted work associated with GPUD’s steelhead production at Wells Hatchery.

**Comment [CS3]**: Originally, DCPUD had language in this document indicating that WDFW M&E folks would sample the Omak Broodstock at spawning as Kirk suggests. Since we have never done that before, and it is time consuming to sample a very-low number of fish during a very busy period, I had suggested to Greg M. that he change the language to indicate that CCT would do the sampling as usual. I am not aware of the SOW wrangling between CCT and GPUD or why we should have to sample their fish for them since they have an incomplete SOW relative to their program needs. However, we can do the sampling if they need—or more likely—train the hatchery staff to do it—not a big deal, just inconvenient.

**Comment [kdt4]**: See comment kdt1
Module 2: Steelhead Adult Stock Assessment

Required to meet:

Objective 1: Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 4: Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

Objective 7: Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.

Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

The Twisp Weir will be operated for steelhead adult stock assessment between March 1, 2014 (approximate as environmental conditions allow) and June 30, 2014. Activities implemented at the Twisp Weir will include sampling all adult steelhead captured (origin, length, sex, genetic tissue sample, record any marks or tags, Floy tag fish to be released according to color scheme [Table 2]); PIT tagging and releasing adult steelhead (females PIT tagged in abdomen, males in pelvic girdle); retain natural origin Twisp returns for broodstock; handle any non-target species captured according to operational protocols and permit conditions; and, perform adult management of hatchery origin returns to achieve a 1:1 hatchery:natural origin ratio of spawner upstream of the Twisp Weir. Fish sacrificed for adult management may be sampled for fecundity to augment the sample size for hatchery-origin fish. Rainbow trout and cutthroat trout captured at the Twisp Weir will also be sampled and tagged similarly to steelhead.
Table 2. Floy Tag Colors for Adult Twisp Steelhead Released Upstream of the Twisp Weir in 2014

<table>
<thead>
<tr>
<th>Sex</th>
<th>Origin</th>
<th>Tag Color</th>
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<tbody>
<tr>
<td>Female</td>
<td>Natural</td>
<td>Blue</td>
</tr>
<tr>
<td>Female</td>
<td>Hatchery</td>
<td>Red</td>
</tr>
<tr>
<td>Male</td>
<td>Natural</td>
<td>Pink</td>
</tr>
<tr>
<td>Male</td>
<td>Hatchery</td>
<td>Chartreuse</td>
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Flay tag colors will be alternated every other year between hatchery and wild fish to control for any potential color effects on reproductive success.

Wells Dam fish counts will provide data on escapement upstream of Wells Dam. Stock assessment will be used to estimate the composition of the escapement. Wells Dam stock assessment will be performed concurrent with broodstock collection activities at Wells Dam and Wells Hatchery from July 2014 – November 2014. Activities will include sampling all adult steelhead captured (origin, length, sex, genetic tissue sample, record any marks or tags, PIT tag fish to be released [females and males PIT tagged in the pelvic girdle]), retain hatchery-origin returns for Columbia Safety-Net, Methow Safety-Net, and Okanogan broodstock, handle any non-target species captured according to operational protocols and permit conditions.

HRR will be estimated and values that fall below the expected values or the corresponding estimate of NRR (Appendix 2 of the M&E Plan) will be evaluated to determine whether in-hatchery or out-of-hatchery factors contributed to the reduced survival. SAR will be estimated for each program and for the natural origin Twisp population.

The proportion of hatchery origin spawners (pHOS) and PNI will be estimated for the Twisp steelhead program and population. **Data for pHOS and PNI (for broodstock within Douglas PUD program facilities) will be collect for other parts of the basin.** Numbers and proportions of hatchery origin returns removed for adult management for the Twisp, Methow and Columbia programs will be estimated and reported consistent with terms and conditions (Appendix 3 of the M&E Plan) in the pending Wells Complex Summer Steelhead HGMP ESA permit.

Module 3: Report Steelhead Contribution to Harvest

Required to meet:

**Objective 10:** Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

In years when the expected returns of hatchery adults exceed the level required to meet program goals of Wells Complex steelhead programs, surplus fish may be available for harvest. The contribution to harvest will be reported for programs that are consistent with harvest.
Conservation fishery data derived from creel census (funded and conducted by WDFW) are reported to NMFS annually, and harvest data reported outside the scope of this plan (PTAGIS, etc.) will be summarized.

**Module 4: Steelhead Spawning Distribution and Timing**

Required to meet:

*Objective 5: Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.*

Spawner surveys will be conducted at least weekly in the Twisp River using standard spawning ground survey methodology and data analysis as described in Snow et al. (2012). Locations of redds will be recorded using GPS; fish location and origin (identified by Floy tags) will also be recorded. Data collected will provide the number of redds and timing and spatial distribution of spawning by fish origin. Any carcasses encountered will be sampled for sex, origin, age, egg retention, PIT tag, and other relevant biological data. Spawn timing comparisons of hatchery and natural origin steelhead will be conducted using data from Twisp River reaches T4-T10. Surveyors will periodically scan completed redds for PIT tags to confirm female origin, or to identify female origin for redds where no visual observations of spawners occurred. The capture efficiency of the Twisp Weir will be estimated by observing the number of fish observed that are not Floy tagged compared to the total escapement estimate.

Additionally, temporary in-stream PIT tag antenna arrays will be placed in selected tributaries in the Twisp drainage to assist with evaluation of spawning spatial distribution and timing. In conjunction with returning steelhead adults tagged as juveniles and adult steelhead tagging at the Twisp Weir and Wells and Priest Rapids dams, these arrays are expected to provide a reliable, cost-effective means of corroborating current survey methodologies with observed steelhead use, and detect spawning (if any) in locations where spawning is presumed to not occur, or where surveys are difficult to conduct. **Permanent PIT tag arrays located in the Chewuch River, Lost River, and in the Methow River near Winthrop, Washington will be used to estimate overall steelhead spawner abundance, origin of spawners, and pHOS, for the Chewuch River, Lost River, and the upper Methow River.** Index redd surveys will be used in the upper and lower Methow reaches in conjunction with PIT tag detection and stock assessment to estimate the number of spawners in the upper and lower Methow.

**Module 5: Estimation of Steelhead Stray Rates**

Required to meet:

*Objective 6: Determine if the stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.*
Stray rates of Twisp conservation, Methow Safety-Net, and Columbia Safety-Net steelhead will be estimated by PIT tag detections at in-stream PIT tag detection stations in the Methow Basin and in watersheds outside the Methow Basin (via PTAGIS), and positive identification of recovered or captured steelhead at traps (Twisp Weir, Methow Hatchery Omak Weir), during spawner surveys, or through creel census. In addition, pre-spawn steelhead movements will be reported.

Collecting stray rate information for steelhead poses a challenge because carcasses are not available for examination. Adult PIT tag monitoring provides the most accurate assessment of stray rates, both within and among populations.

Module 6: Steelhead Juvenile Population Assessment

Required to meet:

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

The population abundance of emigrating juvenile steelhead will be estimated in the rivers supplemented by Douglas PUD’s steelhead hatchery programs. Sampling locations and methods may utilize a combination of the following methods: screw traps, mark-recapture population estimates, electrofishing removal population estimates, snorkel surveys, and PIT tag based survival modeling. Two approaches will be used in 2014.

Approach 1: Rotary screw smolt traps in the Twisp River and the Methow River. Trapping locations and methods will remain as described in Snow et al. 2012. Biological data (species, length, origin, scale samples, genetic samples) will be collected from fish collected each day. Scale samples will be taken from random samples of steelhead juveniles to estimate the age structure of the emigrants. The Twisp trap will be fished from early March through late November, and the Methow Trap will be fished from late February through late November, as conditions allow at both trapping locations. Steelhead greater than 65 mm will be PIT tagged. Trap efficiency trials will be conducted at various flows as the number of available fish for trials allows. Population estimates will be calculated by expanding the number of fish caught on a daily basis by the estimated trap efficiency on that day as estimated using a flow-efficiency model.

Approach 2: Juvenile in-stream PIT tag population estimate coupled with survival model in the Twisp River. Steelhead will be captured by electrofishing at sites chosen using General Random Tessellation Sampling (GRTS) or other random sample method. The standing crop of juveniles will be estimated by either multiple-pass removal estimates or mark-recapture estimates coupled with single-pass electrofishing extrapolated to the amount of habitat in the stream. Captured fish will be PIT tagged. Survival of the fish will be estimated through emigration using a multi-state survival model (J. Skalski and R. Buchanan, personal communication). The number of emigrants will be estimated using this PIT tag based survival model.
Module 7: Steelhead Population Genetic Monitoring

Required to meet:

Objective 7: Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.

Hypotheses related to genetic diversity, population structure, and effective population size were addressed in the 2008-2010 work plans and will not be addressed in 2014. However, to provide the ability to conduct future analysis, we will collect and archive tissue samples (opercle-punch or fin clip) from all steelhead broodstock, and from natural origin steelhead collected on the spawning grounds and at the Twisp River Weir. Samples will have associated data recorded (fish origin, age, date, location, sex, and biological characteristics).
Table 3. Cross Reference of Steelhead M&E Implementation Modules and M&E Objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>Modules</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.</td>
<td>2, 4</td>
<td>• Adult returns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
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<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
</tr>
<tr>
<td>2 Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.</td>
<td>2, 4, 6</td>
<td>• Adult Returns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Juvenile Population Estimates</td>
</tr>
<tr>
<td>3 Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.</td>
<td>1, 2, 4</td>
<td>• Broodstock Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adult returns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
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<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
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<tr>
<td>4 Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.</td>
<td>2, 4</td>
<td>• Adult returns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
</tr>
<tr>
<td>5 Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.</td>
<td>2, 4</td>
<td>• Run timing</td>
</tr>
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<td></td>
<td></td>
<td>• Spawn timing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spatial Distribution of Spawning</td>
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<td>• Adult returns</td>
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<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
</tr>
<tr>
<td>6 Determine if the stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.</td>
<td>4, 5</td>
<td>• Sex and Origin of Adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Number of Spawners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Spatial Distribution of Spawning</td>
</tr>
<tr>
<td>7 Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.</td>
<td>1, 2, 4, 7</td>
<td>• Sample Broodstock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sample Adult Returns</td>
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<tr>
<td></td>
<td></td>
<td>• Sample Spawners</td>
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<td></td>
<td>• Sample Juveniles</td>
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<tr>
<td></td>
<td></td>
<td>• Various Population Genetic Analyses</td>
</tr>
<tr>
<td>8 Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.</td>
<td>1, 2</td>
<td>• In-Hatchery Metrics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adult Phenotype Metrics</td>
</tr>
<tr>
<td>9 Determine if hatchery fish were released at the programmed size and number.</td>
<td>1</td>
<td>• In-Hatchery Metrics</td>
</tr>
<tr>
<td>10 Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.</td>
<td>3</td>
<td>• Various Harvest Data (PIT AGIS, RMIS, Agency Reports, etc.)</td>
</tr>
</tbody>
</table>
Spring Chinook

Module 8: Spring Chinook In-Hatchery Metrics

Required to meet:

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

Objective 9: Determine if hatchery fish were released at the programmed size and number.

Biological data for origin, sex, age, size, fecundity, and survival of broodstock will be recorded for the Twisp Conservation, Chewuch Conservation, and Methow Conservation hatchery programs. Number of fish, stage-specific survivals, size, coefficient of variation, condition factor, and fish health issues will be recorded. An annual review of size, number and supporting statistics of fish from each program will be compared to those values defined in the M&E Plan Appendix 6, or adjusted values agreed to by the Wells HCP Hatchery Committee. If release targets were achieved within acceptable levels (i.e., +/-10% of HCP defined values) then the programs will be considered within acceptable parameters for the program. If release targets are not achieved then causation will be determined and recommendations made based upon the results of the evaluation.

Module 9: Spring Chinook Adult Stock Assessment

Required to meet:

Objective 1: Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 4: Determine if the proportion of hatchery-origin spawners (pHOS or PNI) is meeting management target.

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.
Objective 7: Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.

Objective 8: Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.

The Twisp Weir and Methow Hatchery volunteer trap(s) will be operated for spring Chinook broodstock collection between July 1, 2014 and August 30, 2014 (Twisp Weir is operated under the auspices of steelhead collection and sampling through June 30, but spring Chinook will be collected opportunistically prior to July 1). Wells Dam fish ladders will be operated between about 1 May and 30 June for spring Chinook broodstock collection and overall population stock assessment. Activities will include sampling all adult spring Chinook captured (origin, length, sex, genetic tissue sample, apply PIT tag in the pelvic girdle of released fish, record any marks or tags, retain natural origin Twisp returns for broodstock, handle any non-target species captured according to operational protocols and permit conditions).

Carcass recoveries and coded wire tag data will be the primary means of stock assessment (see the spawner survey section for more information). Samples and data for run composition, age, origin, size, spawn timing, egg retention, and population genetic analyses will be collected.

HRR will be estimated and values that fall below the expected values or the corresponding estimate of NRR (Appendix 2 of the M&E Plan) will be evaluated to determine whether in-hatchery or out-of-hatchery factors contributed to the reduced survival. SAR will be estimated for each program and for the natural origin Twisp and Methow populations.

The pHOS and PNi will be estimated for the Twisp and Methow programs and populations. Numbers and proportions of hatchery origin returns removed for adult management for the Twisp and Methow programs will be estimated and reported consistent with terms and conditions (Appendix 3 of the M&E Plan) in the pending Methow Hatchery Spring Chinook ESA permit.

**Module 10: Spring Chinook Contribution to Harvest**

Required to meet:

Objective 10: Determine if appropriate harvest rates have been applied to conservation, safety net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

In years when the expected returns of hatchery adults exceed the level required to meet program goals for the Methow hatchery spring Chinook programs, surplus fish may be available for harvest. The contribution to harvest will be reported based on numbers of fish released for programs that are consistent with harvest. Conservation fishery data derived from creel census will be reported to NMFS annually, and harvest data reported outside the scope of this plan (PTTagS, RMS, etc.) will be summarized.
Module 11: Spring Chinook Spawner Surveys

Required to meet:

Objective 5: Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.

Spawner surveys will be conducted at least weekly in all spawning reaches of the rivers supplemented by the Methow Hatchery [Table 4] using standard spawning ground survey methodology and data analysis as described in Snow et al. (2012). Locations of redds will be recorded using GPS. Data collected will provide the number of redds, and timing and spatial distribution of spawning by origin. Any carcasses encountered will be sampled for location of recovery, sex, origin, age, egg retention, CWT, PIT tag, and other relevant biological data.

Table 4. Spring Chinook Spawner Survey Reaches and Methods

<table>
<thead>
<tr>
<th>Population</th>
<th>Spawning ground methodology</th>
<th>Spawner composition</th>
<th>Age composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methow</td>
<td>Total ground</td>
<td>Carcasses</td>
<td>Wells Dam</td>
</tr>
<tr>
<td>Chewuch</td>
<td>Total ground</td>
<td>Carcasses</td>
<td>Wells Dam</td>
</tr>
<tr>
<td>Twisp</td>
<td>Total ground</td>
<td>Carcasses</td>
<td>Wells Dam</td>
</tr>
</tbody>
</table>

Module 12: Estimation of Spring Chinook Stray Rates

Required to meet:

Objective 6: Determine if the stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.

Stray rates of Twisp, Chewuch, and Methow conservation programs will be estimated by CWT recoveries within and outside of the Methow Basin. The Regional Mark Information System (RMIS) database will provide all necessary CWT information needed to estimate stray rates for each brood year for within- and outside-basin stray rates based on spawning escapement estimates.

Brood year stray rates for Chinook will require multiple-year CWT recoveries (i.e., all age classes) from broodstock and carcass recoveries on the spawning grounds to account for all cohort age classes. The estimated number of strays for the entire brood year will be calculated by dividing the number of strays by the total number of hatchery fish that returned. Stray rates within, and between independent populations will be calculated in a similar manner as brood year stray rates, except on an annual basis and based on the estimated spawning escapement.

Comment [CS17]: Not sure this is really necessary. Could we just say that we intend to survey all spawning areas, as per our usual method...

Comment [kdr18]: Include table showing spawner survey reaches.
Module 13: Juvenile Spring Chinook Population Assessment

Required to meet:

Objective 2: Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.

The population abundance of emigrating juvenile spring Chinook will be estimated in the rivers supplemented by Douglas PUD’s spring Chinook hatchery programs. Sampling locations and methods may utilize a combination of the following methods: screw traps, mark-recapture population estimates, electrofishing removal population estimates, snorkel surveys, and PIT tag based survival modeling. Two approaches will be used in 2014.

Approach 1: Rotary screw smolt traps in the Twisp River and the Methow River. Trapping locations and methods will remain as described in Snow et al. 2012. Biological data (species, length, origin, scale samples, genetic samples) will be collected from fish collected each day. Scale samples will be taken from random samples of spring Chinook juveniles to estimate the age structure of the emigrants. The Twisp trap will be fished from early March through late November, and the Methow Trap will be fished from late February through late November, as conditions allow at both trapping locations. Spring Chinook greater than 65 mm will be PIT tagged. Trap efficiency trials will be conducted at various flows as the number of available fish for trials allows. Population estimates will be calculated by expanding the number of fish caught on a daily basis by the estimated trap efficiency on that day as estimated using a flow-efficiency model.

Approach 2: Juvenile in-stream PIT tag population estimate coupled with survival model in the Twisp River. Spring Chinook will be captured by electrofishing at sites chose using General Random Tessellation Sampling (GRTS) or other random sample method. The standing crop of juveniles will be estimated by either multiple-pass removal estimates or mark-recapture estimates coupled with single-pass electrofishing extrapolated to the amount of habitat in the stream. Captured fish will be PIT tagged. Survival of the fish will be estimated through emigration using a multi-state survival model (J. Skalski and R. Buchanan, personal communication). The number of emigrants will be estimated using this PIT tag based survival model.

Module 14: Spring Chinook Population Genetic Monitoring

Required to meet:

Objective 7: Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.

Hypotheses related to genetic diversity, population structure, and effective population size were addressed in the 2008-2010 work plans and will not be addressed in 2014. However, to provide the ability to conduct future analysis, we will collect and archive tissue samples (opercle-punch or
fin clip) from all spring Chinook broodstock, and from natural origin spring Chinook collected on spawning grounds and at the Twisp River Weir. Samples will have associated data recorded (fish origin, age, date, location, sex, and biological characteristics).
<table>
<thead>
<tr>
<th>Objective</th>
<th>Modules</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9, 11</td>
<td>• Adult returns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
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<td></td>
<td></td>
<td>• Number of Spawners</td>
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<tr>
<td>2</td>
<td>9, 11, 13</td>
<td>• Adult Returns</td>
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<tr>
<td></td>
<td></td>
<td>• Sex and Origin of Adults</td>
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<td></td>
<td>• Number of Spawners</td>
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<tr>
<td></td>
<td></td>
<td>• Juvenile Population Estimates</td>
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<td>3</td>
<td>8, 9, 11</td>
<td>• Broodstock Data</td>
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<td></td>
<td>• Adult returns</td>
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<td>• Sex and Origin of Adults</td>
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<td>9, 11</td>
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<td>• Sex and Origin of Adults</td>
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<td>• Number of Spawners</td>
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<td>5</td>
<td>9, 11</td>
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<td>• Spawn timing</td>
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<td>• Spatial Distribution of Spawning</td>
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<td>• Adult returns</td>
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<td>• Sex and Origin of Adults</td>
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<td>• Number of Spawners</td>
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<td>• Spatial Distribution of Spawning</td>
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<td>7</td>
<td>8, 9, 11, 14</td>
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<td>• Sample Adult Returns</td>
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<td></td>
<td>• Sample Spawners</td>
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<td></td>
<td>• Sample Juveniles</td>
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<td></td>
<td></td>
<td>• Various Population Genetic Analyses</td>
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<tr>
<td>8</td>
<td>8</td>
<td>• In-Hatchery Metrics</td>
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<td></td>
<td></td>
<td>• Adult Phenotype Metrics</td>
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<td>9</td>
<td>8</td>
<td>• In-Hatchery Metrics</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>• Various Harvest Data (PITAGIS, RMIS, Agency Reports, etc.)</td>
</tr>
</tbody>
</table>
Summer Chinook

Module 15: Summer Chinook In-Hatchery Metrics

Required to meet:

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Objective 9: Determine if hatchery fish were released at the programmed size and number.

Biological data for origin, sex, age, size, fecundity, and survival of broodstock will be recorded for the Wells yearling and subyearling hatchery programs. Number of fish, stage-specific survivals, size, coefficient of variation, condition factor, and fish health issues will be recorded. An annual review of size, number and supporting statistics of fish from each program will be compared to those values defined in Appendix 6, or adjusted values agreed to by the Wells HCP Hatchery Committee. If release targets were achieved within acceptable levels (i.e., +/-10% of HCP defined values) then the programs will be considered within acceptable parameters for the program. If release targets are not achieved then causation will be determined and recommendations made based upon the results of the evaluation.

Module 16: Summer Chinook Adult Stock Assessment

Objective 3: Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.

Stock assessment will be performed on broodstock collected at Wells Hatchery. Activities will include sampling all adult summer Chinook broodstock for origin, length, sex, genetic tissue sample, record any marks or tags, handle any non-target species captured according to operational protocols and permit conditions.

Coded wire tag data will be the primary means of stock assessment. Samples and data for run composition, age, origin, size, spawn timing, egg retention, and population genetic analyses will be collected.

HRR will be estimated and values that fall below the expected value (Appendix 2 of the M&E Plan) will be evaluated to determine whether in-hatchery or out-of-hatchery factors contributed to the reduced survival. SAR will be estimated for each program.
Module 17: Summer Chinook Contribution to Harvest

Required to meet:

Objective 10: Determine if appropriate harvest rates have been applied to conservation, safety net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.

In years when the expected returns of hatchery adults exceed the level required to meet program goals, surplus fish may be available for harvest. The contribution to harvest will be reported based on numbers of fish released for programs that are consistent with harvest and harvest data funded, collected, and reported outside the scope of this plan (PITAGIS, RMIS, etc.).

Module 18: Estimation of Summer Chinook Stray Rates

Required to meet:

Objective 6: Determine if the stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.

Stray rates of Wells yearling and subyearling summer Chinook will be estimated through CWT recoveries reported in RMIS. The RMIS database will provide all necessary CWT information to estimate stray rates for each brood year for within- and outside-basin stray rates based on spawning escapement estimates.

Brood year stray rates for Chinook will require multiple-year CWT recoveries (i.e., all age classes) from broodstock and carcass recoveries on the spawning grounds to account for all cohort age classes. The estimated number of strays for the entire brood year will be calculated by dividing the number of strays by the total number of hatchery fish that returned. Stray rates in independent populations will be calculated in a similar manner as brood year stray rates, except on an annual, run-year basis and based on the estimated spawning escapement.

Module 19: Summer Chinook Population Genetic Monitoring

Required to meet:

Objective 7: Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.

Hypotheses related to genetic diversity, population structure, and effective population size were addressed in the 2008-2010 work plans and will not be addressed in 2014. However, to provide the ability to conduct future analysis, we will collect and archive tissue samples (opercle-punch or
fin clip) from all summer Chinook broodstock. Samples will have associated data recorded (fish origin, age, date, location, sex, and biological characteristics).

<table>
<thead>
<tr>
<th>Objective</th>
<th>Modules</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Determine if conservation programs have increased the number of naturally spawning and naturally produced adults of the target population and if the program has reduced the natural replacement rate (NRR) of the supplemented population.</td>
<td>NA</td>
<td>• NA</td>
</tr>
<tr>
<td>2 Determine if the proportion of hatchery fish on the spawning grounds affects the freshwater productivity of supplemented stocks.</td>
<td>NA</td>
<td>• NA</td>
</tr>
<tr>
<td>3 Determine if the hatchery adult-to-adult survival (i.e., hatchery replacement rate, HRR) is greater than the natural adult-to-adult survival (i.e., natural replacement rate, NRR) and the target hatchery survival rate.</td>
<td>15,16</td>
<td>• Broodstock Data • Adult returns • Sex and Origin of Adults</td>
</tr>
<tr>
<td>4 Determine if the proportion of hatchery-origin spawners (pHOS or PN1) is meeting management target.</td>
<td>NA</td>
<td>• NA</td>
</tr>
<tr>
<td>5 Determine if the run timing, spawn timing, and spawning distribution of the hatchery component is similar to the natural component of the target population or is meeting program-specific objectives.</td>
<td>NA</td>
<td>• NA</td>
</tr>
<tr>
<td>6 Determine if the stray rate of hatchery fish is below the acceptable levels to maintain genetic variation among stocks.</td>
<td>18</td>
<td>• Sex and Origin of Adults • Number of Spawners • Spatial Distribution of Spawning</td>
</tr>
<tr>
<td>7 Determine if genetic diversity, population structure, and effective population size have changed in natural spawning populations as a result of the hatchery program.</td>
<td>19</td>
<td>• Sample Broodstock • Sample Adult Returns • Sample Spawners • Sample Juveniles • Various Population Genetic Analyses</td>
</tr>
<tr>
<td>8 Determine if hatchery programs have caused changes in phenotypic characteristics of natural populations.</td>
<td>NA</td>
<td>• NA</td>
</tr>
<tr>
<td>9 Determine if hatchery fish were released at the programmed size and number.</td>
<td>15</td>
<td>• In-Hatchery Metrics</td>
</tr>
<tr>
<td>10 Determine if appropriate harvest rates have been applied to conservation, safety-net, and segregated harvest programs to meet the HCP/SSSA goal of providing harvest opportunities while also contributing to population management and minimizing risk to natural populations.</td>
<td>17</td>
<td>• Various Harvest Data (PITAGIS, RMIS, Agency Reports, etc.)</td>
</tr>
</tbody>
</table>
DELIVERABLES

**Annual Reports:** A draft annual report will be provided to the Hatchery Committee by 1 July, 2015. A final report will be provided to the HCP HC within 30 days of receiving comments on the draft report. The annual report will summarize all field activities conducted during the contract period. The report will be in a scientific format, organized so that Douglas PUD and other HCP Hatchery Committee members can clearly and concisely evaluate M&E Plan results. Data tables and figures will be cumulative such that all comparable data from previous years is included and that the most recent report supersedes all previous reports. Monitoring indicators and the data used in calculations will be presented for each hypothesis evaluated.

**Monthly Reports:** Monthly reports will be provided to keep Douglas PUD, Grant PUD, as well as HCP and PRCC HSC Committee members and co-managers informed on all hatchery and evaluation related activities. Unless otherwise requested by Douglas PUD, the role of monthly reports will remain the same. Upon request, additional information can be included in the monthly reports.

**Databases:** The contractor will enter and audit all data collected under this M&E Plan into existing databases that contain the historical data as well as the current-year data. These databases, once updated with 2014 data, will be delivered to Douglas PUD by 1 July, 2015. The databases will include all of the data collected during implementation of this plan. Historic data that are not contained in contemporary databases will be provided in an acceptable format. Genetic data will be provided to the extent it is available in raw genotypes, metadata, or statistical results.

**Recommendations:** Recommendations to modify the M&E Plan or reporting will be provided as warranted on an annual basis or within the five-year summary reports. Changes to protocols or methodologies may be necessary to ensure the data required in the M&E Plan are collected. Suggested changes to the M&E Plans’ implementation or hypotheses will be included in the five-year summary report. Recommendations will be consistent with the hatchery program goals and will be included in a separate section of the summary report.

**Presentations:** The contractor will develop and may be asked to present the results of the M&E Plan at the request of Douglas PUD, Grant PUD, or the HCP HC or PRHSC. Presentations will include the results of analyses for the M&E programs and interpretation of these results. Similar presentations of annual results from field activities can be requested and provided if warranted.

**COORDINATION**

Douglas PUD’s M&E contractor will be required to closely coordinate and collaborate with hatchery staff at the Wells and Methow hatcheries. Hatchery staff conduct many of the in-hatchery routine sampling and data collected by hatchery staff must be provided to evaluation staff to ensure the data are included the M&E Plan reports. However, special meetings with the hatchery staff are typically conducted prior to significant events (i.e., broodstock collection, spawning, release of juveniles) to ensure proper methodologies are used and critical data are collected. Evaluation staff will be present at all significant events to collect data needed for evaluation purposes.
Coordination between evaluation staff, hatchery staff, and the ESA Permit compliance officer is required to ensure that conditions of ESA Section 10 permits are not violated. All ESA reporting related to the hatchery programs is the responsibility of the ESA compliance officer.
Deliverables  

2014 Wells Hatchery and Methow Hatchery Programs M&E Implementation Plan

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Moving to a PIT based steelhead spawner survey methodology can provide data that we never had before. Standard redd surveys tell us nothing about steelhead straying. There is no perfect way to estimate steelhead strays because we simply cannot readily document where fish spawn. Steelhead are known to move a lot in the late summer/fall/early winter preceding spawning. We also know that few steelhead appear to hold in the upper reaches of the Methow basin overwinter. Therefore, the vast majority of fish move up beginning in March. These are the fish that will most likely be spawners, and the most likely to be true strays. As we implement this approach, we can improve it over the years. More sophisticated analytical methods could make more accurate estimates, but would probably only offer incremental improvement.

This is a methodology-related comment not really relevant to budgeting purposes. I think Greg was assuming that this is the way we would estimate stray rates in the tributaries using PIT arrays, which is generally true because few fish enter the trbs to spawn before mid-March anyway. The mainstem Methow is a little different and could be estimated using the method Kirk suggests, but it has problems also. Should a fish detected at the lower Methow array in October and not again anywhere else be considered a stray? What if it was killed in a fishery and removed as so many of them are? In short, I don’t think we have a set methodology for this but we are collecting all the data necessary to evaluate stray rates by either of the proposed methods.

My understanding is that we will be conducting remote PIT tagging the Twisp and Methow Rivers for both spring Chinook and steelhead parr. I think Greg has this in here because they (Greg and Rebecca) believe that a different approach to tagging (using GRTS or something similar) will provide a better data-set for the model they are developing than our typical method of choosing sites (based on redd distribution and local knowledge of good rearing habitats). This other approach is an additional last-minute thing that was inserted in here and I did not add additional money in our budget because I figured this would not amount to additional work for us, just a shifting of methodology of the work we are already doing. Further, the analysis and reporting I was presuming would be accomplished by Rebecca.
Confederated Tribes of the Colville Reservation
Fish and Wildlife Division
Wenatchee Field Office, 470 9th Street N.W., East Wenatchee WA 98802
(509) 978-8031

To: HCP Hatchery Committee; PRCC Hatchery Sub-Committee
From: Kirk Truscott, Anadromous Fish program Manager, Colville Tribes
Subject: Wells Steelhead Broodstock Replacement
Date: December 17, 2013

During the November 2013 HCP HC meeting, the Committee was apprised that there had been an unfortunate mortality event at Wells FH that resulted in the loss of 178 of 200 hatchery-origin steelhead broodstock. A portion of these lost broodstock was to support approximately 80,000 smolt production for release in the Okanogan Basin.

During the meeting, the committee agreed to replace broodstock shortage via hatchery-origin steelhead collections from the volunteer ladder at Wells FH. After some Colville Confederated Tribes (CCT) internal discussions, CCT believes that the most appropriate replacement broodstock supporting the Okanogan non locally-adapted program production (80,000 smolts) should be collected from the Okanogan River Basin to the extent possible.

CCT’s collection efficiency in the Okanogan Basin has been variable in the recent past, and providing broodstock to support Grant PUD’s mitigation obligations is central to the Priest Rapids Salmon and Steelhead Settlement Agreement, as such, the CCT proposes the following strategy to acquire the replacement broodstock for the Okanogan production: (1) WDFW will collect the full broodstock to replace the shortfall for the Okanogan production of 80,000 smolts from the Wells FH Volunteer Ladder (assures production obligations are met); (2) CCT will collect and PIT tag hatchery-origin steelhead broodstock collected in the Okanogan River Basin required to meet 80,000 smolts, and replace at a one-to-one ratio, those Okanogan production replacement brood collected at Wells FH Volunteer ladder to the extent possible given the spawn timing of volunteer ladder collected replacement broodstock; and (3) any overage of broodstock required resulting from the volunteer ladder collections be surplused prior to spawning, released if required to meet spawn escapement or incorporated into other Wells FH production components relying upon hatchery-origin broodstock as necessary to meet production objectives.
Although I will be unable to attend the December 18th HCP HC meeting, I’m providing this proposal for HCP HC discussion on December 18th and as a primer for discussion at the December 19th PRCC HSC meeting, which I will be in attendance. There is some time before these actions would be implemented, so we have time to discuss if needed; however, if the Committees agree with the proposal, I’d be fine with agreement during the HCP and PRCC Hatchery Committee meetings on December 18th and 19th.
DRAFT
Addendum to the Chelan County PUD Hatchery Monitoring and Evaluation Implementation Plan
Wenatchee Sockeye Salmon

2014

Prepared by:
Alene Underwood and Catherine Willard

December 2013
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1. **INTRODUCTION**

The Chelan PUD is proposing to conduct monitoring and evaluation (M&E) activities to track key population attributes related to Lake Wenatchee sockeye salmon beginning in 2014 (Table 1). In the absence of a sockeye hatchery program, M&E activities are no longer rooted in the context of evaluating the effects of sockeye salmon supplementation, but instead focus directly on the performance of the natural population, which is a unique departure from historic monitoring obligations. Broadly, the proposed M&E activities cover juvenile and adult life history stages and provide the data necessary to track or estimate viable salmonid population parameters (VSP): abundance, productivity, spatial structure and diversity (McElhaney et al. 2000). The data collected may also have utility in future hatchery compensation recalculation efforts (e.g., Table 2 provides a summary of the data used previously for Lake Wenatchee sockeye recalculation).

Chelan PUD is conducting these M&E activities to support commitments made under the 2011 hatchery recalculation effort, which also included a steelhead production commitment for a sockeye species swap (SOA 2011). This plan describes the specific commitments by juvenile and adult life history stages.

2. **JUVENILE MONITORING**

Chelan PUD will conduct or fund activities to monitor and evaluate the temporal distribution and size of outmigrating sockeye smolts and their contributions to subsequent adult return years (Table 3). Chelan PUD will also develop estimates of smolt production based on adult return data. Collectively, these activities include: (1) funding of the lower Wenatchee River smolt trap concurrent with efforts aimed at evaluating Chelan PUD funded supplemented populations in the Wenatchee River subbasin; (2) providing up to 5,000 PIT tags for natural-origin juveniles encountered during smolt trapping activities at this location; and (3) analyzing historic information to model future smolt production levels based on spawning escapement.

The monitoring data obtained will provide a useful set of tools for evaluating the performance of natural origin sockeye salmon within the basin and downstream and also support the evaluation of VSP parameters [e.g., outmigration timing and size of smolts (diversity); and PIT tagging juveniles for SAR estimates (productivity)].

3. **ADULT MONITORING**

Several M&E activities associated with adult returns of Lake Wenatchee sockeye salmon will be conducted and/or funded by Chelan PUD beginning in 2014 (Table 3). These efforts include (1) continuation of accurate adult counts at Rock Island, Rocky Reach, and Tumwater dams; (2) sampling of scales for age distribution, sex ratio determination, and returns of PIT-tagged adults at Tumwater Dam; (3) reach-specific conversion estimates between Rock Island Dam and spawning grounds in the White and Little Wenatchee rivers (i.e., Rock Island to Tumwater Dam to spawning tributaries); and (4) providing 250 PIT tags to estimate adult spawning escapement in the Little Wenatchee and White rivers utilizing PIT tags and mark-recapture techniques (the
software program Sample Size 2.0.7, developed by the University of Washington School of Aquatic and Fisheries Science (P. Westhagen, J. Lady, and J. Skalski) was used to determine the minimum number of tags required (i.e., 250) to estimate adult sockeye escapement at a +/- 7 percent confidence interval). Chelan PUD will adjust the number of PIT-tagged individuals in order to maintain precision in estimates at the lowest rate of interference to migrating populations, if it is warranted due to annual changes in escapement and detection probabilities.

Collectively, these data will provide reliable metrics of adult returns and spawning escapement (abundance), recruits-per-spawner (productivity), distribution of spawners among tributaries (spatial structure), and run-timing and age structure for adult immigrants (diversity).
Table 1. Chelan PUD’s proposed Lake Wenatchee sockeye salmon monitoring and evaluation activities.

<table>
<thead>
<tr>
<th>Life History Stage</th>
<th>M&amp;E Activity</th>
<th>Entity Performing the Activity</th>
<th>Related analysis</th>
<th>VSP parameter addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juvenile</td>
<td>Concurrent operation of the lower Wenatchee smolt trap to collect juvenile outmigration data</td>
<td>WDWF</td>
<td>Generate distribution of outmigration timing and determine average smolt size.</td>
<td>Diversity</td>
</tr>
<tr>
<td>Juvenile</td>
<td>PIT tagging smolts at lower Wenatchee smolt trap (up to 5,000 fish annually)</td>
<td>WDWF</td>
<td>Estimate smolt-to-adult returns</td>
<td>Productivity</td>
</tr>
<tr>
<td>Juvenile</td>
<td>Develop spawner-smolt production estimates</td>
<td>WDWF</td>
<td>Use previously collected data to quantify the relationship between spawner abundance and smolt production</td>
<td>Productivity</td>
</tr>
<tr>
<td>Adult</td>
<td>Rock Island and Rocky Reach Dam adult counts</td>
<td>CPUD</td>
<td>Initial spawner abundance (Okanogan stock separation)</td>
<td>Abundance and spatial structure</td>
</tr>
<tr>
<td>Adult</td>
<td>PIT tag subsample (250 adults) of returning adults at Tumwater Dam to support mark-recapture evaluation</td>
<td>WDWF</td>
<td>Calculate spawner abundance and relative distribution in tributaries</td>
<td>Abundance and spatial structure</td>
</tr>
<tr>
<td>Adult</td>
<td>Collect and age scales¹ and determine sex via ultrasound from returning adults at Tumwater Dam</td>
<td>WDWF</td>
<td>Estimate age-at-return, sex ratio, and relative productivity of contributing spawner cohorts</td>
<td>Productivity and diversity</td>
</tr>
<tr>
<td>Adult</td>
<td>Tumwater Dam adult counts</td>
<td>WDWF</td>
<td>Estimate potential spawner abundance (pre Lake-Wenatchee harvest), potential productivity (recruits/spawner), and run timing distribution</td>
<td>Abundance and diversity</td>
</tr>
<tr>
<td>Adult</td>
<td>Operate PIT detection arrays on Little Wenatchee and White River</td>
<td>WDWF</td>
<td>Calculate spawner abundance (post-Lake Wenatchee harvest and other mortality), actual productivity (recruits/spawner), and entry-to-spawning-habitat timing distribution, and spatial spawner distribution</td>
<td>Abundance, productivity, spatial structure, and diversity</td>
</tr>
<tr>
<td>All</td>
<td>Data management, analysis, and reporting</td>
<td>BioAnalysts CPUD</td>
<td>------</td>
<td>NA</td>
</tr>
</tbody>
</table>

¹ Scales would be collected concurrently from adults that are PIT tagged at Tumwater Dam
Table 2. Previous use of adult data to calculate hatchery compensation levels for Lake Wenatchee sockeye salmon.

<table>
<thead>
<tr>
<th>Input Data</th>
<th>Derived Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Island Survival</td>
<td></td>
</tr>
<tr>
<td>Average Observed Adult Returns</td>
<td>Average Expected Adult Returns</td>
</tr>
<tr>
<td>93.27%</td>
<td>21,045</td>
</tr>
</tbody>
</table>

4. REFERENCES

Memorandum

To: Rock Island and Rocky Reach HCP Hatchery Committees

From: Chelan County PUD

Date: December 10, 2013

Re: Summary of HC notes regarding the use of mark-recapture methodology to estimate Wenatchee sockeye escapement

Note-the following are excerpts from final HC meeting notes pertaining to the use of mark-recapture methodology to estimate Wenatchee sockeye escapement.

From March 2010 HC meeting minutes
In February 2009, Chelan PUD implemented an approach to estimating the number of returning sockeye to the White and Little Wenatchee rivers using PIT-tag detection arrays. The enumeration study was designed to provide an alternative method of describing escapement and run-timing characteristics versus a visual observation approach that may be biased as a result of turbidity. In 2009, PIT-tag detectors were installed in the White and Little Wenatchee Rivers and they were operational by June 1. Data from both of these arrays has been archived in the PIT Tag Information System (PTAGIS). Analyses are in progress to calculate spawner abundance and run timing for the 2009 run.

From May 2011 HC meeting minutes
Wenatchee Sockeye Escapement Using Mark-Recapture Methodology (Josh Murauskas)
Josh Murauskas said that Chelan PUD’s 2009-2010 Wenatchee sockeye escapement estimates based on PIT-tag detections had been previously reported to the Committees. He said Chelan PUD is proposing to continue PIT-tagging sockeye in 2011 for use in enumerating adult escapement and to continue carcass recovery of CWTs for use in determining adult origin and spawner composition. Murauskas said that with the double PIT-tag arrays at the entrance to the White River, he estimated that only 250 PIT-tagged adults would be needed to estimate adult sockeye escapement at a +/- 7 percent confidence interval (CI). The minimum number of tags required (i.e., 250) was presented to illustrate the power of the mark-recapture approach. Additional tags will be available if needed.

Mike Tonseth said he recommends Chelan PUD continue redd counts and spawning ground surveys in the Little Wenatchee River to ground-truth PIT-tag adult escapement estimates.
Kirk Truscott said that given that the Little Wenatchee River has such relatively low spawner abundance, clear water conditions, and little redd superimposition, it offers reliable conditions for estimating spawning abundance based on redd counts. Joe Miller agreed to continue full spawning ground surveys in the Little Wenatchee River as a component of the carcass surveys. The Hatchery Committees agreed to Chelan PUD’s proposal.

**From February 2011 HC meeting minutes**

*Discussion: 2010 PIT Tag-based Wenatchee River Basin Sockeye Escapement Results (Josh Murauskas)*

Josh Murauskas presented preliminary results of the 2009/2010 Wenatchee Basin sockeye escapement study (Attachment A). The purpose of the study was to obtain more accurate escapement estimates based on detections of passive integrated transponder (PIT)-tagged adults by in-river arrays (as opposed to estimates based on visual observations). Returning adult sockeye were PIT-tagged at Bonneville Dam (by Columbia River Inter-Tribal Fish Commission [CRITFC] staff) and at Tumwater Dam. Detection arrays are located in the Little Wenatchee River, White River, Nason Creek, Chiwawa River, and at Tumwater Dam. A second array was installed in the White River in 2010 just downstream from the original White River PIT-tag detection array to provide for estimation of detection efficiency and provide directionality.

Preliminary results indicated that most sockeye tagged at Tumwater Dam return to the White River, where detection efficiency was over 90 percent. Bill Gale asked how undetected fish were accounted for in the analysis. Murauskas said that based on common methodologies described in the literature, 10 percent was used as an estimate of non-detections. Murauskas presented the escapement estimates, alongside recreational harvest (assuming that marked fish were all released), for the Little Wenatchee River, the White River, and combined, for 2009 and 2010, and as a proportion of the Tumwater Dam count.

Murauskas concluded that the second White River PIT-tag array proved very beneficial in improving detection efficiency, and that there was a substantial under-estimation of escapement using traditional spawner survey methods. He noted the difficulties in counting adults during spawning ground surveys in the White River with the low visibility that is compounded by high escapement in some years. Tom Scribner asked Murauskas what changes to estimating escapement are recommended based on the 2009 and 2010 study. Murauskas said Chelan PUD planned to continue the PIT-tagging program, and had asked John Skalski to evaluate existing data to determine the optimal number of fish needed to achieve a level of statistical confidence. Murauskas said a draft report will be available by the March Committees meeting. He suggested that with the continuation of this program, Chelan PUD may eliminate spawning ground surveys of sockeye salmon since escapement based on PIT-tag data is more accurate. The Hatchery Committees discussed the continued value of spawner surveys as a means of documenting spawner distribution. Murauskas stated that Chelan would continue spawner distribution through carcass surveys, but ask that the inaccurate portions of survey efforts be eliminated.
Use of PIT Technology to Estimate Adult Sockeye Salmon Escapement in the Upper Wenatchee River Basin, 2009-2010

Prepared by:

J.G. Murauskas\(^1\)

Prepared for:

Rock Island and Rocky Reach HCP
Hatchery Committee
Wenatchee, Washington

March 23, 2011

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\(^1\) Sr. Fisheries Biologist, Chelan County Public Utilities District
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Introduction
Chelan County Public Utility District (Chelan PUD) proposed to utilize Passive Integrated Transponder (PIT) technology to monitor adult sockeye salmon *Oncorhynchus nerka* during the spawning migration into the upper Wenatchee River Basin (Figure 1). The primary objective of this effort was to provide an accurate estimation of escapement into the Little Wenatchee and White rivers. Results from the 2009 migration was presented to the HCP Hatchery Committee in May 2009. A second array was added to the White River, allowing for a more precise estimate for escapement.

Figure 1. Map of study area, including the Tumwater Dam (purple) and in-stream detection arrays (yellow).

Methods
Adult sockeye salmon were removed from the adult fishway at Tumwater Dam on the Wenatchee River, northwest of Leavenworth, Washington during the 2009 and 2010 migration. Fish were anesthetized, tagged with a PIT, and released into the forebay consistent with techniques used by the Washington Department of Fish and Wildlife. Resulting tag files were queried in PTAGIS (2010), providing detection histories for each study fish. Adult sockeye salmon were tagged at Bonneville Dam by another organization in 2009 and 2010; fish from this tag group that were detected at Tumwater Dam were also used in the analyses. Total passage of adult sockeye salmon through Tumwater Dam were obtained from Columbia River Data Access in Real Time (DART 2010).
Detection efficiency of in-stream arrays was calculated for the Little Wenatchee River in both 2009 and 2010; efficiency was calculated for the White River arrays after the 2010 migration since only a single array was available during 2009. The in-stream arrays include a series of upstream and downstream coils (i.e., Figure 2). Combined, these coils represented the upstream and downstream detection arrays, respectively. Overall detection efficiency $P_{all}$ of the arrays was calculated based on observed detection probabilities of individual arrays:

$$P_{all} = 1 - (1 - P_{array\text{,}1})(1 - P_{array\text{,}2})$$

where the probability of missing a fish on both the upstream $P_{array\text{,}1}$ and downstream $P_{array\text{,}2}$ arrays are combined for an overall efficiency $P_{all}$ (Connolly et al. 2008).

![Figure 2. PIT array configuration on the Little Wenatchee River, 2009.](image)

Resulting data from passage at Tumwater Dam, mark and recapture using PITs, and detection efficiency estimates can provide estimation of escapement to spawning tributaries. Basic assumptions include: (1) the study population is “closed,” i.e., no individuals die or emigrate between the initial mark and subsequent recaptures; (2) tags are not lost and detections are correctly identified; (3) all individuals have the same probability of being detected; and (4) the number of recapture events are proportional to the total population. Lastly, it is assumed that PIT-tagging efforts at Tumwater have negligible influence on fish behavior and tagged individuals behave similarly to untagged individuals. The resulting escapement rate, adjusted for detection efficiency, can then be applied to the total population as such:

$$Escapement = \left( \frac{Obs_{LWN} + Obs_{WTL}}{Eff_{LWN} + Eff_{WTL}} \right) \times Counts_{TUM}$$
where the PIT detections ($Obs$) at the Little Wenatchee ($LWN$) and lower White River ($WTL$) are adjusted for detection efficiency ($Eff$) at both sites, compared to the number released ($PI{T}$s) at Tumwater Dam ($TUM$), and the resulting proportion is applied to the population observed ($Counts$) passing Tumwater Dam.

**Results and Analyses**

**Marking and Recapture Events**

During the adult spawning migrations of 2009 and 2010, 998 and 1,054 adult sockeye salmon were trapped, PIT-tagged, and released in the forebay at Tumwater Dam, respectively. Most fish were of wild origin (90.3%), and tagging occurred throughout the natural run time: a majority of fish were tagged between mid-July and early August both years (PTAGIS 2010; DART 2010). A group of 55 adults were released late in 2010 (September 20th) as un-spawned broodstock. Additional adult sockeye salmon of unknown origin were trapped, PIT-tagged, and released by the Columbia River Inter-Tribal Fisheries Commission into the Bonneville Dam adult fishway in 2009 and 2010, totaling 838 and 910 fish, respectively. Releases at Bonneville Dam generally occurred between mid-June and early July both years. A portion of these fish were detected at Tumwater Dam, including 87 in 2009 and 110 in 2010, and will be used in escapement analyses.

Detections of fish released at Tumwater and Bonneville dams occurred at five locations upstream of Tumwater, including the lower and upper Chiwawa River arrays, the lower Nason Creek array, and the Little Wenatchee and White River arrays (Table 1). Detections upstream of Tumwater Dam in 2009 and 2010 identified 413 and 584 of adults tagged at Tumwater, and 40 and 44 of adults tagged at Bonneville, respectively. The lower White River array accounted for a majority of all detections (86.2%, both years combined), and the upper Chiwawa River array accounted for the fewest (0.3%). The stray rate of fish above Tumwater Dam was roughly double for fish tagged at Tumwater compared to fish tagged at Bonneville over the two-year period (4.7% vs. 2.3%, respectively).

**Table 1. Individual detections (not adjusted for detection efficiency) of PIT-tagged adult sockeye at and upstream of Tumwater Dam, by location, 2009-2010.**

<table>
<thead>
<tr>
<th>Year</th>
<th>Release site</th>
<th>Tumwater</th>
<th>Lower Chiwawa</th>
<th>Upper Chiwawa</th>
<th>Lower Nason</th>
<th>Little Wenatchee</th>
<th>Lower White</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>BONAFF</td>
<td>87</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>TUMFBY</td>
<td>3</td>
<td>33</td>
<td>2</td>
<td>7</td>
<td>34</td>
<td>347</td>
</tr>
<tr>
<td>2010</td>
<td>BONAFF</td>
<td>110</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>TUMFBY</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>61</td>
<td>530</td>
</tr>
<tr>
<td></td>
<td><strong>Combined</strong></td>
<td><strong>202</strong></td>
<td><strong>37</strong></td>
<td><strong>3</strong></td>
<td><strong>8</strong></td>
<td><strong>105</strong></td>
<td><strong>952</strong></td>
</tr>
</tbody>
</table>
Detection Efficiency
Detection efficiency on the Little Wenatchee River was calculated both years with the 105 individuals that were detected in the array. Detection efficiency on the White River was calculated in 2010 based on the 571 individuals detected in the array. Calculated efficiency for the array in place for the 2009 migration was used to expand 2009 observations for estimation of escapement. The Little Wenatchee array had an overall efficiency of 0.971 in 2009 \( (P_{\text{array } 1} = 0.447, P_{\text{array } 2} = 0.947) \) and 1.000 in 2010 \( (P_{\text{array } 1} = 0.687, P_{\text{array } 2} = 1.000); \) Table 2). The White River array had an overall efficiency of 0.900 in 2010 \( (P_{\text{array } 1} = 0.406, P_{\text{array } 2} = 0.832); \) Table 3). The 2010 observed \( P_{\text{array } 1} = 0.406 \) for the White River was applied to the 2009 observed detections to estimate escapement.

Table 2. Detection sequences used to determine probability of detection on the Little Wenatchee River PIT arrays, 2009-2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hit-Hit (Array 1: Array 2)</th>
<th>Hit-Miss (Array 1: Array 2)</th>
<th>Miss-Hit (Array 1: Array 2)</th>
<th>Grand Total</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>15</td>
<td>21</td>
<td>2</td>
<td>38</td>
<td>0.447</td>
<td>0.947</td>
<td>0.971</td>
</tr>
<tr>
<td>2010</td>
<td>46</td>
<td>21</td>
<td>-</td>
<td>67</td>
<td>0.687</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>61</strong></td>
<td><strong>42</strong></td>
<td><strong>2</strong></td>
<td><strong>105</strong></td>
<td><strong>0.600</strong></td>
<td><strong>0.981</strong></td>
<td><strong>0.992</strong></td>
</tr>
</tbody>
</table>

Table 3. Detection sequences used to determine probability of detection on the White River PIT arrays, 2009-2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hit-Hit (Array 1: Array 2)</th>
<th>Hit-Miss (Array 1: Array 2)</th>
<th>Miss-Hit (Array 1: Array 2)</th>
<th>Grand Total</th>
<th>( P_1 )</th>
<th>( P_2 )</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>-</td>
<td>381</td>
<td>-</td>
<td>381</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>136</td>
<td>339</td>
<td>96</td>
<td>571</td>
<td>0.406</td>
<td>0.832</td>
<td>0.900</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>136</strong></td>
<td><strong>720</strong></td>
<td><strong>96</strong></td>
<td><strong>952</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Escapement
Fishway enumeration at Tumwater Dam indicated that 16,034 and 35,821 adult sockeye salmon passed the facility during the 2009 and 2010 migrations, respectively. The recreational harvest removed an estimated 2,229 and 4,129 fish during the two years, respectively; although, anglers were requested to release marked fish. PIT tags were implanted in 1,085 and 1,164 of these fish prior to subsequent detections in nearby tributaries. Based on the recapture of PIT-tagged adult sockeye and assigned detection efficiencies, total estimated escapement from Tumwater Dam to the White and Little Wenatchee rivers was 14,452 in 2009, including 13,876 fish in the White River and 576 fish in the Little Wenatchee River. Estimated escapement in 2010 totaled 21,604, including 19,542 fish in the White River and 2,062 fish in the Little Wenatchee River. Combined escapement rates represented 0.901 of the population in 2009, and 0.603 in 2010.
Table 4. Number of adult sockeye salmon PIT-tagged, released, and detected upstream of Tumwater Dam in 2009 and 2010, including escapement estimates of PIT-tagged fish based on array detection probabilities.

<table>
<thead>
<tr>
<th>Release Location</th>
<th>Number Released</th>
<th>White River</th>
<th>L. Wenatchee River</th>
<th>Chiwawa R.</th>
<th>Nason Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observed</td>
<td>Estimated</td>
<td>Observed</td>
<td>Estimated</td>
<td>Observed</td>
</tr>
<tr>
<td>Tumwater (2009)</td>
<td>998</td>
<td>347</td>
<td>855</td>
<td>34</td>
<td>35</td>
</tr>
<tr>
<td>Bonneville (2009)</td>
<td>87</td>
<td>34</td>
<td>84</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Tumwater (2010)</td>
<td>1,054</td>
<td>530</td>
<td>589</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>Bonneville (2010)</td>
<td>110</td>
<td>41</td>
<td>46</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Combined (2009)</td>
<td>1,085</td>
<td>381</td>
<td>939</td>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>Combined (2010)</td>
<td>1,164</td>
<td>571</td>
<td>635</td>
<td>67</td>
<td>67</td>
</tr>
</tbody>
</table>

1 Also includes fish detected downstream of release point (fallbacks).
2 Number of fish released at Bonneville and subsequently detected at Tumwater Dam.
3 Based on a detection efficiency $p_{all} = 0.406$ in 2009 (assigned from 2010 data) and $p_{all} = 0.900$ in 2010.
4 Based on a detection efficiency $p_{all} = 0.971$ in 2009 and $p_{all} = 1.000$ in 2010.

Table 5. Estimated escapement of adult sockeye salmon to Little Wenatchee and White rivers based on mark-recapture events, in-stream detection efficiency, and adult enumeration at Tumwater Dam, 2009-2010.

<table>
<thead>
<tr>
<th>Year</th>
<th>Tumwater count</th>
<th>Recreational harvest</th>
<th>Little Wenatchee</th>
<th>White River</th>
<th>Combined</th>
<th>Escapement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>16,034</td>
<td>2,229</td>
<td>576</td>
<td>13,876</td>
<td>14,452</td>
<td>0.901</td>
</tr>
<tr>
<td>2010</td>
<td>35,821</td>
<td>4,129</td>
<td>2,062</td>
<td>19,542</td>
<td>21,604</td>
<td>0.603</td>
</tr>
<tr>
<td>Total</td>
<td>51,855</td>
<td>6,358</td>
<td>2,638</td>
<td>33,418</td>
<td>36,056</td>
<td>0.695</td>
</tr>
</tbody>
</table>

Discussion
The use of PIT-tagged adult sockeye salmon to estimate escapement proved to be a useful and accurate method. Particularly, the addition of the second White River PIT array allowed a precise estimate of detection efficiency in the tributary where a majority of sockeye spawn. Further, standard error associated with the mark-recapture estimates can be derived from the program Sample Size 2.0.7, developed by the University of Washington School of Aquatic and Fisheries Science (P. Westhagen, J. Lady, and J. Skalski), as opposed to observation-based estimates with unknown precision currently in place. The difference in escapement estimates between these methodologies may be drastic. For example, the escapement results from observation-based spawning surveys may under-estimate fish returning to the White River due to low water clarity. PIT-based escapement estimates indicated that the spawning surveys may have underestimated returns to the White River, leading to a roughly 2.5%
offset in the estimated distribution in returns (Figure 3). This disparity was greater in 2009, though the lack of the second White River array precludes assigning a precision value to this estimate. Nonetheless, PIT-based escapement estimates provide greater reliability and a means to assign precision to results.

![Figure 3. Comparison of PIT- and spawning survey-based escapement estimates of adult sockeye in the Wenatchee River Basin by system and method, 2009-2010.](image)

The results of the 2009 and 2010 adult sockeye salmon escapement study ultimately demonstrated great potential in estimating escapement in the upper Wenatchee River Basin. The foremost recommendation to achieve the project objective is to maintain the White River arrays to obtain accurate detection efficiency estimates, as well as increase the probability of recapturing marked fish. This alone will provide the ability to generate reasonable escapement estimates. Further monitoring of the recreational fishery in Lake Wenatchee, along with inclusion of harvest probability into the escapement model, would also have considerable benefit to the reliability of escapement estimations. Lastly, continued monitoring of potential tagging and handling effects of fish released at Tumwater Dam is recommended.
References


Memorandum

To: Rock Island and Rocky Reach HCP Hatchery Committees
From: Chelan County PUD
Date: December 10, 2013
Re: Summary of sockeye salmon escapement estimates based on spawning ground surveys and passive integrated transponder (PIT)-tag detections of returning adults in 2009-2012

Introduction
Chelan County Public Utility District (Chelan PUD) utilized Passive Integrated Transponder (PIT) technology to monitor adult sockeye salmon Oncorhynchus nerka during the spawning migration into the upper Wenatchee River Basin beginning in 2009. The primary objective of this memo is to summarize sockeye salmon escapement estimates based on spawning ground surveys and passive integrated transponder (PIT)-tag detections of returning adults. Escapement estimates from 2009 through 2012 are provided.

Methods

Sockeye Spawning Abundance
In 2009, 2010, 2011, and 2012, sockeye abundance was enumerated using two methods: (1) on-the-ground surveys using an “area-under-the-curve” (AUC) approach and (2) a PIT-tag-based mark recapture study.

AUC Method:
Sockeye spawning ground surveys generally begin in August and end in October. When conditions allow, spawning areas are surveyed at least once per week. The AUC method is based on the number of live spawners counted. Using AUC, the number of fish observed in a survey is plotted against the day of the year and the number of fish-days estimated using an algorithm. The number of fish spawning is then estimated by dividing the cumulative fish-days by the estimated mean number of days that the average spawner was alive in the survey area (survey- or stream-life) and then multiplied by a correction factor for fish visibility (observer
efficiency; Hillborn et al. 1999). Hillborn et al. (1999) outlined what is termed as the most commonly used form of AUC, *trapezoidal approximation*:

$$AUC = \sum_{i=2}^{n} \frac{(t_i - t_{i-1}) (x_i + x_{i-1})}{2}$$

where $t_i$ is the day of the year and $x_i$ is the number of salmon observed for the $i$th survey. Attempts were made to initiate surveys before the presence of fish; however, when the first or last survey was not zero, then the above algorithm was not valid and Hillborn et al. (1999) recommend using the rules that the Alaska Department of Fish and Game use:

$$AUC_{first} = \frac{(x_1 s)}{2}$$

where $s$ is the survey life. Survey attempts should also be made until all salmon die, but when this was not possible, then the final survey should be calculated as:

$$AUC_{last} = \frac{(x_{last} s)}{2}$$

Then total escapement ($E$) is estimated as:

$$E^\wedge = \frac{AUC \: \nu}{s}$$

where $\nu$ is a correction for observer efficiency. Since survey life has not been empirically estimated for the Wenatchee system, we used 11 days based on Perrin and Irvine (1990) and Hyatt et al. (2006).

**Mark Recapture Method:**

Adult sockeye salmon are removed from the adult fishway at Tumwater Dam during migration. Fish are anesthetized, tagged with a PIT tag, and released into the forebay consistent with techniques used by the Washington Department of Fish and Wildlife. Resulting tag files are queried in PITAGIS, providing detection histories for each study fish. Adult sockeye salmon may also be tagged at Bonneville Dam by other organizations. Total passage of adult sockeye salmon through Tumwater Dam was obtained from Columbia River Data Access in Real Time (DART).

Detection efficiency of in-stream arrays is calculated for the Little Wenatchee River and White River. The in-stream arrays include a series of upstream and downstream coils (Figure 1). Combined, these coils represented the upstream and downstream detection arrays, respectively. Overall detection efficiency $P_{all}$ of the arrays is calculated based on observed detection probabilities of individual arrays:
\[ P_{all} = 1 - (1 - P_{array1})(1 - P_{array2}) \]

where the probability of missing a fish on both the upstream \( P_{array1} \) and downstream \( P_{array2} \) arrays are combined for an overall efficiency \( P_{all} \) (Connolly et al. 2008).

Figure 1. PIT array configuration on the Little Wenatchee River (2009-2012) and White River (2010-2012).

Resulting data from passage at Tumwater Dam, mark and recapture using PIT tags, and detection efficiency estimates can provide estimation of escapement to spawning tributaries. Basic assumptions include: (1) the study population is “closed,” i.e., no individuals die or emigrate between the initial mark and subsequent recaptures; (2) tags are not lost and detections are correctly identified; (3) all individuals have the same probability of being detected, and (4) the number of recapture events are proportional to the total population. Lastly, it is assumed that PIT-tagging efforts at Tumwater have negligible influence on fish behavior and tagged individuals behave similarly to untagged individuals. The resulting escapement rate, adjusted for detection efficiency, is then applied to the total population as such:

\[
\text{Escapement} = \left( \frac{\text{Obs}_{LWN} + \text{Obs}_{WTL}}{\text{Eff}_{LWN} + \text{Eff}_{WTL}} \right) \times \text{Counts}_{TUM} 
\]
where the PIT detections (Obs) at the Little Wenatchee (LWN) and lower White River (WTL) are adjusted for detection efficiency (Eff) at both sites, compared to the number released (PITs) at Tumwater Dam (TUM), and the resulting proportion is applied to the population observed (Counts) passing Tumwater Dam.

**Results**

Data obtained from 2009-2012 Monitoring and Evaluation of the Chelan County PUD Hatchery Program Annual Reports.

**Area-under-the-curve method**

**Table 1.** Estimated escapement of adult sockeye into the Little Wenatchee and White River basins for return years 2009-2012. Escapement was based on the AUC method.

<table>
<thead>
<tr>
<th>Return year</th>
<th>Tumwater Dam count</th>
<th>Recreational harvest</th>
<th>Little Wenatchee escapement</th>
<th>White River escapement</th>
<th>Total spawning escapement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>16,034</td>
<td>2,229</td>
<td>763</td>
<td>7,004</td>
<td>7,767</td>
</tr>
<tr>
<td>2010</td>
<td>35,821</td>
<td>4,129</td>
<td>2,543</td>
<td>19,157</td>
<td>21,700</td>
</tr>
<tr>
<td>2011</td>
<td>18,634</td>
<td>0</td>
<td>2,431</td>
<td>14,582&lt;sup&gt;a&lt;/sup&gt;</td>
<td>17,013</td>
</tr>
<tr>
<td>2012</td>
<td>66,520</td>
<td>12,107</td>
<td>5,686</td>
<td>NA&lt;sup&gt;b&lt;/sup&gt;</td>
<td>NA</td>
</tr>
</tbody>
</table>

<sup>a</sup> Spawning escapement was not estimated utilizing the AUC in 2011; White River spawning escapement in 2011 was calculated using historic AUC counts and a regression model.

<sup>b</sup> Spawning escapement was not estimated utilizing the AUC in 2012.

**Mark-recapture method**

**Table 2.** Estimated escapement of adult sockeye into the Little Wenatchee and White River basins for return years 2009-2012. Escapement was based on recapture of PIT tagged fish.

<table>
<thead>
<tr>
<th>Return year</th>
<th>Tumwater Dam count</th>
<th>Recreational harvest</th>
<th>Little Wenatchee escapement (detection efficiency)</th>
<th>White River escapement (detection efficiency)</th>
<th>Total spawning escapement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>16,034</td>
<td>2,229</td>
<td>576 (0.971)</td>
<td>13,876 (NA&lt;sup&gt;a&lt;/sup&gt;)</td>
<td>14,452</td>
</tr>
<tr>
<td>2010</td>
<td>35,821</td>
<td>4,129</td>
<td>2,062 (1.000)</td>
<td>19,542 (0.900)</td>
<td>21,604</td>
</tr>
<tr>
<td>2011</td>
<td>18,634</td>
<td>0</td>
<td>1,803 (0.981)</td>
<td>14,582&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16,385</td>
</tr>
<tr>
<td>2012</td>
<td>66,520</td>
<td>12,107</td>
<td>4,607 (0.9541)</td>
<td>23,866 (0.9157)</td>
<td>28,473</td>
</tr>
</tbody>
</table>

<sup>a</sup>The White River PIT tag array consisted of a single coil in 2009; therefore, detection efficiency was not calculated.

<sup>b</sup>The White River PIT tag array malfunctioned in 2011; White River spawning escapement in 2011 was calculated using historic AUC counts and a regression model.
Discussion
The use of PIT-tagged adult sockeye salmon to estimate escapement proved to be a useful and accurate method. Particularly, the addition of the second White River PIT array in 2010 allowed a precise estimate of detection efficiency in the tributary where a majority of sockeye spawn. Further, standard error associated with the mark-recapture estimates can be derived from the program Sample Size 2.0.7, developed by the University of Washington School of Aquatic and Fisheries Science (P. Westhagen, J. Lady, and J. Skalski), as opposed to observation-based estimates with unknown precision currently in place. Additionally, low water clarity on the White River can often preclude spawner escapement estimates using the AUC method.

In general, annual spawner escapement estimates for the Little Wenatchee River were slightly greater utilizing the AUC method versus the mark recapture method for all years (2009-2012). However, it is unlikely that observer efficiency is 100% accurate (i.e., fish may be over counted or under counted); thus spawning escapement based on AUC may be biased. Escapement year 2010 was the only year that allowed for comparison of spawner escapement estimates on the White River; both methods produced similar estimates (AUC=19,157 and mark-recapture = 19,542).

References


### Summary of Rocky Reach ladder trapping of Adipose fin clipped Spring Chinook mid May-mid June 2013

<table>
<thead>
<tr>
<th>Dates of Trapping</th>
<th>Time spent Trapping</th>
<th>Hours spent Trapping</th>
<th>Trapping opportunities</th>
<th># of fish successfully Trapped</th>
<th>Time Trapped</th>
<th>Time of release</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/16/13</td>
<td>0930-1145, 1330-1500</td>
<td>3.75</td>
<td>2</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/17/13</td>
<td>0800-1115, 1230-1300</td>
<td>5.75</td>
<td>2</td>
<td>1</td>
<td>1115</td>
<td>1215&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>5/20/13</td>
<td>0900-1030</td>
<td>1.5</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/23/13</td>
<td>1330-1500</td>
<td>1.5</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/24/13</td>
<td>1115-1300, 1330-1500</td>
<td>3.25</td>
<td>1</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/28/13</td>
<td>1145-1330, 1330-1500</td>
<td>3.25</td>
<td>2</td>
<td>2</td>
<td>1223, 1259</td>
<td>1224,1300</td>
</tr>
<tr>
<td>5/29/13</td>
<td>0950-1220, 1300-1500</td>
<td>4.5</td>
<td>4</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/30/13</td>
<td>0830-1100, 1145-1445</td>
<td>5.5</td>
<td>2</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5/31/13</td>
<td>0810-1110, 1145-1445</td>
<td>6.0</td>
<td>3</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6/4/13</td>
<td>0800-0930, 1030-1200, 1230-1500</td>
<td>5.5</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6/5/13</td>
<td>1355-1455</td>
<td>1.0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6/6/13</td>
<td>0800-1100, 1215-1500</td>
<td>5.75</td>
<td>1</td>
<td>1</td>
<td>1430</td>
<td>1431</td>
</tr>
<tr>
<td>6/7/13</td>
<td>0900-1200, 1245-1500</td>
<td>5.25</td>
<td>1</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6/10/13</td>
<td>0850-1150, 1245-1500</td>
<td>5.25</td>
<td>10</td>
<td>3</td>
<td>1133, 1351, 1437</td>
<td>1138, 1354, 1438</td>
</tr>
<tr>
<td>6/11/13</td>
<td>1345-1500</td>
<td>1.25</td>
<td>6</td>
<td>1</td>
<td>1447</td>
<td>1448</td>
</tr>
</tbody>
</table>

<sup>1</sup> Unable to see that a fish had been trapped due to poor water clarity–very turbid. Passage was available during this time. Protocol changed after this trapping event to raise the hopper after every trapping attempt to ensure no fish remained in the hopper.

### Total days spent trapping: 15
### Total hours spent trapping: 59
### Total # of trapping opportunities: 34
### Total # of target fish trapped: 8

Video taping of all the trapping efforts were also taken.
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 10 January 2013 from 9:30 am to 12:15 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following addition:

- Okanagan River Restoration Initiative Monitoring Project.

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 8 November 2012 meeting notes.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Lower Wenatchee Instream Flow Enhancement Project – The contractor (P.O.W. Contracting from Pasco, WA) began ground breaking on 8 November. They completed the excavation of the pump station site and the access road to the pump station. A total of 1,500 truckloads of material was removed. The site was graded without any complications and the contractor began installing the coffer dam, which is needed to install the fish screen and suction line. In January, they will begin in-water work. The five miles of earthen channel is 80% filled and graded flat. They have about 2,600 feet of the 3,000 feet of HDPE pipe welded together. Pipe will be installed during early January.

- Chewuch River Instream Flow Project – The Washington Parks easement is waiting on the fee agreement. The sponsor (Trout Unlimited – WWP) began developing a case for a lower fee. There are some monitoring and operational issues to resolve between Ecology and the Chewuch Canal Company (CCC). Ecology, CCC, and the sponsor continue to
refine the reservoir permit. Work on other tasks has stopped to save funding until the reservoir permit is agreed to and finalized.

- Nutrient Enhancement Assessment – The contractor (Water Quality Engineers) has summarized the first year of results and presented them to the Cascade Columbia Fisheries Enhancement Group (CCFEG) Board on 16 November. They will present their findings to Ecology on 9 January and the Upper Columbia Regional Technical Team on 13 February. They will also discuss upcoming activities, seek funds for implementation in 2014, and develop an MOA between CCFEG and Ecology.

- Large Wood Atonement Project – The U.S. Fish and Wildlife Service is finalizing specifications for the wood pilings and whole trees, and will complete a one-dimensional modeling exercise for the treatment reach. They will hold a landowner meeting on 16 January to discuss the latest information and results.

- Nason Creek Lower White Pine Alcove Acquisition Project – The sponsor (Chelan-Douglas Land Trust) expects to have signed options this month and retain the appraisals for both properties (Parker and Click). The sponsor intends to use Larry Rees as the appraiser.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- Wenatchee Levee Removal and Riparian Restoration Project – In November, the sponsor (Chelan County Natural Resources Department) met with the landowner to discuss the project and the water right change application. The landowner wanted assurance that the project would not affect his water right for his orchard and production abilities. After discussion, the landowner was satisfied with the water right modification.

- Entiat Stormy Reach Phase 2 Acquisition – The project is complete and a final report will be submitted to the Rocky Reach Tributary Committee.

IV. Review of Policies and Procedures Documents

Tracy Hillman asked if the Committees had any changes or edits to the Policies and Procedures for Funding Projects and the Tributary Committee Operating Procedures documents. In the Policies and Procedures document under Section 3.4, The General Salmon Habitat Program, the Committees agreed to increase the minimum size proposal value from $50,000 to $100,000 (total project cost). The Committees may provide lesser amounts for phased projects. Under Section 4.4, Administrative and Support Costs, the Committees will include language about the use of approved appraisers. Tom Kahler will provide draft language for the Committees to review in February.

V. Wells HCP Action Plan for 2013

Tom Kahler provided the Committees with the Draft Wells HCP Tributary Committee Action Plan for 2013. The 2013 Draft Action Plan for the Wells Tributary Committee is as follows:

<table>
<thead>
<tr>
<th>Plan Species Account Annual Contribution</th>
<th>January 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>$176,178 in 1998 dollars</td>
<td></td>
</tr>
</tbody>
</table>

Annual Report – Plan Species Account Status

<table>
<thead>
<tr>
<th>Draft to Tributary Committee (TC):</th>
<th>February 2013</th>
</tr>
</thead>
</table>
• Approval Deadline: March 2013
• Period Covered: January to December 2012

2013 Funding-Round: General Salmon Habitat Program
• Request for Project Pre-proposals To be determined (March)
• Pre-proposal to TC To be determined (early May)
• Tours of Proposed Projects To be determined (late May)
• Project Sponsor Presentations to TC To be determined (early June)
• Final Project Proposals to TC To be determined (late June)
• RTT Project Rating Decision To be determined (early July)
• Supplemental Sponsor Presentations To be determined (September)
• TC Final Funding Decisions To be determined (before Dec.)

Small Projects Program
• Project Review and Funding Decision January – December 2013

Tributary Assessment Program
• Draft report to TC on Year 5 of 5 and all years April 2013
• Final report to TC June 2013

*The Wells Tributary Committee approved the Wells Action Plan for 2013.* The Committees will review the Rocky Reach and Rock Island 2013 Draft Action Plans in February.

VI. Information Updates
The following information updates were provided during the meeting.

1. Approved Payment Requests in December and January:
   Rock Island Plan Species Account:
   • $482.72 to Chelan County PUD for project coordination during the fourth quarter of 2012.
   Rocky Reach Plan Species Account:
   • $482.71 to Chelan County PUD for project coordination during the fourth quarter of 2012.
   • $6,407.50 to Trout Unlimited for the Chewuch River Permanent Instream Flow project.
   Wells Plan Species Account:
   • $440.22 to Chelan County PUD for project coordination during the fourth quarter of 2012.

2. Tracy Hillman reported that he and Becky Gallaher are writing Section 2.6 (Tributary Committees and Plan Species Accounts) for the Annual Report of Activities under the Anadromous Fish Agreement and Habitat Conservation Plan for each hydroelectric project. Members of the Committees should soon receive the draft reports for their
review. The final reports will be submitted to the Federal Energy Regulatory Commission in April.

3. Tracy Hillman reported that he and Becky will be meeting with the UCSRB, SRFB, BPA, and the Lead Entity at the end of the month to discuss the schedule for proposal development, submission, and review of 2013 SRFB/GSHP/BPA projects. In the past, this meeting has generated questions from project sponsors regarding the Tributary Committees scoring criteria and types of projects the Committees prefer to fund. After discussion, the Committees provided Tracy and Becky with the following information. The Committees evaluate proposed projects based on (1) the benefit of the proposed action to Plan species, (2) whether the action addresses important limiting factors, (3) the location, size, and expected longevity of the project, and (4) the cost of the project. As part of the evaluation process, the Committees also consider the scores and comments provided by the Regional Technical Team. The types of projects the Committees tend to fund include barrier removal projects, levee removals, meaningful streamflow additions, floodplain reconnections, and acquisition or conservation of “at risk” properties.

4. Tracy Hillman reported that funds will be deposited into each of the Plan Species Accounts at the end of January. The amounts deposited will be about $675,000 into the Rock Island Account, $324,000 into the Rocky Reach Account, and $250,000 into the Wells. Exact amounts deposited into each account will be provided during the February meeting.

5. Tracy Hillman said that the Tributary Committees will continue to meet on the second Thursday of each month in 2013. Those meeting dates are as follows:
   - Jan. 10
   - Feb 14
   - Mar 14
   - Apr 11
   - May 9
   - Jun 13
   - Jul 11
   - Aug 8
   - Sep 12
   - Oct 10
   - Nov 14
   - Dec 12

6. Dale Bambrick reported that Mike Kaputa, Chelan County Natural Resources Department, has distributed a scope of work on the Peshastin and Icicle Irrigation Districts Pump Exchange Project Feasibility Study (Phase II). The purpose of the study is to evaluate alternatives to divert water from the Wenatchee River near Dryden and deliver the water to the Peshastin Irrigation District (PID) canal. This would allow for reduced diversions and increased flows in the lower 2.4 miles of Peshastin Creek. The study would define pump station operations (design flow, duration, and timing), habitat benefits, and design. Dale asked the Committees if this is something that would provide biological benefit. The Committees agreed that the project would be beneficial, especially if it reduces diversions from Icicle Creek. Currently, flows diverted from Icicle Creek are delivered to PID through a bifurcation on the Icicle Irrigation District (IID) Diversion 2 Canal to supplement PID’s supply. If the pump station could be used to deliver flows directly to the IID Canal to reduce diversion from Icicle Creek, the project would have larger biological benefit and would gain greater support from the Committees.

7. Tom Kahler reported that in May 2012 the Wells Tributary Committee recommended that Douglas PUD fund the fifth and final year of Okanagan River Restoration Initiative (ORRI) monitoring. The cost of the monitoring approved by the Committee and Douglas PUD during the fifth year was $18,984. The Okanagan Nation Alliance (ONA) proposes to produce a final report that describes results from the five years of monitoring. The
report will also include the many additional data sources and analyses conducted as part of the monitoring program. To that end, the ONA asked the Wells Tributary Committee for an additional $6,799 to complete the final report. Thus, the total amount for the fifth year would be $25,783. After discussion, the Wells Committee approved the increase and directed Douglas PUD to fund via the Tributary Assessment Program (Wells HCP Section 7.5) the additional funding needed to complete the final report. In addition, the Wells Committee approved a two-month time extension for the project. Thus, the contract period will end on 31 August 2013. At the end of the project, the Committee expects to see a report that summarizes the results of the five-year study. The Committee also requested that the final report include a “lessons learned” section.

VII. Public Outreach and Coordination Discussion

During the October 2012 meeting, Lee Carlson and Becky Gallaher reported that Cascadia Conservation District (CCD), Chelan County, Upper Columbia Salmon Recovery Board, and other entities identified the need for funding to assist with outreach and coordination in the Upper Columbia. As a result of the discussion in October, the Committees asked if Derek Van Marter (UCSRB) and Susan Dretke (Cascadia Conservation District) would talk briefly to the Committees about messaging and funding needs.

Both Derek and Susan talked about the current outreach and coordination process in the Upper Columbia. Derek described some of the results from a Findings Report funded by the Bonneville Environmental Foundation and prepared by Pyramid Communications. Pyramid Communications conducted research in the Methow and Entiat basins from January to March 2012. Their research included a web scan of watershed restoration organizations, review of communication materials used in the Entiat and Methow basins and by the UCSRB, interviews with key opinion leaders, and facilitated discussions with restoration partners in the Upper Columbia. Their report, appended as Attachment 1, summarizes findings and implications for messaging and provides the foundation for a communication strategy. Some of the important findings included:

- Most participants see positive effects of watershed restoration.
- Stakeholders recognize the collective effort.
- Some participants are unsure about the effect on the health of the fish.
- Landowners are committed to protecting their property.
- Liability concerns are widely shared.
- Inconsistent communication leads participants to draw their own conclusions.
- Stakeholders are confused about who is in charge.
- There are concerns about “outsider” influence.

These findings resulted in the following messaging implications:

- Treat the multiple-personality disorder. Decide and agree whose voice is really in charge.
- People already went through high school biology class. Do not ask them to do it again.
- Cut through the clutter. Say it and say it like you mean it.
- Prioritize your audiences. Pay as much attention to what they do not care about as well as what they do.
- Just like Jerry Maguire, “Help me help you.” What is good for one is good for everyone.

Derek then shared with the Committees the 2012-2015 Communication and Outreach Plan for the Entiat and Methow Watersheds, which was funded by the Bonneville Environmental Foundation and prepared by Pyramid Communications (see Attachment 2). The Plan identified the following communication and outreach strategies, which are intended to support restoration project
priorities, elevate the benefits of restoration work, and strengthen communication among partners in the Entiat and Methow basins.

- Create more formal collaboration with partners throughout the watershed.
- Create clear, plain language communication tools anchored in the message platform.
- Strengthen ongoing relationships with landowners.
- Educate opinion leaders on the positive benefits of watershed restoration.
- Forge strong relationships with media.

Susan then described outreach efforts by CCD in the Entiat basin. The CCD outreach efforts currently include:

- Quarterly Conservation District Newsletters.
- A corner/column in the Monthly Chamber of Commerce newsletter.
- Monthly Entiat Habitat Subcommittee meetings.
- Attend monthly Chamber of Commerce luncheons.
- Quarterly Entiat Watershed Planning Unit Meetings.
- Ad Hoc Entiat Landowner Steering Committee Meetings.
- Annual Entiat Report.
- Conservation District web site.
- Annual Entiat River Appreciation Event.
- SwallowFest presence.
- Earth Day presence.
- SummerFest presence.
- One on one landowner meetings.
- At least one public meeting per year in the community.
- Watershed signs.
- Landowner outreach for monitoring (contact over 200 landowners).
- Monitoring report mailed to over 200 landowners.
- Project specific outreach associated with project development with specific landowners.
- Meeting monthly with County Commissioners to provide updates on efforts.
- Began implementation of the Public Outreach Strategy Team.

Susan noted a demographic difference along the length of the Entiat River. Downstream from about RM 16, there is more agriculture and landowners tend to be long-term/multi-generational with strong connections to the basin and support for restoration projects. Upstream from RM 16, landowners tend to be part-timers who are focused on recreational interests with less connection to working in the basin and less support for restoration actions.

Susan indicated that it costs about $35,000 per year for coordination and outreach in the Entiat basin. At this time, they do not know what it would cost to improve coordination and outreach throughout the Upper Columbia. Derek indicated that he would continue to share future outreach and communication needs with the Tributary Committees.

**VIII. Next Steps**

The next meeting of the Tributary Committees will be on Thursday, 14 February 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
Attachment 1

Bonneville Environmental Foundation Findings Report
BONNEVILLE ENVIRONMENTAL FOUNDATION

FINDINGS REPORT

Prepared by:

PYRAMID COMMUNICATIONS
239 NW 13th Avenue
Suite 215
Portland, OR 97209

MARCH 21, 2012
OVERVIEW

Watershed restoration efforts in the Entiat and Methow watersheds span more than a decade. Armed with sound science and a passion for the work, public and private partners have made significant contributions across the Upper Columbia with hard work and cooperative efforts. With the ongoing implementation of restoration projects on the horizon, a communications and outreach plan can strengthen existing relationships and help build new partnerships with local landowners.

From January to March 2012, Pyramid Communications conducted an array of research to inform effective communications planning and outreach in both watersheds. This research included a web scan of watershed restoration organizations, review of communication materials used in the Entiat and Methow watersheds and by the Upper Columbia Salmon Recovery Board, interviews with key opinion leaders, and facilitated discussions with restoration partners in the Upper Columbia.

This report summarizes findings and implications for messaging and provides the foundation for communication strategy moving forward.

WEB SCAN METHODOLOGY AND FINDINGS

A website is the key public-facing medium organizations use to communicate their market position, program priorities, and credibility with their audiences. Websites provide insight to how organizations see themselves and how they want target audiences to see them.

Pyramid conducted a web scan of watershed restoration organizations, documenting how each organization approaches and describes its work, defines goals, reports outcomes and engages with target audiences. A mix of both local and national organizations were selected, all active in watershed restoration in the West:

- Alaska Conservation Foundation (Alaska)
- North Fork John Day Watershed Council (Oregon)
- Oregon Watershed Enhancement Board (Oregon)
- South Santiam Watershed Council (Oregon)
- Stewardship Partners (Washington)
- The Nature Conservancy (Alaska, California, Colorado, Montana, Oregon and Washington)
- Whole Watershed Restoration Initiative (Idaho, Oregon, and Washington)
FINDINGS

Watershed restoration initiatives are predominantly partnership-driven. Partnerships are the foundation of most of these efforts. Partners work together to increase the scope and scale of watershed restoration projects, deploy the varied skills of each partner, increase credibility and reduce duplication of effort to get better results.

Partnerships are complicated and operate in a crowded landscape. Partnerships cross public and private sectors to include tribes, local, state and federal governments, corporations, non-profits, schools and other educational institutions and other non-governmental community groups. The role of the partnership and the function of individual partners are not always clear. This can create confusion about coordination and collaboration.

Many organizations communicate with audiences across multiple channels. Not surprisingly, national organizations use more sophisticated and resourced communication strategies and tools. While varying in scale, most groups incorporate multiple channels, including face-to-face meetings, public meetings, Facebook, Twitter and e-newsletters. Organizations use each channel to support further communication and engagement with key audiences.

Cultivating and educating young people is a priority. Organizations across the board recognize that young people are critical to long-term support of watershed restoration. By offering internships, classroom instruction and hands-on experience, organizations invest in the next generation of conservation leaders. It is also likely that in many communities, schools are relatively easy partners to work with.

There is an enormous amount of information with few clear calls to action. Organizations convey a lot of information and data to a lot of audiences. The sheer volume of content is intimidating to the reader and creates unintended barriers. Key messages are lost in the complexity and mass of content. Much of the content is information reported out with few clear calls to action and few avenues for audiences to engage effectively with the work.

There is little common, consistent language. Organizations describe restoration projects in a variety of ways. Conflicting terminology can be confusing and create further barriers to communicating effectively. Descriptions of in-stream projects that put wood in rivers offer an illustration:

- Trout Unlimited describes this work as “large woody debris;”
- The Nature Conservancy calls it “wood restoration;”
- Stewardship Partners use the term “log structure;” and
- Oregon Watershed Enhancement Board describes these projects as “placing logs” or “placing large wood” in waterways.

Organizations also often use highly technical terms and jargon that laypeople find confusing, if not alienating:

“The South Santiam Watershed is deficient in large woody debris due to past timber management, stream cleaning practices and torrential flows that removed woody debris
in the 1970’s and 1996. This deficiency limits the ability of the watershed to dissipate streamflow energy and prevent erosion, retain spawning gravel and nutrients, or to create and maintain instream habitat complexity. LWD is severely lacking in lower reaches of the basin, but even upper reaches have low habitat complexity and would benefit from increased LWD.” – South Santiam Watershed Council

“The existing culverts are undersized and perched, impeding juvenile salmonid passage under most conditions and often restricting adults. Replacing these structures with properly sized bottomless arch culverts will make 2½ miles of quality habitat accessible to all life-stages of steelhead and Chinook. Overall water quality will also be protected by removing the potential for culvert failure and resultant massive sediment loading to the stream.” – North Folk John Day Watershed Council

“Existing pools were excavated to increase rearing and refugia habitat and nearly 40 log structures were placed to improve habitat. Additional gravel was added to enhanced spawning areas and stream banks were pulled back at a 3 to 1 slope, widening the floodplain and decreasing erosion. This fall, spawning salmon were observed using the newly enhanced cover and spawning habitat. This project enhanced a total of 750 feet of stream channel.” – Stewardship Partners

Communication focuses on process and project descriptions—not impacts. While organizations provide great detail on the function, costs and other characteristics of restoration projects, they rarely highlight the impacts of their work. For example, Trout Unlimited describes over twenty-five projects involved in their Home Rivers Initiative. However, stories are not shared to illustrate the impact of their work on the economy, fish populations, water quality or other elements.

COMMUNICATION MATERIALS REVIEW METHODOLOGY AND FINDINGS

To assess the strength, consistency and effectiveness of messages in both watersheds, Pyramid reviewed an array of communication materials. Please refer to Appendix A for a complete list of materials reviewed. In addition, in-depth interviews were held with key working group members to explore past communications and outreach efforts and identify unique attributes of each watershed.

FINDINGS

Both watershed groups have existing, successful track records with landowners. There is a long history of landowner involvement. Successful partnerships have been developed and projects implemented on private lands in each watershed. This history is a critical prerequisite to developing relationships with new landowners.

There is a lot of data available that measures things people care about. Monitoring efforts in both watersheds are significant. In addition to assessing impacts of restoration activities on fish
populations and habitat conditions, the data also measures factors more people might care about, including water quality and river health.

**Volunteer activities in the Entiat promote citizen involvement and environmental stewardship.** Volunteer events are visible avenues for community outreach and opportunities for citizens to demonstrate support for restoration to the broader community.

**Watershed restoration groups in the Methow highlight their partnerships.** By raising the visibility of existing partnerships, the Methow elevates a breadth of community involvement among citizens, non-profit organizations and government.

**Landowner outreach includes public meetings, newsletters, one-on-one meetings, community forums and events.** Both groups use traditionally effective methods to communicate with landowners. Much of the outreach to date has focused on landowners directly affected by restoration projects.

**Partners in the Entiat communicate without defensiveness.** Interactions with the community are open and honest. This communication fosters trust and builds stronger relationships.

> “We all dropped the ball on public outreach. We could have done better.” – Mike Kaputa

However, it can also have an unintended effect. There is a fine line between communicating without defensiveness and invoking concern by calling attention to unanswered questions about the work.

> “Millions of dollars are spent each year...questions remain regarding the individual and combined effectiveness of restoration efforts implemented thus far.” – Conservation Quarterly Winter 2010

**Salmon recovery is the consistent primary message.** Benefits to fish are a focal point in both watersheds. Yet, restoration projects provide the Upper Columbia, and its communities, with additional benefits, which are not always elevated.

> *Cascadia strives to restore in-stream habitat in the Wenatchee and Entiat watersheds to provide salmon, steelhead and bull trout with the necessary conditions to live and prosper.*
> – Conservation Quarterly Winter 2012

> *This large-scale effort to monitor how fish use the river, both before and after M2 project construction, will help quantify the effects of habitat improvement work in the Middle Methow.* – Middle Methow News July 2011

**The information communicated is often technical and filled with data.** The data is not often accompanied by an explanation of what it means for the larger community. This makes it difficult for people not directly involved with restoration to understand its value to the community.
“The projects will create high quality side channel rearing habitat, improve surface and groundwater connection to the floodplain, and enhance riparian vegetation. Both projects propose to supplement existing large wood with a variety of log structures and placements to provide more habitat complexity and pool depth in both the side channels and the mainstem of the river.” – Middle Methow News January 2012

The focus of restoration communications is on project characteristics and cost—sometimes at the expense of communicating results. Restoration activities are described in great detail but project outcomes are not always emphasized. Success stories and positive impacts are a missing piece of communication.

The stream channel was lengthened to 220 linear feet by installing meanders and other fish habitat features in the stream, such as woody debris, placed to ensure unimpeded upstream fish passage. Weed removal and restoration of native vegetation occurred over an area of 0.35 acres along the Yaksum Creek streambank. The producer and his family were very satisfied with the result of the restoration. This project will serve as a demonstration site for water quality and fish and wildlife projects. – Conservation Quarterly Winter 2011

We carefully obtained onsite many of the necessary materials for construction, placing large boulders to form a low-flow notch and recycling fallen trees to create cover for fish when high water overtops the rock sill and flows into the side channel in the spring. – www.methowsalmon.org

STAKEHOLDER INTERVIEW METHODOLOGY AND FINDINGS

Pyramid conducted confidential interviews with eight community leaders and landowners from each watershed. The interviews were designed to assess their awareness and perceptions of watershed restoration and fish recovery efforts in their communities. Working group members identified participants—all of whom are knowledgeable and have a stake in restoration efforts in their community. Participants were consistently candid and thoughtful with their comments. Interview participants are listed below:

Entiat Watershed:
- John Craven, landowner
- Doug England, Chelan County Commissioner District 3
- Sharon Rose, landowner
- Keith Vradenburg, Mayor, City of Entiat

Methow Watershed
- Hank Konrad, owner of Hank’s Market
- Bob Lloyd, Town of Twisp Council Member
- Sheela McLean, writer for Methow Valley Grist
- Vic Stokes, landowner
FINDINGS

Most participants see positive impacts of watershed restoration. When asked to describe the impact of watershed restoration and fish recovery, interview participants note a range of positive results, including benefits to the economy, reducing erosion and improving water quality.

- The majority of participants, and community leaders in particular, see the positive impact watershed restoration has on their local economy.
  
  “It creates more recreation and is a mainstay of the Valley’s economy.” (Methow)

  “Everybody wants to be able to fish again. And the fishing really helps the economy of our town.” (Entiat)

- Participants see reducing erosion as another benefit of watershed restoration. Both groups value the land and see restoration as a means to protect it.
  
  “Past projects have been beneficial in preventing erosion.” (Entiat)

  “It stabilizes banks that are highly erosive.” (Methow)

- Participants from both groups value water quality. They recognize the positive impact watershed restoration has on improving the quality of water in their communities.
  
  “We all benefit from having a cleaner river.” (Entiat)

  “It’s been successful in terms of improving water quality.” (Methow)

It’s important to note that these interview participants do not mention changes in fisheries heath as a positive impact of restoration. They may attach other positive impact as a benefit of healthier fisheries (as a Methow participant notes, “Improvement to the fisheries is a big deal. That pulls a lot of economic power into this area.”), but healthier fish populations do not emerge as an independent positive impact.

Stakeholders recognize the collective effort. The majority of participants can identify four or more groups involved in watershed restoration. Chelan County and Cascadia Conservation District are identified most frequently in the Entiat watershed while the Yakama Nation, Methow Conservancy and the Bureau of Reclamation are named in the Methow watershed.

Additional agencies and/or organizations mentioned by Entiat participants:

- Chamber of Commerce
- City of Wenatchee
- Entiat Watershed Planning Unit
- Forest Service
- Irrigation Districts
- Landowner Steering Committee
- State of Washington
• US Bureau of Reclamation  
• Upper Columbia Salmon Recovery Board  
• Yakama Nation  

Additional agencies and/or organizations mentioned by Methow participants:  
• Big Valley Ranch  
• Bonneville Power Administration  
• Federal Energy Regulatory Commission  
• Fly Fishing Club  
• Forest Service  
• Methow Salmon Recovery Foundation  
• Natural Resource Conservation Service  
• Okanogan Public Utility District  
• Trout Unlimited  
• U.S. Geological Survey  
• Washington Department of Fish and Wildlife  
• Washington Department of Natural Resources  

Over half of the landowners feel there are additional groups or agencies involved, although they could not identify them by name.  

“There are lots of people behind the scenes.” (Methow)  

“Probably more agencies involved than I know about.” (Entiat)  

Some participants are unsure about the impact on the health of the fish. When asked if fish populations are healthier today than they were ten years ago, responses are split. Half of participants feel the fish are healthier while the other half say they do not know or do not care.  

“It’s widely believed that the fish are healthier now.” (Entiat)  

“I don’t know if the fish runs are healthier. If we left things alone, they’d continue to repopulate.” (Entiat)  

Landowners are committed to protecting their property. Landowner participants are most concerned about the integrity and health of their land. Landowners want to know how projects will improve their livelihoods.  

“My first concern is my riverbank.” (Entiat)  

“Helps me, as a farmer, be more efficient in water use and other things…it has a positive economic impact for me.” (Methow)  

“Landowners have been happy because there’s no or little cost. They see value in saving some of their property.” (Methow)
Liability concerns are widely shared. Landowners and community leaders want to know if liability protections are in place in the event of personal injury or property damage caused by restoration projects on private land.

“Landowners are wondering who is accountable if the woody debris comes loose and causes damage.” (Entiat)

“We have real concerns about liability—and it’s real hard for the agencies to get around that.” (Methow)

“What happens if a bridge is taken out?” (Entiat)

Inconsistent communication leads participants to draw their own conclusions. There is general confusion about restoration projects, leading to skepticism about roles and responsibilities of groups engaged in restoration projects, as well as concerns about results and costs. Participants do not understand the end game and how success is defined.

“They’re doing a better job talking among themselves, but honestly, I don’t know if they’re doing a reasonable job talking to others.” (Methow)

“The different people you talk to use different terms in different ways. Makes the discussion confusing.” (Entiat)

“Where are we going and how will we know it when we’re there?” (Methow)

- Participants are unclear who is responsible for ongoing maintenance of restoration projects. They want reassurance that necessary repairs are made to projects in the river.

“What’s the life of a log? Is there a plan for maintenance? (Entiat)

“People need a way to report damages, like if a log breaks free, there’s a number to call to get the responsible agency to come pull it out.” (Methow)

- Participants recognize that millions of dollars are spent on watershed restoration. They question whether projects yield enough benefits to make it a good use of public dollars.

“Is this an efficient use of our dollars?” (Methow)

“Millions of dollars being are aimed this direction and nobody really knows if the fish are going to benefit enough to justify all the expense.” (Entiat)

- Some participants are skeptical about the effectiveness of restoration projects. They are not sure these projects will deliver the desired outcome.

“No one knows the benefits of larger projects. No one knows what will happen.” (Entiat)
“The people involved don’t know what the outcome is going to be and what the numbers are—how many fish are going to come back—it’s a study in progress.” (Entiat)

**Stakeholders are confused about who is in charge.** Half of the participants in the Entiat watershed see Cascadia leading restoration efforts. Most participants in the Methow watershed do not know who is leading the efforts.

“It’s a struggle to say who has a say on this and who has a say on that.” (Methow)

“Lots of different groups involved. Not sure how projects are selected/prioritized.” (Methow)

**Concern about “outsiders” influence.** Stakeholders in the Entiat perceive some restoration partners as outsiders and question whether they have a real stake in the work. They see anyone who does not live in the watershed as an outsider. When asked to identify the outsiders involved in restoration work, participants name consultants, funders and board members. (This concern also came up in partner discussions with stakeholders in the Methow)

“Some of the people involved don’t live here and don’t care about what happens down river.” (Entiat)

“Folks involved in this work don’t necessarily live in the Entiat.” (Entiat)

**PARTNER DISCUSSIONS METHODOLOGY AND FINDINGS**

Pyramid held five discussions with eight watershed restoration partners, representing six organizations/agencies in the Entiat and Methow. Four discussions were conducted in-person in Wenatchee and Winthrop and two discussions were by phone. Please refer to Appendix D for a complete list of partner discussion participants.

The discussions were fluid conversations ranging from 45 to 90 minutes, explored perceptions of partner collaboration and solicited insight about communication and outreach with both landowners and the broader community.

**FINDINGS**

**Funding and timelines are driving a new sense of urgency.** The timelines of BPA funding (including the Accords with Yakama) create a timeline not necessarily consonant with the most effective restoration strategies. Partners do not have the luxury of moving at a different pace to reflect the unique dynamics of their own watershed and communities.

**Collaboration is seen as more important than ever.** Given the number of groups implementing projects throughout the Upper Columbia, collaboration is vital to align efforts and build the awareness and support of landowners and community leaders.
**Cascadia Conservation District is the clear leader in the Entiat.** Partners recognize that Cascadia is the communication hub in the Entiat. They are seen as the organization to call for questions or clarification.

**People are looking for more clarity in the Methow.** The structure of the partnership in the Methow makes it difficult to identify a clear leader. Some partners are looking to the Methow Salmon Recovery Foundation to serve as a more visible hub.

**There is desire on all sides to work better with the Yakama Nation.** For a variety of reasons, the visible collaboration with Yakama can be strengthened. There is clear consensus that this is both necessary and doable, and will deepen the impact of restoration efforts.

**There is ongoing concern about liability in the Entiat.** Partners are not sure how to address liability concerns that continue to arise in the community. They are looking for responses to address these concerns.

**Liability is an emerging issue in the Methow.** This presents an opportunity for partners to get ahead of the issue and tackle concerns head on.

**Relationship building with landowners needs to be ongoing.** Current landowner outreach is generally focused on a deal-by-deal approach. These transactions are generally viewed as successful. However, ongoing communication and relationship with landowners after the project is in place can be more visibly strengthened. Many participants also noted the need and opportunity to communicate with landowners up and down river from projects to create greater awareness, answer questions and forestall concerns.

**MESSAGING IMPLICATIONS**

**Treat the multiple-personality disorder. Decide and agree whose voice is really in charge.** Landowners are perplexed when multiple people approach them to participate in different aspects of fish recovery. While many nod their heads in support at the onset of these conversations, they call their neighbors immediately afterwards to get the unvarnished truth. This has come about because the initial design for each watershed coalition was intentionally loose and largely decentralized. As the number of partners grew, communications with the public and with each other unraveled. That early spirit of democracy inadvertently created unintended consequences. “The buck stops here” needs to be clear and evident within each watershed, both in terms of messenger and messages.

**People already went through high school biology class. Don’t ask them to do it again.** Simplify the complexity of your work and what you do. Science, acronyms, engineering jargon, and species terminology alienate residents and landowners. Landowners and residents aren’t experts in fish recovery or water quality and they don’t want to feel dumb. Experience tells us that when people are confused, they don’t support the work. Prevent this by keeping the science in the textbooks.
Cut through the clutter. Say it and say it like you mean it. Explain your work so that a fourth-grader can understand it. Be clear, be convincing, show your excitement. Practice the elevator pitch with a kid. If s/he doesn’t immediately understand what it’s all about, you need to simplify your story. This isn’t the same as dumbing down. It is why Mark Twain said, “If I’d had more time, I would’ve written a shorter letter.”

Prioritize your audiences. Pay as much attention to what they don’t care about as what they do. It’s easy to fall into the trap of thinking you have to talk with everyone, all the time, about every aspect of what’s happening in the watershed. The primary audiences identified in the Message Platform [separate document] are essential. Spend 80% of your time and energy educating and energizing these groups about the overarching goals and what it means for the economy and for property values. Reassure them about the steps you are taking to address liability; give them peace of mind so they are open and willing to hear about the economic and property value benefits. Spend 20% of your time on the secondary audiences.

Just like Jerry Maguire, “Help me help you.” What’s good for one is good for everyone. The competition for environmental funding is fierce and philanthropy is no longer a reliable revenue stream for non-profits. It’s no wonder that partners put out their elbows to take credit when the funding stakes are high. Given the number of groups working in each watershed—each with a different purpose for being there—it’s essential to join together around unified programs and messages. Funders will be drawn to the big-picture results that come about from being part of integrated effort with positive impact for the entire watershed, not a 100-yard stretch of riverbank overseen by a single group.
APPENDIX A

WORKING GROUP MEMBERS

Bonneville Environmental Foundation:
   ▪ Robert Warren, Model Watershed Program Director

Entiat Watershed:
   ▪ Susan Dretke, Resource Specialist II, Cascadia Conservation District
   ▪ Mike Rickel, Program Manager, Cascadia Conservation District

Methow Watershed:
   ▪ John Crandall, Biologist, Wild Fish Conservancy
   ▪ Chris Johnson, Board President, Methow Salmon Recovery Foundation
   ▪ Jennifer Molesworth, Methow Subbasin Liaison, Bureau of Reclamation

Upper Columbia Salmon Recovery Board:
   ▪ Don McIvor, Natural Resources Coordinator
   ▪ Derek Van Marter, Associate Director
APPENDIX B

COMMUNICATION AND OUTREACH MATERIALS REVIEWED

Entiat Watershed:
- Cascadia Annual Report
- Community assessment survey April 2010
- Conservation Quarterly newsletters
- Entiat BEF work plan
- IMW implementation plan
- Entiat Watershed Planning Unit meeting minutes
- Script treatment for the Story of the Entiat video
- Wenatchee World articles
- www.cascadiacd.org

Methow Watershed:
- Building a shared future talking points
- Methow BEF work plan
- Methow Grist articles
- Middle Methow newsletters
- Methow Restoration Council 2011 outreach and education communications plan
- Methow sub-basin monitoring assessment
- Methow sub-basin model watershed proposal
- Methow Valley News articles
- www.methowsalmon.org

Regional:
- Reach assessments for Entiat and Methow sub-basins
- The Power of Partnership news release
- The Power of Partnership video
- Upper Columbia salmon habitat implementation schedule and projects
- Upper Columbia Salmon Recovery Board 2011 legislative brochure
- Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan
- www.ucsrb.com
APPENDIX C

STAKEHOLDER INTERVIEW GUIDE

INTRO TO ENTIAT GUIDE (2 minutes)

Thanks for taking the time to talk about fish recovery and watershed restoration in the Entiat River Watershed. I will be respectful of your time and get through everything in about 30 minutes. We can spend a bit more time at the end of our interview— if you’ve got it – covering issues you’d like to discuss in more depth.

Pyramid Communications is working with the Cascadia Conservation District and the Upper Columbia Salmon Recovery Board to help strengthen communication around fish recovery and watershed restoration efforts in the watershed. To do that, we’re talking with a handful of community leaders like you to better understand what’s working and what needs improvement.

This interview is confidential. The findings that we report back will be about general themes. No specific comments will be attributed to you or other participants. We are looking for your honest, candid input.

INTRO TO METHOW GUIDE (2 minutes)

Thanks for taking the time to talk about fish recovery and watershed restoration in the Methow River Watershed. I will be respectful of your time and get through everything in about 30 minutes. We can spend a bit more time at the end of our interview— if you’ve got it – covering issues you’d like to discuss in more depth.

Pyramid Communications is working with a coalition of organizations in the Methow and the Upper Columbia Salmon Recovery Board to help strengthen communication around fish recovery and watershed restoration efforts in the watershed. To do that, we’re talking with a handful of community leaders like you to better understand what’s working and what needs improvement.

This interview is confidential. The findings that we report back will be about general themes. No specific comments will be attributed to you or other participants. We are looking for your honest, candid input.

AWARENESS

Entiat: For our conversation today, we are talking about fish recovery and watershed restoration in the Entiat River, specifically, on the upper reaches of the river, about 20 plus miles up the Entiat River Road from the mouth of the river. In two years, restoration projects will occur on the lower 7 miles of the river, from the fish hatchery to the mouth of the river.

Methow: For our conversation today, we are talking about fish recovery and watershed restoration in the Methow River, specifically, upstream of Carlton along the main stem of the
Methow River, the lower 12 miles of the Twisp River, the lower 9 miles of the Chewuch River and the lower 6 miles of Beaver Creek.

1) Can you describe for me what you know about watershed restoration efforts in the Entiat/Methow River? How would you describe them?

(Probes: specific projects, kinds of projects; note any distinctions made between restoration, conservation and preservation)

2) How would you describe the impacts of this work?

(Probes: general river health, water quality, impact on fish, community/economic benefits)

3) What organizations come to mind that are involved in these watershed restoration efforts?

(Probes: who’s leading these efforts; responsible for ensuring the work is effective; championing)

PERCEPTION OF IMPACTS

4) The listing of spring Chinook salmon as endangered – and bull trout and steelhead as threatened – really sparked these recovery and restoration efforts.

How would you describe the health of the salmon, bull trout and steelhead populations now? Do you think these populations are healthier today than 10 years ago?

(Probe: Is it important to have a healthy fish population here? What’s the consequence of not having a healthy population?)

5) Are there other benefits of the fish recovery efforts to the river or the land or the community?

YES/NO

5A. If YES: How would you describe those benefits?

5B. If NO: Why not?

Entiat: 6) The restoration projects involve the installation of what’s called woody debris,
essentially, placing large logs in the river to provide shelter and areas of rest for fish. Is this project different from others you’ve seen in the past? If so, how?

**Methow:** 6) Where appropriate, the restoration projects involve things like creating logjams, removing levees, placing large wood structures in the river, replanting riparian areas and reestablishing wetlands. Are these projects different from others you’ve seen in the past? If so, how?

7) How would you describe the impacts of these kinds of woody debris projects?

(Probes: benefits, negative impacts)

8) Given these concerns, what do you think the partners in this effort need to do to address them?

(Probes: aesthetics, liability, access, communication, involvement)

9) Let’s step back and think about landowners, particularly those directly involved with or affected by these restoration projects that we just talked about. What are you hearing from landowners and their feelings about it? Do you think they see the value in the work?

(Probes: barriers, stumbling blocks, positive attributes)

10) What’s one thing partners working on the ground can do— that they aren’t already doing— to help build support from landowners and others?

(Probes: specific concerns, communication or outreach, messengers)

11) Thinking about everything we’ve talked about today, what’s the hardest thing to explain about this work to people who aren’t involved?

(Probe: Where are people getting hung up? How should this work be talked about?)

12) We’ve talked about a lot today. Is there anything I should know that hasn’t come up yet?
APPENDIX D

PARTNER DISCUSSION PARTICIPANTS

Entiat Watershed:
- Jason Hatch—Trout Unlimited, Project Manager
- Mike Kaputa—Chelan County, Director, Natural Resources
- Robes Parrish—US Fish & Wildlife Service, Hydrologist

Methow Watershed:
- Tom McCoy—Methow Wildlife Area of Washington Department of Fish and Wildlife, Manager
- Jason Paulsen—Methow Conservancy, Executive Director
- John Sunderland—Methow Conservancy, Land Program Manager

Yakama Nation:
- Lee Carlson—Yakama Nation, Habitat Coordinator
- Brandon Rogers—Yakama Nation, Upper Columbia Watershed Restoration Specialist
APPENDIX E

PARTNER DISCUSSION GUIDE

INTRODUCTION

- Thanks for participating.
- We are working with Bonneville Environmental Foundation and a coalition of organizations in the Methow and the Entiat – including Cascadia Conservation District, Salmon Recovery Foundation, Wild Fish Conservancy, Bureau of Reclamation and the Upper Columbia Salmon Recovery Board – to help strengthen communication around fish recovery and watershed restoration efforts with landowners and the broader community.
- You have been selected to participate in this discussion because we see you as a leader in this field who has a good perspective on what’s working and what might need more attention.
- This interview is confidential, used to sharpen and help align communications with landowners and community members.

QUESTIONS

CONTEXT

1. There are a lot of players contributing to watershed restoration efforts in the Upper Columbia and the Entiat/Methow watershed more specifically. How do you see yourself fitting in? What’s the most critical problem you are trying to solve? What the most critical piece of your work that everything hangs off of?

   (Probe: Shared goal around fish recovery; vision of success)

AWARENESS

2. Thinking about fish recovery efforts in the Entiat/Methow watershed, who are your allies? Who do you work with the best? Why?

   (Probe: Upper Columbia Salmon Recovery Board)

3. Who are you not working with as much that maybe in the back of your head you think you should?

4. Who is getting in the way of recovery efforts?

   (Probe: landowners)

PERCEPTION

5. To be really clear, our job is not to change how you all are doing fish recovery and watershed restoration. The projects don’t change. Our job is to take better advantage of all the great work being done and communicate more effectively to landowners to make
your jobs easier. We want to make sure landowners understand what you are doing, see
the need and connect the dots so that they support the work.

With this in mind, how can we improve coordination among all the groups working on fish
recovery so that information falls to landowners in a cohesive way?

COMMUNICATIONS AND OUTREACH TO THE COMMUNITY

6 Thinking specifically about landowners, tell me what you are hearing from them. What are
you asking them to do? Have you had any problems getting their support? What are you
saying to them? How are you dealing with any issues that have come up? Any missteps?
What would you like to be doing?

7 How are you reaching landowners? What’s worked well? What hasn’t worked?

8 What’s one specific thing you want landowners to know about the work in order to
support it?
Attachment 2

Bonneville Environmental Foundation 2012-2015 Communication and Outreach Plan for the Entiat and Methow Watersheds
BONNEVILLE ENVIRONMENTAL FOUNDATION

2012 – 2015 COMMUNICATION AND OUTREACH PLAN
ENTIAT AND METHOW WATERSHEDS

PREPARED BY:
PYRAMID COMMUNICATIONS
MAY 8, 2012
OVERVIEW

Watershed restoration efforts in the Upper Columbia River Basin have been challenging and inspiring local communities across the region for many years. Tribes, local, state and federal governments, non-profit organizations and local landowners have all been working to address the decline in spring Chinook salmon, bull trout and steelhead populations across the region.

Currently, watershed restoration is guided by the Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan, adopted in 2007. Funding to conduct restoration work has increased significantly since the Plan’s adoption, with large investments by multiple funders. As a result, restoration and recovery projects on the ground have grown in breadth, scale and visibility throughout the Upper Columbia.

Recognizing both need and opportunity, the Bonneville Environmental Foundation (BEF) has embarked upon ten-year partnerships with the Entiat and Methow watersheds. BEF has identified the Entiat and Methow watershed programs as models for taking community-based, strategic, watershed-scale approaches to restoration and rigorous, sustained monitoring.

Pyramid Communications worked closely with BEF and partners in the Entiat and Methow to craft a communications and outreach plan to build awareness and support for restoration efforts in their communities. This three-year plan establishes a structure and the capacity for long-term stakeholder engagement and communication; both are necessary for long-term, widely supported natural resources management and conservation in these watersheds. This communication and outreach plan takes advantage of the existing cycle of instream restoration projects, allowing partners to connect effectively with audiences at each major stage, from design to ongoing monitoring. It also takes advantage of the existing connections partners have established in each watershed to create new aligned strategies that allow audiences to experience relevant, consistent communication and provide clear, simple ways to engage with the work.

Most importantly, this plan is actionable. In the first year, it identifies core elements to build momentum and strengthen the organizational capacity of coalition partners. It creates an ambitious but manageable annual cycle of events and respects the unique challenges of each community. It also helps to release the passion that participating organizations bring to this work; passion that is sometimes muted by scientific language and hidden by individual efforts. There is an exciting story to tell about the impact of restoration on the communities and waterways of the Entiat and Methow.

IMPLICATIONS OF THE RESEARCH

From January to March 2012, Pyramid Communications conducted an array of research to inform effective communications planning and outreach in both watersheds. This research included:

- Web-scan of effective watershed restoration organizations
- Review of communication materials used in the Entiat and Methow watersheds and by the Upper Columbia Salmon Recovery Board (UCSRB)
- Stakeholder interviews with landowners and opinion leaders
- Facilitated discussions with restoration partners
Full research findings are found in the March 2012 report from Pyramid. The following are implications of the findings for communications and outreach strategies, consistent for both watersheds:

**Clarify who’s “in charge” of the collective effort.** The majority of people interviewed can identify four or more groups involved in watershed restoration. Chelan County and Cascadia Conservation District are identified most frequently in the Entiat watershed while the Yakama Nation, Methow Conservancy and the Bureau of Reclamation are named in the Methow watershed. (Methow Salmon Recovery Foundation was mentioned once.) While stakeholders recognize the groups doing the work, they are unsure who is in charge. Half of the participants in the Entiat Watershed see Cascadia leading restoration efforts while most participants in the Methow Watershed do not know.

**Expand the frame of the positive impacts of watershed restoration.** When asked to describe the impact of watershed restoration and fish recovery, interview participants note a range of positive results, including benefits to the economy, reducing erosion and improving water quality. It’s important to note that these interview participants do not mention healthier fish populations as a positive impact of restoration. They may attach healthier fish populations to other benefits (As a Methow participant notes, “Improvement to the fisheries is a big deal. That pulls a lot of economic power into this area.”) but fish populations do not emerge as an independent positive impact.

**Simplify the language.** Current print and digital communications are often technical, filled with data and focus on salmon recovery. The data are not often accompanied by an explanation of what it means for the larger community. This makes it difficult for people not directly involved with restoration to understand the value of the work.

**Focus on the results of restoration.** Restoration activities and characteristics are described in great detail, but project outcomes are not always emphasized. Success stories and positive impacts are a missing piece of communication.

**Strengthen the consistency of communication.** Stakeholders are confused about restoration projects and do not understand how success is defined. They are unclear as to who is responsible for ongoing maintenance, and they want reassurance that necessary repairs are made to projects in the river. Stakeholders recognize that millions of dollars are spent on watershed restoration. They question whether projects yield enough benefits to make it a good use of public dollars. Some are skeptical about the overall effectiveness of restoration projects and whether they will deliver the desired outcome.

**Recognize that BPA funding and timelines make collaboration more important than ever.** The timelines of BPA funding (including the Accords with Yakama) create a timeline not necessarily consonant with the most effective restoration strategies. Restoration partners do not have the luxury of moving at a different pace to reflect the unique dynamics of their own watershed and communities. Given the number of groups implementing projects throughout the Upper Columbia, collaboration is vital to align efforts and build the awareness and support of landowners and community leaders.

**Build relationships with landowners for the long-term.** Current landowner outreach is generally focused on a deal-by-deal approach. These transactions are generally viewed as successful. However, ongoing communication and relationship building with landowners after the project is in place can be more visibly strengthened. Many partners note the need and opportunity to communicate with landowners...
up- and down-river from projects to create greater awareness, answer questions and forestall concerns.

**STRATEGIC ASSUMPTIONS**

Both the Entiat and Methow groups face a similar set of dynamics in the environments in which they operate. As noted above, the research revealed a set of common perceptions and strengths on which to build, as well as some concerns and landmines to pay attention to. The following strategic assumptions reflect these dynamics and establish a framework for the recommendations of an actionable communications and outreach plan:

- **Bridge the gap between what people care about and watershed restoration.** Current restoration efforts in the Entiat and Methow watersheds are anchored in the recovery of endangered fish populations by both law and funding. Yet the benefits of restoration extend beyond that and, in fact, audiences targeted in this plan—and key to greater awareness and support—place more value and see greater visibility in additional positive benefits. Embracing and communicating broader impacts create stronger connections to the values of priority audiences.

- **Anticipate concerns before they become bigger problems.** The sheer accumulation of events—from the increasing visibility of projects to the successes and inevitable glitches that come with them—will increase public awareness and scrutiny. Be prepared with regular, clear and consistent information to stakeholders.

- **Recognize that not everything can be controlled.** This work is subject to the vagaries of funding and timelines that don’t dovetail naturally with ecological or community readiness. There are also an array of groups with their own missions and messages doing related work. The media can pick up stories that may not reflect the complexity or reality of the work being done. These constraints are part of reality: be ready when they get in the way.

- **Landowners require ongoing connections.** Successful restoration projects with landowners are a basis for ongoing relationships that build trust and create positive buzz with friends and neighbors. Light but regular communication can have big impacts on cementing effective relationships.

- **Make the Upper Columbia effort a friend.** Watershed restoration is specific to particular, local places. But its benefits affect economies, habitats and species up and down our rivers. Take advantage of information, resources and successes in other parts of the Upper Columbia region to tell the story.

- **An organized partnership is an effective partnership.** Successful collaboration means partners agree on common purpose and acknowledge different roles for different players. It’s most successful when a partner is charged to be the steward or manager of the collaboration, helping align agendas and creating forums to solve problems and exchange ideas.
GOALS

Clearly defined goals build clarity of purpose, focusing energy and creating parameters for disciplined execution of priorities. This communications and outreach plan is designed to accomplish the following:

- Build support for watershed restoration among landowners, opinion leaders and the media.
- Increase awareness and understanding of the economic, recreational and environmental benefits of restoration.
- In each watershed, strengthen collaboration among watershed restoration partners to deliver clear, effective and consistent communication.

MESSAGING

Clear and consistent messages are key to successful communications. Effective messages should be sound bite quality, able to stand on their own and incorporated into broader storytelling opportunities that are relevant and significant to key audiences. The message framework arms partners with consistent, unified language that puts a sharp focus on the key benefits of watershed restoration.

VOICE AND TONE

The following attributes capture the personality and tone of restoration communication in the Entiat and Methow watersheds. Do not share these adjectives publicly. Instead, use them to animate all communications.

- Collaborative
- Trustworthy
- Experienced
- Straight-forward
- Professional
- Transparent
- Inclusive

KEY AUDIENCES

- **Tier 1**: These audiences are the primary targets for communication. Spend 75% of time and energy educating and energizing these groups.
  - Land owners
  - Business owners
  - Local elected officials
  - Chamber of Commerce, tourism and real estate leaders
  - Upper Columbia Salmon Recovery Board
- **Tier 2**: The opinions and actions of these groups influence Tier 1 audiences. Spend 25% of time and energy on Tier 2 audiences.
KEY MESSAGES

Elevator Statement
A good elevator statement doesn’t try to be all things to all people. Rather, it conveys a clear, convincing idea in a short amount of time to elicit excitement and inspiration. Use the statements below to speak to the value of restoration work in the Entiat and Methow watersheds.

- This region is legendary for its natural beauty and strong sense of community. We all know someone who came for a visit and left dreaming about one day relocating here.
- Healthy rivers are a fundamental part of this area. They’re more than just pretty to look at; they are a critical economic engine.
- That’s why dozens of groups and individual landowners are working together to protect and restore the Entiat/Methow River. Our economy and our way of life depend on it.

Boilerplate
The statements below provide standard language that can be used in a variety of materials to describe watershed restoration and the partnership in the Entiat and Methow watershed. Using this language will create a unified image and promote better understanding among key audiences. This language can be used in news releases at the end of the release, in public service announcement copy—for TV, radio, print or web—in newsletter articles and publications when discussing watershed restoration and how partners collaborate, etc.

- Work to protect and restore the Entiat/Methow River is supported by a growing list of landowners, farmers, conservationists and scientists.
- We work together at the grassroots level to integrate ecologic and economic interests for waterways in the region.
- Funding is provided by a variety of sources.

Talking Points
The set of talking points below are for communicating to target audiences. When developing materials for a particular audience, tailor the text to that specific audience. Use these talking points consistently to ensure partners convey the same clear messages in a similar voice and tone.

- #1: Restoring the Entiat/Methow River is more than an environmental imperative. It’s an economic imperative.
  - People come from all over the Northwest to fish our legendary waters. Restaurants, hotels, guides and outfitters depend on healthy rivers for their businesses to thrive.
People also come here to ski, camp, swim and float the river.

Tourism in Chelan County generates $350M/year* for our region.

Tourism in Okanogan County generates $130M/year* for our region.

Farmers and ranchers depend on the river for their livelihoods.

For people who live on or near the water, the view is important to the market value of their property.


#2: Landowners are our most important partners and we want to protect them.

- We rely on landowners to help make good things happen for the river and our economy. Our work is only successful when we partner with landowners and with each other.
- Many landowners have lived here their entire lives and fished the river as kids. Restoring the Entiat/Methow is important to ensuring our children and grandchildren have the opportunity to fish and play on the river.
- We are committed to doing all we can to address liability concerns. That’s why we’re urging the Washington legislature to pass a law that protects landowners from situations beyond their control (HB 2597).
- We have dedicated resources to monitor and maintain every project, now and in the future.
- Because rivers are inherently dangerous, we are committed to doing our best to inform recreationists about the risks.

#3: Our work is making a positive impact.

- The work we’re doing here is happening across the entire Upper Columbia region. We’re excited to be part of a bigger effort to preserve the beauty and way of life that makes this region extraordinary.
- Communities in other states are looking to us as a model for collaboration and results.
- Our partners are efficient about how they spend their resources to improve the health of our streams. We are mindful about making every dollar count.
- We’re excited about the results we’re getting:
  - Helping farmers and ranchers save money by using more efficient irrigation techniques.
  - Helping preserve green spaces along the river for the public and wildlife.
  - Seeing more fish in the river.

STRATEGIES AND TACTICS

The goals and message platform come to life in the communication and outreach strategies. Clearly defined strategies and specific tactics supporting them help determine which methods, used well and at the appropriate times will deliver the desired results.

The following communication and outreach strategies support restoration project priorities, elevate the benefits of restoration work and strengthen communication among partners in the Entiat and Methow watersheds.
Communication Strategies:

- Create more formal collaboration with partners throughout the watershed.
- Create clear, plain language communication tools anchored in the message platform.

Outreach Strategies:

- Strengthen ongoing relationships with landowners.
- Educate opinion leaders on the positive economic benefits of watershed restoration.
- Forge strong relationships with media.

**Strategy 1: Create more formal collaboration with partners throughout the watershed.**

**Tactics:**

- **Build an inclusive partnership.** A strong coalition is crucial to align communication throughout the watershed and help create the clarity and consistency priority audiences need. In each watershed, identify the agencies and organizations with missions, funding and activities supporting watershed restoration. Present their involvement in the coalition as a resource and value-add to their work.

  First steps to build the coalition include:
  - Invite them to participate in a planning session to better coordinate projects and outreach.
  - Use the communications research and messaging as an organizing tool to recruit coalition members.
  - Hold an organizing meeting to establish a common purpose and formalize a structure for the coalition.
  - Acknowledge individual strengths and approaches, map and identify roles of each partner.
  - Identify a handful of common strategic outcomes agreed upon by partners.
  - Agree on a coordinator to manage the activities of the coalition. This is not a lead spokesperson for the coalition but one that plays a "behind the scenes" management role.
  - Develop a coalition flow chart and tag responsibilities to different coalition members.

- **Train partners on messaging.** Share the message platform, be clear about how to adapt messaging to fit their mission and conduct message trainings.

- **Work together.** Create ways for partners to work together on common problems, issues and opportunities. Use monthly or bimonthly meetings for joint planning and problem solving, rather than merely sharing information. Exchange emails and provide general updates as issues arise.

- **Promote an environment of trust and mutual support.** Hold formal and informal meetings as often as necessary to help partners know and trust each other. Encourage partners to give input at key points.

- **Take advantage of regional work.** Reinforce the UCSRB’s role as a convener and learning resource. Create opportunities to strengthen collaborative efforts and coordination across the region. Show the *Power of Partnership* video to illustrate successful collaboration. Explore with
UCSRB holding annual meetings and regular conference calls, webinars, trainings or other learning opportunities for partners in the region.

- **Create ways for the UCSRB to solicit feedback, including identifying support and assistance local partners might need.** Develop short online surveys for partners in each watershed to identify topics of interest and areas of expertise. Use this information to create a community of practice and offer local organizations more capacity to tell their story in a regional context. Involve partners in the scheduling of calls, trainings or meetings to boost participation. Establish an open-door policy for partners to solicit advice or counsel from the UCSRB.

**Additional recommendations for the Entiat Watershed**

- **Brand the coalition of agencies and organizations in the Entiat Watershed.** Use the Entiat Watershed Planning Unit as a starting point to build membership. Create a friendlier, less bureaucratic name for the coalition. Develop a consistent look and feel for all materials, using a consistent logo and similar design elements (such as color scheme, font, text size and layout).

- **Elevate Cascadia as coordinating partner.** The organization currently serves in a similar capacity. Staff is well poised to coordinate and facilitate coalition meetings and communicate effectively with members to promote collaboration, negotiation and problem solving.

- **Create a microsite for quick and easy access to information.** Leverage digital communications to enhance the coalition’s visibility and credibility. Build a microsite, also known as a brochure site, using five to eight pages of content with a strong, consistent visual theme that binds them together. Base content on newly refined collateral but embed interactive links to educational materials, news, social media connections, program updates and contact information. Make sure the microsite is easy to navigate and segmented to target audiences. Select a vanity URL that is relevant to watershed restoration work and easy to remember.

- **Create a Facebook page.** Grant partners posting permissions. Use posts to engage audiences and drive traffic to the microsite for more information.

- **Use existing community and other events to build visibility for the coalition.** Identify methods to tap into existing events by hosting informational booths, being an official sponsor, recruiting speakers, etc. Organize an annual coalition event to raise visibility for the coalition.

**Additional recommendations for the Methow Watershed**

- **Brand the Methow Restoration Council (MRC).** Use the existing council as a starting point to strengthen the visibility and activities of a coalition of partners. Brand the MRC to represent the partnership in the most simple, straightforward way possible. Create a consistent look and feel in all materials using a consistent logo and similar design elements (such as color scheme, font, text size and layout).

- **Designate a coordinating partner.** This requires strong leadership that is responsive and collaborative, not directive. The ability to identify, balance and create common purpose with competing interests is essential. Think of this as a stewardship role among partners with strong, independent views.
- **Create a microsite for quick and easy access to information.** Leverage digital communications to enhance the coalition’s visibility and credibility. Build a microsite, also known as a brochure site, using five to eight pages of content with a strong, consistent visual theme that binds them together. Base content on newly refined collateral but embed interactive links to educational materials, news, social media connections, program updates and contact information. Make sure the microsite easy to navigate and segmented to target audiences. Select a vanity URL that is relevant to watershed restoration work and easy to remember.

- **Create a Facebook page.** Grant partners posting permissions. Use posts to engage audiences and drive traffic to the microsite for more information.

- **Use existing community and other events to build visibility for the Methow Restoration Council.** Identify way to tap into existing events by hosting informational booths, being an official sponsor, recruiting speakers, etc. Organize an annual coalition event to raise visibility for the coalition.

**Strategy 2:** Create clear, plain language communication tools anchored in the message platform.

**Tactics:**

- **Review existing digital and print materials used by partners.** Strive to ensure partners’ materials reflect the key messages and use plain language to communicate their role in restoration. Support and encourage them to refine their materials, including websites, Facebook pages, newsletters, brochures, fact sheets and talking points. Make the information simple, straightforward and easy to digest so that a fourth-grader can understand it. Use as few technical or scientific (as well as unintentionally bureaucratic) terms as possible.

- **Build a library of reusable content to use and share with partners.** Working from the key messages, prepare information to use in future communications. Potential materials include:
  - One page fact sheet, highlighting economic benefits to the local economy
  - Short success stories, providing snapshots of success (150 words or less) that emphasize impacts more than project descriptions and include quotes
  - Landowner profiles and testimonials, using pictures, quotes and background information to provide compelling details about why featured landowners were involved with the work and what it means for the community
  - Landowner FAQ, addressing questions around liability and other practically relevant issues
  - Quotes from opinion leaders, using a variety from a diverse group who help elevate the benefits of watershed restoration
  - Restoration partners reference list, identifying contact information, websites and Facebook pages

- **Work with the UCSRB to identify additional data points demonstrating the local economic impact.** Choose data that makes watershed restoration relevant to the local community. Data points of restoration must be easy to remember, compelling and defensible. Use data on tourism, the local economy, agriculture, water quality, etc.
Strategy 3: Strengthen ongoing relationships with landowners.

Tactics:

- **Collect contact information from landowners at every point of engagement.** Maintain a database of landowner contacts. Use it to deliver light but consistent communication. Keep the database current, and promptly unsubscribe those who no longer wish to receive mailings or emails.

- **Create a quarterly e-newsletter to share updates.** Keep it short. Select one to three topics for each edition, and keep the text brief. Provide links to drive landowners to the microsite for more in-depth material—this helps strengthen the website as an important, consistent source of information for them.

- **Deploy partners for one-on-one, informal discussions throughout the year.** Face-to-face conversations over coffee or food build relationships and trust. These ongoing, informal touches enable partners to solicit input and demonstrate their commitment to understanding landowner concerns.

- **Train three landowners as media spokespeople.** Landowners are credible messengers, with experiences and values that resonate with key audiences. Spokespeople should be articulate and well versed in watershed restoration, as well as liability issues. Brief them on the key messages and work with them prior to each interview to review potential questions. Provide feedback following the interview to reinforce positive behavior or suggest techniques for improvement.

- **Host a summer barbeque to get to know landowners and build trust.** Keep the event light and informal. Hold informal conversations with landowners to find commonalities and shared interests. Use these events as a way to continue building relationships.

- **Send a friendly email within 48 hours of every meeting, forum, event or individual discussion.** Following up promptly helps keep momentum and ensures the relationships continue to grow after every interaction.

Strategy 4: Educate opinion leaders on the positive benefits of watershed restoration.

Tactics:

- **Using key messages, brief supportive business owners, community and church leaders and elected officials on restoration activities.** Hold briefings with members across stakeholder groups. Opinion leaders like to know the other leaders and organizations engaged in the issues; it illustrates support and provides additional reasons to support watershed restoration. Include a review of key research findings to help ground the plan. Conclude by offering tangible ways they can show support.

- **Identify and train media spokespeople.** Recruit supportive, influential opinion leaders and brief them on key messages. Anticipate difficult questions and coach spokespeople with role-playing activities prior to media or public events. Provide feedback following each interview to reinforce positive behavior or suggest techniques for improvement.
Recruit three opinion leaders to weigh in on blog conversations and online news stories (see Appendix A). Watershed restoration issues are being discussed in blogs and online news stories now. Make it easy for opinion leaders to participate in these digital conversations. Email them links to the blog along with key message points.

Collect quotes for print, digital and media materials. Be attentive to collecting quotes from opinion leaders that demonstrate their support for watershed restoration. Listen for statements that emphasize the economic, property protection and water quality benefits of watershed restoration. Leverage these quotes whenever possible to reinforce key messages.

Ghost write op-eds and letters to the editor. Letters to the editor and op-eds are some of the most frequently read sections of newspapers. It is an ideal place to earn media attention and respond to criticism or concerns. Pieces should be brief and persuasive. Draft the piece and ask respected opinion leaders in the community to sign.

Invite opinion leaders to speak at restoration events. Use these speaking opportunities to deliver messages about the economic and community benefits of watershed restoration. Recruit unusual suspects to serve as speaker. When powerful and unexpected messengers speak on behalf of watershed restoration, these issues receive more attention from the media and with landowners. Such speakers include local restaurant owners, clergy members, or artists.

Strategy 5: Forge strong relationships with media.

Tactics:

Conduct briefings with reporters (see Appendix B). Identify key media and meet with them at each major stage of projects, including design, implementation and follow-up. Include reporters who have written negative stories in the past. Use these briefings to increase their awareness of watershed restoration issues. Emphasize the economic benefits of watershed restoration and be prepared to pivot back to key messages.

Conduct tours of project sites. Hold tours to establish stronger relationships with reporters. Present information about what’s underway and on the docket.

Create press materials to make messaging and data readily available. Make it easy for reporters who are on a deadline and working on way too many things. Position the coalition as a resource for the information they need, including referrals and interviews with diverse spokespeople. Make them feel that the coalition is the go-to-entity for accurate and up-to-date information. A packet may include:

- Information about the coalition of partners in each watershed, including a list of partners and the coalition’s mission and goals
- Contact information for the press spokesperson
- Background data and fact sheets
- Frequently asked questions
- Positive press coverage of watershed restoration issues
- Information on how watershed restoration benefits the local economy
- **Develop a rolling list of story ideas and pitch.** Create a rhythm of coverage by regularly pitching ideas—quarterly and/or when newsworthy events take place. Such events may include securing new funding sources, announcing an important project milestone or launching a new coalition.

- **Anticipate when a project, action, decision or event is likely to spark media coverage.** Develop three key message points and a response strategy. Help frame the story by preparing to respond to tough questions and acting in a timely fashion. Deploy trained messengers who are prepared to speak to media.

- **Contact reporters as issues emerge.** Reporters won’t listen just because the information is right; they pay attention to what’s relevant. Think in terms of what a reporter and her boss, the editor, would consider newsworthy. Reporters are faced with dozens of issues and stories. Set watershed restoration issues apart from the others and make it compelling. Find hooks to make the story relevant.

- **Generate responses to coverage of restoration-related stories and events.** Reference previously published articles when submitting letters to the editor or op-eds. This increases the likelihood of earning coverage. Avoid arguments over data and project specifics. Instead, generate responses that elevate the positive benefits and economic impact of watershed restoration.

**MEASURING SUCCESS**

**Track the impact of outreach by setting up metrics for success.** The success of a comprehensive communications and outreach plan will be measured by the effectiveness and impact of the strategies and tactics. Create detailed measures of success for each goal in advance. Measures should be both qualitative and quantitative, including:

The quality of:
- Landowner testimonials and profiles
- Collected quotes
- One-on-one conversations
- Written feedback collected at meetings
- Opinion leader and media briefings

The number of:
- Coalition members recruited
- Media hits generated
- Events and participants attending
- E-communication open rates
- Data from online surveys such as Survey Monkey or Zoomerang to conduct quick temperature-checks
Evaluate these measures on an annual basis. Use the evaluation as a learning tool to strengthen communications and outreach work moving forward. The point of measurement is to assess efforts and find ways to improve, whenever possible. Test along the way and routinely review and adjust the approach as needed.
# TIMELINE

## MAY–JUNE 2012

### PARTNER COLLABORATION

- Review communications plan with working group in each watershed; assign near-term roles and responsibilities
- Compile a list of agencies and organizations in the watershed relevant to restoration that should be involved in the coalition
- Recruit potential partners to attend initial organizational meeting
- Hold the organizational meeting (model group decision-making and problem-solving)
  - Brief partners on the research findings and communications and outreach plan
  - Establish common purpose
  - Discuss proposed coalition structure
  - Select a consistent meeting time
- Hold first official coalition meeting within 30 days
  - Revise and finalize official coalition structure and statement of purpose
  - Affirm Cascadia as coordinating partner in the Entiat
  - Rename the coalition in the Entiat
  - Create logo and brand for the MRC
  - Select coordinating partner in the Methow
  - Identify roles and responsibilities of each partner
- Develop a coalition flow chart and tag responsibilities to different coalition members
- Create partners reference list, including contact information, websites and Facebook pages
- Create a comprehensive calendar of community events to attend, sponsor or host a coalition booth
- Train coalition partners on key messages

### MEDIA

- Monitor local media and generate responses as needed (identify interim lead to manage)

### KEY DELIVERABLES:

- Formal coalition structure with coordinating partners in place
- Coalition flow chart
- Partners reference list
- Calendar of community events
- Message training for coalition partners
- Interim media monitor in place
### JULY-SEPTEMBER 2012

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<td>▪ Create a practical evaluation framework to measure the success of communication and outreach strategies and tactics</td>
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<td>▪ Hold regular (monthly or bimonthly) coalition meetings</td>
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<tr>
<td>▪ Identify materials that need refinement to align with key messages</td>
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<tr>
<td>▪ Assess additional materials needs, including landowner FAQ and one-pager on economic benefits</td>
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<tr>
<td>▪ Create print and digital materials, starting with landowner FAQ and one-pager on economic benefits</td>
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<tr>
<td>▪ Work with USCRB to identify data points for materials</td>
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<td>▪ Develop a library to begin collecting quotes from landowners and opinion leaders</td>
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<td>▪ Host summer barbeque with targeted landowners and opinion leaders</td>
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<td>▪ Send follow up email to all invited and present participants</td>
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<td>▪ Create coalition e-newsletter</td>
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<tr>
<td>▪ Design template</td>
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<td>▪ Write content</td>
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<td>▪ Distribute through coalition channels</td>
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<td>▪ Create press packet</td>
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<tr>
<td>▪ Identify targeted local media and invite them to tour project site</td>
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<tr>
<td>▪ Build a list to track story ideas to pitch to media</td>
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**KEY DELIVERABLES:**

▪ Priority communication materials, including landowner FAQ, press packet and economic benefits one-pager
▪ Coalition e-newsletter
▪ Summer barbeque
▪ Project site tours with media
## OCTOBER–DECEMBER 2012

| **PARTNER COLLABORATION** | Hold regular coalition meetings  
Assess progress using the evaluation framework |
|---------------------------|------------------------------------------------------------------|
| **COMMUNICATION TOOLS**   | Collect quotes from landowners and opinion leaders  
Write and assemble landowner profiles and testimonials |
| **LANDOWNERS**            | Distribute first quarterly e-newsletter  
Create a list of landowners to target for one-on-one conversations  
Hold two to three one-on-one landowner conversations over coffee, food or beer |
| **OPINION LEADERS**       | Brief targeted opinion leaders on research findings, communications and outreach |
| **MEDIA**                 | Monitor local media and generate responses as needed  
  - If response is needed, send designated landowners email alerts with talking points and online links to comment on news articles or submit letters to the editor  
  - Begin local media outreach and share current and upcoming restoration projects  
  - Add to rolling list of story ideas to pitch to media  
  - Pitch story to key local media |

### KEY DELIVERABLES:
- Coalition e-newsletter
- Landowner profiles and testimonials
- Opinion leader briefings
- Media brief and pitch
### JANUARY–MARCH 2013

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<td>Recruit targeted landowners and opinion leaders for media training</td>
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<tr>
<td>Conduct media training</td>
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**KEY DELIVERABLES:**
- Coalition e-newsletter
- Media training for landowners and opinion leaders
### APRIL–JUNE 2013

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| ▪ Hold regular coalition meetings  
| ▪ Update the annual calendar of community events to attend, sponsor or host a coalition booth  
| ▪ Create coalition microsites and Facebook pages  
| | o Launch microsites and Facebook pages for coalitions  

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| ▪ Brief key local media on project updates  
| ▪ Add to rolling list of story ideas to pitch to media  
| ▪ Pitch story to key local media  

**KEY DELIVERABLES:**

- Coalition e-newsletter
- Media brief and pitch
- Calendar of events
- Coalition microsites
### JULY–SEPTEMBER 2013

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<th>OPINION LEADERS</th>
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| • Hold regular coalition meetings | • Continue to collect quotes from landowners and opinion leaders | • Distribute quarterly e-newsletter  
• Hold two to three one-on-one landowner conversations over coffee, food or beer  
• Host summer barbeque with targeted landowners and opinion leaders  
  o Send follow up email to all invited and present participants | • Identify opportunities for speaking engagements  
  o Recruit and prep opinion leaders to speak | • Monitor local media and generate responses when needed  
  o If response is needed, send designated landowners email alerts with talking points and online links to comment on news articles or submit letters to the editor  
• Add to rolling list of story ideas to pitch to media  
• Hold project site tour for local media |

**KEY DELIVERABLES:**

- Coalition e-newsletter
- Summer barbeque
- Project site tours with media
### OCTOBER–DECEMBER 2013

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<thead>
<tr>
<th>Category</th>
<th>Tasks</th>
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| Partner Collaboration | - Hold regular coalition meetings  
                        |   - Assess progress using the evaluation framework |
| Communication Tools | - Continue to collect quotes from landowners and opinion leaders  
                        |   - Update landowner profiles and testimonials in web materials |
| Landowners        | - Distribute quarterly e-newsletter  
                        |   - Hold two to three one-on-one landowner conversations over coffee, food or beer |
| Opinion Leaders   | - Identify opportunities for speaking engagements  
                        |   - Recruit and prep opinion leaders to speak |
| Media             | - Monitor local media and generate responses when needed  
                        |   - If response is needed, send designated landowners email alerts with talking points and online links to comment on news articles or submit letters to the editor  
                        |   - Add to rolling list of story ideas to pitch to media  
                        |   - Pitch story to key local media |

**KEY DELIVERABLES:**

- Coalition e-newsletter
- Landowner profiles and testimonials
- Media brief and pitch
### JANUARY–MARCH 2014

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| **OPINION LEADERS**       | ▪ Identify opportunities for speaking engagements  
|                            | ▪ Recruit and prep opinion leaders to speak |
| **MEDIA**                 | ▪ Monitor local media and generate responses when needed  
|                            | ▪ If response is needed, send designated landowners email alerts with talking points and online links to comment on news articles or submit letters to the editor  
|                            | ▪ Add to rolling list of story ideas to pitch to media  
|                            | ▪ Hold media training for any new coalition members or community spokespeople |

**KEY DELIVERABLES:**

▪ Coalition e-newsletter  
▪ Media training for landowners and opinion leaders
## APRIL–JUNE 2014

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**KEY DELIVERABLES:**

- Coalition e-newsletter
- Media brief and pitch
- Calendar of events
### JULY-SEPTEMBER 2014

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**KEY DELIVERABLES:**

- Coalition e-newsletter
- Summer barbeque
- Project site tours with media
### OCTOBER–DECEMBER 2014

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| ▪ Add to rolling list of story ideas to pitch to media |
| ▪ Pitch story to key local media |

**KEY DELIVERABLES:**

- Coalition e-newsletter
- Landowner profiles and testimonials
- Media brief and pitch
## JANUARY–MARCH 2015

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<td>▪ Hold media training for any new coalition members or community spokespeople</td>
</tr>
</tbody>
</table>

**KEY DELIVERABLES:**
▪ Coalition e-newsletter
▪ Media training for landowners and opinion leaders
APPENDIX A

ELECTED OFFICIALS

County Commissioners

Chelan County:
- Ron Walter, Commissioner District 1, ron.walter@co.chelan.wa.us, 509-667-6215
- Keith Goehner, Commissioner District 2, keith.goehner@co.chelan.wa.us, 509-667-6215
- Doug England, Commissioner District 3, doug.england@co.chelan.wa.us, 509-667-6215

Okanogan County:
- Andrew Lampe, Commissioner District 1, 509-422-7100
- Don (Bud) Hover, Commissioner District 2, 509-422-7100
- Jim Detro, Commissioner District 3, 509-422-7100

Mayors

Entiat:
- Keith Vradenburg, kvradenburg.city@entiat.org, 509-784-1500

Twisp:
- Mayor Soo Ing-Moody, townmayor@townoftwisp.com, 509-997-4081

Wenatchee:
- Mayor Frank Kuntz, 509-888-6204

Winthrop:
- Mayor Dave Acheson, mayor@townofwinthrop.com, 509-966-2320

City Council

Entiat:
- Bill Haven, Mayor Pro Tem, notbhaven1@yahoo.com, 509-784-1500
- Tom Martin, Council Position 1, 509-784-1500
- Ellen Warren, Council Position 3, 509-784-1500
- Cheri Wire, Council Position 4, 509-784-1500
- Lalla Przespolowski, Council Position 5, 509-784-1500

Twisp:
- Bob Lloyd, Council Position 1, 509-997-4081
- Clinton Estes, Council Position 2, 509-997-4081
- Traci Day, Council Position 3, 509-997-4081
- John Fleming, Council Position 4, 509-997-4081
- Hans Smith, Council Position 5, 509-997-4081

**Wenatchee:**
- Jim Bailey, Council Position 1, 509-662-2751
- Tony Veeder, Council Position 2, 509-665-6981
- Karen Rutherford, Council Position 3, 509-662-2039
- Doug Miller, Council Position 4, 509-393-6323
- Mark Kulaas, Council Position 5, 509-884-7173
- Linda Herald, Council Position 6, 509-630-0309
- Bryan Campbell, Council Position 7, 509-630-0725

**Winthrop:**
- Rick Northcott, Council Position 1, council@townofwinthrop.com, 509-996-2320
- Tiffany Langdalen, Council Position 2, council@townofwinthrop.com, 509-996-2320
- Gaile Bryant-Cannon, Council Position 3, council@townofwinthrop.com, 509-996-2320
- Lance Christensen, Council Position 4, council@townofwinthrop.com, 509-996-2320
- Mortee Banasky, Council Position 5, council@townofwinthrop.com, 509-996-2320
APPENDIX B

MEDIA OUTLET CONTACT INFORMATION

Newspapers

Chelan:
- **Lake Chelan Mirror**, [http://www.lakechelanmirror.com](http://www.lakechelanmirror.com), mirror@lakechelanmirror.com, 509-682-2213

Entiat:
- **The Entiat Leader**, entiatleader@yahoo.com, 509-264-0783

Twisp:
- **Methow Valley News**, [http://www.methowvalleynews.com](http://www.methowvalleynews.com), editor@methowvalleynews.com, 509-997-7011

Wenatchee:
- **Wenatchee World**, [http://www.wenatcheeworld.com](http://www.wenatcheeworld.com), newsroom@wenatcheeworld.com, 509-663-5161

Radio

Chelan:
- KOZI, [http://kozi.com](http://kozi.com), jay@kozi.com, 509-682-4033

Twisp:
- KCSY-FM, [http://www.kcsyfm.com](http://www.kcsyfm.com), sunnyfm@kcsyfm.com, 509-997-5857

Wenatchee:
- KAAP-FM, [http://www.applefm.com](http://www.applefm.com), news@fisherwen.com, 509-665-6565
- KKRT-AM, [http://www.kkrt.com](http://www.kkrt.com), gary.patrick@morris.com, 509-663-5186
- KKRV-FM, [http://www.kkrv.com](http://www.kkrv.com), 509-663-5186
- KPLW-FM, [http://www.plr.org](http://www.plr.org), kplw@plr.org, 509-665-6641
- KPQ-AM, [http://www.kpq.com](http://www.kpq.com), info@kpq.com, 509-663-5121
- KPQ-FM, [http://www.thequake1021.com](http://www.thequake1021.com), news@kpq.com, 509-663-5121
- KWLN-FM, [http://www.lanuevaradio.com](http://www.lanuevaradio.com), 509-663-5186
- KWNC-AM, [http://www.lasuperz.com](http://www.lasuperz.com), kwnc@crcwnet.com, 509-664-6424
- KWWW-FM, [http://www.kw3.com](http://www.kw3.com), jconnor@cherrycreekradio.com, 509-663-5121
- KWWX-FM, [http://www.lasuperz.com](http://www.lasuperz.com), eesparza@cherrycreekradio.com, 509-665-6565
KYSN-FM, [http://www.kysn.com](http://www.kysn.com), swright@cherrycreek.com, 509-665-6565
KZNW-AM, [http://www.lasuperz.com](http://www.lasuperz.com), 509-665-6565

Winthrop:

**Television**

Spokane:
- KAYU-TV, [http://www.myfoxspokane.com](http://www.myfoxspokane.com), kayutv@kayutv.com, 509-448-2828
- KGPX-TV, [http://www.ionline.tv](http://www.ionline.tv), 509-340-3405
- KHQ-TV, [http://www.khq.com](http://www.khq.com), g6news@khq.com, 509-448-4656
- KREM-TV, [http://www.krem.com](http://www.krem.com), newsdesk@krem.com, 509-448-2000
- KSKN-TV, [http://www.krem.com/cwtv](http://www.krem.com/cwtv), feedback@krem.com, 509-448-2000
- KSPS-TV, [http://www.kspso.org](http://www.kspso.org), kspso@kspso.org, 509-354-7800
- KXLY-TV, [http://www.kxly.com](http://www.kxly.com), news4@kxly.com, 509-324-4004
- KXMN-TV, [http://www.mykxmn.com](http://www.mykxmn.com), 509-324-4004
Members Present: Dale Bambrick (NOAA Fisheries), Lee Carlson (Yakama Nation), Jeremy Cram (WDFW), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), and Tracy Hillman (Committees Chair).

Members Absent: Kate Terrell (USFWS).

Others Present: Becky Gallaher (Tributary Project Coordinator).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 14 February 2013 from 10:00 am to 12:15 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting. Tracy introduced Jeremy Cram as the WDFW representative on the Tributary Committees. Carmen Andonaegui will serve as the alternate.

The Committees reviewed and adopted the proposed agenda with the following additions:

- Wenatchee Nutrient Enhancement Study Update.
- Icicle Diversion Update.
- Shingle Creek Update.

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 10 January 2013 meeting notes with edits.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Chewuch River Instream Flow Project – The sponsor (Trout Unlimited – WWP) continues to refine the reservoir permit. A meeting is planned for mid-February to resolve any issues. All other work is on hold until the reservoir permit is resolved.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- Wenatchee Levee Removal and Riparian Restoration Project – The sponsor (Chelan County Natural Resources Department) continues to coordinate with the landowner on water rights issues. The landowner is working with the irrigation district to ensure all of his water needs will be met in case there are issues with his current claim.
Entiat Stormy Reach Phase 2 Acquisition – The project is complete and the project sponsor submitted a final report.

Becky indicated that she is having difficulty receiving project updates from sponsors. The Committees suggested adding a clause in future contracts that states that payments may be withheld if sponsors do not submit monthly updates on project status.

IV. Review of Policies and Procedures Documents

The Committees reviewed the edits made by Tracy Hillman and Tom Kahler. Tom described some of the issues he identified in the Policies and Procedures for Funding Projects document. What follows are the issues identified by Tom.

- Under Section 3.8 (Management Guidelines for Conservation Easements/Acquired Lands), there is language that indicates that the Committees “reserve the right to require public access on conservation easements or lands acquired with Plan Species Account funds.” This statement is inconsistent with the July 2012 meeting notes, which state that all protection projects funded by the Committees will have public access. The Committees agreed that the Policies and Procedures document should say that all protection projects funded by the Committees will have public access except under extraordinary circumstances. In addition, the Committees agreed to include language in this section that states that the project sponsors will allow restoration if deemed necessary and that the restoration actions must be approved by the Committees.

- Under Section 4.2 (Eligible Projects and Elements), the Committees agreed to add language that indicates that they may provide a one-time fee for the development of a stewardship plan for acquisition projects.

- After reviewing the revised SRFB manual (SRFB Manual 3 Acquisition Projects), Tom identified additional elements that could be added to the list of administration costs associated with acquisitions. These elements are listed under Section 4.4 (Administrative and Support Costs) in the Policies and Procedures document. The Committees reviewed the list provided by Tom and agreed to most of the elements. Advertising and contract award correspondence were elements not approved by the Committees.

- Tom indicated that the revised SRFB manual (SRFB Manual 5 Restoration Projects) also included additional elements associated with Architectural and Engineering Services (A&E) and Administrative costs for restoration projects (identified under Section 4.4 in the Policies and Procedures document). Currently, A&E costs cannot exceed 15% of the total restoration cost and administration costs cannot exceed 15% of the total restoration cost. Although the Committees questioned the percentages, they agreed to be consistent with the SRFB. They were unclear as to how one calculates and codes the percentages. For example, are subcontractor A&E and admin costs included in the 30%? Dale Bambrick indicated that he will speak with the Washington State Recreation and Conservation Office on how they calculate and code A&E and admin costs for restoration projects. Chris Fisher said that he will contact his engineer to see what they include as A&E and admin costs.

Based on these discussions, Tracy Hillman and Tom Kahler will update the language in the Policies and Procedures document. The Committees will review the revised language during their March meeting.

The Committees also reviewed their Operating Procedures. They approved the minor edits made to the document (i.e., changed the name of the WDFW representative on the Committees).
V. Rocky Reach and Rock Island HCP Action Plans for 2013

Steve Hays provided the Committees with the Draft Rocky Reach and Rock Island HCP Tributary Committees Action Plans for 2013. The 2013 Action Plan for both Rocky Reach and Rock Island Tributary Committees is as follows:

- Plan Species Account Deposit: January 2013
- GSHP Project solicitation: March through July 2013
- GSHP Project Approval: May through August 2013
- GSHP Project Implementation: Ongoing
- Small Project Review and Approval: January through December 2013
- Small Project Implementation: Ongoing

The Rocky Reach and Rock Island Tributary Committees approved the Rocky Reach and Rock Island Action Plans for 2013.

VI. Small Projects Program Application: Okanogan Basin Stream Discharge Monitoring Project

The Committees reviewed a Small Projects Program application from the Confederated Tribes of the Colville Reservation titled Okanogan Basin Stream Discharge Monitoring Project.

Okanogan Basin Stream Discharge Monitoring Project

The purpose of this project is to fund the monitoring of stream flows for two years within two tributaries to the Okanogan River (likely Loup Loup and 9-Mile creeks). The two-year period will allow the Colville Tribes enough time to find a long-term funding source. The total cost of the project is $94,924. The sponsor requested $62,984 from HCP Tributary Funds. Because of a lack of information, the Committees were unable to make a funding decision. They identified the following issues:

1. The sponsor needs to confirm that the gauges will be placed in Loup Loup and 9-Mile creeks. The proposal indicates that they will likely be placed in these streams. The Committees would like more certainty that they will indeed be placed in these streams.
2. The sponsor needs to provide information indicating that the water that is being monitored in the two streams is protected in trust (i.e., the water is not available for agricultural consumption).
3. The sponsor needs to describe the monitoring equipment and whether it is already at the USGS sites, or if it needs to be installed at the sites.
4. The sponsor needs to fix the budget so the Committees know the exact amount they are requesting from the Committees and the total amount of the project. The budget on the first page is inconsistent with the detailed budget on the last page. In addition, the amounts in the detailed budget add up to $106,924, which exceeds the upper limit for the Small Projects Program.

The Committees directed Tracy Hillman to share these concerns with the project sponsor. In addition, if the sponsor is able to send an electronic copy of the revised proposal to the Committees, the Committees will make a funding decision before their next meeting.

VII. Information Updates

The following information updates were provided during the meeting.
1. Approved Payment Requests in January and February:

Rock Island Plan Species Account:

Rocky Reach Plan Species Account:
- $1,904.12 to Chelan-Douglas Land Trust for the Entiat Stormy Reach Phase 2 Acquisition. This is the final invoice for this project.

Wells Plan Species Account:
- $198.28 to the Methow Salmon Recovery Foundation for the Twisp River Acquisition (Hovee Property). This is the final invoice for this project.

2. Tracy Hillman reported that he and Becky Gallaher completed Section 2.6 (Tributary Committees and Plan Species Accounts) for the Annual Report of Activities under the Anadromous Fish Agreement and Habitat Conservation Plan for each hydroelectric project. Members of the Committees should soon receive the draft reports for their review. The final reports will be submitted to the Federal Energy Regulatory Commission in April.

3. Becky Gallaher reported that the PUDs deposited funds into each of the Plan Species Accounts at the end of January. Chelan PUD deposited $690,515 into the Rock Island Account and $327,041 into the Rocky Reach Account. Douglas PUD deposited $250,729 into the Wells Account.

4. Tracy Hillman reported that he and Becky will attend the Annual 13th Funding Round Debrief meeting in Chelan on 21 February. The purpose of the meeting is to discuss potential changes to the funding process, identify potential concerns and solutions, and outline the funding schedule. Steve Hays indicated that he will also try to attend the debrief meeting.

5. Tracy Hillman shared with the Committees the draft Funding Process Schedule (see Attachment 1). Pre-proposals will be delivered to the Tributary Committees on 7 May and the Committees will review the pre-proposals during their May and June meetings (9 May and 13 June). Project tours are scheduled for 29-30 May (Methow and Okanogan) and 5-6 June (Wenatchee and Entiat). Pre-proposal presentations will occur on 12 June. Final proposals will be delivered to the Tributary Committees on 12 July. The Committees will make funding decisions on 8 August. This gives the Committees about 3.5 weeks to review the final proposals.

6. Tracy Hillman reported that Jason Lundgren gave a presentation to the RTT on the Wenatchee Nutrient Assessment – Treatment Design Project, which was funded in part by the Rock Island Tributary Committee. The baseline results indicate that the Wenatchee River basin is nutrient poor (oligotrophic). The researchers reported low levels of nutrients and low levels of periphyton. They also indicated that macroinvertebrate abundance was low, but species richness was relatively high. Tracy asked the Committees if they would like to invite Jason to the March meeting to discuss his results. The Committees said they would like to see a copy of the PowerPoint presentation, but there is no need for Jason to present to the Committees at this time. The presentation is appended to these notes as Attachment 2.

7. Dale Bambrick indicated that he attended a meeting last week to discuss an integrated plan for the Peshastin and Icicle Creek diversions. Dale said that he is recommending that
the water pump station be located on the Wenatchee River upstream from the Peshastin Creek confluence. This would be a more reasonable approach than placing the pump station downstream from the Peshastin Creek confluence (near Alice Avenue). The pump station would contribute water to both the Peshastin Irrigation District canal and the Icicle Irrigation District canal.

8. Chris Fisher reported that the managers, engineers, and bios met to discuss the three options for fish passage at Shingle Creek Dam. Recall that the three options were (1) backwater the dam with a series of riffles, (2) notch the dam and backwater with a series of riffles, and (3) remove the dam. Chris said that because of deterioration of the dam, the engineers and managers recommended that the dam be removed. This is consistent with the recommendation from the Tributary Committees in November 2012.

VIII. Next Steps
The next meeting of the Tributary Committees will be on Thursday, 14 March 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
### Proposed 2013 SRFB/GSHP/BPA Process Schedule

#### DRAFT Upper Columbia Lead Entity Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY/MILESTONE</th>
<th>PARTICIPANTS</th>
<th>LOCATION</th>
<th>LEAD</th>
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<tbody>
<tr>
<td><strong>FEBRUARY</strong></td>
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<tr>
<td>Feb 21</td>
<td><strong>Meeting:</strong> SRFB/TRIB Debrief for 2012</td>
<td>LE, RTT, Sponsors, TRIB</td>
<td>Lake Chelan PUD</td>
<td>LE</td>
</tr>
<tr>
<td>February</td>
<td><strong>Meeting:</strong> Sponsor Meetings Begin</td>
<td>Project Sponsors, LE, Data Steward</td>
<td>Wen, Okan, Methow</td>
<td>LE</td>
</tr>
<tr>
<td><strong>MARCH</strong></td>
<td></td>
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<tr>
<td>March 13</td>
<td><strong>Meeting:</strong> RTT Biological Strategy Approved &amp; Sponsor RTT Dialog</td>
<td>Sponsors, BOR, RTT</td>
<td>TBD</td>
<td>RTT</td>
</tr>
<tr>
<td>March 15</td>
<td><strong>Deadline:</strong> All active and completed projects updated in HWS</td>
<td>Sponsors, data steward</td>
<td>HWS</td>
<td>Data Steward</td>
</tr>
<tr>
<td>March 27</td>
<td><strong>Meeting:</strong> SRFB/TRIB/BPA Kickoff Meeting for the Region</td>
<td>LE, RTT, TRIB, BPA, Sponsors, RCO</td>
<td>Chelan</td>
<td>LE</td>
</tr>
<tr>
<td><strong>APRIL</strong></td>
<td></td>
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<tr>
<td>April (TBD)</td>
<td><strong>Meeting/Workshop:</strong> Sponsor Science Workshop</td>
<td>Sponsors, BOR, RTT, Agencies, Independent scientists, LE</td>
<td>TBD</td>
<td>LE/Region</td>
</tr>
<tr>
<td>April 30</td>
<td><strong>Deadline:</strong> Projects are submitted to PRISM via HWS to initiate a new project</td>
<td>Sponsors, Data Steward, LE</td>
<td>HWS</td>
<td>LE</td>
</tr>
<tr>
<td><strong>MAY</strong></td>
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<tr>
<td>May 7</td>
<td><strong>DEADLINE:</strong> DRAFT PROPOSALS DUE <em>(must be 3 weeks prior to tours)</em></td>
<td>Sponsors, LE, RCO, SRP, RTT, CAC, TRIB, BPA</td>
<td>Prism</td>
<td>LE</td>
</tr>
</tbody>
</table>
# DRAFT Upper Columbia Lead Entity Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
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<tbody>
<tr>
<td><strong>MAY</strong></td>
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<tr>
<td>May 12</td>
<td><strong>Meeting/Call:</strong> Discuss project tour logistics</td>
<td>RTT, LE, TRIB, SRFB Panel Members, and Sponsors?</td>
<td>Call</td>
<td>LE</td>
</tr>
<tr>
<td>May 29 &amp; 30</td>
<td><strong>Meeting/Tours:</strong> SRFB/TRIB/BPA Project Tours</td>
<td>RTT, LE, TRIB, BPA, SRFB SRP, and Project Sponsors</td>
<td>TBD</td>
<td>LE</td>
</tr>
<tr>
<td></td>
<td>• 29th Methow (Wed)</td>
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<td></td>
<td>• 30th Okanogan (Thur)</td>
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<tr>
<td><strong>JUNE</strong></td>
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<tr>
<td>June 5 &amp; 6</td>
<td><strong>Meeting/Tours:</strong> SRFB/TRIB/BPA Project Tours</td>
<td>RTT, LE, TRIB, BPA, SRFB SRP, and Project Sponsors</td>
<td>TBD</td>
<td>LE</td>
</tr>
<tr>
<td></td>
<td>• 5th Wenatchee (Wed)</td>
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<td></td>
<td>• 6th Entiat (Thur)</td>
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<tr>
<td>June 12</td>
<td><strong>Meeting/Presentations:</strong> Draft Proposal Presentations to Reviewers</td>
<td>Project Sponsors, CAC, RTT, LE</td>
<td>River Bank, Twisp</td>
<td>LE</td>
</tr>
<tr>
<td>June 13</td>
<td><strong>Action:</strong> TRIB reviews draft proposals</td>
<td>TRIB</td>
<td>Tributary Committee Meeting</td>
<td>TRIB</td>
</tr>
<tr>
<td>June 20</td>
<td><strong>Action:</strong> TRIB provides comments on draft proposals</td>
<td>TRIB</td>
<td>Tributary Committee Meeting</td>
<td>TRIB</td>
</tr>
<tr>
<td><strong>JULY</strong></td>
<td></td>
<td></td>
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<tr>
<td>July 12</td>
<td><strong>DEADLINE: FINAL PROPOSALS DUE to LE for regional review</strong></td>
<td>Sponsors, LE, RTT, CAC, TRIB, BPA</td>
<td>Prism</td>
<td>LE</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>July 17/18 or 24/25 or 31/Aug 1 (TBD)</td>
<td><strong>Meeting/Presentations:</strong> Proposal Presentations to CACs</td>
<td>Project Sponsors, CAC, RTT, LE</td>
<td>River Bank, Twisp</td>
<td>LE</td>
</tr>
</tbody>
</table>

### AUGUST

<table>
<thead>
<tr>
<th>August 8</th>
<th><strong>Action:</strong> TRIB reviews final proposals</th>
<th>TRIB</th>
<th>Tributary Committee Meeting</th>
<th>TRIB</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 14</td>
<td><strong>Action:</strong> RTT Meeting formal project reviews and technical ranking</td>
<td>RTT, CAC, LE, Region, BPA, BOR</td>
<td>RTT Meeting</td>
<td>LE</td>
</tr>
<tr>
<td>August 14</td>
<td><strong>DEADLINE:</strong> <strong>FINAL PROPOSALS DUE to RCO</strong></td>
<td>Sponsors, LE, RCO, SRP, RTT, CAC, TRIB, BPA</td>
<td>Prism</td>
<td>LE</td>
</tr>
<tr>
<td>August 20</td>
<td><strong>Action:</strong> TRIB preliminary decisions</td>
<td>TRIB, LE</td>
<td>Email via LE</td>
<td>TRIB</td>
</tr>
<tr>
<td>August 21 or 22 (TBD)</td>
<td><strong>Meeting:</strong> Chelan CAC project rankings</td>
<td>CAC, LE</td>
<td>Wenatchee</td>
<td>LE</td>
</tr>
<tr>
<td>August 21 or 22 (TBD)</td>
<td><strong>Meeting:</strong> Okanogan CAC project rankings</td>
<td>CAC, LE</td>
<td>River Bank Twisp</td>
<td>LE</td>
</tr>
<tr>
<td>August 28 or 29 (TBD)</td>
<td><strong>Meeting:</strong> Regional joint CAC approves final combined ranked list</td>
<td>Joint CAC, LE</td>
<td>Lake Chelan PUD?</td>
<td>LE</td>
</tr>
</tbody>
</table>

### SEPTEMBER

| Sept 6              | **Deadline:** LE & Regional Organization submits Final Ranked List to SRFB | LE/Region                     | Email                        | LE   |

### OCTOBER
# DRAFT Upper Columbia Lead Entity Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
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</thead>
<tbody>
<tr>
<td>Oct 17</td>
<td><strong>Deadline:</strong> Response from Project Sponsors to SRP comment forms</td>
<td>Project Sponsors, LE</td>
<td>email</td>
<td>LE</td>
</tr>
<tr>
<td>Oct 21-24</td>
<td><strong>Meeting/Presentations:</strong> LE and project sponsors present projects <em>(only projects identified by SRP)</em></td>
<td>Select Project Sponsors, LE, Region</td>
<td>Olympia</td>
<td>LE/Region</td>
</tr>
<tr>
<td>Oct 30</td>
<td><strong>Action:</strong> SRP panel finalizes comments</td>
<td>SRP</td>
<td>Email</td>
<td>SRP</td>
</tr>
</tbody>
</table>

## NOVEMBER

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<th>Month</th>
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<td>Final report by SRP to SRFB</td>
<td>RCO</td>
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## DECEMBER

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<td>December</td>
<td>TRIB supplemental decisions</td>
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</tbody>
</table>

**Acronyms**

- CAC Citizen’s Advisory Committee
- BPA Bonneville Power Administration
- LE Lead Entity Program
- RCO Recreation and Conservation Office
- Region UCSRB
- RTT Regional Technical Team
- SRP State Review Panel
- SRFB Salmon Recovery Funding Board
- TRIB Tributary Committee
Attachment 2

PowerPoint Presentation on the Wenatchee Nutrient Assessment – Treatment Design Project
ATTACHMENT 2:

PowerPoint Presentation on the Wenatchee Nutrient Assessment – Treatment Design Project

Background

- Previous Nutrient Treatment by USFWS
- Ongoing Nutrient Assessments in Methow by Yakama Nation
- 2010 – SRFB/Trib “Fish Toss” (WDFW/UCRFEG)
- 2011 – Nutrient Enhancement Feasibility
- 2011 – Open solicitation – Wenatchee Nutrient Assess.Treatment Design
- 2012 – First Year Effort
Project Need

- "The need and magnitude of adding nutrients is not well understood and this assessment unit should be part of an ESU-wide plan to determine where, how and how much nutrient supplementation is required." RTT Biological Strategy

- UCSRP: nutrient restoration as important "delivering food for juvenile salmon, nutrients for riparian plants and benthic macro invertebrates."

- "many factors that must be evaluated prior to nutrient enrichment, these include baseline nutrient status." RTT: 2010 Analysis Workshop Synthetic Report

- Nutrient Enhancement, Tier 2 Priority Action, Wenatchee Sub basin Wide. RTT Priorities for Reaches

Wenatchee Nutrient Assessment – Treatment Design

- YEAR 1 SUMMARY: 2012

OUTLINE

- YEAR 1 WORK SUMMARY
- SUMMARY OF RESULTS OF SAMPLING
  - WATER & PERiphyTON
  - NUTRIENT LIMITATION METRICS
- OVERVIEW OF WATERSHED LOADS AND RESTRICTIONS
- OPPORTUNITIES FOR NUTRIENT ENHANCEMENT
  - OTHER INFORMATION NEEDED
- MOVING FORWARD – 2013 AND BEYOND
- Notes:
  - TMDL refers to total maximum daily load for pH and DO that limits P loads in Wenatchee Watershed
  - ug/L = ppm
WORK SUMMARY

- Quality Assurance Project File (DAPP) - June
  - 10 sites: upper and lower sites on each river

- Water Sampling:
  - 1 site per month, JUNE – OCTOBER
  - TP, TDP, BOD, TP, TN, NO3-N, NH4-N, DO, pH, turbidity, temperature
  - Continuous monitoring one week in late August
  - 5 stations (lower river sites)
  - pH, DO, temp, conductivity
  - Evaluate natural conditions for temp, pH and DO

- Parachute:
  - Accurate dates – Lower river sites; JULY 11 – SEPTEMBER 20TH
    - Raw of growth (from 1st week in August to December)
    - Mooring loggers attached to sites for temperature and light
    - Peak biomass sampling – Mooring logging fixes in September all 10 sites

- Invertebrates:
  - Secondary productivity – 1x per month on White River, June – Oct
  - Annual reproduction - September at 10 sites

Sonde with casing and weights
Periphyton accrual plate – Wenatchee River

Invertebrate sampling – EWU Dr. Camille McNeely and Conor Giorgi

Water Sampling – Dissolved inorganic nitrogen DIN = sum of NH4-N, NOx-N

N deficient < 30 – 50 ug/L
Detection limit = 10 ug/L
Water sampling results -
Soluble reactive phosphorus (srp)
Most bioavailable form of phosphorus
Attachment 2

- Chishaka River
  - Detection limit: 1 ug/L
  - Target during nutrient enhancement: 3-5 ug/L

- Little Mumbuniwe River
  - Detection limit: 1 ug/L
  - Target during nutrient enhancement: 3-5 ug/L

- Ndambe River
  - Detection limit: 1 ug/L
  - Target during nutrient enhancement: 3-5 ug/L

- White River
  - Detection limit: 1 ug/L
  - Target during nutrient enhancement: 3-5 ug/L
Preliminary Nutrient Assessment

Periphyton Analysis:
(end of season rock scraping)

Elwha River: AFDW (above dams) ranged from 1 – 7 g/m² (Morley et al. 2008)

Periphyton Analysis

- Chl-a density (mg/m²) and Ash Free dry weight similar to other ultra oligotrophic rivers

- Species diversity is low, productivity is low, indicative of lack of nutrients
**Preliminary results and conclusions**

Summary of Year 1 Assessment

- All rivers appear very low in nutrients (ultra oligotrophic <4 ug/L TDP and srp)
- Year 1 data and TMDL data
  - Mean srp (ug/L) = 1.4 (n = 26)
  - TMDL Background srp not to be exceeded = 4.7 ug/L
  - All rivers much lower than background level
- Should be "room" for nutrient enhancement
- Second year of data will strengthen dataset

**Wenatchee Nutrient Assessment**

– Benthic Macroinvertebrates –

Conor Giorgi

Eastern Washington University

**Objectives**

1. Conduct a bioassessment of all rivers
   a) Use indices of stream health (e.g. Hilsenhoff Biotic Index) and other macroinvertebrate metrics
   b) Characterize macroinvertebrate community by taxa and functional groups

2. Determine the impact of a salmon mediated nutrient subsidy on macroinvertebrate production in the White River
   a) Use error propagation to calculate 95% confidence intervals for production above and within spawning reach
Bioassessment Sampling

- Conducting biannual bioassessment sampling in all streams to support larger Wenatchee Nutrient Assessment
- Spring and fall
- 2 sampling sites, one upstream, one downstream
- 8 subsamples, data composited 2 replicates

Sample Processing

- Sort invertebrates from collected substrate/detritus
  - ≥500 individuals/sample for biomonitoring
- Measure length
- Identify to lowest practical taxon
- Apply established length/weight regressions for biomass estimates
- Classify according to functional groups

Progress

- Sorted 2 subsamples from each site
- Identified dominant invertebrate families
- Developing database for easier management
Bioassessment Metrics

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<th>Units</th>
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<tr>
<td>Density</td>
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<td>Biomass</td>
<td>g/m²</td>
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<td>Richness</td>
<td>Overall number of species sampled</td>
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<td>Evenness</td>
<td>Relative abundance of species</td>
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<td>Number of species in Ephemeroptera, Plecoptera and Trichoptera</td>
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<td>Predators Richness</td>
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<td>Shannon's index of diversity</td>
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<td>HBI</td>
<td>HBI Scores</td>
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Preliminary Results

- Invertebrate communities of all systems are taxonomically similar
  - Dominant Taxa:
  - Rare taxa also present
  - High richness
  - Low abundance

Preliminary Results - HBI

- HBI Scores (0 = great, 10 = bad)
  - Dominant Taxa mostly ≤4
  - Some 1’s and 0’s
  - Chironomids = 6
Preliminary Results – Functional Groups

Habit
- Clingers
- Swimmers
- Burrowers

Feeding
- Scrapers
- Gatherers

White River Secondary Production

- 2 sampling sites, one above, one within spawning reach
- Regular sampling intervals over 1 year
- 5 replicate samples per site, per event
- Total 130 samples

Calculating Production:
Size-Frequency Method

- Taxon specific
- Individuals sorted into size (length) classes
  - Track change in density and weight of individuals over time
- Correct for cohorts per year
- Calculation requires 1 year of data, anticipated completion December 2013
- Error Propagation to generate 95% confidence intervals of production, compare reaches
Implications

- High water quality with low pollutants (including dissolved nutrients)
- Low relative abundance
- Production estimates in White River may give insight to if and how other systems are limited

Enhancement? Where, When, How

- TMDL —
  - Applies to Nason Creek, Chiwawa River, and upper Wenatchee River
  - Load restrictions from March – October
- First approach —
  - Simulate Coho returns — Enhancement in November, and December on all rivers
  - Second year and final report to determine where

Enhancement? Where, When, How

- Second Approach
  - Enhancement during late summer or early fall on all rivers
  - Need depends on complete assessment
  - Where (based on Yr 1 results and watershed conditions)
    - Little Wenatchee — summer, fall, winter
    - White River? Already has big sockeye run, does it need more?
    - Nason Creek? Difficult but must consider Steven Pass wastewater facility discharge
    - Chiwawa River? Where?
    - Upper Wenatchee River? Where?
  - Clarify locations in final report
Moving Forward

- Open Solicitation - Application for Nutrient Enhancement in 2013
  - Define geographic scope, loading, costs, and logistics.
- Final Report in 2013
  - Guidelines for monitoring, permitting, and implementation (where, how, when)
  - Developed with WA DOE
- Outreach to stakeholders and public

Acknowledgements

- PRCC, Yakama Nation, Tributary Committee, SRFB
- WDOE (Jim Yates, Charlie McKinney, Sanjay Barik)
- John Jorgenson, Keely Murdoch, Yakama Nation, Andrew Murdoch, Ken Bevis, WDFW, Casey Baldwin, Colville Confederated Tribe, Tony Meyer, Lower Columbia RFEG, CCFEG Board, many others who have helped and provided info along the way.

Questions?
Wells, Rocky Reach, and Rock Island HCP Tributary Committees Notes
14 March 2013

Members Present: Dale Bambrick (NOAA Fisheries), Lee Carlson (Yakama Nation), Jeremy Cram (WDFW), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), Kate Terrell (USFWS), and Tracy Hillman (Committees Chair).

Others Present: Becky Gallaher (Tributary Project Coordinator).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 14 March 2013 from 10:00 am to 12:15 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following additions:

- Review a Small Projects Application from Cascade Columbia Fisheries Enhancement Group.
- Peshastin Creek Riparian Restoration Project.
- Shingle Creek Update.

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 14 February 2013 meeting notes with edits.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Twisp River Riparian Protection Project (Zinn) – The conservation easement has been negotiated and is near final draft. All due diligence is complete, pending a final site inspection. The stewardship plan is in development and closing should occur in early May.
- Nason Creek Upper White Pine Reconnection – Chelan PUD Powerline Reconnection Alternatives Analysis – The sponsor (Chelan County Natural Resources Department) will meet with Chelan PUD and US Forest Service upper management to determine how to address the PUD corridor in the project area. The sponsor hopes to receive direction from both parties on how to proceed with the powerline relocation and restoration activities.
- Nutrient Enhancement Assessment – Data from the first year of sampling have been compiled and presented to stakeholders. The contractor (Water Quality Engineers) collected water samples at the monitoring sites during late February 2013. Researchers are still analyzing the macroinvertebrates collected last fall. The sponsor (Cascade
Columbia Fisheries Enhancement Group) will hold a meeting with Washington Department of Ecology (WDOE) on 14 March to begin the process of developing an interim agreement for implementing nutrient enhancement based on initial findings.

- Large Wood Atonement Project – The sponsor (Cascade Columbia Fisheries Enhancement Group) has convened four small-scale public meetings (included a subset of Lake Wenatchee and White River residents). The purpose of the meetings was to help identify and work through issues. Although the project has been progressing well, recently, one resident has voiced skepticism. However, the sponsor believes they are making progress on both social and technical issues. A public meeting will be held on 30 March. The sponsor prepared a “Recreational Considerations” paper to address potential concerns from recreationalists. The sponsor also floated the project reach on 26 February to determine how much new wood was recruited to the channel from the recent winter storms. The sponsor counted about 25 new pieces of wood within a four-mile reach. Implementation is scheduled to occur in 2013; however, it may need to be pushed into 2014 pending community support.

The Rock Island Committee voiced concern over the possible delay in the implementation of the project. If the contract ends in 2013, the Committee directed Tracy Hillman to send an e-mail to the project sponsor indicating that the Rock Island Committee encourages the sponsor to implement the project in 2013. Following the meeting, Becky reviewed the contract and noted that the contract terminates at the end of 2014. Therefore, there is no need for Tracy to send an e-mail to the sponsor.

- Nason Creek Lower White Pine Alcove Acquisition Project – The sponsor (Chelan-Douglas Land Trust) has secured options on all three parcels. Larry Rees (Committees’ approved appraiser) will begin the appraisals mid to late March, with appraisals completed in late May. The Yakama Nation is planning to implement a restoration project on the property.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- Lower Foster Creek Steelhead Habitat Enhancement Project – Becky sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review.

- Twisp River-Poorman Creek Wetland Habitat Acquisition – The sponsor (Methow Salmon Recovery Foundation) has requested the initiation of an appraisal. Becky has requested necessary information from the sponsor for engaging the appraiser, but has not yet received the information from the sponsor.

- Shingle Creek Fish Passage Project – The Tributary Committee/Sponsor Agreement is ready for signature.

IV. Review of Policies and Procedures Documents

The Committees reviewed and approved the edits made by Tracy Hillman and Tom Kahler to the Policies and Procedures for Funding Projects document. The Committees reviewed Section 4.4 (Administrative and Support Costs) of the Policies and Procedures document. They also reviewed the elements associated with Architectural and Engineering Services (A&E) and Administrative costs for restoration projects identified in the Salmon Recovery Funding Board (SRFB) Manual 5 Restoration Projects document. After discussion, the Committees agreed that the items described in the SRFB document were appropriate and should be included in the Policies and Procedures
document. Rather than listing all the items in the Policies and Procedures document, the Committees agreed to reference the SRFB document. Thus, the language in the Policies and Procedures document reads:

Acceptable Architectural and Engineering Services and Administrative costs are provided on pages 11-15 in Section 2 of the SRFB Manual 5 Restoration Projects document (see: http://www.rco.wa.gov/documents/manuals&forms/Manual_5.pdf). A&E costs cannot exceed 15% of the total restoration cost and Administrative costs cannot exceed 15% of the total restoration cost.

The Committees will share the revised Policies and Procedures document with project sponsors during the SRFB/TC/BPA kick-off meeting on 27 March in Chelan, WA.

V. Small Projects Program Applications

In February, the Committees reviewed a Small Projects Program application from the Confederated Tribes of the Colville Reservation titled Okanogan Basin Stream Discharge Monitoring Project. The purpose of this project was to fund the monitoring of stream flows for two years within two tributaries to the Okanogan River. The two-year period will allow the Colville Tribes enough time to find a long-term funding source. The total cost of the project was $94,924. The sponsor requested $62,984 from HCP Tributary Funds. The Committees were unable to make a funding decision in February and asked the sponsor for additional information.

On 20 February, the Colville Tribes submitted a revised proposal, which the Committees reviewed prior to the March meeting. The Colville Tribes indicated that the gauges would be placed in Loup Loup and Nine-Mile creeks. In addition, the Tribes revised the budget. The total cost of the project is $90,954. The Tribes requested $74,984 from the HCP Tributary Funds. The Rocky Reach Tributary Committee approved funding for this project.

In March, the Committees received a Small Projects Program application from Cascade Columbia Fisheries Enhancement Group titled Methow/Chewuch Shallow Groundwater Monitoring Project. The purpose of this project is to establish groundwater monitoring sites on three floodplain parcels owned by WDFW to determine if it is feasible to pursue habitat restoration projects in these areas. The three parcels are the Silver Side Channel Complex (Methow River downstream from Twisp), Lewisia Floodplain (middle Methow River), and the Burns-Garrity Floodplain (lower Chewuch River). These sites were selected because they contain remnant channel features and there is evidence of shallow groundwater. The total cost of the project is $39,390. The sponsor requested $35,790 from HCP Tributary Funds. The Wells Tributary Committee approved funding for this project.

However, the Committee identified the following conditions and concerns:

- The cost of the monitoring project appeared excessive and the sponsor provided little detail in the budget. The Committee requested that the sponsor provide a more detailed budget. [Following the meeting, the sponsor provided the Committee with a revised budget: total cost = $34,180; request from the Wells Committee = $30,580]

- The project requires the purchase of 12 piezometers equipped with continuously recording water surface elevation and temperature data loggers. The Committee will provide the sponsor with the funding needed to purchase the monitoring equipment. Once the monitoring work is completed, the sponsor will need to return the equipment to the Wells Committee.
VI. SRFB/TC Debrief Meeting

Tracy Hillman, Becky Gallaher, and Steve Hays attended the SRFB/TC Debrief Meeting in Chelan, WA, on 21 February 2013. The purpose of the meeting was to discuss potential changes to the funding process, identify potential concerns and solutions, and outline the funding schedule. Most of the issues discussed during the meeting dealt with the SRFB process. However, a few project sponsors had concerns or questions for the Tributary Committees. For example, Julie Grialou, Methow Conservancy, voiced her concern about the Committees’ policy that requires public access on conservation easements and lands acquired with Plan Species Account funds. She understood that access was for bird watching and river access, but wondered who would police activities such as camping, picnics, parties, keggers, etc. She was concerned that public access would also result in bank and vegetation disturbances and littering. She asked if the Committees would provide additional funds to police, clean up, and restore the property. She also asked if the policy applied to all past protection projects funded by the Committees. Jessica Goldberg, Methow Salmon Recovery Foundation, voiced concerns about using the Committees’ appraisers, who lack knowledge about the local markets.

With regard to the public access concerns, the Committees laid out specific guidelines for public access in the Policies and Procedures document. Although public access shall be provided on all conservation easements and lands acquired with Plan Species Account funds, there is no requirement to post public access signs, establish trails, or provide parking. The requirement is that public access is restricted to foot access and will be provided at all times. There shall be no impediments to foot access (e.g., fences) and the access cannot devalue the habitat being protected. The Committees do not require the easement or property-title holder to provide any improvements to facilitate access or to accommodate ADA standards. The public access policy applies to all protection projects funded by the Committees beginning in 2012.

An outcome of the debrief meeting was a final funding schedule for 2013 (see Attachment 1). The following dates are relevant to the Tributary Committees. Pre-proposals will be delivered to the Tributary Committees on 7 May and the Committees will review the pre-proposals during their May and June meetings (9 May and 13 June). Project tours are scheduled for 29-30 May (Methow and Okanogan) and 5-6 June (Wenatchee and Entiat). Pre-proposal presentations will occur on 12 June. Final proposals will be delivered to the Tributary Committees on 12 July. The Committees will make funding decisions on 8 August. This gives the Committees about 3.5 weeks to review the final proposals.

VII. Information Updates

The following information updates were provided during the meeting.

1. Approved Payment Requests in February and March:

   Rock Island Plan Species Account:
   - $8,770.08 to Chelan County Natural Resources Department for the Wenatchee Levee Removal and Riparian Restoration Project.

   Rocky Reach Plan Species Account:
   - $8,247.50 to Trout Unlimited – Washington Water Project for permitting on the Chewuch River Instream Flow Project.
2. Dale Bambrick indicated that WDOE’s Office of the Columbia River is interested in helping fund pump stations for the Peshastin Irrigation District canal and the Icicle Irrigation District canal. Dale said that his idea of developing one pump station, located on the Wenatchee River upstream from the Peshastin Creek confluence, would not work for both canal systems. Operation of a single pump station would be too expensive. Therefore, parties would like to conduct a feasibility study to evaluate the development of two pump stations. The feasibility study would cost about $325,000. The Priest Rapids Coordinating Committee (PRCC) Habitat Subcommittee is reviewing the project and may contribute up to $200,000 toward the feasibility study.

3. Chris Fisher reported that the Cascadia Conservation District met with him to discuss riparian restoration work on lower Peshastin Creek. Recall that in October and again in November 2012, Cascadia Conservation District submitted a Small Projects Application seeking funds to improve and restore riparian areas along a contiguous section of Peshastin Creek from RM 0.6 to 1.4. The Committees elected not to fund the project because it appeared the proposed project fit better with Farm Bill Programs such as the Conservation Reserve Enhancement Program (CREP) and the proposed approach would have questionable success. The Committees said that the sponsor should use smaller plants (plugs) and plant them deep so the roots could tap into groundwater. This would minimize the need for irrigation. Chris indicated that the sponsor is willing to use plugs and plant them late in the season. This should address some of the concerns the Committees raised with the original proposal. Chris asked the Committees if they would like to see a new proposal from the sponsor. The Committees indicated that they would be more interested in the project if the reestablishment of riparian vegetation was part of a bank protection/stabilization project. The Committees believe that planting without bank stabilization would be unsuccessful because of the high energy, unstable nature of the channel in the proposed reach. Chris will share this information with Cascadia Conservation District.

4. Chris Fisher reported that the managers, engineers, and bios met in February to discuss the three options for fish passage at Shingle Creek Dam. The three options were (1) backwater the dam with a series of riffles, (2) notch the dam and backwater with a series of riffles, and (3) remove the dam. Chris said that because of deterioration of the dam, the engineers and managers recommended that the dam be removed. Dam removal was selected as the preferred alternative. This is consistent with the recommendation from the Tributary Committees in November 2012. The Okanagan Nation Alliance will develop a cost estimate by May 2013. The project should be completed by September 2013.

VIII. Next Steps

If necessary, the next meeting of the Tributary Committees will be on Thursday, 11 April 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
## Final Upper Columbia SRFB Lead Entity & TRIB Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY/MILESTONE</th>
<th>PARTICIPANTS</th>
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<td><strong>MARCH</strong></td>
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<td></td>
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<td>March 25</td>
<td><strong>Meeting/Webinar: SRFB Application Workshop</strong></td>
<td>Sponsors, RCO</td>
<td>Online Webinar</td>
<td>RCO</td>
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<td>March 27</td>
<td><strong>Meeting: SRFB/TRIB/BPA Kick-Off Meeting</strong></td>
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<td>Chelan, WA. Fire District</td>
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<td>March 31</td>
<td><strong>Deadline: All active and completed projects updated in HWS</strong></td>
<td>Sponsors, LE</td>
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<td></td>
<td><strong>APRIL</strong></td>
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<td>Beginning in April</td>
<td><strong>Meeting: Sponsor Meetings Begin</strong></td>
<td>LE, Sponsors</td>
<td>Region wide</td>
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<td>April 30</td>
<td><strong>Deadline: Projects are submitted to HWS to initiate a new project in Prism</strong></td>
<td>Sponsors, LE</td>
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<td><strong>MAY</strong></td>
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<td>May 7</td>
<td><strong>DEADLINE: DRAFT PROPOSALS DUE</strong></td>
<td>Sponsors, LE, RCO, SRP, RTT, CAC, TRIB, BPA</td>
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<td>LE</td>
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<tr>
<td>May 12</td>
<td><strong>Meeting/Call: Discuss project tour logistics</strong></td>
<td>LE, RTT, TRIB, SRP, Sponsors</td>
<td>Call</td>
<td>LE</td>
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<tr>
<td>May 14 &amp; 15</td>
<td><strong>Salmon Recovery Conference</strong></td>
<td>All</td>
<td>Vancouver, WA</td>
<td>RCO</td>
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## Final Upper Columbia SRFB Lead Entity & TRIB Funding Process Schedule

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<td><strong>Meeting/Tours:</strong> SRFB/TRIB/BPA Project Tours</td>
<td><strong>Sponsors,</strong> LE, RTT, TRIB, BPA, SRFB SRP</td>
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<td>~29th Methow (Wed)</td>
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<td>~30th Okanogan (Thur)</td>
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<td>June 5 &amp; 6</td>
<td><strong>Meeting/Tours:</strong> SRFB/TRIB/BPA Project Tours</td>
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<td>TBD</td>
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<td>~5th Wenatchee (Wed)</td>
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<td>~6th Entiat (Thur)</td>
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<td>June 12</td>
<td><strong>Meeting/Presentations:</strong> Draft Proposal Presentations to RTT and other Reviewers</td>
<td><strong>Sponsors,</strong> RTT, CAC, LE</td>
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<td>June 13</td>
<td><strong>Action:</strong> TRIB reviews draft proposals</td>
<td>TRIB</td>
<td>Tributary Committee Meeting</td>
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<tr>
<td>June 20</td>
<td><strong>Action:</strong> TRIB provides comments</td>
<td>TRIB</td>
<td>Email</td>
<td>TRIB</td>
</tr>
<tr>
<td>June 20</td>
<td><strong>Action:</strong> RTT provides comments</td>
<td>RTT</td>
<td>Email via LE</td>
<td>RTT Chair</td>
</tr>
<tr>
<td>June 21</td>
<td><strong>Action:</strong> SRP provides comments</td>
<td>SRP</td>
<td>Email via LE</td>
<td>RCO</td>
</tr>
<tr>
<td>June 24 or 25</td>
<td><strong>Meeting/Workshop:</strong> Sponsor Science Workshop</td>
<td>LE, Sponsors, BOR, RTT, Agencies</td>
<td>TBD</td>
<td>LE/Science and Reporting Program</td>
</tr>
</tbody>
</table>
### Final Upper Columbia SRFB Lead Entity & TRIB Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY/MILESTONE</th>
<th>PARTICIPANTS</th>
<th>LOCATION</th>
<th>FACILITATOR/COORDINATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 12</td>
<td><strong>DEADLINE: FINAL PROPOSALS DUE</strong> for Regional Review</td>
<td><strong>Sponsors, LE, RTT, CAC, TRIB, BPA</strong></td>
<td>Prism</td>
<td>LE</td>
</tr>
<tr>
<td>AUGUST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 8</td>
<td><strong>Action:</strong> TRIB reviews final proposals</td>
<td>TRIB</td>
<td>Tributary Committee Meeting</td>
<td>TRIB</td>
</tr>
<tr>
<td>August 14</td>
<td><strong>Action:</strong> RTT technical ranking</td>
<td>RTT, CAC, LE, BPA, BOR</td>
<td>RTT Meeting (TBD)</td>
<td>RTT</td>
</tr>
<tr>
<td>August 14</td>
<td><strong>DEADLINE: FINAL PROPOSALS &amp; PRISM UPLOAD DUE</strong> to RCO</td>
<td><strong>Sponsors, LE, RCO, SRP</strong></td>
<td>Prism</td>
<td>LE</td>
</tr>
<tr>
<td>August 20</td>
<td><strong>Action:</strong> TRIB Decisions</td>
<td>TRIB</td>
<td>Email/Letter</td>
<td>TRIB</td>
</tr>
<tr>
<td>August 20-22 (TBD)</td>
<td><strong>Meeting/Presentations:</strong> Presentations to Chelan and Okanogan CACs</td>
<td><strong>Sponsors, CAC, RTT, LE</strong></td>
<td>Wenatchee Irrigation Dist. &amp; River Bank, Twisp</td>
<td>LE</td>
</tr>
<tr>
<td>August 27-29 (TBD)</td>
<td><strong>Meeting:</strong> Chelan/Okanogan CAC project rankings</td>
<td>CAC, LE</td>
<td>Wenatchee Irrigation Dist. &amp; River Bank, Twisp</td>
<td>LE</td>
</tr>
<tr>
<td>SEPTEMBER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept 3 or 4 (TBD)</td>
<td><strong>Meeting:</strong> Regional joint CAC approves Final Ranked Project List</td>
<td>Joint CAC, LE</td>
<td>Chelan PUD, Chelan WA</td>
<td>LE</td>
</tr>
<tr>
<td>Sept 6</td>
<td><strong>Deadline:</strong> LE submits Final Ranked Project List to SRFB</td>
<td>LE</td>
<td>Email</td>
<td>LE</td>
</tr>
<tr>
<td>OCTOBER</td>
<td></td>
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</table>
# Final Upper Columbia SRFB Lead Entity & TRIB Funding Process Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY/MILESTONE</th>
<th>PARTICIPANTS</th>
<th>LOCATION</th>
<th>FACILITATOR/COORDINATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oct 4</td>
<td>Action: SRP panel provides comments</td>
<td>SRP</td>
<td>Email via LE</td>
<td>SRP</td>
</tr>
<tr>
<td>Oct 17</td>
<td>Deadline: Response from Project Sponsors to SRP comments</td>
<td>Sponsors, LE</td>
<td>Email via LE</td>
<td>LE</td>
</tr>
<tr>
<td>Oct 21-24</td>
<td>Meeting/Presentations: LE and project sponsors present projects (only projects identified by SRP)</td>
<td>Select Sponsors, LE, Region</td>
<td>Olympia, Washington</td>
<td>LE</td>
</tr>
<tr>
<td>Oct 30</td>
<td>Action: SRP panel finalizes comments</td>
<td>SRP</td>
<td>Email via LE</td>
<td>SRP</td>
</tr>
</tbody>
</table>

## NOVEMBER

<table>
<thead>
<tr>
<th>November</th>
<th>Upper Columbia Science Conference</th>
<th>All</th>
<th>Wenatchee, WA</th>
<th>UCSRB</th>
</tr>
</thead>
<tbody>
<tr>
<td>November</td>
<td>Final report by SRP to SRFB</td>
<td>RCO</td>
<td></td>
<td>RCO</td>
</tr>
</tbody>
</table>

## DECEMBER

| December | Action: SRFB Decisions | SRFB | Olympia, WA | RCO |

**Acronyms**
- CAC- Citizen’s Advisory Committee
- BPA- Bonneville Power Administration
- LE- Lead Entity Program
- RCO- Recreation and Conservation Office
- SRP- State Review Panel
- SRFB- Salmon Recovery Funding Board
- TRIB- Tributary Committee
- UC- Upper Columbia Region
- UCRTTT- Upper Columbia Regional Technical Team
- UCSRB- Upper Columbia Salmon Recovery Board

**Timeline Legend**
- Meetings - Blue
- Deadlines - Red
- Conferences - Purple
- Actions - Black
Wells, Rocky Reach, and Rock Island HCP
Tributary Committees Notes
9 May 2013

Members Present: Dale Bambrick (NOAA Fisheries), Lee Carlson (Yakama Nation), Jeremy Cram (WDFW), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), Kate Terrell (USFWS), and Tracy Hillman (Committees Chair).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 9 May 2013 from 10:00 am to 12:05 pm.

I. Review and Adopt Agenda
Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following additions:

- Request from the Upper Columbia Salmon Recovery Board (UCSRB).
- Methow Valley Irrigation District (MVID) developments.

II. Review and Approval of Meeting Minutes
The Committees reviewed and approved the 14 March 2013 meeting notes.

III. Monthly Update on Ongoing Projects
Tracy Hillman gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Lower Wenatchee Instream Flow Enhancement Project – The project is complete. The new irrigation system was up and running by 5 April. All service connections were installed by the end of April, and the six miles of ditch (now a road) and the pump station site have been cleaned up and vegetated. Shareholders who have connected to the system are pleased with the water pressure. The Rock Island Tributary Committee will receive a final report soon.

- Twisp River Riparian Protection Project (Zinn) – Closing on this property will occur in early May. The Rock Island Committee is waiting for the Purchase and Sale Agreement before transferring funds to escrow.

- Nutrient Enhancement Assessment – On 8 April, the sponsor (Cascade Columbia Fisheries Enhancement Group), Trout Unlimited, and Water Quality Engineering met with Tracy Hillman, Jeremy Cram, Keely Murdoch, and John Jorgenson to discuss how to proceed with establishing a nutrient enhancement treatment in the Upper Wenatchee Tributaries, and to what extent they should try to capture a treatment response. The sponsor is developing a nutrient treatment plan to submit through the open solicitation process, but they are struggling with how much effectiveness monitoring is needed and
how to get monitoring funded. An AmeriCorps member has been assisting the subcontractors with data collections.

- **Large Wood Atonement Project** – The sponsor (Cascade Columbia Fisheries Enhancement Group) convened a public meeting on 30 March. The decision to implement the project next year (2014) comes down to a few critical components: (1) WDFW does not have time to engage as a landowner/stakeholder this year because of staff constraints; (2) the sponsor needs to continue building public support; and (3) they have some technical and recreational elements to more fully develop before the sponsor can say they have done their due diligence. Because of the location of the project and experience with the Grant PUD acclimation project, the community is sensitive to anything being proposed in the White River basin. The sponsor has spent most of April following up with people from the meeting and strategizing with the USFWS and the CCFEG Board of Directors about how to move the project forward. On 3 April, the sponsor and the USFWS presented the project to the Chelan-Douglas Land Trust (CDLT) Stewardship Committee. The Committee raised no major concerns.

- **Coulter Creek Barrier Replacement Project** – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- **Wenatchee Levee Removal and Riparian Restoration Project** – The sponsor (Chelan County Natural Resources Department) met with the landowner and discussed alternatives to moving his diversion. The landowner is concerned about converting the existing surface diversion to a well, primarily because of poor water quality from the well and potential water-rights issues. However, the landowner does want to move forward with removing the levee and restoring the riparian area. The sponsor is coordinating with WDFW to determine the best approach for removing the levee, short and long-term maintenance of the diversion, improving the existing diversion, and obtaining all necessary permits. Once the sponsor secures the necessary permits, they will quickly remove the levee. WDFW indicated that the current side channel does provide off-channel habitat, which is limiting in the lower Wenatchee River. Improving the current surface diversion along with improvements to the side channel, including removal of the levee and restoring riparian vegetation, may be the best approach at this time. The landowner will decide next week if the diversion should be moved.

- **Upper Beaver Habitat Improvement Channel Restoration Project** – This project is scheduled to begin autumn 2013. The sponsor (Methow Salmon Recovery Foundation) has been working with the project engineer (Anchor QEA) and the permitting staff to ensure that project elements are fully detailed and reviewed before implementation at the end of the irrigation season. The primary issues being resolved during this period include: (1) coordination with WDFW to ensure that the fish screen / screen box satisfies passage requirements for the flow reduction associated with the 2011 Trout Unlimited water purchases and (2) coordination with the ditch users to identify and resolve any outstanding design or maintenance concerns. The Batie Ditch users do not have a formal organization or formal decision-making process, requiring substantial individual efforts to ensure that each landowner has had the opportunity to raise issues for consideration and action where appropriate. The final task requiring attention during this period has been the ongoing coordination with Okanogan County Public Works for those portions of the project where work is required within or adjacent to the Okanogan County right-of-way. The sponsor expects all of these issues to be resolved well in advance of the construction schedule.
• Lower Foster Creek Steelhead Habitat Enhancement Project – Becky Gallaher sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review.

• Twisp River-Poorman Creek Wetland Habitat Acquisition – The sponsor (Methow Salmon Recovery Foundation) has requested the initiation of an appraisal. The appraisal is scheduled to begin the first week of May and should be completed by mid-May.

• Shingle Creek Fish Passage Project – Chris Fisher reported that he and Wayne Cornwall, Colville Confederated Tribes engineer, met with the Okanagan Nation Alliance to discuss the removal of Shingle Creek Dam. He said that the Penticton Indian Band needs to decide if they want the wing wall removed. If they do, Wayne will design a hardened-rock toe in place of the wall. There should be a decision soon. Chris also noted that all the regulatory agencies that would approve permits are aware of the project. Chris believes that the final design will be completed in late-May or June. Wayne is currently in the final process of getting his certification so he can work in Canada. Construction should occur sometime in August or September. Wayne believes it will take only two weeks to complete the project.

• Methow/Chewuch Shallow Groundwater Monitoring Project – The sponsor (Cascade Columbia Fisheries Enhancement Group) continued to coordinate with WDFW and Fogle Pump & Supply on logistics and installation of monitoring equipment. The sponsor installed a water-level logger on the Silver Side Channel and measured discharge there. They attempted to install monitoring wells in April, but found that large cobbles prevented them from digging the wells by hand. Therefore, the contractor used a small, rubber-tracked mini-excavator to help dig monitoring wells. Groundwater monitoring wells are now installed and water-level loggers have been deployed. Continuous water-level data are being collected in all groundwater monitoring wells and the Silver Side Channel.

IV. Small Projects Program Applications

The Committees reviewed two Small Projects Program applications, both from Trout Unlimited-Washington Water Projects.

**Beaver Creek Late Season Well Installation Project**

The purpose of this project is to determine the feasibility of removing a landowner from a surface diversion on Beaver Creek during the period 1 August to 15 September. The sponsor will install a well and conduct a pump test to assess the production of the well. If the pump test is successful, the sponsor will seek funds for the second phase of the work, which is to install the pumps, mainline, and electrical hookup. If the conversion from surface water to well water is successful, a total of about 0.3 cfs could be saved permanently in trust. The total cost of the project is $16,396.72. The sponsor requested $16,396.72 from HCP Tributary Funds. After careful review of the proposal, the Tributary Committees were unable to make a funding decision, because additional information is needed from the sponsor. The Committees identified the following questions:

1. Will the Redshirt Ditch be completely shut down for the entire year and the point-of-diversion removed, or will the ditch be used during periods other than August through mid-September?

2. If the ditch is used during other periods of the year, has the point-of-diversion been upgraded and are the fish screens in compliance with state regulations?
3. If the diversion is screened, what is the cost of maintaining the screen?

4. Why would the well only be used during the August through mid-September period?

The Committees indicated that the sponsor can respond to these questions in an e-mail. They do not need to submit a revised proposal. After the Committees receive and review responses to their questions, they will make a funding decision.

**Antoine Creek Feedlot Relocation Project**

The purpose of this project is to improve water quality and riparian conditions in Antoine Creek, a steelhead stream in the Okanogan River basin, by moving an existing feedlot about 1.5 miles away from the stream. This action will significantly reduce nutrient loading and habitat degradation along 3,450 feet of Antoine Creek, and increase instream flows by about 18.2 gpm from October through February. The total cost of the project is $97,533. The sponsor requested $37,533 from HCP Tributary Funds. After careful review of the proposal, the Tributary Committees decided to table the proposal, because there is a possibility that the Colville Confederated Tribes will fund the entire project. Chris Fisher indicated that he will check internally to see if the Tribes can fund the entire project. He will report his findings to the Committees before the next meeting.

**V. Budget Amendment Request**

The Wells Tributary Committee received a budget amendment request from Cascade Columbia Fisheries Enhancement Group (CCFEG) on the Methow/Chewuch Shallow Groundwater Monitoring Project. The sponsor indicated that a Cultural Resource Survey was not necessary for this project. Therefore, they asked to move the Cultural Resource Survey funds ($4,500) to Sponsor Salaries and Benefits, and Contract Labor. Specifically, they asked to move $3,000 to Sponsor Salaries and Benefits, and $1,500 to Contract Labor.

After reviewing the request, the Wells Committee was unable to approve the amendment request without additional information. The Committee questioned why the sponsor proposed to shift $3,000 to Sponsor Salaries and Benefits. The Committee thought that the entire $4,500 should be moved to Contract Labor. The Committee requested that the sponsor describe why they want to move a large percentage of the Cultural Resource Survey funds to Sponsor Salaries and Benefits. Finally, the Committee asked that the sponsor provide written documentation indicating that a Cultural Resource Survey is not necessary. The Committee found it odd that no Cultural Resource Survey is required.

**VI. General Salmon Habitat Program (GSHP) Pre-Proposals**

The Committees received a list of the General Salmon Habitat Program and Salmon Recovery Funding Board pre-proposals. Of the 23 pre-proposals on the list, 14 requested funds from the Tributary Committees. The Committees reviewed the list of pre-proposals with the intent of identifying which projects the Committees would like to visit in the field. During the June meeting, the Committees will identify which pre-proposals will have no chance or a low likelihood of receiving funding from the Tributary Committees. The following table summarizes which projects the Committees would like to visit.
## Project Title

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Sponsor</th>
<th>Request Site Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entiat Canal System Phase III Project</td>
<td>Cascadia Conservation District</td>
<td>No</td>
</tr>
<tr>
<td>Chiwawa Nutrient Enhancement Project</td>
<td>Cascade Columbia Fisheries Enhancement Group</td>
<td>No</td>
</tr>
<tr>
<td>Nason Creek RM 4.6 Side Channel Reconnection Project</td>
<td>Chelan County Natural Resources Department</td>
<td>No</td>
</tr>
<tr>
<td>Peshastin Irrigation District Pump Exchange Design Project</td>
<td>Chelan County Natural Resources Department</td>
<td>No</td>
</tr>
<tr>
<td>Peshastin BRG Channel Construction Project</td>
<td>Chelan County Natural Resources Department</td>
<td>Yes</td>
</tr>
<tr>
<td>Camas Creek Fish Passage Project</td>
<td>Chelan County Natural Resources Department</td>
<td>Yes</td>
</tr>
<tr>
<td>Entiat Stillwaters Grayreach Acquisitions</td>
<td>Chelan-Douglas Land Trust</td>
<td>Yes</td>
</tr>
<tr>
<td>Nason Creek UWP Horseshoe Bend Acquisitions</td>
<td>Chelan-Douglas Land Trust</td>
<td>Yes</td>
</tr>
<tr>
<td>Silver Side Channel Design</td>
<td>Cascade Columbia Fisheries Enhancement Group</td>
<td>Yes</td>
</tr>
<tr>
<td>Janis Rapids Side Channel Project</td>
<td>Cascade Columbia Fisheries Enhancement Group</td>
<td>Yes</td>
</tr>
<tr>
<td>Twisp to Carlton Reach Assessment</td>
<td>Cascade Columbia Fisheries Enhancement Group</td>
<td>No</td>
</tr>
<tr>
<td>M2 3R Floodplain and Side Channel Project</td>
<td>Methow Salmon Recovery Foundation</td>
<td>Yes</td>
</tr>
<tr>
<td>Similkameen RM 3.8 Spawning Habitat Design</td>
<td>Okanogan Conservation District</td>
<td>Yes</td>
</tr>
<tr>
<td>MVID Instream Flow Improvement Project</td>
<td>Trout Unlimited</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Project tours are scheduled for 29-30 May in the Okanogan and Methow basins, and 5-6 June in the Wenatchee and Entiat basins. Becky Gallaher and Tracy Hillman will participate on the conference call on Thursday, 16 May, to coordinate the project tours. Sponsors will give presentations to the Tributary Committees and Upper Columbia Regional Technical Team on Wednesday, 12 June. The Committees will then meet on Thursday, 13 June to conduct their final evaluation of pre-proposals.

## VII. Information Updates

The following information updates were provided during the meeting.

1. Approved Payment Requests in April and May:

   Rock Island Plan Species Account:
   - $1,320 to Trout Unlimited – Washington Water Project for the Lower Wenatchee Instream Flow Enhancement Project.
• $104,996 to Inland Professional Title for the Twisp River Protection Project – Zinn Property.

• $3,494.50 to Cascade Columbia Fisheries Enhancement Group for the White River Large Wood Atonement Project.

• $951.36 to Chelan PUD for project coordination during the first quarter of 2012.

Rocky Reach Plan Species Account:

• $9,455 to Trout Unlimited – Washington Water Project for the Chewuch River Instream Flow Project.

• $1,248.42 to Chelan PUD for project coordination during the first quarter of 2012.

Wells Plan Species Account:

• $10,931.93 to Cascade Columbia Fisheries Enhancement Group for the Methow/Chewuch Shallow Groundwater Monitoring Project.

• $1,205.25 to Chelan PUD for project coordination during the first quarter of 2012.

2. Tracy Hillman reported that he received a call from Mike Kaputa, Chelan County Natural Resources Department, asking if he could speak with the Committees about the Peshastin/Icicle Pump Exchange Project at the June or July meeting. Although the Committees appreciated his offer, they indicated that his visit is not necessary at this time. Members of the PRCC Habitat Subcommittee who are also on the Tributary Committees have been providing the Tributary Committees with updates on the project. Dale Bambrick and Kate Terrell provided some history regarding the Peshastin/Icicle Pump Exchange Project. The PRCC Habitat Subcommittee will be reviewing two different proposals requesting funds to do a feasibility study. One is a proposal from Chelan County Natural Resources Department with a cost estimate of about $230,000 (they are not requesting the entire amount from the PRCC Habitat Subcommittee). The other is from Trout Unlimited with a cost estimate of about $175,000. Kate and Dale will continue to update the Committees on the status of the Pump Exchange Project.

3. Tracy Hillman indicated that he received an e-mail from Derek Van Marter, Associate Director of the Upper Columbia Salmon Recovery Board, asking if the Tributary Committees would be interested in funding the completion of Appendix C (Monitoring Plan for the Methow Basin) to the Upper Columbia Monitoring Strategy, which is part of the Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan. Derek indicated that the total cost of the project is about $25,000, of which $13,000 has already been secured and spent. They need $12,000 to complete the plan. After discussion, the Committees indicated that they would not be interested in reviewing a proposal seeking funds to complete the Monitoring Plan for the Methow Basin.

4. Dale Bambrick reported that he recently spoke with John Sunderland with the Methow Conservancy (MC) about acquisitions and appraisals for the Methow Valley Irrigation District (MVID) Flow Enhancement Project. According to Dale, the MC is trying to keep the costs down for the acquisitions required by the MVID project, and getting them done in an expeditious manner. MVID will be acquiring easements for a well field, storage tank, and pipelines on the Westside, and an easement for a spill from the intake above Mill Hill on the Eastside.
MC has been working with Rick Witt, who has expertise on pipeline and well-field easement values, because of his research recently completed for expert testimony in a condemnation case. Rick estimates that the well-field easement value and the storage-tank easement values will be about $15,000 each (exclusive of any additional "damages" suffered by the landowners), because of the visual obtrusiveness of the infrastructure and the fact that the easement area will not be available for use by the landowners. The pipeline easement values will be about $5,000 each, based on Rick’s research and analysis for the condemnation case.

Because the standards MC must meet for appraisals require a complete, self-contained report, the appraisal costs for each of the pipeline easements will be $2,500 for each of the four appraisals, and another $1,000 for each of the reviews if Rick does the appraisals. This is $14,000 that MC does not want to spend. They would like to dispense with the appraisals for the pipeline easements and pay $5,000 for each of the pipeline easements.

MC believes they can save money on the well-field and storage-tank easements by using Rick Witt. Rick performed a well-field easement appraisal for the MC on the Jumars property last winter. Because of the similarity between the Jumars well-field easement and the one currently contemplated by the preferred alternative on the Schultz property, Rick's appraisal cost is likely to be lower than any other appraiser, most of whom will need to develop information on easement values from scratch. Rick has offered a cost estimate of $3,100 for the appraisal. It is this high because of the "damages" calculations and write-up related to the 30 apple trees in production that must be removed for project implementation. In addition, the MVID project is time critical. The preferred alternative that the MVID board will select is only possible if the acquisition of easements between the well field and the existing canal takes place. Rick has promised MC an appraisal for the well-field easement by 4 June.

Dale asked the Committees if they would be interested in reviewing a proposal that would include the costs of the pipeline easements, but dispense with the appraisal. In addition, he asked if the Committees would approve the use of an appraiser who is not on the Committees’ approved list. The latter question resulted in a discussion by the members about who was on the approved list and why there was only one approved appraiser and three reviewers. Most members remembered that the decision was to have a pool of three or four potential appraisers and one reviewer. Tracy Hillman and Tom Kahler directed the members to the July 2012 meeting notes, which state:

As noted during the June meeting, the Committees will use Larry Rees as their primary appraiser and Michael Gentry, Peter Shorett, and Fred Strickland as reviewers. The Committees directed Tracy Hillman and Becky Gallaher to contact the appraisers and ask them for rates and qualifications.

Tracy noted that the Committees can change their policy on appraisers. Dale suggested that we see how the process works with the Twisp River-Poorman Creek Wetland Habitat Acquisition Project and then evaluate if we need to make changes. The Committees agreed. They also agreed to add appraisers if having only one available causes significant delays. Chris Fisher indicated that this is the process used by the Tribes.

Although there was no official vote, the Committees seemed to support the idea of not doing an appraisal on the pipeline easements. In addition, they would like to hear more about Rick Witt and his ability to provide cost-effective appraisal services.
VIII. Next Steps
The next meeting of the Tributary Committees will be on Thursday, 13 June 2013 at Chelan PUD in Wenatchee. At that time, the Committees will review GSHP pre-proposals.
Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 13 June 2013 from 9:00 am to 12:00 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following additions:

- Change in November Meeting date.

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 9 May 2013 meeting notes.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Lower Wenatchee Instream Flow Enhancement Project – The project is complete. The Rock Island Committee will soon receive a final report.
- Twisp River Riparian Protection Project (Zinn) – The project is complete. The Rock Island Committee received a final report.
- Nason Creek Upper White Pine Reconnection – Chelan PUD Powerline Reconnection Alternatives Analysis – The US Forest Service has initiated public scoping for the NEPA process and is accepting public comments through June. Chelan PUD has requested written clarification from the Forest Service as to whether or not a replacement easement is feasible if the powerlines are re-located to accommodate restoration actions.
- Chewuch River Instream Passage Project – The sponsor (Trout Unlimited) continued coordination with the Chewuch Canal Company on options to consider regarding schedule, funding, reservoir permitting, and cost saving strategies. The reservoir permit has been signed and the Record of Examination (ROE) was issued on 30 April with public comment ending on 30 May. With the issuance of the ROE, the HPA process

1 Dale called into the meeting.
began. The construction estimate provided by Reclamation was $2.9 million and exceeds the amount of funding available ($1.75M). The Sponsor has hired an engineering firm to review the estimate in order to be more certain of the funding needs and to have a strong basis for addition funding requests.

Because of unforeseen delays in permitting, the sponsor asked the Rocky Reach Tributary Committee for a contract extension. The project was scheduled to end on 30 June 2013. The sponsor requested an extension to 31 December 2013. The Rocky Reach Tributary Committee approved the contract extension.

- Nutrient Enhancement Assessment – The sponsor (Cascade Columbia Fisheries Enhancement Group) continued water quality and macroinvertebrate sampling throughout May and into June. The Sponsor has started developing a treatment plan. Determining appropriate loading rates, geographic scope, and effectiveness monitoring protocols remain subjective. The sponsor met with Tracy Hillman, Jeremy Cram, Keely Murdoch, and John Jorgensen on 8 April to discuss how to proceed with establishing a nutrient enhancement treatment in the Upper Wenatchee tributaries.

- Large Wood Atonement Project – The sponsor (Cascade Columbia Fisheries Enhancement Group) hosted a public hike on the lower White River on 2 May to provide another opportunity for community members to engage in the restoration process. Overall, the dialog was constructive and at the end of the visit, the group talked about how to mitigate for the potential hazards caused by installing pilings in the river. When the discussion shifted from “why are you doing this” to “how can we make this work for everyone,” the sponsor felt like they made a major breakthrough with the public. As a result of this site visit, the sponsor is scheduling a meeting with WDFW and Chelan-Douglas Land Trust to discuss installing a trail that would roll through the forest and along the river as a means of providing a route for boaters to scout the river for hazards. The sponsor believes a low impact trail would be an acceptable solution to move this project forward, appease the recreating public, and provide the public with the opportunity to appreciate the publicly funded conservation properties on the lower White River.

- Nason Creek Lower White Pine Alcove Acquisition Project – The appraisal and review of the appraisal are complete. Because the appraisal for the Click property was greater than estimated, the sponsor (Chelan-Douglas Land Trust) asked the Rocky Reach Tributary Committee for an extra $27,300. The Rocky Reach Tributary Committee approved the cost increase.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- Twisp River Well Conversion – The well that was installed was repaired and a second pump test was conducted. There are now sufficient gallons per minute to operate the system. Excavation is scheduled to begin on 10 June. The irrigation pump and variable frequency drive are on back order. Electrical and mainline installations are scheduled to be completed by the end of June or mid-July.

Because of unforeseen delays, the sponsor (Trout Unlimited) asked the Wells Tributary Committee for a contract extension. The project is scheduled to end on 30 June 2013. The sponsor requested an extension to 31 October 2013. The Wells Tributary Committee approved the contract extension.
• Wenatchee Levee Removal and Riparian Restoration Project – The sponsor (Chelan County Natural Resources Department) met with WDFW staff at the project location to discuss project details and evaluate the existing diversion screen. It was determined that the existing screen meets WDFW’s screening requirements. The sponsor also met with the landowner and at this time the landowner does not want to proceed with converting from surface diversion to well because of uncertainties associated with water quality and quantity. The landowner has agreed to levee removal.

• Upper Beaver Habitat Improvement Channel Restoration Project – This project is scheduled to begin autumn 2013. The sponsor (Methow Salmon Recovery Foundation) has completed and submitted SEPA and JARPA, and has met with the design engineer (Anchor QEA) to update the final design. The USFWS offered onsite construction oversight and additional financial support for site restoration.

• Lower Foster Creek Steelhead Habitat Enhancement Project – Becky Gallaher sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review.

• Twisp River-Poorman Creek Wetland Habitat Acquisition – The sponsor (Methow Salmon Recovery Foundation) met with the landowners to review the appraisal process and purchase options. The sponsor also met with the appraiser to discuss the definition of the acquisition parcel. The appraisal should be complete by mid-June.

• Shingle Creek Fish Passage Project – Chris Fisher reported that Wayne Cornwall, Colville Confederated Tribes engineer, passed the necessary requirements for practicing in British Columbia. The proposed approach is to remove the dam, leave the wing wall, and construct four grade-control structures. The Okanagan Nation Alliance is reviewing the proposal. If they approve the proposal, they will apply for all the necessary permits. Chris thought that it would take about two weeks to complete the construction of the project. He would like the project completed this fall; however, depending on the amount of time needed to secure permits, the project may not happen until 2014.

• Lower Chewuch Beaver Restoration Project – See attachment 1.

• Methow/Chewuch Shallow Groundwater Monitoring Project – The sponsor (Cascade Columbia Fisheries Enhancement Group) continued to coordinate with WDFW and Fogle Pump & Supply on logistics and installation of monitoring equipment. The sponsor installed a water-level logger on the Silver Side Channel and measured discharge there. They attempted to install monitoring wells in April, but found that large cobbles prevented them from digging the wells by hand. Therefore, the contractor used a small, rubber-tracked, mini-excavator to help dig monitoring wells. Groundwater monitoring wells are now installed and water-level loggers have been deployed. Continuous water-level data are being collected in all groundwater monitoring wells and the Silver Side Channel.

IV. Small Projects Program Applications

In May, the Committees reviewed two Small Projects Program applications, both from Trout Unlimited-Washington Water Projects.

Beaver Creek Late Season Well Installation Project

The purpose of this project was to determine the feasibility of removing a landowner from a surface diversion on Beaver Creek during the period 1 August to 15 September. The sponsor will install a well and conduct a pump test to assess the production of the well. If the pump test is
successful, the sponsor will seek funds for the second phase of the work, which is to install the pumps, mainline, and electrical hookup. If the conversion from surface water to well water is successful, a total of about 0.3 cfs could be saved permanently in trust. The total cost of the project is $16,396.72. The sponsor requested $16,396.72 from HCP Tributary Funds. After careful review of the proposal in May, the Committees requested additional information from the sponsor. Below are the responses from the sponsor to the Committees request.

1. Will the Redshirt Ditch be completely shut down for the entire year and the point-of-diversion removed, or will the ditch be used during periods other than August through mid-September?

As the plan is currently conceived, the Redshirt Ditch will not be shut down for the entire year and the point of diversion will not be removed. The Redshirt ditch will be used during the period of May 1st through July 31st by both the Water Right holder addressed in this proposal and the other Water User on the Redshirt. Annually on August 1st, in perpetuity, during the critical flow period of Beaver Creek, the landowner addressed in this proposal will cease diverting flows out of the Redshirt Ditch and begin to use a well (if funded). This is important because Trout Unlimited has secured a permanent late season acquisition for the other user on the ditch on August 1st, annually. In summary, if this proposal is supported and the well installation is successful, from August 1st-September 15th, no flow will be diverted from the Redshirt Ditch. This would improve instream flow by at least 0.76 cfs in Beaver Creek.

2. If the ditch is used during other periods of the year, has the point-of-diversion been upgraded and are the fish screens in compliance with state regulations?

The headgate on the Redshirt’s point of diversion was improved in 2007 and the fish screen was upgraded in 2008, both are in compliance with state regulations.

3. If the diversion is screened, what is the cost of maintaining the screen?

The diversion is screened and as it is relatively new there are currently minimal costs to maintain the screen. Currently the only costs of maintaining the screen are routine cleaning of debris and weekly adjustments, if necessary.

4. Why would the well only be used during the August through mid-September period?

The landowner and Trout Unlimited want to ensure that the aquifer for the well remains adequate for perpetual use from August 1st-September 15th. Local knowledge and discussions with well drillers indicate that the highest rate of success would be limiting the withdrawal of water from the aquifer and allowing the longest term of recharge to take place. The landowner has shown interest in using this well for more than August 1st-September 15th if it can perform adequately with relatively limited overall drawdown for a few years. It is important to note that even if the landowner went to the well all season long, the Redshirt Ditch would still remain active from May 1st-July 31st due to the additional Water User.

After carefully evaluating the proposal and the response to questions, the Tributary Committees elected not to fund this project. The Committees would like to see the ditch shut down and the point of diversion removed.

**Antoine Creek Feedlot Relocation Project**

The purpose of this project was to improve water quality and riparian conditions in Antoine Creek, a steelhead stream in the Okanogan River basin, by moving an existing feedlot about 1.5 miles away from the stream. This action will significantly reduce nutrient loading and habitat degradation along 3,450 feet of Antoine Creek, and increase instream flows by about 18.2 gpm
from October through February. The total cost of the project is $97,533. The sponsor requested $37,533 from HCP Tributary Funds. In May, the Committees tabled this project because there was a possibility that the Colville Confederated Tribes will fund the entire project. Following the May meeting, the Tribes elected to fund the entire project.

V. Budget Amendment Request

In May, the Wells Tributary Committee received a budget amendment request from Cascade Columbia Fisheries Enhancement Group (CCFEG) on the Methow/Chewuch Shallow Groundwater Monitoring Project. The sponsor indicated that a Cultural Resource Survey was not necessary for this project. Therefore, they asked to move the Cultural Resource Survey funds ($4,500) to Sponsor Salaries and Benefits, and Contract Labor. Specifically, they asked to move $3,000 to Sponsor Salaries and Benefits, and $1,500 to Contract Labor.

During the May meeting, the Wells Committee was unable to approve the amendment request without additional information. Following the May meeting, the Wells Committee received the information they requested and approved the budget amendment.

VI. General Salmon Habitat Program (GSHP) Pre-Proposals

The Committees received 13 General Salmon Habitat Program draft proposals. The Committees reviewed each draft proposal and selected those that they believe warranted a full proposal. Projects that the Committees dismissed were either inconsistent with the intent of the Tributary Fund or did not have strong technical merit. The Committees assigned draft proposals to one of two categories: Fundable and Not Fundable. It is important to note that these are ratings of draft proposals and do not reflect ratings of full proposals. The Committees directed Tracy to notify sponsors with appropriate projects to submit a full proposal, with a discussion of the questions/comments identified for each draft proposal listed below. Tracy will also notify sponsors with projects that have no chance or a low likelihood of receiving funding from the Tributary Committees.

**Chiwawa Nutrient Enhancement Project (Fundable)**

The Committees recommend that the project sponsor (Cascade Columbia Fisheries Enhancement Group) consider the following comments/suggestions as they develop the full proposal:

- Consider reducing the spatial scope of the work and increasing the nutrient loading. The Committees believe it would be better to load the section of the Chiwawa River between Schaefer Campground (RM 22.5) and Nineteenmile Campground (RM 27). This area supports some of the highest densities of juvenile spring Chinook. Although it may not be possible, increasing the loading to 0.5 kg/m² would be preferable.

- Describe why the analog approach is preferred over a drip system for delivering nutrients.

- Given that the monitoring component of this project was removed, how will you define success?

- What are the possible management implications from either positive or negative results?

**Entiat Canal System Conversion Phase 3 Construction Project (Not Fundable)**

The Committees recommend that this project, sponsored by the Cascadia Conservation District, should not be submitted as a full proposal to the Tributary Committees for the following reason:

- The Committees believe that the addition of about 2.2 cfs to the lower Entiat will have little biological benefit.
Janis Rapids Side Channel Project (Not Fundable)
The Committees recommend that this project, sponsored by the Cascade Columbia Fisheries Enhancement Group, should not be submitted as a full proposal to the Tributary Committees for the following reason:

- The Committees believe that the proposed phase (phase 1) will have little biological benefit. The Committees believe the greatest benefit will come from activating the side channels (phase 3). To that end, they would review a final proposal for phase 3.

Silver Side Channel Design Project (Fundable)
The Committees recommend that the project sponsor (Cascade Columbia Fisheries Enhancement Group) consider the following comment/suggestion as they develop the full proposal:

- Describe clearly how groundwater monitoring will be used to guide or direct proposed restoration actions. Providing examples would be helpful.

Twisp to Carlton Reach Assessment Project (Fundable)
The Committees recommend that the sponsor (Cascade Columbia Fisheries Enhancement Group) submit a full proposal.

Camas Creek Fish Passage Design and Construction Project (Not Fundable)
The Committees recommend that this project, sponsored by the Chelan County Natural Resources Department, should not be submitted as a full proposal to the Tributary Committees for the following reason:

- The Committees do not believe there is enough known about Camas Creek to make an informed decision about potential biological benefit. That is, before the Committees are comfortable considering a full proposal, they would like to know more about fish passage issues throughout the watershed, seasonal stream flows, and potential water rights issues. Without this additional information, it will be difficult to determine biological benefit.

Nason Creek RM 4.6 Side Channel Reconnection Construction Project (Fundable)
The Committees recommend that the sponsor (Chelan County Natural Resources Department) submit a full proposal.

Peshastin Irrigation District Pump Exchange Feasibility and Design Project (Fundable)
The Committees recommend that the project sponsor (Chelan County Natural Resources Department) consider the following comments/suggestions as they develop the full proposal:

- The Committees want to see the Icicle project separated from the Peshastin project. The Peshastin project should be proposed as a standalone project.
- As a standalone project, the Peshastin Pump Station should be designed to take no more from the Wenatchee River than would otherwise have been legally and physically available to divert from Peshastin Creek. Thus, the pump should be designed to take no more than 10-12 cfs.
- The proposal must include a plan for covering O&M costs.

CDLT Entiat Stillwaters Gray Reach Acquisitions (Fundable)
The Committees recommend that the sponsor (Chelan-Douglas Land Trust) submit a full proposal.
CDLT Nason Creek UWP Horseshoe Bend Acquisition (Not Fundable)
The Committees recommend that this project, sponsored by the Chelan-Douglas Land Trust, should not be submitted as a full proposal to the Tributary Committees for the following reason:

- The Committees believe that there is little opportunity for reconnecting side channels because of issues with the downstream landowner. In addition, there is some concern that Chelan County will develop a park on their parcel adjacent to the properties included in this proposal.

Middle Methow River Rock Reach (M2 3R) Floodplain and Side Channel Restoration Project (Fundable)
The Committees recommend that the project sponsor (Methow Salmon Recovery Foundation) consider the following comments/suggestions as they develop the full proposal:

- The Committees recommend that the sponsor fill in the depressions that entrap fish as necessary to prevent fish stranding rather than the proposed extensive excavation, and let the floodplain function naturally.
- The sponsor needs to re-evaluate the budget. The Committees believe the cost of this work is excessive.

MVID Instream Flow Improvement Project (Fundable)
The Committees recommend that the project sponsor (Trout Unlimited) consider the following comment/suggestion as they develop the full proposal:

- Limit the amount requested from the Tributary Committees to no more than $400,000.

Similkameen RM 3.8 Spawning Habitat Design Only Project (Fundable)
The Committees recommend that the sponsor (Okanogan Conservation District) submit a full proposal.

Tracy will share this information with project sponsors by Thursday, 20 June. The Committees hope this feedback will help sponsors develop full proposals, which are due on 12 July. The Committees will evaluate final proposals on Thursday, 15 August.

VII. Information Updates
The following information updates were provided during the meeting.

1. Approved Payment Requests in May and June:
   - Rock Island Plan Species Account:
     - $205.03 to Clifton Larson Allen for first-quarter financial management and reporting.
   - Rocky Reach Plan Species Account:
     - $10,414.86 to Trout Unlimited – Washington Water Project for the Chewuch River Instream Flow Project.
     - $1,445.51 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project.
     - $205.03 to Clifton Larson Allen for first-quarter financial management and reporting.
Wells Plan Species Account:

- $10,414.86 to Trout Unlimited – Washington Water Project for the Chewuch River Instream Flow Project.
- $11,312.51 to Cascade Columbia Fisheries Enhancement Group for the Methow/Chewuch Shallow Groundwater Monitoring Project.
- $4,015.07 to the Methow Conservancy for the Lower Chewuch Beaver Restoration Project.
- A payment of $5,934.36 to Trout Unlimited – Washington Water Project for the Twisp River Well Conversion Project was denied because the costs did not reconcile with the information provided. The sponsor was asked to submit a revised payment request.

2. Tom Kahler shared with the Committees information about a video that Douglas PUD commissioned to document the development and implementation of the Fish-Water Management Tool (FWMT). The purpose of the video is to serve as a historical archive and educating tool for their employees and stakeholders, and to counter the many theories regarding the resurgence of Okanagan sockeye. To achieve those main purposes, Douglas PUD produced a short version of the video to share with the media, and a longer, more comprehensive version for everyone else. Here is a link to both the short and long FWMT videos: [http://www.youtube.com/user/DouglasCountyPUD?feature=mhee](http://www.youtube.com/user/DouglasCountyPUD?feature=mhee)

3. Tracy Hillman reported that Greer Maier with the Upper Columbia Salmon Recovery Board (UCSRB) asked if the Tributary Committees would be willing to change their November meeting date. The UCSRB has scheduled a Science Conference for 13-14 November. Currently, the Committees meeting is scheduled for 14 November. After discussion, the Committees elected to move their meeting date to Friday, 15 November. Kate Terrell indicated that she will not be able to attend the meeting on 8 August. Because this is the meeting during which the Committees evaluate final proposals, the Committees elected to move the meeting date to Thursday, 15 August. By changing the meeting date to the 15th, the Committees will be able to use the scores and rankings developed by the Upper Columbia Regional Technical Team.

Chris Fisher asked if anyone would be interested in touring restoration projects in Canada during the second week of October. All except Kate Terrell and Dale Bambrick thought that they would be able to attend the tours. Brandon Rogers may attend the tour in Lee Carlson’s stead.

VIII. Next Steps

If necessary, the next meeting of the Tributary Committees will be on Thursday, 11 July 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman ([tracy.hillman@bioanalysts.net](mailto:tracy.hillman@bioanalysts.net)).
Attachment 1

Lower Chewuch Beaver Restoration Project
Methow Beaver Project
Accomplishments and Outcomes
April 2013
The Methow Beaver Project

History and Establishment
In 2000, John Rohrer had an idea. As a Forest Service District Wildlife Biologist working in the Methow Valley, he thought that ‘nuisance’ beavers removed by Washington Department of Fish and Wildlife enforcement agents might be valuable to restore an old wetland on Forest Service land where he had seen water tables lowered and riparian vegetation lost. After a series of releases there, the beavers set up shop and began restoring the site, returning the wetland to a 23 acre complex of dams and wet meadows. For the next few years, more attempts followed, some successful, some less than successful. All of this was a backyard, spare-time effort to try to improve places that had once held beavers. An inspiration for John was a 1932 map from the Forest Service archive that showed the original beaver relocation work at 61 sites in the Methow Valley. If it was possible to re-establish beavers then, maybe now would be even more feasible.

The year 2000 was a crossroads for beaver restoration in Washington State because the Legislature passed a bill that year banning body gripping traps statewide, meaning that it would be more difficult for trappers to remove beavers from streams where they had become established.

In 2006 Jon Merz with the Washington Department of Ecology learned about the project and thought there might be an improvement to water quality if beavers were returned to historic places. On the day after Christmas that year he met with USFS biologist Kent Woodruff to talk about the possibility of working toward solutions to the temperature violations that had been noted in the Methow Drainage.

For the next 6 months Ecology Staff, USFS biologists and hydrologists, Methow Conservancy Stewardship Director Steve Bondi, WDFW biologists Kim Bondi and Scott Fitkin, and Pacific Biodiversity Institute spatial analyst Hans Smith met to craft a project that could begin to restore beavers to suitable habitat in historic locations in the Methow. The team proposed to Hatchery Manager Chris Pasley the idea of using the Winthrop National Fish Hatchery as a holding facility, and he enthusiastically welcomed the project.

The result was an Implementation Plan, a partnership Memorandum of Understanding, a project structure including a steering committee, and partnership financial agreements that allowed Direct Implementation Fund money granted by DOE to be shared by the group to begin relocating captured beavers in spring 2008 to places where they would be more welcome.
Project Objectives

Beaver restoration efforts can have different objectives. For this project we decided to pursue the following:

Re-establish beavers in the Methow Watershed to places they occurred historically. Work with landowners to find solutions to nuisance issues. Share information that can help our community recognize the complexities of our water quality issues and the contributions healthy beaver populations can provide. Utilize beavers’ unmatched natural engineering ability to build and maintain dams high in the watershed, bringing about the following benefits:

- Store water for later season delivery
- Raise ground water levels in upper reaches of watersheds
- Improve water quality by reducing stream temperature
- Reintroduce complexity and dynamism to streams that were simplified when beavers were removed
- Increase nutrient availability in streams
- Improve stream function by reconnecting floodplains
- Decrease sediment delivery to the stream system
- Improve rearing and winter habitat for salmonids and other native fish
- Improve and expand riparian and wetland habitat

A substantial amount of literature supported the teams’ assertion that these objectives could be met by returning beavers to places they occupied historically (see Appendix A).

The ultimate goal is to successfully return beavers to 50 locations in the Methow Watershed in 10 years. If we succeed, we are confident this will provide a measurable, lasting benefit to the watershed.

2010 successful establishment on Libby Creek
Project Methods

A project Implementation Plan has been the guiding document for the project. As part of implementation, we developed a list of tasks needed to allow for successful re-introduction. Some were programmatic like “establish goals”, “assemble appropriate partners”, and “pursue a broad education campaign”. Others involved the basic mechanics of beaver establishment and included:

1. Identify suitable habitat
2. Assess current population status
3. Evaluate individual sites for suitability
4. Determine priorities for release sites
5. Interact with landowners who have beaver issues
6. Pursue a trapping effort to remove beavers prior to lethal action
7. Provide a facility for secure, healthy, short-term husbandry and group aggregation
8. Carefully prepare the release site
9. Deliver beavers as a group to the selected location
10. Monitor beavers use
11. Document results

Project Implementation

After a very successful pilot year, an ambitious first phase effort was proposed to deliver beavers to at least 15 sites in the first four years with the goal of at least 5 sites becoming established in three watersheds. Prior to this project the success rate reported in other reintroduction projects in the Western US was about 20%. We felt like we might be able to improve upon that level of success.

In addition, because documenting the water quality benefits was also a project goal, we proposed to design and set up a monitoring effort to answer the questions:

- Does reintroduction of beavers affect the magnitude of water temperature in subwatersheds?
- Does reintroduction of beavers affect streamflow in small-order streams?

To these ends, a grant was secured by the Methow Conservancy from the Washington Department of Ecology administered, Federal Clean Water Act Section 319 Program, followed by matching support contributed by the Yakama Nation, the National Fish and Wildlife Foundation, and Ecotrust.
Beaver sexing

One of the significant innovations of this project, beyond developing a strong GIS analysis of the beaver habitat, was the ability to rapidly and reliably tell male and female beavers apart. The need to determine gender is obvious, but is confounded by the confusing physical structure of beavers, with two sets of glands, internal reproductive organs, and genital openings that are difficult to discern – especially on live beavers that could inflict serious injury with their teeth.

Our initial effort was to work with the University of Idaho Genetics Laboratory lead by Lisette Waits. We helped the team there develop DNA markers for beaver males and females. We then collected hair from all beavers we captured and sent it to the lab for gender ID. This proved 100% reliable for sexing beavers and resulted in a 2011 publication (Goldberg et al. 2011). Issues were the 10 – 15 day turnaround time and the expense for the lab analysis.

In May 2011, with the generous help of beaver expert Dr. Lixing Sun at Central Washington University, we learned how to determine gender with secretions from the oil glands of beavers captured. His approach involved expressing oil from oil glands while beavers were anesthetized and examining color, odor, and viscosity. We learned that oil from male and female beavers is distinctly different. Issues were the 1-2 hour processing time for each beaver and the expense for anesthesia.

The next improvement involved connecting with the local North Cascades Smokejumper base where we asked for help designing a restraint bag that could eliminate the need for anesthesia. After a few trials, our jumper friend, J.T. Sawyer created a sturdy nylon funnel that fit over the Hancock traps and very effectively allowed us to hold a beaver immobile for our entire intake process, including sex determination, with no injury or trauma to crew members or beavers. Now, three to five minutes was the time required to remove beavers from the trap, sex, tag, and release the beavers into the holding facility. For the rest of the season we compared the crew’s ability for oil gland sex determination with DNA hair analysis. At the end of the season we learned the process was 100% accurate and reliable.

The ability to quickly and reliably determine the sex of captured beavers greatly improved our competence in making grouping choices in the holding facility. This innovation, along with providing a period of group acclimation at the facility, was perhaps the most substantial benefit to increasing the establishment rate for groups released, because we had strong assurance that compatible males and females were included in release groups.
Project Benefits and Results

One of the most valuable initial connections for the project was with Hans Smith and Pacific Biodiversity Institute. They helped the project immensely by creating a model that became the initial Geographic Information System assessment of the available beaver habitat for the entire Methow watershed. This was an instrumental tool for evaluating beaver habitat suitability. In 2010 USFS spatial analyst Chaochung Tsai added his talent and helped refine the model that showed the places where suitable stream gradient, appropriate stream flow, and available food resources occurred together.

In 2011 the field crew helped develop a score card used to assess individual sites in the field, and in 2012 that was refined to the current final Release Site Score Card (Appendix B).

Our beaver intake procedures have evolved over the years. We now have a written, thorough, detailed intake protocol for tracking each individual beaver from capture to release and to any subsequent encounter.

We created a comprehensive release site monitoring protocol and a standard measure of success. After release we visit the site weekly for 8 weeks, then semi-monthly for the rest of the first season. We deliver a small amount of aspen at each visit to provide some food and to help determine continuing beaver activity. We record the presence of beaver sign and look for dam and lodge building activity. If a site remains active for a period long enough to produce young, and if the beavers have maintained at least one dam sufficient to at least double the cross-sectional measure of the stream (width x depth), then the site is determined to be successful.
In 2012 we developed a beaver handling protocol to assure the safety and health of our crew, our visitors, and the animals we interact with each day. We pioneered a tagging system of FLOY ear tags for temporary identification in the holding facility, and tail injected PIT tags for permanent identification and movement analysis. The tail tags are detected on either hand held readers for identification or instream readers used for fish monitoring and allow some indication of dispersal after release. Because the tags are permanent and require no battery, we will be able to know about beavers we have handled if they are encountered again.

Temperature and flow investigation

The substantial effort lead by Dr. Richard Woodsmith of the USFS Wenatchee Forestry Sciences Laboratory to develop a comprehensive stream temperature and flow study using a Before-After, Control-Impact design to document the magnitude and scale of temperature improvement and the amount of flow attenuation in streams where beavers are re-introduced is unprecedented. The scientific rigor with which we are attempting to document the changes in stream characteristics has not been attempted to date. The study plan requires a minimum of 3 years of pre-treatment (pre-beaver release) data collection and 3-5 years of post-treatment data collection before results can be analyzed. That we were able to find suitable sites for all replicates, establish and instrument all 6 flow stations, and establish and instrument all 32 temperature stations in one field season (consistent with Washington Department of Ecology SOPs and with the approved project Quality Assurance Project Plan) was nothing short of astounding. The 2011 field crew of Alexis Monetta, Carmen VanBianchi, Gabe Spence, and Chris Vennum deserve special recognition for the magnitude of their effort toward the success of the monitoring program. The data we have gathered since the sites were established will lead to a peer reviewed analysis and published results in about 5 years.
Beaver Capture and Release Outcomes

To date we have captured 181 beavers from 54 locations. In a few cases we did not keep the beaver, a few beavers died, and in 6 cases, beavers managed to escape from the holding facility. We have released 163 beavers to 35 sites. Beginning in 2011, all beavers captured were permanently marked with PIT tags for future identification. To date, because of these tags in the tail, two beavers were documented as recaptures of beavers we had previously caught and released. Both had travelled some distance. The furthest was about 37 miles from the release location.

Beaver Establishment Outcomes

Figure 1 displays the locations where we released beavers and where those efforts were successful. On October 25, 2012 17 sites were active. 14 sites have been established long enough to be considered successful.

Figure 1. Methow Watershed Beaver Release Locations
Establishment examples

2012 successful establishment on South Fork Boulder Creek

2011 successful establishment near Bear Mountain
Temperature and Streamflow Data Outcomes

Figure 2 shows all the stream monitoring locations. The comprehensive study plan for this effort was completed in March 2011 and a Quality Assurance Plan was approved by the Department of Ecology. In June 2011, data gathering began at these sites for stream temperature and stream discharge. 82 temperature loggers are currently capturing baseline stream temperature in 18 subwatersheds. Six flow stations with water pressure loggers in 6 subwatersheds are currently documenting rising and lowering stream elevations. Hydrologic ratings curves for these six streams will be constructed in 2013 and flow calculations will then be derived. After the baseline period, beavers will be released at half the sites and all will be monitored for a period to determine what the effects to stream temperature and stream discharge are. We expect this to require another 3-5 years.

Figure 2. Stream monitoring Stations
Figure 3 is an example plot of temperature records for approximately one year for one of the 84 temperature data loggers currently deployed. This plot is from the Chicamun Creek tributary to Libby Creek. This time period contains 17,096 records and shows a temperature range in that period from -0.06°C on February 27 to 11.47°C on August 17. Figure 4 is a subsample plot of the same data.

**Figure 3. Temperature graph for Chicamun Creek bottom monitoring station 10-6-11 to 9-26-12**

**Figure 4. Temperature graph for Chicamun Creek Bottom monitoring station 7-30-2012 to 8-29-2012**
**Education Outcomes**

The project partners developed and have implemented an Education Plan. **Table 1** shows the list of education programs and when they were provided.

**Table 1. Education and Outreach Programs for the Methow Beaver Project as of October 15, 2012.**

<table>
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<th>Program</th>
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<td>x</td>
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<td>Kindergarten and elementary school-interactive ecology lessons, holding facility tours.</td>
</tr>
<tr>
<td>National Fishing Day</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>100’s of families/yr see captive beavers and read interpretive materials.</td>
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<tr>
<td>Public tour</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<td>Beaver ecology and release site assessment.</td>
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<tr>
<td>Water quality www link</td>
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<td></td>
<td></td>
<td></td>
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<td>Water quality/beaver project information.</td>
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<tr>
<td>Other press</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td>Methow Conservancy fall/winter newsletter. Ruralite.</td>
</tr>
<tr>
<td>Volunteer efforts</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td>Audubon of Washington sponsored bird surveys.</td>
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<tr>
<td>Project information sheet</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>One page white paper for interested people.</td>
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<tr>
<td>Water quality community program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>One planned for in 2011-2013.</td>
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<tr>
<td>Hatchery facility exposure/water quality message delivery</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>500 visitors annually 2010-2013.</td>
</tr>
<tr>
<td>Classroom programs</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>&gt;2/yr in 2010-2013 regarding beavers and their benefit to water quality.</td>
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<tr>
<td>Technology transfer workshops</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>Two in 2010-2013, perhaps through NW beaver symposium.</td>
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<tr>
<td>Publish article</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>One article in 2010-2013 that promotes beaver restoration as a water quality solution and highlights the innovative collaboration of project partners. Ruralite 7-5-11</td>
</tr>
<tr>
<td>www link on Methow Conservancy www site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>Notes the partners engaged in water quality improvement and the actions undertaken in the watershed.</td>
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<tr>
<td>Interagency Publications</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
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<td>USFWS and USFS Regional Newsletters.</td>
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<tr>
<td>Academic Institutions</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td></td>
<td>Interact with academics at various Colleges and Universities</td>
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<tr>
<td>Presentation to Methow Conservancy Stewardship Committee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>Update on the beaver project accomplishments</td>
</tr>
</tbody>
</table>
The education effort has been very successful. Since 2008, the project has reached more than 9000 people with watershed stewardship, water quality, and habitat conservation messages. See the link on the Methow Conservancy web page [http://methowconservancy.org/beaver_project.html](http://methowconservancy.org/beaver_project.html).


Also in 2012, we contracted Steven Foreman to produce our own project documentary compiled from video footage that Steven made and also footage captured by an Ecotrust film crew in June 2012. That documentary is available at [http://www.youtube.com/watch?v=CDXO0Yc8aOs](http://www.youtube.com/watch?v=CDXO0Yc8aOs).

Perhaps the most positive education event for the project is our participation with a number of partners in the US Fish and Wildlife Service sponsored National Fishing Day event at the Winthrop Fish Hatchery. We have shared the benefits of the beaver project with more than 2000 kids and adults at that event alone.
Another education activity is regular coordination with the Methow Restoration Council. We share information regularly with participating fisheries and watershed managers at monthly MRC meetings. The MRC Outreach Committee is charged with design and delivery of key messages for stewardship of local fisheries, water quality and quantity, and habitat restoration projects, as well as data gathering and presentation of results for local scientific studies. They highlight the beaver project as one of the successes in the watershed.

We have presented information at 4 annual beaver conferences and shared the techniques and discoveries we have made.

**Landowner Outcomes**

Working with landowners to solve beaver related issues is a positive part of the project. Many of these people recognize the partners participating in the Methow Beaver Project and appreciate the help and advice they receive for free. Sharing messages about beavers’ role in water quality and beavers’ ability to enhance late season water availability are key messages. That this project might be able to help landowners where problems are occurring with beavers is a key project contribution.

Following are the contacts made to date:

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<tr>
<th>Landowner/Entity</th>
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<th>2012</th>
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<td>x</td>
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<td>x</td>
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<td>Hugh Glassburn</td>
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<td></td>
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<td></td>
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<tr>
<td>Lucy Reed</td>
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<tr>
<td>Marc Hallet</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>
Riparian Protection Outcomes

Several Conservation Easements were added during the last five years. Two of the more recent additions include the Tawks II and Keith properties on the Upper Methow River that protect more than 0.6 mile of riverfront from development in perpetuity. The Tawkls II Conservation Easement protects undeveloped riparian forest and wetlands along approximately 1000 feet of both sides of the Methow River, protecting 2000 feet of total shoreline. It includes a diverse mixture of native plants and provides excellent fish, songbird, amphibian, raptor and large and small mammal habitat. It provides habitat for spring Chinook salmon and steelhead trout, both of which are classified as endangered, and the bull trout, which is listed as threatened, under the Endangered Species Act.

The Keith Conservation Easement spans over 700 feet of the Methow River (and approximately 1, 320 feet of shoreline, including both sides of the river) and incorporates dense riparian vegetation and wetland habitats. This property too provides habitat for spring Chinook salmon, steelhead, and bull trout.

Since 2008 at least 65 beavers have been removed from main river corridor riparian areas and relocated to tributary systems where their actions will be beneficial in raising the water table, storing water in the aquifer and expanding riparian habitat.

The Methow Conservancy, through its Cage-a-Tree project has caged 738 trees on 14 properties, most of which had either Methow Conservancy or WDFW conservation easements on them. This project is on-going to maximize its impact on the protection of riparian vegetation and the recruitment of shade producing trees.
Cooperation Outcomes

The project worked with the Methow Watershed Council and Aspect Consulting to evaluate the contributions beavers might be able to make and the suitability of some key selected sites for a WATER STORAGE EVALUATION for the Methow Watershed. Three key sites were noted as potentially viable beaver enhanced water storage areas: Davis Lake area, Beaver Creek, and the Walking D Ranch. The Walking D was proposed as a possible future beaver release site in Aspect’s June, 2012 report.

We have shared stream temperature monitoring information with the USFS Methow Valley Ranger District Fisheries staff and the Methow Restoration Council Watershed Monitoring Project. In the Methow Basin we currently participate in a network of more than 300 temperature monitoring stations.

We have shared information with several projects that have ultimately begun their own beaver restoration efforts including the Lands Council Beaver Project in Spokane, the Yakama Nation Beaver Project, the Grand Canyon Trust beaver project in Utah, and the Yakima Basin Beaver Project in Ellensburg.

WDFW fisheries biologist Charlie Snow has been a very generous project cooperator. Since 2010 he has helped insure we have pit tags for all the beavers we handle and then helped load the data into the PTAGIS system so that we can ‘see’ when each beaver crosses one of the 27 instream readers. His contribution has allowed us to pioneer this type of movement monitoring for beavers.
Partners

The project has benefitted from very able partners. The Methow Conservancy has contributed project oversight, coordinated connections with private landowners, provided fiscal accounting and tracking, led the education effort for the project, and provided grant administration.

The Forest Service has coordinated project implementation, communication, and support, developed and maintained project records, developed and supervised monitoring efforts, identified and evaluated the best places for beaver release, and interacted with other organizations and agencies active in the Methow watershed. The Wenatchee Forestry Sciences Lab has worked out the statistical and logistic aspects of the water quality study and then very ably coached the implementation of temperature and flow data gathering.

The Washington Department of Fish and Wildlife has coordinated the capture and care of beavers, assisted with beaver release and establishment, assisted with holding facility design and maintenance, conducted stream monitoring set-up and data collection, and made connections with private landowners that experience beaver damage.

Pacific Biodiversity Institute originally developed map products and conducted analyses for assessing the beaver habitat present in the Methow watershed. They passed that role to the Forest Service with staffing changes at PBI. The Forest Headquarters in Wenatchee has made significant contributions to the habitat model.

The Winthrop National Fish Hatchery has generously contributed a portion of the hatchery each year for the holding facility and hatchery staff has helped immensely with facility maintenance, construction, equipment repair, and a big part of the education effort during National Fishing Day.

Funding

We would like to acknowledge and thank the following contributors and supporters of the project.

- The Washington Department of Ecology
- The Yakama Nation
- The Nation Fish and Wildlife Foundation - Community Salmon Fund
- Ecotrust Whole Watershed Restoration Initiative
- Bureau of Reclamation – Methow Field Office
- Habitat Conservation Plan / Tributary Fund
- The Salmon Recovery Funding Board
- The Methow Watershed Council

Acknowledgements

The success of this project is completely the result of the dedication and hard work of the people involved. John Rohrer’s original idea to improve the watershed with beavers was the important initial spark that began the project. Steve and Kim Bondi grew the beaver restoration idea into grant proposals that eventually paid off. Steve’s passion for the project is evident in the many presentations and programs he has given over the years, and that he continues to give in his new role as Inn Owner. He speaks eloquently about the benefit that beavers bring to the watershed in the short video on the Methow Conservancy Website.
Beaver crew members Lindsay Welfelt, Dan Russell, Chris Street, Luke Yockey, Alexis Monetta, Gabe Spence, Carmen VanBianchi, Chris Vennum, Keith Douville, and Carla Jo Ehlinger all have showed amazing dedication and perseverance. Their significant contributions have been noticed and very much appreciated.

Our friends at the Winthrop National Fish Hatchery, including Bob Adams, Chris Dammann, Bob Gerwig, Jeremy Mail, Dave Carrie, Mike Johnson, Craig Chisam, and especially Chris Pasley have helped make sure we have had a nearly perfect holding facility and well-cared-for beavers.

The cooperation and patience of the researchers at the University of Idaho Genetics Lab were instrumental in allowing us to determine sexing methods. Caren Goldberg and Lisette Waits helped wade through the challenges of long-distance sex determination. Dr. Lixing Sun was very generous to share his techniques for sexing. His time with us in May 2011 was a game changer for the success of this project.

Northwest Trek small mammal keeper Jessica Hoffmann kindly gave us her ideas for holding facility design and feeding suggestions. High Desert Museum Wildlife Manager John Goodell was helpful in sharing ideas about husbandry as well.

A large group of veterinarians, pathologists, epidemiologists, and state health department officials helped us complete a thorough, careful evaluation of risks to staff and the trapped and wild beaver populations from water borne disease. Dr. Kristin Mansfield and Ella Rowan from WDFW, Dr. Gary Haldorson and Dr. Tom Besser from WSU, and Nicola Marsden-Haug from WA Department of Health (among many others) were tremendously helpful. This resulted in very careful handling and disinfectant procedures that will become standard for these types of projects from now on.

Mark McKinstry and Stanley Anderson of the Wyoming Cooperative Wildlife Research Unit pioneered large scale beaver restoration projects in Wyoming in the 1990s. Mark was tremendously helpful and supportive as we tried to learn techniques and develop our Implementation Plan. He generously reviewed our plans and shared his work with us to help this project get started.

Michael Pollock is the premier beaver researcher in the Northwest. He provided ideas and support from the beginning of our effort. He was helpful in his review of the study plan for temperature and flow monitoring and has been a valuable colleague to share ideas with.

The staff of the Methow Conservancy has been especially patient as we have learned what it takes to put together, fund, and implement a significant venture in ecosystem restoration. Thank you Joy, Sarah, Mary, Heide, Steve, Eric, Dawn, and Jason for lots of hard work and lots of perseverance.

Scott Fitkin has managed to wedge this project into a work schedule each year that has never had enough room for hiring, training, timesheets, field work, reporting, accident forms, vehicles, and awards – but he has pulled it off remarkably well each year.

John Rohrer continues to be steady in his relaxed encouragement to keep walking forward on the worthwhile project he imagined.
Literature Supporting Beaver Benefits to Watersheds


Methow Beaver Project

Release Site Score Card

Date____________________ Site ID_________________________ Observer_______________________

GPS Coordinates_UTM (NAD 83)___________________________ Subwatershed__________________________

Lat Long______________________________ Location Description__________________________________

Stream Gradient of the defined habitat unit

<table>
<thead>
<tr>
<th>Stream Gradient</th>
<th>Score</th>
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<tbody>
<tr>
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<tr>
<td>4-6%</td>
<td>3</td>
</tr>
<tr>
<td>7-9%</td>
<td>1</td>
</tr>
<tr>
<td>≥9%</td>
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Stream Flow     Min (fall)  Max (spring)

<table>
<thead>
<tr>
<th></th>
<th>garden hose</th>
<th>fire hose</th>
<th>30” culvert</th>
<th>un-wadeable</th>
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</thead>
<tbody>
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<td>garden</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fire</td>
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<td>30” culvert</td>
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</tr>
<tr>
<td>un-wadeable</td>
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<td>2</td>
<td>1</td>
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</table>

Habitat Unit Size (stream length)

<table>
<thead>
<tr>
<th>Habitat Unit Size</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Extensive stretch of the stream</td>
<td>1. Small isolated pocket</td>
</tr>
</tbody>
</table>

Woody Food

a. 3. Aspen, willow  2. Alder  1. Other hardwoods

b. 3. Within 10 meters  2. Within 30 meters  1. Within 100 meters

c. 3. Large amount (thousands of stems)  2. Some (hundreds of stems)  1. Little (dozens)

Woody food score = multiply  a x b x c

Herbaceous Food

3. Grass/Forbs Present  0. No Grass/Forbs Present

Floodplain Width

5. Wide stream bottom  0. Narrow V Channel

Dominant Stream Substrate


Historic Beaver use

10. Old structures present  0. No indication of previous occupancy

Lodge and dam building materials

5. A variety of 1-6” diameter woody vegetation avail.  -10. no building material present

Browsing / Grazing impacts

5. No Impact or obvious presence of browsers / grazers  (-10). Heavy browsing / grazing impact.

Bonus: (5 points each) 1. Easy Access. 2. Recent fire. 3. No conflict with human values. 4. Existing aquatic escape cover. 5. Landowner / user enthusiastic

Total Score

Narrative description of site and notes/ Photo ID# / sketch on back:
Wells, Rocky Reach, and Rock Island HCP Tributary Committees Notes  
15 August 2013

Members Present: Lee Carlson (Yakama Nation), Jeremy Cram (WDFW), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), Kate Terrell (USFWS), and Tracy Hillman (Committees Chair).

Members Absent: Dale Bambrick (NOAA Fisheries).¹

Others Present: Becky Gallaher (Tributary Project Coordinator).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 15 August 2013 from 9:30 am to 12:00 pm.

I. Review and Adopt Agenda
Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following addition:

- Review of the Committees Chairperson.

II. Review and Approval of Meeting Minutes
The Committees reviewed and approved the 13 June 2013 meeting notes.

III. Monthly Update on Ongoing Projects
Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Lower Wenatchee Instream Flow Enhancement Project – The project is complete. The Rock Island Committee received a final report.

- Nason Creek Upper White Pine Reconnection – Chelan PUD Powerline Reconnection Alternatives Analysis – The US Forest Service has completed initial public scoping for the NEPA process. They have decided not to have a public meeting because the only public comment received was a letter from Chelan PUD. Chelan PUD requested a map showing the limits of the powerline right-of-way if the powerline is relocated to the Upper White Pine (UWP) road. In addition, the PUD requested some additional information about costs and confirmation from the Sponsor (Chelan County Natural Resource Department) that all costs will be covered if the powerlines are moved to UWP road.

- Chewuch River Instream Passage Project – After several modifications, the Washington State Parks easement is complete. The sponsor (Trout Unlimited) will acquire signatures in August. The monitoring plan for the new system was changed and now meets Ecology

¹ Dale provided his vote on decision items prior to the meeting.
requirements. The plan was submitted with an expectation that the ROE will be issued in early August. Assembly of the bid documents continues.

- Nutrient Enhancement Assessment – The sponsor (Cascade Columbia Fisheries Enhancement Group) has been sampling water quality and macroinvertebrates since June. The sponsor met with Ecology on 18 July to talk about implementation and the level of monitoring that will be required. Ecology believes that CCFEG is on the right track; however, the sponsor is going to have some difficulties with implementing nutrient enhancement work in a watershed with a TMDL. The sponsor believes they have provided adequate justification to move forward and therefore started to draft an Administrative Order, which will be the route to permit the proposed actions in the Chiwawa. The sponsor will schedule a stakeholder meeting soon to discuss possible opportunities to use surplus carcasses from Priest Rapids Hatchery.

- Large Wood Atonement Project – The sponsor (Cascade Columbia Fisheries Enhancement Group) received a letter of “no support” from a resident on the White River. The landowner attended the public meeting held on 30 March, but did not submit comments until recently. The sponsor will schedule a meeting with the landowner within the next two weeks.

- Nason Creek Lower White Pine Alcove Acquisition Project – The project has closed. The sponsor (Chelan-Douglas Land Trust) will complete the stewardship plan this autumn.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon the successful implementation of the railroad reconnection project, which has not yet happened.

- Twisp River Well Conversion – The sponsor (Trout Unlimited) continues to coordinate with the landowners and contractors to make sure the project stays on schedule. The first system is scheduled to be turned on in early August.

- Wenatchee Levee Removal and Riparian Restoration Project – JARPA and SEPA have been completed and submitted to WDFW and Chelan County. The sponsor (Chelan County Natural Resource Department) is now waiting for the HPA permit. The sponsor will solicit a contractor to remove the levee sometime in August.

- Upper Beaver Habitat Improvement Channel Restoration Project – Field review and coordination were conducted by Anchor QEA and the US Fish and Wildlife Service to verify the proposed channel configuration. The sponsor (Methow Salmon Recovery Foundation) has received all necessary permits. Out-of-channel efforts related to reconstructing a preferred flow channel, construction of new facilities for irrigation diversion and screen facility, parking, staging, and access areas are underway.

- Lower Foster Creek Steelhead Habitat Enhancement Project – Becky Gallaher sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review; however, she has not received a response from the project sponsor.

- Twisp River-Poorman Creek Wetland Habitat Acquisition – The Committees’ appraiser completed the appraisal. The sponsor (Methow Salmon Recovery Foundation) reviewed the appraisal and has requested an independent market valuation. The sponsor felt this step was necessary because of the disparity between the indicated value and current assessed value. The sponsor indicated that they may discuss the option of a Conservation Easement rather than an acquisition with the landowner. If the sponsor elects to move forward with a Conservation Easement, they will need to submit a revised proposal.
• Okanogan Basin Stream Discharge Monitoring Project – The Tributary/Sponsor Agreement is ready for signature.

• Shingle Creek Fish Passage Project – Chris Fisher reported that they are waiting for a Resolution and Letter of Support from the Penticton Indian Council. If they receive these items, they could have all the permits by this Friday. Work is scheduled to begin on 3 September. It should take only three weeks to complete the project.

• Methow/Chewuch Shallow Groundwater Monitoring Project – The Sponsor (Cascade Columbia Fisheries Enhancement Group) and WDFW installed benchmarks and surveyed all staff plates to benchmarks on 3 July. On 12 July, the sponsor and the Bureau of Reclamation established two control points along Silver Side Channel that can be tied to future survey efforts. The sponsor monitored all wells, staff plates, and measured discharge at eight separate cross-sections along Silver Side Channel on 24 and 25 July. Water-level loggers continue to record data.

IV. Review of General Salmon Habitat Program Proposals

The Committees received nine General Salmon Habitat Program proposals. Before reviewing the proposals, Becky Gallaher reported that currently there is $3,925,213 in the Rock Island Plan Species Account, $1,683,645 in the Rocky Reach Plan Species Account, and $1,047,957 in the Wells Plan Species Account. In addition, and consistent with the Committees’ Operating Procedures, members of the Committees identified potential conflicts of interest. Kate Terrell recused herself from voting on the Silver Side Channel Design project.

**Silver Side Channel Design Project**

Cascade Columbia Fisheries Enhancement Group is the sponsor of the Silver Side Channel Design Project. The purpose of this project is to evaluate past, current, and future desired conditions and develop permit-ready (30%) designs for the Silver Side Channel and adjacent floodplain. The Silver Side Channel is located between Twisp and Carlton on the Methow River at about RM 35. The total cost of the project is $183,733. The sponsor requested $66,000 from HCP Tributary Funds. The Rocky Reach Committee approved funding for this project.

**Chiwawa Nutrient Enhancement Project**

Cascade Columbia Fisheries Enhancement Group is the sponsor of the Chiwawa Nutrient Enhancement Project. The purpose of this project is to increase available nutrients for primary production and provide a direct food source for juvenile salmonids within the Chiwawa River basin. Over a four-year period, carcass analogs will be distributed manually over a 4.6-mile stretch of the Chiwawa River (RM 22.4-27.0) and within select tributaries. Water quality will be monitored before and after treatments. The total cost of the project is $684,000. The sponsor requested $342,000 from HCP Tributary Funds. The Rock Island Committee approved funding for this project.

**Janis Rapids Side Channel Project**

Cascade Columbia Fisheries Enhancement Group is the sponsor of the Janis Rapids Side Channel Project. The purpose of this project is to restore natural processes to side channels in the Okanogan River. This will be accomplished by removing a rock weir and concrete structure. In addition, the sponsor proposes to conduct a reach-scale assessment of the Wilson Side Channel. The Janis Rapids Reach is located between RM 49.8 and 50.5. The total cost of the project is $98,750. The sponsor requested $37,000 from HCP Tributary Funds.

Although the Committees generally support restoring natural processes, they see this project as having little biological benefit. Therefore, the Tributary Committees elected not to fund this
project. However, the Committees would review an application to restore the Wilson Side Channels.

**Twisp to Carlton Reach Assessment Project**

Cascade Columbia Fisheries Enhancement Group is the sponsor of the Twisp to Carlton Reach Assessment Project. The purpose of this project is to collect and compile watershed process information, link processes with known habitat limiting factors, and develop and prioritize multiple projects in the Middle Methow (RM 29-40). The sponsor intends to use the U.S. Bureau of Reclamation’s Reach Assessment methodology. The total cost of the project is $173,016. The sponsor requested $46,500 from HCP Tributary Funds. *The Rock Island Committee approved funding for this project.*

**Icicle-Peshastin Irrigation District Pump Exchange Preliminary Design Project**

Chelan County Natural Resource Department is the sponsor of the Icicle-Peshastin Irrigation District Pump Exchange Preliminary Design Project. The purpose of this project is to complete preliminary (30%) designs for a pump station on the Wenatchee River with the capacity to pump 50 cfs, a pipeline to the Peshastin Irrigation District Canal, and a booster pump and pipeline to the Icicle Irrigation District canal. Ultimately, the goal of the project is to: (1) increase flows in the lower 2.4 miles of Peshastin Creek during late summer and early fall, (2) increase flows in the lower 5.7 miles of Icicle Creek during late summer and early fall, (3) increase instream flows in the mainstem Wenatchee River between RM 16.5 and 25.6, and (4) install instream structures in lower Peshastin Creek that will enhance channel complexity. The total cost of the design project is $322,000. The sponsor requested $25,000 from HCP Tributary Funds.

The Committees recognize that fish would benefit from the addition of more flow in lower Peshastin and Icicle creeks; however, they believe the sponsor should have separated the Icicle project from the Peshastin project. In addition, the absence of an estimated cost for O&M was troubling to the Committees. They are concerned that the annual costs for O&M could be so high that the benefits associated with the project would not justify the costs. Before the Committees are comfortable spending money on preliminary designs, they need an estimated cost for O&M.

Finally, there are unnecessary elements in the proposal (and methods) and uncertainty about the change in limiting factors, because claimed benefits are only speculative. That is, the proposal includes habitat components in Peshastin Creek that are out of sequence. It is unclear what instream-flow benefits will accrue in Peshastin Creek from the pumping of 20 cfs of Wenatchee River water (i.e., just because they take 20 cfs from the Wenatchee River does not mean there is 20 cfs to leave in Peshastin Creek). There is nothing in the proposal that limits the District’s usage to the pumped input, and they would need to maintain flow in the canal for users between the diversion and the point where the pumped water enters the canal. With a water right of 50 cfs, they could conceivably still withdraw enough water, in addition to the pumped input, to severely dewater the lower Peshastin. As shown in Figure 1 in the proposal, in three of the six years with both gauges operating, they withdrew about the same amount as or more than would be provided by the pumped Wenatchee water. In the other three years, they used less, but left only 6, 7, and 8 cfs, respectively, in the creek, such that had pumped water been supplied down the line it remains likely that they would have still left less than 20 cfs in the creek. The claim of the proposal that the project would add 20-cfs to Peshastin Creek does not appear accurate—the water is not added to the creek, it is added to the canal and the 20 cfs pumped does not eliminate the diversion and the withdrawal necessary to water the canal. Therefore, *the Tributary Committees elected not to fund this project.*
Nason Creek RM 4.6 Side Channel Reconnection Construction Project

Chelan County Natural Resource Department is the sponsor of the Nason Creek RM 4.6 Side Channel Reconnection Construction Project. The purpose of this project is to provide high-flow refugia and rearing habitat for adult and juvenile salmonids in Nason Creek. The project will reconnect a 4.6-acre, high-flow channel to the mainstem near RM 4.6. The total cost of the project is $525,030. The sponsor requested $88,000 from HCP Tributary Funds. The Rock Island Committee approved funding for this project.

CDLT Entiat Stillwaters Gray Reach Acquisitions

The Chelan-Douglas Land Trust is the sponsor of the Entiat Stillwaters Gray Reach Acquisitions. The purpose of this project is to protect in perpetuity and maintain 77.31 acres of largely riparian habitat including 6,730 linear feet of stream bank of the Stillwaters Reach. This action will prevent degradation of spawning and rearing habitat by eliminating threats of subdivision development and associated habitat degradation, and will facilitate restoration and enhancement actions. The parcels are located between RM 17.6-17.9 and RM 16.8-17.3. The total cost of the project is $569,625. The sponsor requested $170,000 from HCP Tributary Funds. The Rocky Reach Committee approved funding for this project.

As part of the Committee’s contribution to this project, the Committee will use their own appraiser and reviewer to assess the value of the property. The $10,000 that the sponsor identified in their budget for appraisal and review will be covered by the Committee. Thus, the Committee will provide up to $160,000 for the purchase of the properties, plus the cost of the appraisal and review ($10,000).

Similkameen RM 3.8 Habitat Design Project

Okanogan Conservation District is the sponsor of the Similkameen RM 3.8 Habitat Design Project. The purpose of this project is to design a project that will reduce bank erosion and improve spawning and fry rearing habitat at RM 3.8 on the Similkameen River. The total cost of the project is $84,640. The sponsor requested $21,160 from HCP Tributary Funds. The Rocky Reach Committee approved funding for this project.

Although the Committees recognize that this project will have little biological benefit, they believe that the landowner, who approached the Okanogan Conservation District about fixing the erosion problem, will communicate with other landowners in the Okanogan River basin. It is hoped that this communication among landowners will create a more positive environment for implementing habitat restoration actions in the basin.

MVID Instream Flow Improvement Project

Trout Unlimited – Washington Water Project is the sponsor of the MVID Instream Flow Improvement Project. The purpose of this project is to: (1) improve instream flows in the lower 4.5 miles of the Twisp River by eliminating the MVID irrigation diversion and returning up to 15 cfs, which will be placed in permanent trust; (2) improve instream flow in the Methow River by piping a portion of the east canal and permanently trusting the saved water; (3) improve instream flow (2 cfs) and wetland and side channel habitat by restoring the natural flow in Alder Creek and permanently trusting the water; and (4) prevent fish injury and mortality associated with MVID’s Twisp River pushup dam, fish screen operations, and the stranding of redds and juveniles in the MVID West Canal’s intake canal and fish return channel. The total cost of the project is $9,747,000. The sponsor requested $400,000 from HCP Tributary Funds. The Wells Committee approved funding for this project.
Summary of Review of 2013 General Salmon Habitat Program Projects.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sponsor1</th>
<th>Total Cost</th>
<th>Request from T.C.</th>
<th>T.C. Contribution2</th>
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<tr>
<td>Silver Side Channel Design</td>
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<td>$183,733</td>
<td>$66,000</td>
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<td>CCFEG</td>
<td>$684,000</td>
<td>$342,000</td>
<td>RI: $342,000</td>
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<td>Janis Rapids Side Channel</td>
<td>CCFEG</td>
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<td>CCFEG</td>
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<tr>
<td>Nason Creek RM 4.6 Side Channel Reconnection</td>
<td>CCNRD</td>
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<td>MVID Instream Flow Improvement</td>
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<td><strong>$1,195,660</strong></td>
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</table>

1 CCFEG = Cascade Columbia Fisheries Enhancement Group; CCNRD = Chelan County Natural Resource Department; CDLT = Chelan-Douglas Land Trust; OCD = Okanogan Conservation District; and TU-WWP = Trout Unlimited – Washington Water Project.

2 RI = Rock Island Plan Species Account; RR = Rocky Reach Plan Species Account; W = Wells Plan Species Account.

V. Contract Extension Request

In July, the Rock Island Tributary Committee received a contract extension request from the Chelan County Natural Resource Department on the Wenatchee Levee Removal and Riparian Restoration Project. The sponsor indicated that they needed additional time this summer and fall to complete the levee removal and riparian restoration work, and to allow time for the landowner to process the water rights changes. The sponsor asked the Committee to extend the contract from 30 June 2013 to 28 February 2014. The Rock Island Committee approved the contract extension.

VI. Information Updates

The following information updates were provided during the meeting.

1. Approved Payment Requests in July and August:

   Rock Island Plan Species Account:
   - $87.50 to Clifton Larson Allen for second-quarter financial management and reporting.
   - $1,554.54 to Chelan PUD for second-quarter administration and management.

   Rocky Reach Plan Species Account:
   - $87.50 to Clifton Larson Allen for second-quarter financial management and reporting.
   - $1,913.60 to Chelan PUD for second-quarter administration and management.
   - $67,300.00 to First American Title for the purchase of the Click and Stone-Parker parcels for the Nason Creek Lower White Pine Alcove Acquisition.
   - $13,239.58 to Trout Unlimited – Washington Water Project for the Chewuch River Instream Flow Project.
• $1,113.26 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project.

Wells Plan Species Account:
• $10,157.21 (includes two invoices: $4,835.00 for January through April and $5,322.21 for May through June) to Trout Unlimited – Washington Water Project for the Twisp River Well Conversion Project.
• $1,113.26 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project.
• $147.55 to the Methow Salmon Recovery Foundation for the Twisp River-Poorman Creek Wetland Habitat Acquisition Project.
• $2,601.46 to Cascade Columbia Fisheries Enhancement Group for the Methow/Chewuch Shallow Groundwater Monitoring Project.
• $2,187.82 to the Methow Conservancy for the Lower Chewuch Beaver Restoration Project.
• $6,500.00 to Cascade Chelan Appraisal, Inc., for appraisal of the Poorman Creek Habitat Acquisition Project.
• $787.41 to Chelan PUD for second-quarter administration and management.

2. Tom Kahler reported that the Committees agreed unanimously to retain Tracy Hillman as the Chairperson for the next three-year period (2014 through 2016). Tracy accepted the appointment and asked the members for feedback on how he could better serve them as their Chairperson. Members requested that Tracy more freely offer technical information on projects.

3. Tracy Hillman reported that he received a letter from the Upper Columbia Salmon Recovery Board (UCSRB) extending an opportunity for the Tributary Committees to help sponsor the 2013 Upper Columbia Science Conference on 13 and 14 November. The UCSRB asked for a contribution of $500 or more to help organize and implement the event. After discussion, the Committees elected to contribute $3,000 ($1,000 from each of the administrative accounts [no greater than $80,000 per year] of the Plan Species Accounts).

4. Chris Fisher reported that the tour of restoration projects in Canada will occur on 9 and 10 October. The Shingle Creek project should be completed in September, alterations to Vertical Drop Structure 13 should be completed by early October, and ORRI Phase II should be completed by the end of September. All except Kate Terrell and Dale Bambrick thought that they would be able to attend the tour. Brandon Rogers may attend the tour in Lee Carlson’s stead. The tour will replace the Committees’ October meeting.

VII. Next Steps
The next meeting of the Tributary Committees will be on Thursday, 12 September 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
Wells, Rocky Reach, and Rock Island HCP
Tributary Committees Notes
12 September 2013

Members Present: Dale Bambrick (NOAA Fisheries), Lee Carlson (Yakama Nation), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), Kate Terrell (USFWS), and Tracy Hillman (Committees Chair).

Members Absent: Jeremy Cram (WDFW).

Others Present: Becky Gallaher (Tributary Project Coordinator).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD Auditorium in Wenatchee, Washington, on Thursday, 12 September 2013 from 10:00 am to 12:00 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda with the following additions:

- Shingle Creek Contract Extension
- Review of Projects Funded by the Tributary Committees

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 15 August 2013 meeting notes with edits.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Nason Creek Upper White Pine Reconnection – Chelan PUD Powerline Reconnection Alternatives Analysis – Jeff Osborn reported that Chelan PUD is coordinating with Chelan County and the Bonneville Power Administration. The PUD will meet with the US Forest Service to discuss right-of-ways and easements.

- Chewuch River Instream Passage Project – The sponsor (Trout Unlimited) continues to coordinate with the Chewuch Canal Company president on options to consider regarding schedule, funding, reservoir permitting, and cost saving strategies. The landowner, who will provide access for the Winthrop-Bear Creek piping added another demand to his easement proposal. All landowners along this section of the ditch are renegotiating their agreements. Two additional piping areas were located in case it is needed. These areas will not require cultural surveys, but will require some payment. Assembly of the bid document continued in August for the Winthrop-Bear Creek part of the project. A pre-bid

1 Jeremy provided his votes on decision items following the meeting.
walk-through was held on 29 August. Seven companies attended. The sponsor will open
bids on 9 September and award the project to a contractor by 12 September 2013.
Ecology issued the ROE on 2 August 2013.

- Nutrient Enhancement Assessment – During the month of August, the sponsor (Cascade
  Columbia Fisheries Enhancement Group) and PACE Engineering collected water quality
  samples, periphyton, and macroinvertebrates in all of the sub-watersheds of the upper
  Wenatchee River basin. The sponsor also submitted a draft Administrative Order (the
  permit) to Ecology for nutrient enhancement in the Chiwawa River basin. The sponsor is
  scheduling a meeting with the U.S. Forest Service, U.S. Fish and Wildlife Service,
  NOAA Fisheries, and WDFW to discuss permitting for this project.

- Large Wood Atonement Project – The sponsor (Cascade Columbia Fisheries
  Enhancement Group) received a non-supportive letter from a White River resident. On 22
  August, the sponsor met with the concerned citizen and explained the background and
  logic that went into the development of the project. The sponsor left the meeting feeling
  that the landowner was more informed and is generally okay with proceeding. In
  addition, because of the new landowner liability legislation and growing “paranoia”
  surrounding the addition of wood to rivers, the sponsor is exploring hiring an engineer to
design and stamp the project plans. This may be required given that the Department of
Natural Resources owns the streambed.

- Nason Creek Lower White Pine Alcove Acquisition Project – This project has closed.
The sponsor (Chelan-Douglas Land Trust) will complete the stewardship plan this
  autumn.

- Coulter Creek Barrier Replacement Project – Funding for this project is contingent upon
  the successful implementation of the railroad reconnection project.

- Silver Protection Project – The WDFW Director has approved moving forward with the
  Silver Conservation Easement. The portion proposed for fee acquisition will remain on
  hold indefinitely pending resolution on WDFW land acquisitions in Okanogan County.
The Methow Salmon Recovery Foundation will purchase the property if WDFW is
  unable to complete the transaction.

- Twisp River Well Conversion – Construction has progressed to the point where the
  system was turned on and tested. This included backfilling the irrigation lines, installing
  the pumps and VFD, and running all electrical components. The test indicated that during
  spring, there was adequate water available to run the system (i.e., 150 gallons/minute).
  However, in August, the system was only able to produce 90 gallons/minute. The driller,
  hydrogeologist, and water witcher confirmed that the well needs to be drilled deeper to
  produce the required production. Deepening the well will increase costs, which include
  pulling the pumps, fabrication to lower the pumps, a booster pump, and the well driller
  costs. In addition, the NRCS contribution will be less than originally thought. Therefore,
  the sponsor (Trout Unlimited) asked the Wells Tributary Committee if they would
  provide additional funding for the project. The revised total cost of the project is
  $99,188.58 (the original cost was $87,738.87). The sponsor asked the Wells Committee if
  they would increase their contribution to $68,022.58 (the original contribution was
  $43,550.27). After carefully reviewing the request, the Wells Committee approved
  funding up to $68,022.58, an increase of $24,472.31 from the original contribution.

- Wenatchee Levee Removal and Riparian Restoration Project – The HPA is ready and
  will be issued the week of 9 September 2013. Removal of the levee will likely occur after
  the landowner is finished with harvesting pears.
• Upper Beaver Habitat Improvement Channel Restoration Project – The sponsor (Methow Salmon Recovery Foundation) completed field staking in advance of rough channel construction. They also placed a temporary bridge across the active channel of Beaver Creek to allow access to the floodplain. They initiated rough construction work to establish a new channel route for the primary segment. Out-of-channel efforts related to reconstructing the preferred flow channel will be completed in September. Construction of new facilities for irrigation diversion and screen facility, parking, staging, and access areas are underway.

• Lower Foster Creek Steelhead Habitat Enhancement Project – Becky Gallaher sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review. She has not received a response from the project sponsor.

• Twisp River-Poorman Creek Wetland Habitat Acquisition – An independent review was completed on 11 August 2013. The sponsor (Methow Salmon Recovery Foundation) then met with the landowner to discuss options and preferences. Based on the appraisal and independent review, the landowner will proceed under a conservation easement rather than an acquisition. Although the Wells Committee has not received a formal request, the sponsor would like to use a portion of the allocated Plan Species Account funds for the non-acquisition elements of the property.

• Shingle Creek Fish Passage Project – Chris Fisher reported that there were some issues with coordination between the Okanagan Nation Alliance (ONA) and the contractor (Westhills). Because there is no contract in place, rock from the quarry may not be available this year for the fish passage project. To that end, ONA asked the Wells and Rocky Reach Tributary Committees for a contract extension from 31 December 2013 to 31 December 2014. The Wells and the Rocky Reach Tributary Committees approved the time extension. Chris believes that they will be able to complete the project this year.

• Methow/Chewuch Shallow Groundwater Monitoring Project – The U.S. Fish and Wildlife Service collected discharge data at 11 cross-sections along the Silver Side Channel. The sponsor (Cascade Columbia Fisheries Enhancement Group) organized the piezometer water-level data and populated a spreadsheet that tracks flow measurements collected from the Silver Side Channel. They also compiled data from the Burns-Garrity site and sent those data to WDFW for analysis.

IV. Additional Funding Request

Tracy Hillman shared with the Committees the list of projects that were selected for possible funding by the Salmon Recovery Funding Board (SRFB) (see Attachment 1). He noted that some of the projects selected to receive Plan Species Account funds were not selected to receive matching funds from the SRFB. That is, the Silver Side Channel Design Project, Nason Creek RM 4.6 Side Channel Reconnection Construction Project, Similkameen RM 3.8 Design Project, and the Chiwawa Nutrient Enhancement Project fell below the SRFB funding line. The Cascade Columbia Fisheries Enhancement Group asked the Rocky Reach Tributary Committee if they would fund the entire Silver Side Channel Design Project. Because the Rocky Reach Committee sees this project as an important step in restoring important habitat for Plan species, the Committee elected to fund the entire project for $132,000. Chris Fisher noted, however, that the cost of the project appeared excessive.

The Committees reviewed the other three projects that were selected to receive Plan Species Account funds but did not receive SRFB matches and concluded that of the three, they would only fully fund the Similkameen RM 3.8 Design Project. This is because the Committees see this project as an important tool in developing relationships with landowners in the Okanogan Basin.
Thus, the Rocky Reach Tributary Committee elected to fund the entire Similkameen RM 3.8 Design Project for $84,640. The Committee requires, however, that the landowner establish a riparian buffer zone, which his livestock cannot enter. In addition, the sponsor (Okanogan Conservation District) needs to develop a design-build project. That is, there is no need to identify several different alternatives for this project. The sponsor is welcome to submit a proposal for additional funding if the $84,640 does not cover the entire cost of the design-build project.

V. Icicle-Peshastin Irrigation District Pump Exchange Project

In August, the Committees elected not to fund the Icicle-Peshastin Irrigation District Pump Exchange Project, because the sponsor (Chelan County Natural Resource Department) did not separate the Icicle project from the Peshastin project. In addition, the absence of an estimated cost for O&M troubled the Committees. Finally, the sponsor included unnecessary elements in the proposal (and methods) and uncertainty about the change in limiting factors, because claimed benefits are only speculative. Following receipt of the rejection letter from the Tributary Committees, Mike Kaputa contacted Tracy Hillman and asked for additional clarification. His questions and the Committees’ responses follow:

1. *Would the Committees be willing to review a revised proposal this year?* The Committees indicated that the sponsor would need to resubmit the proposal during the next funding cycle, which would be next year. The Committees do not want to deviate from their current policy. They noted that if the project is time sensitive, the sponsor should seek funding elsewhere.

2. *Would the Committees be willing to help support O&M costs?* The Committees would need to know the O&M costs before they can determine if they would support the costs in part or in total. Importantly, the Committees requested this information during the pre-proposal and field review as well as during the sponsor presentations.

3. *Please indicate why the Icicle Pump Station should be separate from the Peshastin Pump Station?* The Committees do not believe the Peshastin Pump location is the most appropriate location for the Icicle Pump. They believe the most advantageous location for the Icicle Pump is downstream from Leavenworth.

The Committees directed Tracy to send an e-mail to Mike with the Committees’ responses.

VI. Information Updates

The following information updates were provided during the meeting.

1. Approved Payment Requests in August and September:

   - Rock Island Plan Species Account:
     - $67.50 to Clifton Larson Allen for July-August financial management and reporting.
     - $1,000.00 to the Upper Columbia Salmon Recovery Board to help sponsor the Upper Columbia Science Conference.

   - Rocky Reach Plan Species Account:
     - $67.50 to Clifton Larson Allen for July-August financial management and reporting.
• $1,570.72 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project.


• $2,478.63 to the Chelan-Douglas Land Trust for the Nason Creek Lower White Pine Alcove Acquisition.

• $1,000.00 to the Upper Columbia Salmon Recovery Board to help sponsor the Upper Columbia Science Conference.

Wells Plan Species Account:

• $1,570.72 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project.

• $24,737.91 to Trout Unlimited – Washington Water Project for the Twisp River Well Conversion Project.

• $14,579.98 to the Methow Conservancy for the Lower Chewuch Beaver Restoration Project.

• $2,272.00 to Douglas PUD for Fiscal Year 2013 administration and management.

• $1,000.00 to the Upper Columbia Salmon Recovery Board to help sponsor the Upper Columbia Science Conference.

2. Tracy Hillman reported that he and Jeremy Cram were asked to meet with Cascade Columbia Fisheries Enhancement Group (CCFEG) about the Chiwawa Nutrient Enhancement Project. The CCFEG asked if the Committees would be interested in reviewing a proposal that would assess the effects of nutrient supplementation in the Chiwawa River basin. The CCFEG does not believe the hatchery monitoring and evaluation program funded by Chelan PUD will be sensitive enough to detect treatment effects. After discussion, the Committees indicated that they would not be interested in reviewing a proposal to monitor the effects of the nutrient enhancement work. They would rather use the Tributary Assessment Program funds to examine off-channel habitat actions and barrier removal actions.

3. Becky Gallaher provided the Committees with a list of projects that have been funded under each Plan Species Account (see Attachment 2). The lists provide the project name, project sponsor, type of funding (Small Project or General Salmon Habitat), project type, total cost of the project, Tributary contribution, and project status.

4. Chris Fisher reported that the tour of restoration projects in Canada will occur on 9 and 10 October. The Shingle Creek project may not be complete by October; however, alterations to Vertical Drop Structure 13 should be completed by early October and ORRI Phase II should be completed by the end of September. All except Kate Terrell, Dale Bambrick, and Lee Carlson thought that they would be able to attend the tour. Brandon Rogers will attend the tour in Lee Carlson’s stead. The tour will replace the Committees’ October meeting.

VII. Next Steps

The next meeting of the Tributary Committees will be on Friday, 15 November 2013 at Chelan PUD in Wenatchee.
Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).
Attachment 1—List of projects seeking funds from the Salmon Recovery Funding Board. Projects above the blue line were selected to receive SRFB funds.

### UCSRB 2013 Lead Entity Project List

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>SPONSOR</th>
<th>AMOUNT REQUESTED</th>
<th>RTT Score</th>
<th>CAC Rank</th>
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<tbody>
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<td>Roaring Creek Flow Restoration and Diversion Removal Project</td>
<td>Trout Unlimited (TU)</td>
<td>$77,000.00 $0.00 $177,000.00 $254,000.00</td>
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<td>$318,547.00 $0.00 $1,950,000.00 $2,268,547.00</td>
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<td>Icicle Creek Boulder Field Passage Design</td>
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<td>Silver Side Channel Design</td>
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<td>Similkameen RM 3.8 Design Only</td>
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SRFB Allocation $1,953,000.00
**Rock Island Plan Species Account**

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<th>Project Name</th>
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<th>Project Type</th>
<th>Total Cost</th>
<th>Tributary Contribution</th>
<th>Tributary Contribution (actual to date)</th>
<th>Project Status</th>
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<td>Off-Channel Habitat</td>
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<td>Instream Flows</td>
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<td>Instrm Flows/Fish Passage</td>
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<td>Colville Confederated Tribes</td>
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<td>Instream Structures</td>
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<td>Assessment</td>
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</table>
## Rock Island Plan Species Account

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sponsor</th>
<th>Fund Type</th>
<th>Project Type</th>
<th>Total Cost</th>
<th>Tributary Contribution</th>
<th>Tributary Contribution (actual to date)</th>
<th>Project Status</th>
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<tbody>
<tr>
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<td>Assessment</td>
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<td>Washington Rivers Conservancy</td>
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**Current Rock Island Plan Species Account Balance (unallocated):** 1,095,281.00
**Contribution to the Rock Island Account is made annually (January 31):** $485,200 (in 1998 dollars)
## Rocky Reach Plan Species Account

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<th>Sponsor</th>
<th>Fund Type</th>
<th>Project Type</th>
<th>Total Cost</th>
<th>Tributary Contribution</th>
<th>Tributary Contribution (actual to date)</th>
<th>Project Status</th>
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<td>Fund Type</td>
<td>Project Type</td>
<td>Total Cost</td>
<td>Tributary Contribution</td>
<td>Tributary Contribution (actual to date)</td>
<td>Project Status</td>
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<td>Fish Passage</td>
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Current Rocky Reach Plan Species Account Balance (unallocated): $1,274,933.90
Contribution to the Rocky Reach Account is made annually (January 31): $229,800 (in 1998 dollars)
## Wells Plan Species Account

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<th>Fund Type</th>
<th>Project Type</th>
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**Current Wells Plan Species Account Balance (unallocated): $833,943.27**

**Contribution to the Wells Account will be made annually beginning in 2010: $176,178 (in 1998 dollars)**
Wells, Rocky Reach, and Rock Island HCP
Tributary Committees Notes
15 November 2013

Members Present: Lee Carlson (Yakama Nation), Jeremy Cram (WDFW), Chris Fisher (Colville Tribes), Steve Hays (Chelan PUD), Tom Kahler (Douglas PUD), Kate Terrell (USFWS), and Tracy Hillman (Committees Chair).

Members Absent: Dale Bambrick (NOAA Fisheries).

Others Present: Becky Gallaher (Tributary Project Coordinator) and Jeff Osborn (Chelan PUD).

The Wells, Rocky Reach, and Rock Island Hydroelectric Projects Habitat Conservation Plans Tributary Committees met in the Chelan PUD First Floor Conference Room in Wenatchee, Washington, on Friday, 15 November 2013 from 9:30 am to 12:00 pm.

I. Review and Adopt Agenda

Tracy Hillman welcomed everyone to the meeting and the Committees adopted the proposed agenda.

II. Review and Approval of Meeting Minutes

The Committees reviewed and approved the 12 September 2013 meeting notes with edits.

III. Monthly Update on Ongoing Projects

Becky Gallaher gave an update on funded projects. Most are progressing well or had no salient activity in the past month.

- Nason Creek Upper White Pine Reconnection – Chelan PUD Powerline Reconnection Alternatives Analysis – The Forest Service has completed their resource surveys and is preparing an Environmental Assessment for NEPA. The U.S. Bureau of Reclamation has hired Interfluve to develop 30% restoration design plans, which should be completed this winter. The Sponsor (Chelan County Natural Resources Department; CCNRD) recently held a regulatory agency meeting on site with representatives from WDFW, NOAA Fisheries, USFWS, U.S. Forest Service, Bureau of Reclamation, CCNRD, and Interfluve to discuss the proposed restoration alternative. Jeff Osborn noted that Chelan PUD has written a letter of agreement with Chelan County on moving the power lines. The letter will go to BPA for their review.

- Chewuch River Instream Passage Project – The contractor, Selland Construction, spent the first part of the month mobilizing and sorting out clarifications with Trout Unlimited (project sponsor). This work was complicated because the Bureau of Reclamation (BOR) engineers, who designed the project, were on government furlough. As a result, the sponsor created a short-term contract with Anchor QEA to keep things moving while BOR engineers were unavailable. Selland Construction has focused on two of the three project stages: Lake Creek and the Winthrop-to-Bear Creek piping. Lake Creek is the primary focus because of the need to redo the Lake Creek intake while the reservoir is low. A second crew is working on the Winthrop-to-Bear Creek piping and progressing at about 500 feet per day. The sponsor also worked to address
all of the remaining easement issues with State Parks, secured all of the landowner access agreements, and provided project management support.

- Large Wood Atonement Project – Proposals for engineering assistance were due on 25 September. However, because of the government shutdown, a firm was not selected until the end of October. The sponsor (Cascade Columbia Fisheries Enhancement Group) and the USFWS selected Natural Systems Design (NSD) to help with engineering. The sponsor and the USFWS are working on finalizing the scope of work and are planning a float trip with NSD on 12 November.

- Wenatchee Levee Removal and Riparian Restoration Project – Rayfield Brothers Excavation has completely removed the levee. The contractor removed about 2,500 cubic yards of material, which formed the 300-foot long levee. The sponsor (Chelan County Natural Resources Department) will re-plant the area where the levee was removed next spring.

- Upper Beaver Habitat Improvement Channel Restoration Project – Construction is nearly complete on the channel realignment, new diversion structure, new screen structure, upper canal pipeline, and decommissioning of the historic alignment adjacent to Beaver Creek Road.

- Lower Foster Creek Steelhead Habitat Enhancement Project – Becky Gallaher sent the Tributary Committee/Sponsor Agreement to the sponsor (Foster Creek Conservation District) for their review. She has not received a response from the project sponsor. Kate Terrell recommended that Becky contact the project sponsor and find out the status of the agreement and enhancement project. Kate mentioned that there is a possibility that Cascade Columbia Fisheries Enhancement Group could implement the project if the Conservation District is unable to do so.

- Twisp River-Poorman Creek Wetland Habitat Acquisition – The Sponsor (Methow Salmon Recovery Foundation; MSRF) is working to build a collaborative project through the Methow Conservancy, Trout Unlimited, and MSRF. The intent is to secure the largest possible benefit on the Reynaud property in conjunction with Bonneville Power Administration funding awarded for the larger Twisp River floodplain project. During October, the group completed identification of project elements and partner responsibilities. The sponsor continues to coordinate efforts with Bonneville Power Administration, Bureau of Reclamation, and the Upper Columbia Salmon Recovery Board to develop a scope of work to prioritize and identify data gaps and restoration objectives. The sponsor has recently initiated data collection efforts. The sponsor has not yet requested a scope change with the Wells Tributary Committee (change from a conservation easement to an acquisition).

- Methow/Chewuch Shallow Groundwater Monitoring Project – The USFWS measured flows within the Silver Side Channel on 21 October. In addition, the USFWS installed eight temperature loggers along Silver Side Channel the last week of October. The Sponsor (Cascade Columbia Fisheries Enhancement Group) began looking into the feasibility of a possible pump drawdown test at the Burns-Garrity site.

IV. Wenatchee Levee Removal and Riparian Restoration Project Budget Amendment

The Rock Island Tributary Committee received a budget amendment request from Chelan County Natural Resources Department on the Wenatchee Levee Removal and Riparian Restoration Project. The sponsor asked to move $7,000 from contract labor to sponsor salaries and benefits. The total cost of the project will not change. After discussion, the Committee was unable to approve the amendment request because the Committee needs more information on why additional funds are needed for sponsor salaries and benefits. Although the construction work was completed under budget, it was not clear why additional funds are needed for salaries and benefits. The Committee directed Tracy to seek additional information.
from the project sponsor. The Committee will revisit this request after they receive the additional information from the project sponsor.

V. Methow/Chewuch Shallow Groundwater Monitoring Project Scope Change and Budget Amendment

The Wells Tributary Committee received a scope change and budget amendment request from Cascade Columbia Fisheries Enhancement Group on the Methow/Chewuch Shallow Groundwater Monitoring Project. The sponsor would like to conduct a pump-drawdown test in two or three locations to measure groundwater quantity and recharge on the Burns-Garrity property. Because excavation of the test pits will require the presence of an archeologist, the sponsor would like to move $1,000 from contract labor to professional services. After discussion, the Committee was unable to approve the scope change and budget amendment because the Committee needs more information on the pump rate (gpm). The Committee directed Tracy to seek additional information from the project sponsor.

Following the meeting, the project sponsor provided the following responses to the Committee’s questions:

Question: For clarification, your proposed drawdown test will cost about $800-$1,500, and the cost of the archeologist will add $1,000 more to the cost of the test for a total of $1,800-$2,500. Do we have that right?

Answer: “The total cost of the entire pump test will cost between $800-1500. If all goes well the archeologist will only be on site for 1-2 hrs and reporting will be minimal. I am asking for $1000 dollars to be moved to professional services, although I am anticipating it costing less than that. I want to make sure I have enough so I don’t have to bother all of you again. The other portion of the $1500 budget will be to hire a laborer from a local contractor who has the required equipment (pump, hoses, etc.). This portion of the budget is already in place under Contract Labor. WDFW is providing technical assistance as well as the backhoe and operator for free.”

Question: Back in May we moved all of the money out of the professional services category (since an archeologist was not needed) into the salaries and benefits and materials/equipment categories. Are you asking to move $1,000 back to professional services if the money’s available from elsewhere in the budget?

Answer: “Yes, that is correct. After inviting potential funders to the site, some concerns were voiced about groundwater productivity and it was suggested that we do a pit and or slug test to further investigate. This level of monitoring is not in the SOW, however I see it as a good low cost opportunity to quantify groundwater productivity and if positive move this project forward.”

Question: What pump rate (gpm) will be used to conduct the drawdown test?

Answer: “We are preparing to do two types of tests - slug and drawdown. The drawdown will involve two pumping rates to achieve a static drawdown level. Right now I am estimating 50 GPM and 100 GPM, but the actual rates will be determined by how strongly the water level draws down in response to pumping... In other words, if the aquifer is highly productive, we will pump at two higher rates and if productivity is low, we will pump at two lower rates.”

Question: Is the intent of this project to provide groundwater to activate relic channels, or to supplement channels that are currently active with surface water? If it is the former, it is probably not worth the effort or money to test 50 gpm as this is unlikely to result in any biological benefit, unless it is for plant growth. The 100 gpm may have value if it is supplemental to a channel that is active.

Answer: “The pumping rates are to create a staged drawdown. That will quantify shallow aquifer transmissivity. With the purpose of understanding the potential groundwater inflow to an improved channel. Intent is to improve a seasonally active groundwater fed channel to a perennially active
channel. The intent or development of this project could very well change based upon findings from the
pump test. This seems like a likely next step.”

Based on the responses from the project sponsor, the Wells Tributary Committee approved the scope
change and budget amendment. The Committee recommended that the drawdown test be conducted at a
pumping rate of no less than 100 gpm.

VI. Okanagan Project Tour

Tracy Hillman, with support from Chris Fisher, Tom Kahler, Steve Hays, and Jeremy Cram, provided a
briefing on their trip to the Okanagan River in Canada. The Okanagan Nation Alliance (ONA) conducted
the site tours. During the first day of the fieldtrip (9 October), members visited the lower portion of
Shuttleworth Creek. The lower portion of Shuttleworth Creek was designed to act as a sediment trap.
About every five-ten years, the Ministry of Environment removes the sediment from the channel. This
results in what looks like a bombing range. A rock dam located just upstream from the mouth of the
stream maintains the sediment trap. Restoration actions under consideration include removing the barrier,
reconfiguring the channel, and restoring riparian vegetation. Reconfiguration would result in a step-pool
sequence, which would allow the Ministry of Environment to clean annually the first few pools in the
sequence. Restoration would open about 31 km of tributary habitat. This stream is an important spawning
and rearing area for steelhead/rainbow. The Committees suggested that ONA also consider actions to
reduce sediment recruitment to the channel. In addition, in the future, the Committees would like to visit
the upper watershed.

Members then visited the Shuttleworth Creek diversion, which is located at Rkm 3.5. Surface water is
diverted through an unscreened intake into a 300-m long open ditch that feeds into Hody Lake. The water
is then piped to the Water Users’ Community (WUC) properties. The system significantly reduces stream
flows and habitat conditions in Shuttleworth Creek, and strands rainbow/steelhead in pools. The goal of
the restoration project is to transfer the WUC from surface water to groundwater, and decommission the
existing intake and diversion. The PRCC Habitat Subcommittee approved funding for the conversion to
groundwater. So far, ONA has completed the drilling of wells, tested the wells and completed part of the
irrigation pipeline. The remaining pipeline and irrigation system will be completed by late March 2014.

Following the site visit on Shuttleworth Creek, members visited the site of the new sockeye hatchery near
the mouth of Shingle Creek and the irrigation dam on Shingle Creek. The dam is located at Rkm 2.3 and
blocks access to 35.4 km of spawning and rearing habitat for steelhead and Chinook (once passage is
provided at Okanagan Falls Dam). The dam will be removed and a series of vortex weirs will be installed
to stabilize the channel and to create a series of riffles. Construction work is scheduled to begin during
summer 2014. Re-vegetation work will occur during autumn 2014.

On the second day (10 October), ONA discussed restoration options for the Penticton Channel (Okanagan
River upstream from Okanagan Falls Dam), which was channelized in the 1950s. About 100 meters of
spawning gravels were added to the channel in the mid-1970s. Kokanee spawn extensively in these
gravels. The ONA intends to add about four spawning gravel ramps to the Penticton Channel that will be
used by sockeye after passage is provided at Okanagan Falls Dam. Because of controlled flows, the
gravels should remain stable in the channel. ONA has completed hydraulic analyses for conceptual design
options and started pretreatment monitoring. They have also started working on engineering designs and
permits.

Member then visited the Okanagan River Restoration Initiative (ORRI) Project, which is located just
upstream from the Town of Oliver. The first phase of implementation, which is complete, was to rebuild
the setback dike in the lower portion of the project area. Members observed the completed side channel
and instream rock structures, and noted the gravel bar forming in the main channel upstream of the side
channels. They also visited the second phase of the project, which is the reconnection of a 300-m long
side channel with the main channel. This was accomplished by placing bottomless, concrete structures at
the upstream and downstream ends of the side channel. Members questioned the opening to the side channel, noting that the long rock barb extending upstream will likely be modified during spring flows. The intake may need period maintenance in order to keep the side channel connected at all flows.

Lastly, members visited Vertical Drop Structure (VDS) 13, which was modified by removing four V-shaped concrete components within the two middle bays of the structure. This should improve fish passage at the structure and enhance fish habitat (velocities and substrates) upstream from the structure. Large numbers of sockeye were spawning just upstream from VDS 13.ONA will monitor the effects of the modification on changes in slope, water velocities, water depths, and incubating sockeye eggs.

VII. Information Updates

The following information updates were provided during the meeting.

1. Approved Payment Requests in October and November:

Rock Island Plan Species Account:

- $688.96 to Chelan PUD for Rock Island Tributary Committee administration and coordination.
- $13,886.27 to Trout Unlimited – Washington Water Project for the Lower Wenatchee Instream Flow Project.
- $6,867.06 (Oct invoice) and $1,009.47 (Nov invoice) to Cascade Columbia Fisheries Enhancement Group for the Wenatchee Nutrient Assessment Project.
- $4,371.63 to Chelan County for the Nason Creek Upper White Pine Reconnection – PUD Powerline Reconnection Alternatives Analysis Project.

Rocky Reach Plan Species Account:

- $1,196.02 to Chelan PUD for Rocky Reach Tributary Committee administration and coordination.
- $947.56 (Oct invoice) and $2,007.20 (Nov invoice) to Trout Unlimited – Washington Water Project for the Chewuch River Instream Flow Project.
- $1,949.45 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project (for work in August).
- $18,908.03 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project (for work in September and October).

Wells Plan Species Account:

- $1,449.97 to Chelan PUD for Wells Tributary Committee administration and coordination.
- $1,949.45 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project (for work in August).
- $19,035.64 to the Methow Salmon Recovery Foundation for the Upper Beaver Habitat Improvement Channel Restoration Project (for work in September and October).
- $17,731.07 to Trout Unlimited – Washington Water Project for the Twisp River Well Conversion Project.
- $670.03 to Cascade Columbia Fisheries Enhancement Group for the Methow/Chewuch Shallow Groundwater Project.
$5,595.42 to the Methow Conservancy for the Lower Chewuch Beaver Restoration Project.

2. Becky Gallaher reported that Mike Kane, Chelan County Natural Resources Department, asked her if he could give a presentation on the Lower White Pine B+ Project to the Tributary Committees. Following discussion, members agreed that it is too early for a presentation. If the presentation is similar to the one they gave to the PRCC Habitat Subcommittee, it would not be worth the Committees’ time. The County needs to coordinate and communicate with the Railroad and Bonneville Power Administration (BPA) before they are ready to present to the Committees. For example, the County needs approval from BPA on a right-of-way. In addition, they need to find out if they can go through the railroad grade. Becky will share these concerns with Mike Kane.

3. Last month, the Rocky Reach Committee received an information request from the Okanogan Conservation District regarding the Similkameen RM 3.8 Habitat Design Project. The purpose of this project is to design and build a project that will reduce bank erosion and improve spawning and fry rearing habitat. As part of funding for this project, the Rocky Reach Committee required that the landowner establish a riparian buffer zone that would protect the restored bank from livestock. The sponsor asked the Committee to recommend a width for the required riparian buffer zone. In October, the Committee agreed that the buffer should be no less than 100 feet from the ordinary high-water mark.

4. Last month, the Wells Tributary Committee received a request from Trout Unlimited - Washington Water Project to extend the Twisp River Well Conversion Project contract. Because of a lack of available contractors, the onset of winter, and the fact that the irrigation system has been drained and will not be turned on until spring, the sponsor requested that the contract be extended from 31 October 2013 to 30 June 2014. This will give the sponsor time to complete the project when the system is turned on in the spring. In October, the Wells Committee approved the extension with no change in the budget. During the meeting, Tom Kahler noted that the extension may not be sufficient. The original well was in such close continuity with the river that it became apparent that the well was not deep enough even before the river flows approached base levels. Therefore, extending the contract until late June may not provide an opportunity to determine if the deepened well accomplishes the intended purpose.

5. Most members of the Committees attended the Upper Columbia Science Conference that was held in Wenatchee on 13-14 November. Members were pleased with the outcome of the conference and commented that, although it tended to be hatchery centric, it provided useful information that can be used in evaluating habitat restoration proposals. For example, the presentation by Tim Beechie on habitat restoration under a changing climate was informative and will help practitioners develop restoration actions to accommodate climate change. The Committees discussed other presentations that they found informative. Presentations can be found at the following site: http://www.ucscience.org/index.php?conference=2013conf&schedConf=2013conf&page=schedConf&op=presentations

VIII. Next Steps

If necessary, the next meeting of the Tributary Committees will be on Thursday, 12 December 2013 at Chelan PUD in Wenatchee.

Meeting notes submitted by Tracy Hillman (tracy.hillman@bioanalysts.net).