Please find attached a response from The Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) for Project # **2008-301-00**, *Habitat Restoration Planning, Design and Implementation within the boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon, lower Deschutes River, Oregon*.

This response is intended to address a condition placed on this project, for the Beaver Creek work area, as part of the Council decision made on February 7, 2012.

Following is a summary of the Council decision and condition placed on the three work areas. Please note that this decision was based on the three qualifications identified in the ISRP's last review (ISRP document 2011-27).

1. The CTWSRO will submit further detail as requested by the ISRP for each work area as detailed in the following.
   a) Beaver Creek: Upper Beaver, Coyote, and Quartz creeks enhancement will be made available for review during Spring/Summer 2012;
   b) Mill Creek: Potters Pond to Boulder Creek restoration available Spring/Summer 2012; and
   c) Warm Springs River: Large woody debris additions/placements available for review in late 2012/early 2013 or reviewed during the Geographical Review.

   Bonneville will include as part of contracting specific deliverable of the details for the three proposed project work areas that can be used as the basis to evaluate project merit and action effectiveness. In response to the ISRP request, at a minimum the deliverables will include site-specific detail defining baseline habitat condition; expected improved condition post implementation; a description of how restoration will contribute to improved parameters of focal species for each site; and a description of project evaluation criteria and monitoring to determine action effectiveness. Site-specific monitoring and results will be included in annual reporting requirements for the project. Implementation of the three work areas will be based on a favorable review by the ISRP.

2. The goal of this CTWSRO habitat project is to protect, manage, and restore aquatic habitats in Reservation watersheds, given the Council's understanding of the focus of this project, the Council expects adequate monitoring of physical aspects of restoration actions to detect whether the desired physical change is achieved. The Council understands the difficulty of detecting a fish population response at a local project scale. The Council therefore anticipates regional status and trend and watershed effectiveness programs, such as IMWs, to provide within the appropriate timeframe the evidence that these type of habitat restoration actions do contribute to improved fish condition and productivity.

3. The qualification raised by the ISRP is addressed in #2 above and in the work area submittal and review by the ISRP as addressed in #1.

Based on the ISRP review the Council **supports continued planning and design** associated with projects in Beaver Creek, Mill Creek and Warm Springs River. Implementation of the plans in Beaver Creek, Mill Creek and the Warm Springs are conditioned on favorable review from the ISRP.

The response received on October 26, 2012 is for the Mill Creek: Potters Pond to Boulder Creek restoration work area and included the following.

- A memorandum for the Mill Creek: Potters Pond to Boulder Creek restoration
- A hyperlink to the Mill Creek at Potter's Pond – Stream Enhancement Designs, Final Design Plans (link is also in memorandum)

If you have any questions please give me a call. Mark

THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

Branch of Natural Resources, Fisheries Department

M E M O R A N D U M

To: Rich Alldredge, Independent Science Review Panel Chairman

From: Scott Turo, Fisheries Habitat Manager
Jen Graham, Fisheries RM&E Manager

Date: October 23, 2012

Re: ISRP Review 2011-27 for BPA Project #2008-301-00 "Habitat Restoration Planning, Design and Implementation within the Boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon, Lower Deschutes River, Oregon"

Project Site Response: Mill Creek: Potters Pond to Boulder Creek restoration

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We would like to thank ISRP for their last review (2011-27) and comments. This response is specific to habitat restoration to be completed from Potter's Pond downstream to Boulder Creek in Mill Creek. Since our last submission, planning and project design has continued per the Council recommendation. The project design can be found at: https://pisces.bpa.gov/release/documents/DocumentViewer.aspx?doc=P126981.

Introduction:

Potter's Pond, built in the 1940s, is located on the edge of the commercial forest in Mill Creek (rkm 9.7 – 12.1; Figure 1)[1] and was historically used as log storage for a mill. Lateral berms were created bisecting the active floodplain to block stream flow, and storage ponds were created behind the lateral berms, which were tied into the edges of the active floodplain at the edge of the high terraces. Water levels were manipulated to maintain a level for suitable log storage. Remaining stream flow was routed around the ponds, in a ditch, and reconnected downstream of the pond. Passage of returning adult salmonids was effectively blocked by these operations. In December 1980, high flows caused the earthen dams to breach.

[1] More about Potter's Pond, Mill Creek watershed, including fishes and limiting factors information, narrative of how funds will be used, etc. can be found on pp 22 – 28 of the project narrative submitted on December 22, 2011.

Figure 1. Historic photo of Potter's Pond, Mill Creek, lower Deschutes River Subbasin, Oregon, July 20, 1966.

Previous attempts have been made to improve habitat at Potter's Pond; however, other than maintenance of riparian fences no further restoration work has been done at since the late 1980s. Restoration activities are a priority from Potter's Pond downstream to Boulder Creek because of the past anthropogenic disturbances. Upstream and downstream of the restoration site, there appears to be ample suitable rearing and spawning habitat. The improvements to Potter's Pond focus on limiting factors that are in agreement with regional and local planning documents including the Columbia River Basin Fish Accords, The Deschutes River Subbasin Plan (NWPCC 2003), NWPCC Fish and Wildlife Program (NWPCC 2009), Mid Columbia River Steelhead Recovery Plan (Carmichael *et al.* 2008), and the CTWSRO IRMPs (CTWSRO 1992*a*; CTWSRO 1992*b*)[2].

Existing and Expected Site Conditions:

Currently Potter's Pond lacks instream hydraulic complexity, floodplain connectivity, velocity and thermal refugia, and riparian cover and most importantly habitat complexity including spawning size substrates and abundant rearing habitat. The existing berms and gabions installed during previous habitat improvement are eroding banks and increasing sediment delivery to the channel. Restoration activities are expected to result in an increase of nearly 1,300 logs, mostly in log jams, three times the pools, a 6% increase in length of the main channel, over four times the total length of side channels, an increase of spawning gravel by a factor of 16, six times the area of ponds and alcoves, and a 42% increase in floodplain area based on a 5-year flood event. Table 1, Figure 2, and Figure 3 are a snapshot of the existing condition and expected outcome of restoration activities at the project site.

[2] For full descriptions see Section C (Rational and significance to regional programs) pp. 10 - 14 of the narrative submitted to ISRP on December 22, 2011.

Table 1. Estimated benefits from restoration activities in Potter's Pond, lower Deschutes River Subbasin, Oregon.

Habitat Element	Existing	Proposed	Increase
Pieces of instream large wood including side channels (> 15 cm DBH and 6.1 m in length)	7	1,272	1,265
Total number of pools (main channel)	10	34	24
Stream length (m) (main channel)	1,494	1,585	91
Total length of side channel (m)	160	869	709
Estimate of total spawning habitat available (m^2, main channel)	1,013	17,651	16,638
Acres of Pond and/or Alcove (ha)	0.1	0.6	0.6
Available Floodplain (ha) calculated at a 5 yr event.	7.8	11.1	3.3

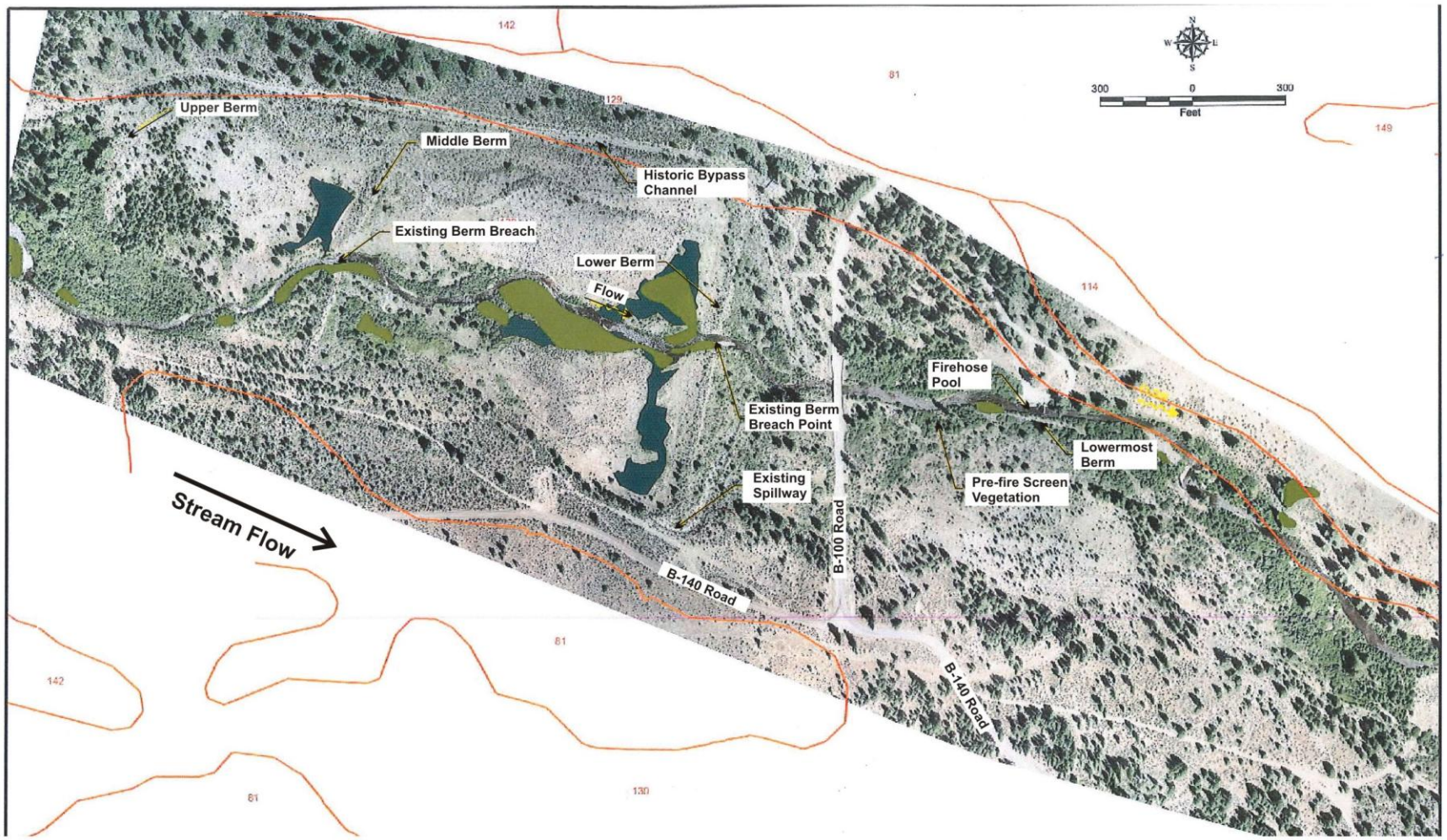

Figure 2. Pre-restoration condition of Potter's Pond area (rkm 9.7 – 11) of Mill Creek, lower Deschutes River Subbasin, Oregon.

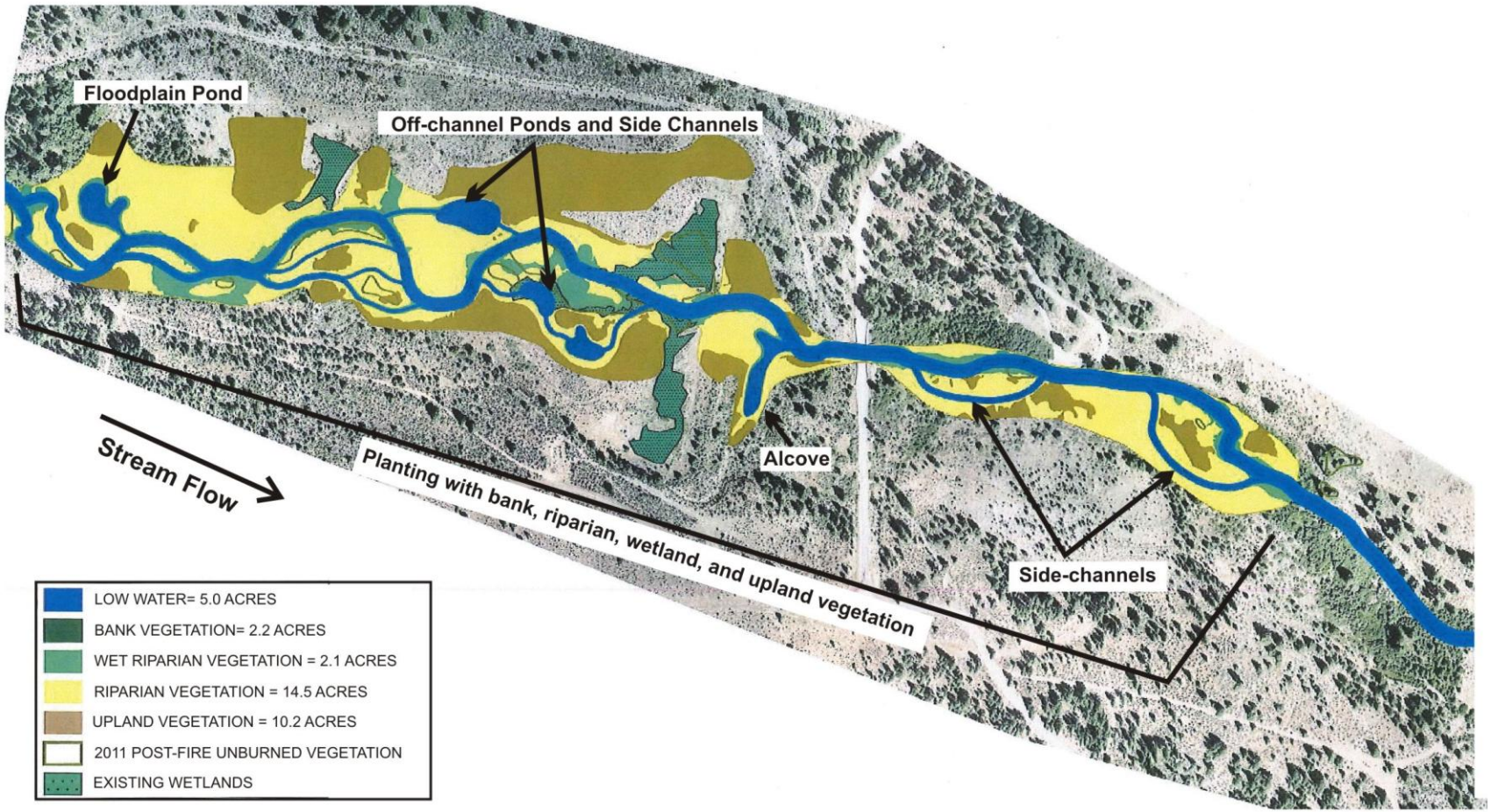

Figure 3. Post-restoration project concept of Potter's Pond area (rkm 9.7 – 11) of Mill Creek, lower Deschutes River Subbasin, Oregon.

Significance for Fishes:
Anticipated improvements for target species and other native fishes

- Velocity refugia
- Thermal refugia
- Improved spawning, foraging, holding and rearing habitat

Monitoring by BPA project 2008-311-00[3] & Significance
The BPA funded Project #2008-311-00 (based on ISRP review [ISRP document 2010-20] and recommended by the Council on March 7, 2012) conducts annual spring Chinook and steelhead population status and trend monitoring, including three reaches in Mill Creek (Figure 4). These reaches are: 1) mouth of Mill Creek to mouth of Boulder Creek (rkm 0 to 7.4); 2) Boulder Creek to Potter's Pond (B-100 road crossing, rkm 7.4 to 10.3; and, 3) Potter's Pond to Old Mill (rkm 10.3 to 17.9).

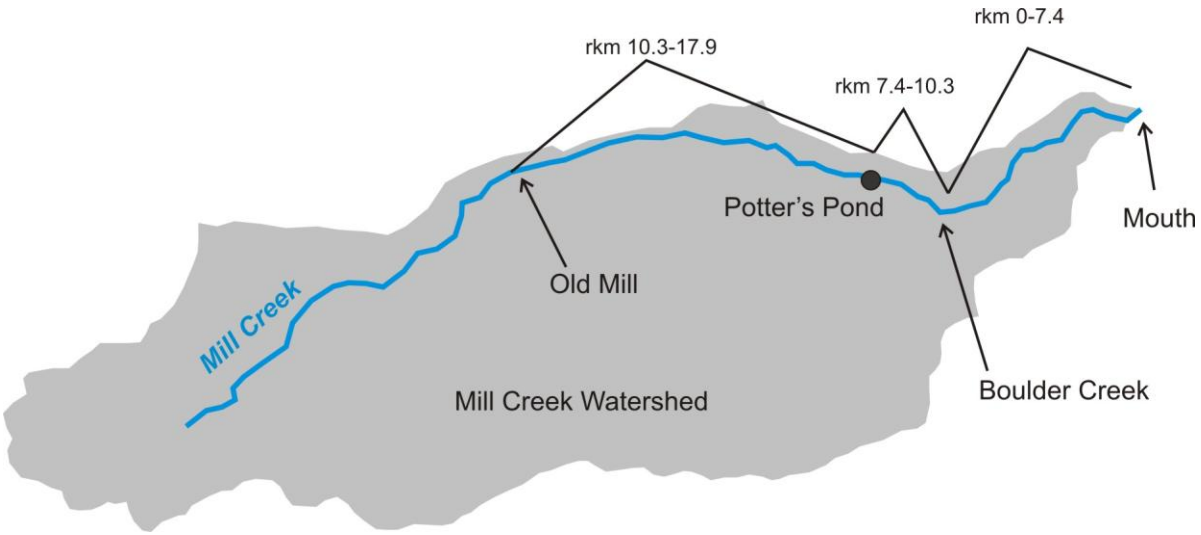

Figure 4. Monitoring reaches in Mill Creek, lower Deschutes River Subbasin, Oregon.

Juvenile spring Chinook and steelhead density surveys are conducted yearly, during summer, in standard index reaches, so comparisons can be made among reaches within streams, among streams, and years. Index reaches in Mill Creek tend to have relatively high densities of spring Chinook compared to other streams (Table 2). From 2006 – 2009, juvenile steelhead densities were highest in Mill Creek in 2007 when compared with other Reservation streams, in the other years, they were within 50 to 84% of the highest value (Table 3).

[3] Project 2008-301-00 "Monitoring wild populations of spring Chinook salmon (*Onchorhynchus tshawytscha*) and summer steelhead (*O. mykiss*) in tributaries of the lower Deschutes River with the boundaries of the Confederated Tribes of the Warm Springs Reservation of Oregon Reservation" lists this project as being related and will assist with biologically monitoring as appropriate (p. 13). Link to project narrative https://pisces.bpa.gov/release/documents/DocumentViewer.aspx?doc=P123837&session=c699a137-6768-4342-8915-af15804dfa44 redd count RM&E methods pp. 19 – 26 and juvenile density RM&E methods pp. 28 – 39.

Table 2. Average densities of juvenile Chinook salmon (fish / 100 m2) in streams on the Warm Springs Reservation, lower Deschutes River Subbasin, Oregon, 2006 – 2009 (shaded values indicate highest densities).

Stream	2006	2007	2008	2009
Shitike Cr.	2.9	10.8	17.0	19.2
Mill Cr.	11.7	34.8	13.1	22.4
Beaver Cr.	2.2	26.1	3.6	13.0
Warm Springs R.	0.4	14.4	1.3	2.6

Table 3. Average densities of juvenile *O. mykiss* (under 200 mm, fish / 100 m2) in streams on the Warm Springs Reservation, lower Deschutes River Subbasin, Oregon, 2006 – 2009 (shaded values indicate highest densities).

Stream	2006	2007	2008	2009
Shitike Cr.	19.38	13.35	12.71	11.91
Mill Cr.	16.34	22.63	6.50	9.28
Beaver Cr.	5.64	11.64	6.72	14.49
Warm Springs R.	1.99	2.31	1.53	1.91

These data suggest that Mill Creek is relatively productive for rearing juvenile spring Chinook and steelhead. With spawning gravel additions and multiple improvements to habitat features beneficial to rearing juveniles (*e.g.*, log jams, pools, side-channels, floodplain velocity refuge during high-flow events; Table 2), we expect an increase in juvenile densities after restoration activities are completed.

Spawning surveys include spring Chinook and steelhead redd counts in the upper two reaches (Boulder Creek-Potter's Pond; Potter's Pond to Old Mill). The lower reach is characterized by increased gradient from the middle reach in which the channel is constrained by a canyon and substrate is dominated by boulders and large cobble with patchy spawning gravel. Between 1998 and 2010, spring Chinook redd counts conducted in early fall in index reaches of Mill Creek ranged from two to 120 redds (average 26/yr, Figure 5), which was between one and eight percent of the total redds in the Warm Springs River drainage (average 16%). Steelhead redd counts, conducted in spring in index reaches of Mill Creek, ranged from zero to 22 redds (average 9/yr, Figure 5), which was between zero to 46 percent of the total redds in the Warm Springs River drainage (average 19%).

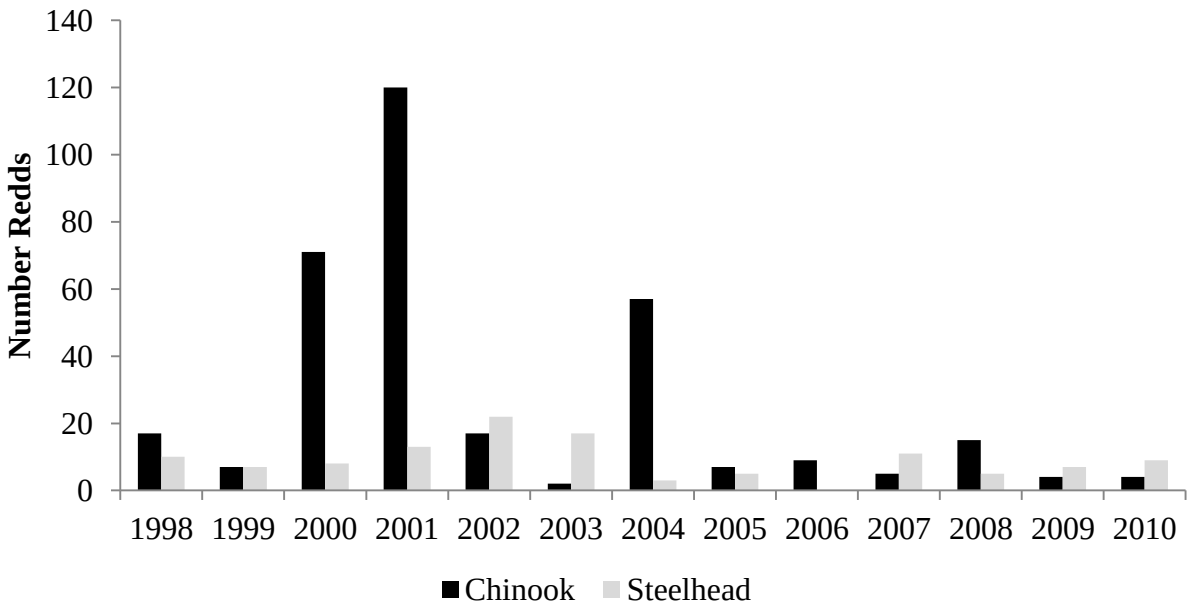

Figure 5. Spring Chinook and steelhead redd counts in the upper two reaches of Mill Creek, lower Deschutes River, Oregon, 1998 to 2010.

Comparing redd counts for the years that juvenile densities are shown (Table 2), spring Chinook redds in Mill Creek represented between four to 14% of the total in the Warm Springs River drainage, yet juvenile rearing densities were highest in 75% of the surveys. Similarly, steelhead redds represented from 0 to 22% of the total in the Warm Springs River drainage between 2006 and 2009, and juvenile densities in Mill Creek during this period were at least within 50% of the highest values (Table 3). The restoration at Potter's Pond will provide greater spawning and rearing habitat in 7.3% of the spawning and rearing distribution in Mill Creek (1.3 km/17.9). It is likely we will observe an increase in juvenile densities after the restoration activities; however, yearly monitoring was not designed to show a fish response to the restoration activity.

Monitoring:
Physical monitoring will be conducted to document spatial and temporal changes of the restoration site. Monitoring parameters will include channel cross-section, longitudinal profiles, photo points, and McNeil core samples as described in the project narrative to track the quality of the spawning habitat. Standardized methods will be used. The CTWSRO is engaged and aware of ongoing efforts to further standardize methods through regional efforts such as ChAMP and ISEMP with direct participation in PNAMP's http://www.monitoringmethods.org through partnership with BPA.

Biological monitoring is beyond the scope of this project. However, projects funded by the Columbia River Accords, for spring Chinook, steelhead, bull trout and Pacific lamprey, research and monitoring, within the boundaries of the CTWSRO will be complimentary to the habitat work being completed. Specifically, the spring Chinook and steelhead natural production monitoring project (BPA Project #2008-311-00) will be used to monitoring trends of "fish-in" "fish-out" of the Warm Springs River and Shitike Creek through juvenile outmigration monitoring and adult escapement. Linking fish response to a site-specific habitat project is extremely difficult and requires a sample design that takes into account a number of variables

(*e.g.*, temporal and spatial replication), which are cost prohibitive and logistically impossible. However, CTWSRO is engaged with effectiveness monitoring programs (*e.g.*, Middle Fork John Day IMW) and anticipate that the outcome of these types of activities will allow a benefit to be quantified biologically.

Costs:

Following is a rough breakdown (by percentage) of how costs will be distributed amongst funders (BPA and "other") from planning to physical effectiveness monitoring (Table 4). Planning, administration, and design are currently underway with funds secured through BPA, Bureau of Indian Affairs (BIA), and Pacific Coastal Salmon Recovery Fund (PCSRF). We are continuing to secure funds for implementation to begin summer 2014.

Table 4. Project Planning and administration, design, implementation, and monitoring costs by approximate percentage by funding source (BPA and "Other") for Potter's Pond, Mill Creek, lower Deschutes River Subbasin, Oregon.

Project Stage	BPA	Other*
Planning and Administration	100%	0%
Design	20%	80%
Implementation**	25%	75%
Physical Effectiveness Monitoring	100%	0%

*not all funding secured – potential funding sources (*e.g.*, PCSRF, BPA, Portland General Electric/CTWSRO, Oregon Watershed Enhancement Board)

**Total implementation costs are estimated at $950,000 to complete construction, revegetation and protection fencing.

Literature Cited:

Carmichael, R., and Taylor, B. 2008. Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment.

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CTWSRO and BIA. 1992b. Integrated Resources Management Plan for the Non-forested and Rural Areas (IRMP II). Confederated Tribes of the Warm Springs Reservation of Oregon Bureau of Indian Affairs, Warm Springs, Oregon.

Northwest Power and Conservation Council (NWPCC). 2003. Deschutes Subbasin Plan.

Northwest Power and Conservation Council (NWPCC). 2009. Columbia Basin Fish and Wildlife Program 2009 Amendments.