MEMORANDUM

Department of Fish and Wildlife

Date: September 18, 2014
To: Oregon Fish and Wildlife Commission

From: Mike Gray, District Fish Biologist, Charleston Field Office
Greg Apke, Statewide Fish Passage Program Coordinator, Salem HQ

Subject: Coos Bay North Bend Water Board's Request for:

1. **Alternative Mitigation for Supplemental Flow Requirement from UPCD Fish Passage Waiver MOU (1999/amended 2004);**
2. **Application for Fish Passage Waiver at LPCD (New).**

Introduction

The Coos Bay-North Bend Water Board (WB) provides the water supply for the cities of Coos Bay and North Bend, and outlying areas. They operate two dams: Upper Pony Creek Dam (UPCD) and Lower Pony Creek Dam (LPCD; a.k.a. Merritt Dam), for storage of water and release to the municipal water supply. LPCD has been in operation since the 1920's, and was re-built in 1988. The re-build in 1988 was allowed by the State of Oregon (Governor Atiyeh) without providing fish passage. Passage into the basin above LPCD has essentially been blocked since the 1920's. UPCD has been in place since 1951, and was expanded in height/storage capacity in 2001. An MOU between the WB and the Oregon Fish & Wildlife Commission (Commission) in 1999 outlined mitigation required of the WB with regard to waiving fish passage requirements and mitigating for habitat impacts in the expanded Upper Pony Creek Reservoir.

At the time of the development of the UPCD dam expansion project and the MOU with the Commission, fish passage waiver rules required mitigation to be "in-place", meaning in the Pony Creek watershed. This was a challenge for the WB and ODFW biologists to establish meaningful mitigation, due to the urbanized condition of the lower watershed. Flow releases were established, requiring the WB to release a Continuous, year-round flow of 1.0 CFS below LPCD and Supplemental Flows ranging from 1.0 to 3.0 CFS (depending on the month) from November through May, in addition to the Continuous release. Subsequently, mitigation rules have changed, allowing for "in-proximity" mitigation that benefits the same species affected, but within the same population area. This allows mitigation elsewhere in the Coos Basin, and not restricted to the Pony Creek watershed (Figure 1).

The lower Pony Creek watershed below LPCD is highly urbanized/residential and provides only marginal habitat for a small population of Coastal Cutthroat Trout. Although they were potentially present in the basin historically, prior to the installation of the dams, Coho Salmon and winter steelhead are not currently present, and attempts by the Oregon Department of Fish and Wildlife (ODFW) through the Salmon Trout Enhancement Program (STEP) to re-establish these species have been unsuccessful. Conversely, an alternate site for mitigation in the Catching Slough subbasin, namely the Matson Creek drainage, has great potential for restoration of former ditched/drained agricultural lands back to naturally-functioning stream/wetland habitat conditions, and greater benefits to multiple native fish species.

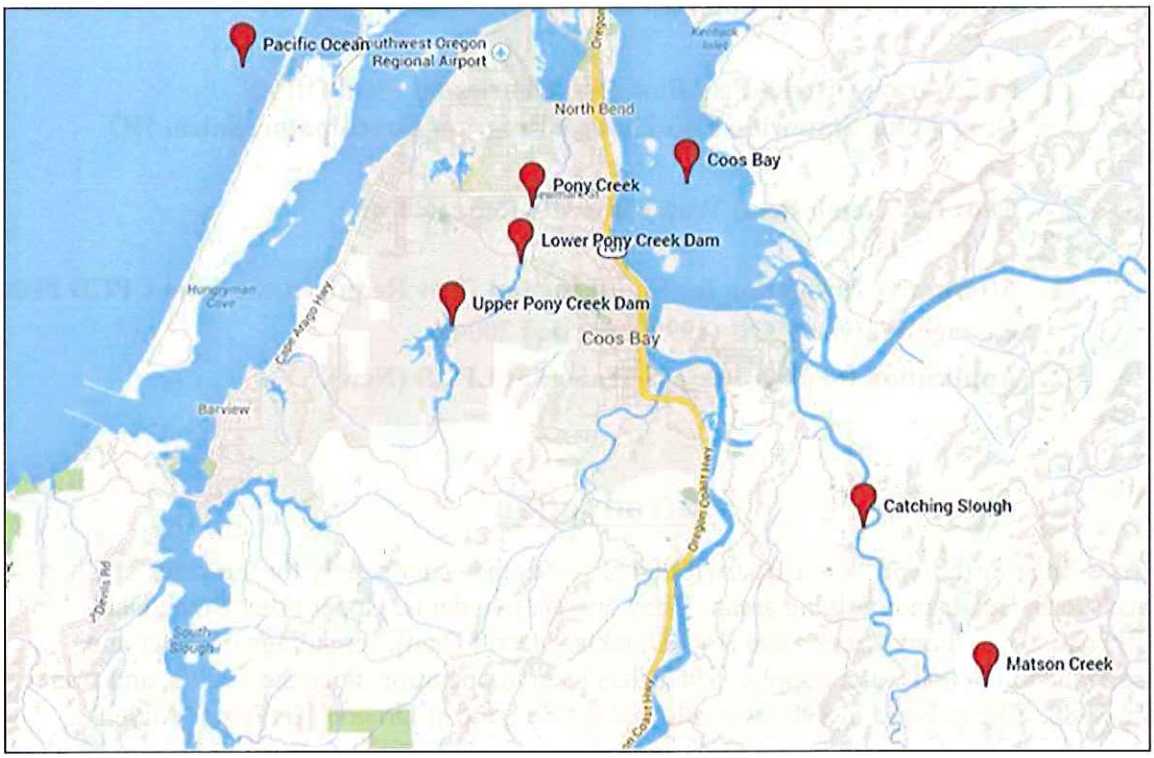

Figure 1. Project location map for Pony Creek and Matson Creek watersheds.

Although the WB received approval from Governor Atiyeh to re-build the LPCD in 1988 without fish passage, there has never been a formal fish passage waiver for this structure. The WB anticipates that spillway and seismic upgrades to the dam will be necessary sometime in the next 5-7 years. These construction activities will invoke the state's fish passage policy and will trigger the need to address fish passage (provide passage or seek a passage waiver). The WB requests a new fish passage waiver with mitigation at this time, in advance of the future trigger event at LPCD.

The WB's proposed mitigation plans for UPCD and LPCD have the potential to greatly improve the net benefit to multiple native migratory fish species in the Coos Basin, while lengthening the life span of the municipal water supply system and allowing an additional 55 days of municipal water during drought years.

Commission Actions Requested by WB:

ACTION #1--Upper Pony Creek Dam Fish Passage Waiver/MOU— Amendment of Mitigation; This action would amend the current mitigation requirement for the WB to release Supplemental Flows at LPCD to maintain flows as measured at a point just downstream of the confluence of Pony Creek and the AAA Fork. These Supplemental Flows are: 1 CFS in November, 2 CFS in December, 3 CFS in January, 3 CFS in February, 2 CFS in March, 1 CFS in April, and 1 CFS in May. The supplemental flow releases are in addition to the 1 CFS Continuous Flow to be released year-round.

- Sub-action (a): Concurrent with the alternative mitigation for UPCD, the WB is proposing to change the measuring point for the ongoing Continuous release to the release point at the outlet of LPCD, rather than the MOU-stipulated measurement point just downstream of the Pony Creek-AAA Fork confluence (a distance of approx. 300 ft. downstream of LPCD).
- Sub-action (b) (ODFW): Additionally, this action would eliminate the need for ODFW to continue pursuing a water right to transfer water from Joe Ney Reservoir to UPCD Reservoir to maintain the Supplemental Flow Release below LPCD.

ACTION #2--Lower Pony Creek Dam Fish Passage Waiver (Merritt Dam)— New Passage Waiver; This action would establish a new fish passage waiver where none has previously existed for the Lower Pony Creek Dam. The WB requests this waiver pre-emptively, anticipating seismic and spillway upgrades to the dam in the near future.

Proposed Fish Passage Mitigation Actions

Upper Pony Creek Dam Fish Passage Waiver/MOU—Amendment of Mitigation

A more detailed description of the proposed mitigation alternatives proposed by the WB in lieu of providing the supplemental flows in Pony Creek can be found in the WB's request for Amendment of the MOU for fish passage at UPCD. Table 1 provides a summary of the mitigation actions to effectively compensate for these flow releases. Anticipated benefits include:

- Restoration of functional fish habitat for multiple native migratory fish species, as opposed to one species and marginal habitat at lower Pony Creek;
- Increased stream mileage, floodplain interaction, and habitat complexity in restored reaches at South Arm of Matson Creek, compared to existing channelized/ditched streams;
- Conservation assurance through perpetual easement at Matson Creek, vs. continued urbanization trend at Pony Creek with associated habitat degradation;
- Connectivity with complementary restoration actions already accomplished by WB in Matson Creek basin;
- Elimination of the need to transfer water from Joe Ney Basin to Pony Cr. Basin to accomplish Supplemental Flow releases.

Lower Pony Creek Dam Fish Passage Waiver--New

A more detailed description of the proposed mitigation alternatives proposed by the WB in lieu of providing passage at LPCD can be found in the WB's Fish Passage Waiver Application. Table 1 provides a summary of the mitigation actions to compensate for the lack of providing passage at LPCD. Anticipated benefits include:

- Restoration of functional fish habitat for multiple native migratory fish species, as opposed to one species and marginal habitat between LPCD and UPCD;
- Habitat complexity and floodplain interaction in restored reaches at Matson Creek, compared to existing channelized/ditched streams;
- Conservation assurance through perpetual easement at Matson Creek, vs. continued urbanization trend at Pony Creek with associated habitat degradation;
- Connectivity with complementary restoration actions already accomplished by WB in Matson Creek basin;

Table 1. Summary of the Fish Passage Waiver mitigation actions requested by the Coos Bay-North Bend Water Board.

Fish Passage Waiver Mitigation Requests from Coos Bay-North Bend Water Board			
Action Requested--Current Site	**Distance Affected**	**Proposed Mitigation--Mitigation Sites**	**Distance Affected**
UPPER PONY CREEK DAM MITIGATION--Amend Existing Mitigation			
Amend existing fish passage waiver mitigation for UPCD requiring Supplemental Flows in Nov. through May;	5,209 ft. (0.99 mi.) of marginal quality, cutthroat-only fish habitat.	Matson Creek South Arm--restore channelized stream by re-meandering, adding large wood, creating floodplain interaction, and planting native riparian vegetation.	5,708 ft. (1.08 mi.) of fully functional, multi-species fish habitat.
Sub-action a.--Amend point of measurement from just below AAA Fork confluence with Pony Cr., to the release outlet at Merritt Dam (LPCD).		(on-site at Pony Creek)	--
Sub-action b.--Amend (discontinue) ODFW's pursuit of a water right to transfer water from Joe Ney Reservoir to UPCD Reservoir to maintain the Supplemental Flows.			
LOWER PONY CREEK DAM MITIGATION--New Fish Psg. Waiver			
New fish passage waiver for anticipated spillway replacement and seismic upgrade at existing Merritt Dam (LPCD).	6,500 ft. (1.23 mi.) in Merritt Reservoir; cutthroat only.	Matson Creek North Arm--restore channelized stream by re-meandering, adding large wood, creating floodplain interaction, and planting native riparian vegetation.	3,706 ft. (0.7 mi.) of fully functional, multi-species fish habitat.

Existing Baseline Site Conditions

Lower Pony Creek- Waiver Site

This section of Pony Creek is affected by Action #1, elimination of winter/spring supplemental flow releases. The lower Pony Creek watershed below LPCD is highly urbanized/residential (Figures 2 and 3) and provides only marginal habitat for a small population of Coastal Cutthroat Trout. Photos beginning on page 13 at the end of this document show the urbanized, highly – impacted character of the lower Pony Creek watershed. Although they were potentially present in the basin historically, prior to the installation of the dams, Coho Salmon and winter steelhead populations have not been present in surveys of the last 20 years, and attempts by the ODFW STEP Program to re-establish these species during that period have been unsuccessful. Conversely, an alternate site for mitigation in the Catching Slough subbasin, namely the Matson Creek drainage, has great potential for restoration of former ditched/drained agricultural lands back to naturally-functioning stream/wetland habitat conditions.

Native Migratory Fish Species present in Pony Creek watershed are coastal Cutthroat Trout.

Figure 2. Aerial view of lower Pony Creek section affected by flow releases from LPCD. *Note that the "Ocean Blvd." and "Newmark Ave." labels are reversed on the photo.*

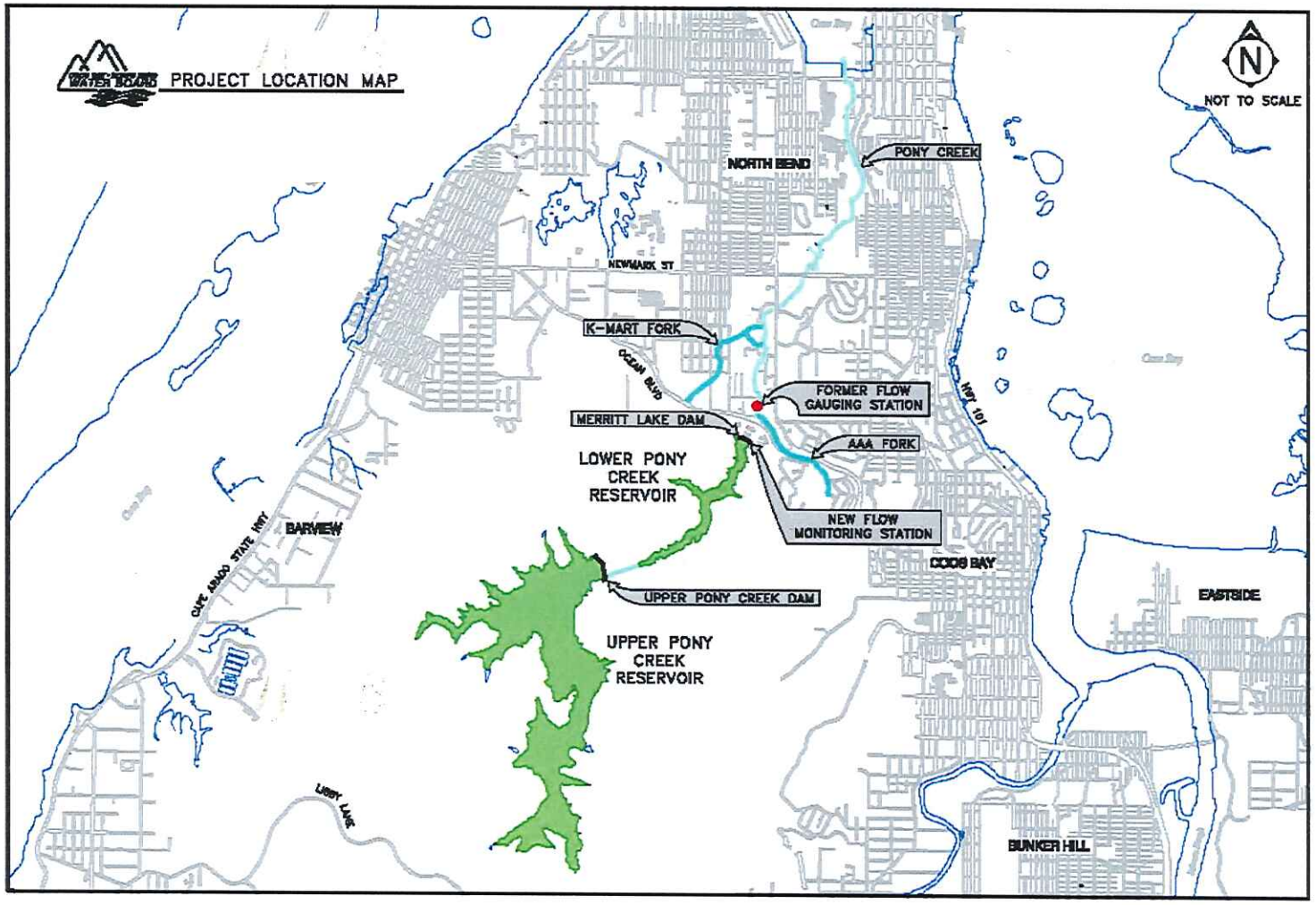

Figure 3. Schematic map of Pony Creek watershed showing pertinent landmarks associated with Water Board's requested actions.

Although a few reaches of greenbelt and wooded riparian area exist, lower Pony Creek contains little large wood, limited stream complexity, and low potential for gravel recruitment. Aquatic Habitat Inventory (AHI) surveys for lower Pony Creek and Matson Creek have been conducted by ODFW staff, Coos Watershed staff, and Sol Coast (a consultant hired by the WB) staff, all trained in using ODFW AHI protocol. In general, most reaches of both Pony Creek and Matson Creek have low wood volume and number of key pieces per 100m of stream, as compared to AHI benchmarks (Tables 2 and 3). Substrate composition is predominantly sands and silts in both systems, although Matson Creek has reaches with a moderate level of gravel (Table 4).

Table 2. Large wood per 100 meters of stream based on the AHI surveys.

Stream	Reach	# of Pieces	Wood Volume (m^3)	# of Key Pieces
Pony Creek	1	3.4	0.5	0
	2	2.4	0.3	0
	3	7.4	0.9	0
	4	2.8	0.2	0
	5	10.2	3.1	0.2
Matson Creek Mainstem (South Arm)	1	5.7	5	0.2
	2	10.9	8.3	0
	3	8.5	30.4	2.1
Matson Creek Tributary #3 (South Arm)	1	3.8	6	0.3
	2	6.2	10.2	0
Matson Creek North Arm	1	2.3	4.9	0.5
	2	11.9	5.1	0
	3	7.6	7.5	0

Table 3. ODFW Aquatic Inventory and Analysis Project: Habitat Benchmarks.

	UNDESIRABLE	DESIRABLE
POOLS		
POOL AREA (% Total Stream Area)	<10	>35
POOL FREQUENCY (Channel Widths Between Pools)	>20	5-8
RESIDUAL POOL DEPTH (m)		
SMALL STREAMS (<7m width)	<0.2	>0.5
MEDIUM STREAMS (≥ 7m and < 15m width)		
LOW GRADIENT (slope <3%)	<0.3	>0.6
HIGH GRADIENT (slope >3%)	<0.5	>1.0
LARGE STREAMS (≥15m width)	<0.8	>1.5
COMPLEX POOLS (Pools w/ LWD pieces ≥3) / km	<1.0	>2.5
RIFFLES		
WIDTH / DEPTH RATIO (Active Channel Based)		
EAST SIDE	>30	<10
WEST SIDE	>30	<15
GRAVEL (% AREA)	<15	≥35
SILT-SAND-ORGANICS (% AREA)		
VOLCANIC PARENT MATERIAL	>15	<8
SEDIMENTARY PARENT MATERIAL	>20	<10
CHANNEL GRADIENT <1.5%	>25	<12
SHADE (Reach Average, Percent)		
STREAM WIDTH <12 meters		
WEST SIDE	<60	>70
NORTHEAST	<50	>60
CENTRAL - SOUTHEAST	<40	>50
STREAM WIDTH >12 meters		
WEST SIDE	<50	>60
NORTHEAST	<40	>50
CENTRAL - SOUTHEAST	<30	>40
LARGE WOODY DEBRIS* (15cm x 3m minimum piece size)		
PIECES / 100 m STREAM LENGTH	<10	>20
VOLUME / 100 m STREAM LENGTH	<20	>30
"KEY" PIECES (>60cm dia. & ≥10m long)/100m	<1	>3
RIPARIAN CONIFERS (30m FROM BOTH SIDES CHANNEL)		
NUMBER >20in dbh/ 1000ft STREAM LENGTH	<150	>300
NUMBER >35in dbh/ 1000ft STREAM LENGTH	<75	>200

*Values for Streams in Forested Basins

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Table 4. Substrate composition per stream reach.

Survey name	Reach	% Silt/Organics	% Sand	% Gravel	% Cobble	% Boulders	% Bedrock
Pony Creek	1	9	74	16	1	0	0
	2	8	78	8	7	0	0
	3	10	88	3	0	0	0
	4	9	90	1	0	0	0
	5	11	86	2	1	0	0
Matson Creek Mainstem (South Arm)	1	46	29	19	2	0	4
	2	24	38	29	9	0	0
	3	13	23	28	9	0	28
Matson Creek Tributary #3 (South Arm)	1	56	26	9	0	0	10
	2	52	40	8	0	0	0
Matson Creek North Arm	1	60	37	3	0	0	0
	2	44	41	16	0	0	0
	3	10	10	25	5	0	50

In Pony Creek, as is typical for small watersheds in close proximity to the Pacific Ocean in the Oregon south coast, the sandstone geology produces a preponderance of sand and silt, with limited quantities of small pea-sized gravels. This substrate type is used by Cutthroat Trout, but is not conducive to significant production by larger anadromous fish (e.g. Coho Salmon or winter steelhead). Limited spawning gravels, impaired water quality (DEQ 303d listed for Temperature, Fecal Coliform, and *E. coli*), and lack of stream habitat complexity limit the potential for Cutthroat production to minimal levels, with no expectation that this will improve significantly in the future.

Urban/Residential development in the lower watershed encroaches on the stream in major portions of reach. Buildings and parking surfaces have been located within riparian areas, removing stream cover and buffer benefits of riparian vegetation. Impervious surfaces such as parking lots, building roofs, and streets contribute chemical runoff to the stream, and contribute quickly to the streamflow during rainfall events. The Biological Assessment for the Upper Pony Creek Expansion Project (USACE 1998) noted that the extent of impervious surfaces produced enough runoff to support the minimal fish population present, and that there was minimal spawning habitat available due to limited quantities of pea-sized gravel. The AAA Fork flow contribution was noted as being perennial. The existence of the two Pony Creek dams upstream precludes the recruitment of gravel to lower Pony Creek. A community-driven "Lower Pony Creek Watershed Assessment" was undertaken in 2000-01 to address flooding issues in the area just above Newmark Avenue (LPCWC 2001). The assessment identified the geology of this basin as primarily sandy loams and clay formed by sedimentary marine terraces. They also identified summer water temperatures "stressful" to fish and aquatic life. ODFW Aquatic Inventory surveys completed for the assessment identified areas of "orange slime, oil in the water, and petrol odors, likely associated with residential and commercial development, and collection/transport from impermeable surfaces such as roads, parking lots, and building roofs."

The AHI surveys also noted that stream substrate was dominated by silt, organics, and sand (77 to 90%+) with extremely limited quantities of sandstone-based gravels. Gravel composition and size in lower Pony Creek is typical of many near-coast tributaries in Coos County, having limited use by larger (non-Cutthroat) anadromous salmonids. The only area they noted with gravels suitable for larger anadromous fish were those gravels placed by the Water Board for mitigation.

Riparian vegetation was primarily perennials and shrubs below the K-Mart Fork, with small conifers and hardwoods upstream of this point. Wood volume was low, in the range of 0.2 to 2.2 m^3 per 100 m of stream. The WB placed LWD for mitigation in the basin, most of which remain, however three LWD placements in the AAA Fork had to be removed due to a change of mind by the cooperating landowner. The effectiveness of other mitigation completed by the WB has been thwarted or negated by commercial/residential encroachment on the stream or riparian area of lower Pony Creek.

As shown in Tables 2 and 4, Lower Pony Creek is lacking large wood, is dominated by silt and sand, and largely lacks stream gravels. These degraded stream habitat conditions are unlikely to improve given the development trend in this urbanized area.

Matson Creek Arms – Proposed Mitigation Sites

Matson Creek is a tributary system to Catching Slough, an arm of Coos Bay east of the city of Coos Bay. The proposed mitigation sites are approximately seven miles southeast of the two Pony Creek Dams. The lower basin is the site of a former dairy farm, purchased by the WB to provide mitigation for the UPCD Expansion Project, transferred to ownership of the Wetlands Conservancy, and secured under a perpetual conservation easement (Figure 4). For the UPCD Expansion Project, the WB was required to develop mitigation for both the fish passage waiver and for wetland/habitat impacts in the UPCD Reservoir with the expanded inundation levels. The WB completed wetland mitigation requirements by removing tide gates and replacing culverts with a new bridge structure at the mouth of Matson Creek, where it crosses under Catching Slough Road. This allowed for increased tidal action into the former dairy's meadow/pasture area, restoring it to historic salt marsh, and provided unimpeded fish passage. Above that tidal wetland mitigation area, Matson Creek splits into two arms: the North Arm, and the Mainstem (South) Arm. The North Arm would be the subject of mitigation for the LPCD new fish passage waiver. The South Arm would be the subject of mitigation for the UPCD action to eliminate Supplemental Flow releases (Fig. 4). Typical of low gradient bottomland that has been converted to agricultural land (pasture or hay ground) in this area, streams that formerly meandered across the land were channelized and straightened into more of a ditch. In order to keep water moving out of the pastures, complexity (wood and vegetation) was historically removed from the channel. In the case of the upper South Arm, the stream was channelized to both sides of the valley (Figure 5).

As shown in Tables 2 and 4, the existing channels at Matson Creek are lacking in large wood, dominated by silt and sand , and generally lacking in gravels in their current state. The upper reaches do show a higher percentage of gravel, a factor that would be beneficial if gravel-capturing structures are placed in the low-gradient mitigation reaches.

Native Migratory Fish Species present in Matson Creek that will benefit from the proposed mitigation activities include:

- coastal Cutthroat Trout—spawning, rearing, residence;
- Coho Salmon—spawning, rearing;
- Chinook Salmon—primarily juvenile rearing;
- Chum Salmon—spawning, early rearing;
- winter steelhead—spawning, rearing;
- Pacific Lamprey;
- Western Brook Lamprey.

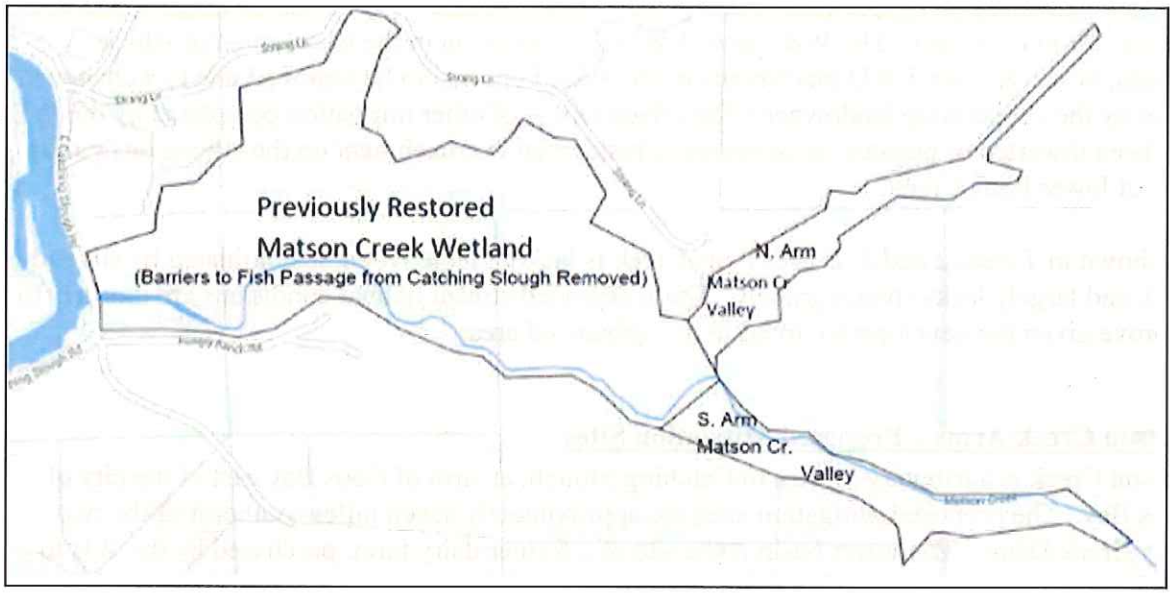

Figure 4. Schematic of existing and proposed Matson Creek mitigation zones. The North Arm is the mitigation reach for the LPCD new fish passage waiver. The Mainstem/South Arm is the mitigation reach for the UPCD alternative mitigation in lieu of lower Pony Cr. Supplemental flow releases.

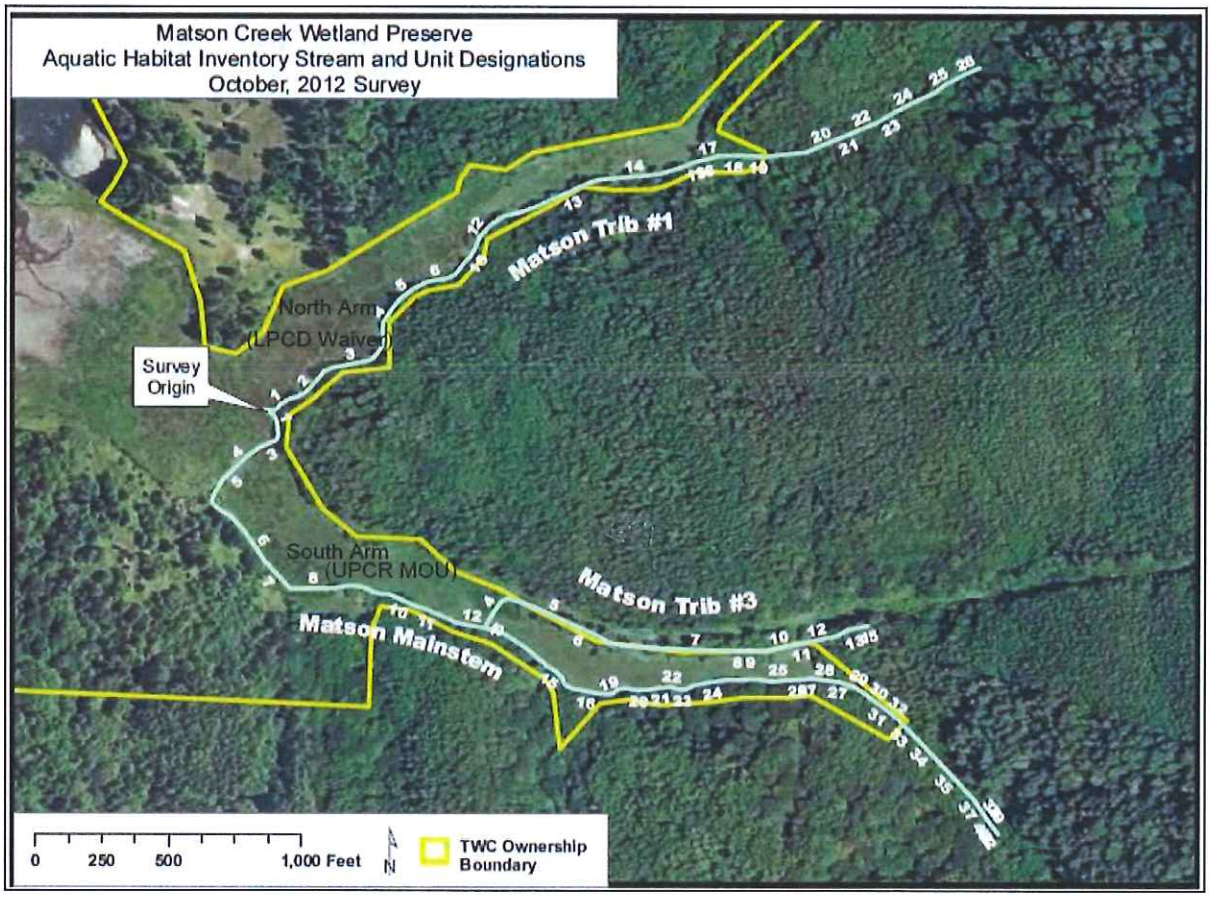

Figure 5. Aerial view and schematic of existing pasture channels at the two Matson Creek arms.

Net Benefit Analyses

Upper Pony Creek Dam Fish Passage Waiver/MOU—Amendment to Supplemental Flow Mitigation

To begin the analyses for the two proposed actions (UPCD alternative mitigation and LPCD new fish passage waiver), it is helpful to consider the watershed reaches under comparison. For the UPCD action, the existing reach affected by the elimination of Supplemental Flows is from the outlet of Merritt Dam (LPCD) to the head of tidewater near Newmark Avenue. This linear stream reach distance is 5,209 ft. (0.99 mi.). The mitigation reach at Matson Creek for the UPCD action is the Matson South Arm (existing Mainstem and Trib.#3; Figures 5 and 6) with a meandered channel having a length of 5,708 ft. (1.08 mi.) and a flood prone "meander belt" that would provide off-channel habitat during high water periods. The restoration channel and the meander belt will contain large wood structures (LWD) and the riparian zone will be planted with native riparian and wetland vegetative species.

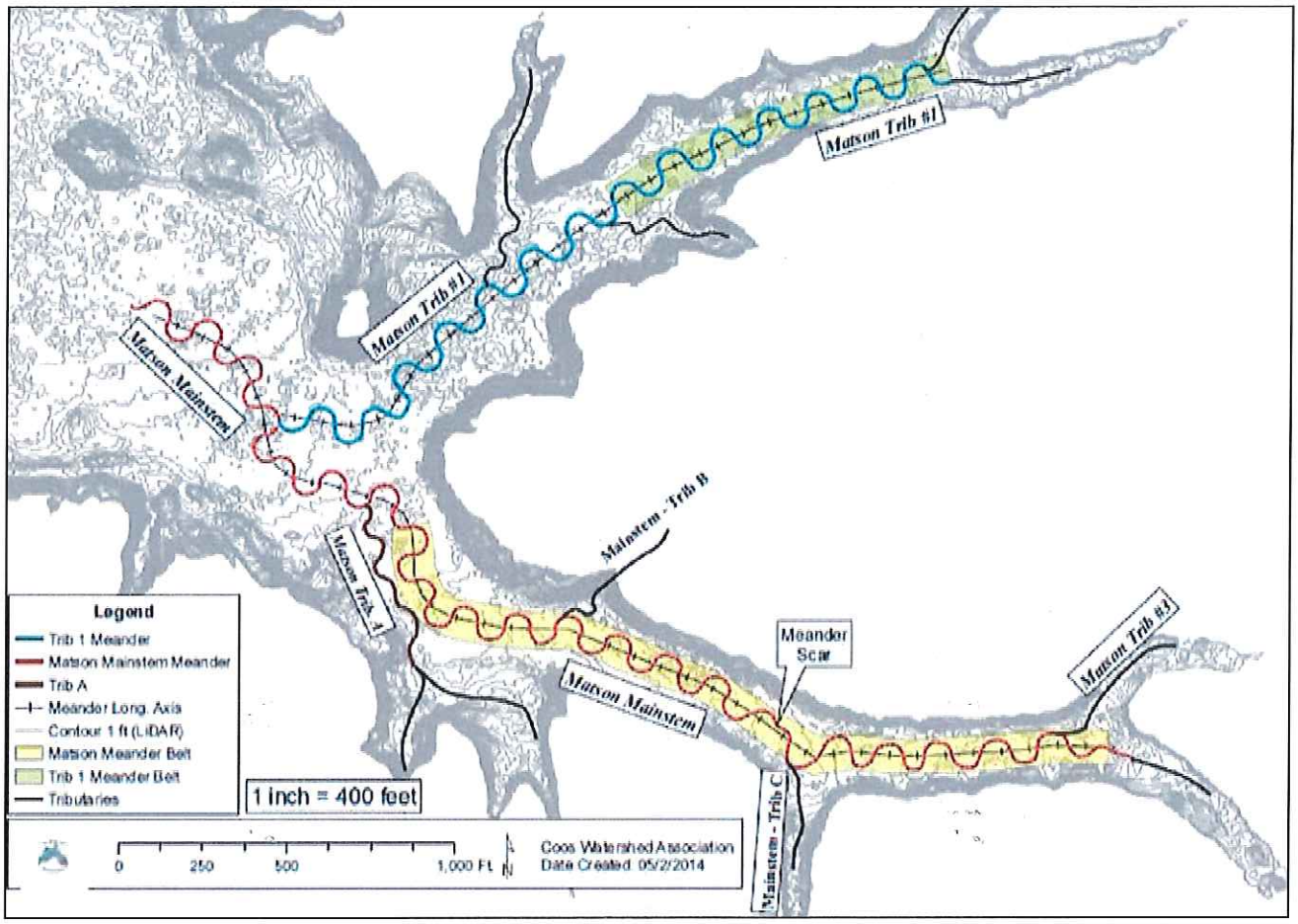

Figure 6. Proposed Matson Creek mitigation reaches for two fish passage waiver actions. The North Arm is the mitigation reach for the LPCD new fish passage waiver. The Mainstem/South Arm is the mitigation reach for the UPCD alternative mitigation in lieu of lower Pony Cr. Supplemental flow releases.

The proposal to eliminate the Supplemental Flow Releases from lower Pony Creek and create restored stream/wetland habitat at Matson Creek Mainstem/South Arm results in a net positive benefit for native migratory fish. The restoration will benefit multiple species, including Coastal Cutthroat Trout, Coho Salmon, Chinook Salmon, Chum Salmon, winter steelhead, and lamprey species. The proposal has a high level of conservation security into the future in the form of a perpetual conservation easement with the Wetlands Conservancy. The restoration distance is 5,708 ft. of fully functional salmonid habitat, versus 5,209 ft. of marginal, cutthroat trout only, fish habitat existing in Pony Creek. In addition, this proposed action is complementary to the wetland mitigation that has already occurred in the broad lower Matson Valley, which included fish passage/tidal connectivity actions previouisly implemented by the WB.

Positive benefits for native migratory fish would accrue from the concomitant sub-actions with this Alternative Mitigation action. First, the WB proposes to move the Flow Release measurement point from the MOU-identified site just below the confluence of Pony Creek and the AAA Fork, to the release outlet of Merritt Dam (LPCD). This is a distance of approximately 300 ft. Currently, the measurement to assure that the WB is meeting flow requirements includes the contribution of the AAA Fork and other contributions of water that can occur in the distance from Merritt Dam to the existing measurement point. Moving the point of measurement to the release outlet at the base of Merritt dam will assure the Continuous Release year-round of 1.0 CFS by the WB, and streamflows below the dam will have additional contributions from the AAA Fork and other forks, and runoff from the land below the dam. Secondly, ODFW agreed to and has a pending application for water rights from the Oregon Water Resources Department to transfer water from the Joe Ney Reservoir to Upper Pony Creek Reservoir, in order to provide the flows necessary for the WB to meet the Supplemental Flow Releases from LPCD. If the Supplemental Flow Releases are eliminated, ODFW could withdraw the water rights application as the transfer of water would no longer be needed. This would benefit native migratory fish species in Joe Ney watershed, leaving water in place there instead of making an inter-basin transfer to supplement flows in lower Pony Creek. As part of its previous mitigation requirements, the WB constructed a fish ladder at Joe Ney Dam and worked cooperatively with ODFW biologists to trap/monitor fish at the ladder to verify successful passage by adult Coho and winter steelhead.

Other factors considered in this benefit analysis included:

- Continuous Flow Releases will remain in place year-round, so only the habitat contribution of Supplemental Flow Release reductions should be considered.
- Rainfall, tributary input, and groundwater contribute additonal streamflows downstream of LPCD.
- Stream habitat currently exists in the channelized condition of Matson Creek, although such habitat is in much lower condition than potential, and deficient in several stream function attributes.
- A simple comparison of existing vs. proposed channel length on the Mainstem/South Arm shows a net loss of distance, due to the fact that there were two channelized reaches against the north and south hillslope to form the pasture.

Two approaches were used to quantitatively compare the effects of shifting mitigation from the lower Pony Creek Supplemental Flow Releases to the restoration channel at Matson Creek: (1) the Willamette Partnership's "Salmon Credit Calculator" (SCC) methodology, and (2)

apportionment of the contribution of the Supplemental Flow Releases to the total Salmon Credit of lower Pony Creek. While the Willamette Partnership is transitioning to a new "Stream Functional Assessment Methodology for Oregon", this approach is not yet publicly available and the SCC is still in use by agencies. The SCC incorporates habitat quality in terms of seven ecological attributes, and the stream length and width for habitat quantity. (For calculation details, see Coos Watershed Association's [CWA] documentation of the SCC applied to Pony and Matson Creek sites. Coos WA, 2014.) For existing conditions, the site Functional Performance scores for Pony Creek were slightly higher than the existing reaches at Matson Creek (Table 5). However, the proposed designs on both forks of Matson Creek are intended to bring the restored streams to 100% functionality using SCC measures.

Table 5. Weighted average values of functional attribute scores in the baseline analysis (Willamette Partnership Salmon Credit Calculator methodology). *Highlights added for emphasis.*

Functional Attributes	Pony Creek	Matson South Arm	Matson Trib. #3	Matson North Arm
1. Anadromous Fish Biotic Support	52.8%	59.2%	51.1%	49.4%
Cover/Refugia	41.0%	49.3%	37.5%	34.9%
Foraging	17.8%	27.5%	18.3%	14.7%
Nesting/Spawning	0.8%	34.9%	33.0%	5.2%
Connectivity	99.5%	100.0%	100.0%	100.0%
2. Insect/Invertebrate Biotic Support	14.5%	42.5%	31.4%	25.8%
Cover	8.3%	24.3%	17.9%	14.8%
Nesting	16.4%	60.7%	44.9%	36.9%
3. Habitat Formation	23.7%	32.5%	28.5%	22.1%
4. Temperature Regulation	47.9%	44.8%	36.7%	36.0%
5. Spatial Separation	75.7%	49.4%	51.6%	50.9%
6. Variable Velocity	15.2%	15.4%	11.7%	10.5%
7. Channel Diversity	50.9%	39.3%	45.1%	36.4%
Overall Site Function*	**63.9%**	**60.3%**	**53.9%**	**54.5%**

* Note: Overall Site Function is the weighted average of the individual map unit functional performances. See text.

The SCC evaluates stream reaches for their level of functionality in the seven attributes, and then converts the total into an equivalent stream length of 100% functional salmon supportive stream for comparison between the project and mitigation sites. With the existing condition at lower Pony Creek, the SCC assigns a Salmon Credit equivalent to 2,098 ft. (Table 6).

Table 6. Existing, baseline salmon credits for the project streams.

Stream	Stream Length (ft.)	Salmon Credit (ft.)*
Pony Creek	5,209	2,098
Matson South Arm	3,155	1,902
Matson Trib. #3	1,300	355
Matson North Arm	2,062	1,124

Note: Salmon Credit is the result of a complex, weighted calculation, and not the Overall Site Function times the Stream Length. (Coos WA 2014.)

It was recognized that the functionality of lower Pony Creek is not entirely contributed by the Supplemental Flows release from November through May. In order to estimate the contribution of the Supplemental Flows to the functionality, Sol Coast plotted historical flow duration curves in those months for the recent four-year period from 2010 through 2013. "Target Flow" was defined as the sum of the 1 Sol Coast Continuous Flow Release and the monthly Supplemental Flow Release requirement. Sol Coast then plotted the Projected Stream Flow, which represented the Historical Flow minus the Supplemental Flow for that month. A side-by-side comparison of the Historical Flow plot and the Projected Flow plot reveals the percentage of time that Target Flows are met or exceeded if Supplemental Flows are removed (Figure 7). Thus, Sol Coast defined the value of the Supplemental Flows as the percentage of time they are responsible for maintaining flows at or above Target Flow. The biggest impact was for December, when Supplemental Flows were responsible for meeting Target Flows 40% of the time (Table 7). Apportioning 40% of the Salmon Credit of lower Pony Creek (2,098 ft.) to Supplemental Flows, results in the equivalent of 893.2 ft. of fully functional salmon habitat. Sol Coast indicates that "This approach is conservative because it effectively attributes all of the functionality of Pony Creek to stream flows. It does not credit any of the other functional attributes of the stream nor does it reflect the life limiting conditions that occur during the summer months, all of which will endure mitigation action or replacement by a more effective mitigation elsewhere."

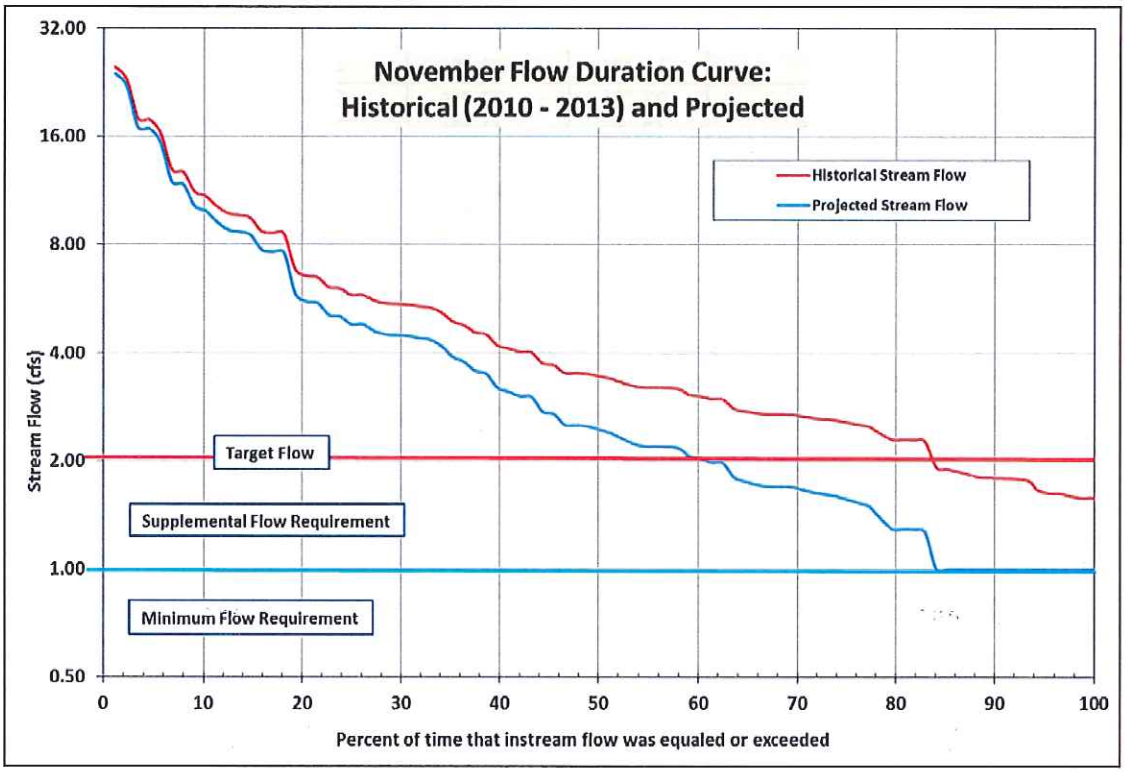

Figure 7. Example of monthly flow duration curve, showing Historical Flow (2010-2013) and Projected Flow (Historical minus Supplemental Flow). This duration curve relationship was repeated for all months, Nov.-May, when Supplemental Flows are currently required.

Table 7. Comparison of flow durations over Target Flow, and percentage of time that Supplemental Flows maintain flows at or over Target. *Highlight added for emphasis.*

	Historical Duration at or over Target	Projected Duration at or over Target	Percentage of time at or over Target attributed to Supplemental Releases
November	84	60	24
December	87	47	40
January	60	30	30
February	78	40	38
March	93	88	5
April	100	99	1
May	100	94	6

Using the combination of the SCC methodology and the apportionment method to calculate the contribution of the Supplemental Flows, the restoration at Matson Creek Mainstem/South Arm would result in restoration distance is 5,708 ft. of fully functional salmonid habitat, versus 893.2 ft. of equivalent fully functional habitat estimated by the SCC to presently exist in Pony Creek.

Lower Pony Creek Dam Fish Passage Waiver--New

For the LPCD action, the existing reach without fish passage is from Merritt Dam (LPCD) to the base of the UPCD. This distance is 6,500 ft. (1.23 mi.), primarily within the impounded reservoir of LPCD. The reservoir provides for rearing/residence of the existing, small population of resident Cutthroat Trout. A short section of wetland occurs between the typical reservoir-inundation zone and the base of UPCD. Four small tributaries to Merritt Reservoir were identified in 1999 surveys, providing short reaches of spawning habitat suitable for the Cutthroat Trout to persist (CH2MHill 1999). These small tributary reaches would provide only marginal production area for other anadromous fish such as Coho or winter steelhead.

The mitigation reach at Matson Creek for the LPCD action is the Matson North Arm (existing Trib.#1; Figure 3) with a meandered channel having a length of 3,706 ft. (0.7 mi.) and a flood prone "meander belt" that will provide off-channel habitat during high water periods. Restoration channels and the meander belt will contain large wood structures (LWD) and the riparian zone would be planted with native riparian and wetland vegetative species. Although the stream channel distance of the mitigation reach is shorter than the 6,500 ft. between LPCD and UPCD dams, it should be noted that the latter is impounded reservoir, providing only residence/rearing habitat for one species of native migratory fish (Cutthroat). The mitigation reach will be fully functional for multiple native migratory fish, including expanded habitat area in the interactive floodplain for overwintering habitat.

The request for a fish passage waiver at LPCD, with mitigation to create restored stream/wetland habitat at Matson Creek North Arm, results in a net positive benefit. The restoration will benefit multiple species, including Coastal Cutthroat Trout, Coho Salmon, Chinook Salmon, Chum Salmon, winter steelhead, and lamprey species. The proposal has a high level of conservation security into the future in the form of a perpetual conservation easement with The Wetlands Conservancy. The restoration distance is 3,706 ft., versus providing passage into Merritt Reservoir. Due to the approved fish passage waiver at UPCD, fish access would still be blocked at UPCD, even if passage were provided at LPCD. In addition, this proposed action is complementary to the wetland mitigation that has already occurred in the broad lower Matson

Valley, which included fish passage/tidal connectivity actions by the WB. It is also complementary to restoration proposed in the Matson Mainstem/South Arm, if alternative mitigation is approved.

The SCC methodology was not applied to the reach between LPCD and UPCD, as this is not stream habitat, but rather reservoir habitat. However, the SCC calculation of the existing Salmon Credits at Matson Creek North Arm are 1,124 feet of Credits calculated on an existing 2,062 ft. of channelized stream length (Table 6). The proposed mitigation would create 3,706 ft. of fully functional stream and floodplain, beneficial for multiple species of native fish. As shown in Table 2, a gravel source occurs in the Matson Creek reaches and upstream, so spawning habitat for multiple species is expected to accrue from restoration activities. With restored stream complexity, in-stream cover, riparian and wetland vegetation, and floodplain connection, the proposed mitigation at North Matson Arm will be beneficial to multiple fish (and wildlife) species. If passage were provided at LPCD, the habitat accessed would be primarily rearing/residence habitat in the reservoir, with minimal spawning habitat for only Cutthroat Trout in the tributaries, and flows necessary to operate a fish ladder would diminish the municipal water storage.

Conclusions/Staff Recommendations

The WB's proposed mitigations for UPCD have the potential to greatly improve the production potential for multiple native migratory fish species in the Coos Basin (Matson Creek), including Coastal Cutthroat Trout, Coho Salmon, Chinook Salmon, Chum Salmon, winter steelhead, and lamprey species. Due to the poor quality and degraded conditions of and lack of future potential habitat in the lower Pony Creek watershed habitat will at best continue to harbor a minimal population of Coastal Cutthroat Trout. Mitigation for a fish passage waiver at LPCD provides a benefit for multiple fish species at Matson Creek, again where little potential occurs for future improvement in the Pony Creek watershed. The WB and ODFW have attempted, but exhausted, efforts to implement measures in lower Pony Creek that would improve stream functionality.

As currently occurs with the WB's fish passage waiver and habitat mitigation requirements, new and alternative mitigation will be monitored and reported to ODFW, and remediated to ensure future success of the mitigation actions. Future certainty for the success of the proposed mitigation actions is bolstered by the WB's perpetual easement with Wetlands Conservancy.

Upper Pony Creek Dam - Waiver Amendment

ODFW staff recommends Commission approval of the Coos Bay-North Bend Water Board's request to amend the existing mitigation for the Upper Pony Creek Dam Fish Passage Waiver, which will suspend the Supplemental Flow Releases into lower Pony Creek in exchange for the proposed alternative mitigation actions to be implemented at Matson Creek Mainstem/South Arm. This recommendation includes the two sub-actions previously discussed.

Lower Pony Creek Dam – New Fish Passage Waiver Request

ODFW staff recommends Commission approval of the Coos Bay-North Bend Water Board's request for a waiver of the fish passage requirements at Lower Pony Creek Dam, in exchange for the proposed mitigation actions to be implemented at Matson Creek North Arm.

References

Reports

CH2MHill, 1999. Final Environmental Impact Statement for the Upper Pony Creek Expansion Project.

Coos Watershed Association (CWA), 2014. Summary Report: Task2, "Determine the Benefits from Existing In-stream Flows. Charleston OR

Lower Pony Creek Watershed Committee (LPCWC), 2001. Lower Pony Creek Watershed Assessment and Potential Action Plan. Prepared for LPCOC by Satre Assoc. PC, Eugene; Earth Designs Consultants, Inc., Corvallis; and Hart Crowser, Lake Oswego, OR.

Oregon Department of Fish and Wildlife (ODFW) & Coos Bay-North Bend Water Board, 2004. Memorandum of Understanding (MOU) Waiver to Fish Passage Amended: July 8, 2004. Salem Oregon.

US Army Corps of Engineers, 1998. Coos Bay-North Bend Water Board Water Supply Expansion Project—Biological Assessment. USACE, Portland District. December 1998.

Other Documents/Data

AHI Surveys completed by Coos WA and SolCoast.....attachments to Fish Passage Waiver applications.

Salmon Credit Calculations by Coos WA.....attachments to Fish Passage Waiver applications.

Photos (following pages)

Photo A—Pony Creek above Newmark Avenue showing business development to stream edge, including riparian vegetation removal.

Photo B—Parking lot to stream edge, riparian removal, storm drain directly to creek.

Photo C—Tidal area at Virginia Avenue, riparian removal, landscaping, building close to slough, major thoroughfare within feet of slough, storm drains to slough.

Photo D—Business development, pavement, and playground to slough edge; riparian removal.

Photo E—Pony Creek near Woodland Avenue, business/parking built into riparian zone. Landscaping, lawn, and removal of native riparian vegetation.

Photo F—Storm drains from parking lot and street directly into slough.

Photo A

Photo B

Photo C

Photo D

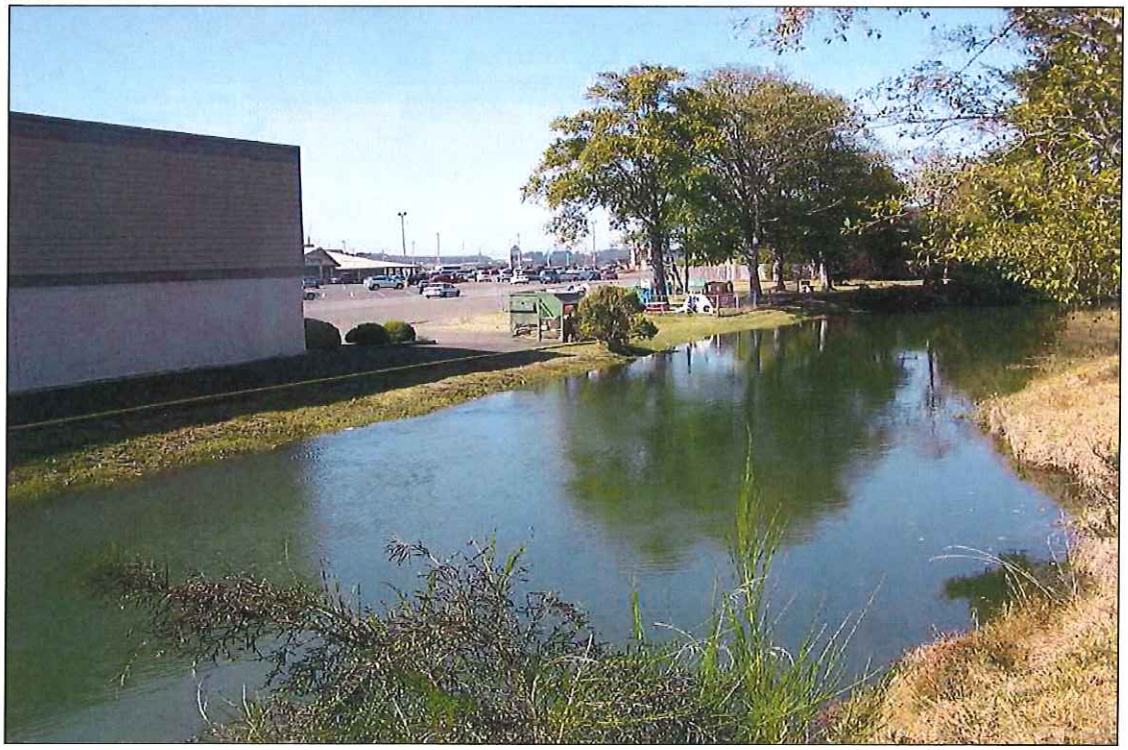

Photo E

Photo F