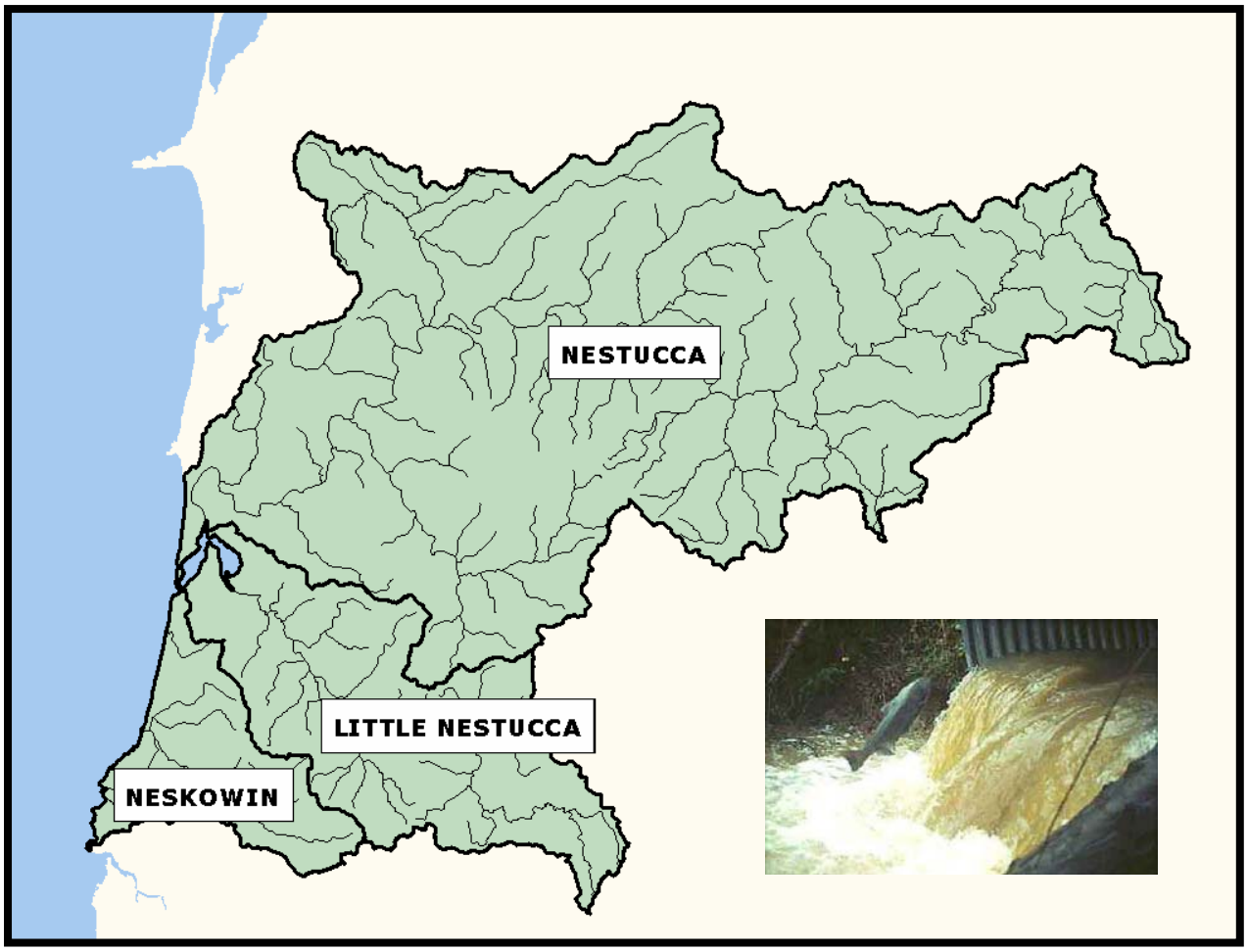
NESTUCCA / NESKOWIN WATERSHEDS

CULVERT PRIORITIZATION
AND
ACTION PLAN
FOR FISH PASSAGE



Tillamook County
Soil & Water
Conservation District

Tillamook
Estuaries
Partnership
A National Estuary Project

Nestucca/Neskowin
Watersheds Council

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Bureau of Land Management

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The Tillamook Estuaries Partnership is a non-profit organization dedicated to the conservation and restoration of the five Tillamook County estuaries and the watersheds that sustain them.

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PURPOSE

The intent of this document is to identify high and medium priority fish passage barriers and offer strategies for their replacements. Clustering schemes in the Action Plan describe potential strategies by which partners can leverage resources to implement barrier replacements efficiently and economically ('bang for the buck').

This prioritization was meant to be simple and utilize existing data. Extensive costs can be expended in developing prioritizations, estimating culvert replacement costs, and conducting analyses. For this prioritization, extensive analyses were not conducted since partners implementing the projects would be conducting them prior to implementation, regardless of whether the information was available in this document. This Action Plan is *not* a numbered list of which barrier is the best one to replace of all the culverts in the Nestucca and Neskowin watersheds, followed by the second, and so on. Watershed partners have different goals, needs, and available funds, often with ties to land use or ownership. As such, this Plan provides available culvert data and potential clustering strategies for implementation. The landowner or user of this Plan is responsible for determining which culvert or cluster should be replaced based upon their goals.

NOTE: It is likely that some fish barriers were unintentionally overlooked or not surveyed and have therefore been excluded from this document. The Neskowin Watershed is included in this prioritization, but culvert data is incomplete. Tidegates and dams are excluded. Overlooked and un-surveyed culverts, and tidegates and dams are mentioned in the culvert summary narratives where they may influence restoration efforts of high or medium priority culverts. Not all the data used in developing this prioritization has been field verified, but it should be prior to initiating a project. Landowners listed in the Plan are current at the completion of this document. It is important to verify current landowners prior to contacting them for projects. Since spring chinook and summer steelhead have similar biological characteristics and habitat needs as fall chinook and winter steelhead, it is understood that analysis of fall chinook and winter steelhead cover the requirements of spring chinook and summer steelhead.

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I. INTRODUCTION

In the Nestucca and Neskowin watersheds agencies and organizations have identified, surveyed, prioritized, and replaced fish passage barriers according to their internal goals, rather than from a watershed perspective. These activities have resulted in a jumble of data collected using different methods, compiled into multiple databases, and used to prioritize culverts for replacements with divergent objectives. Specific problems include:

- **Data Collection and Compatibility:** Culvert survey data is likely collected by a method not consistent with other watershed partners', making it difficult to compile data into one database for analysis and prioritization.

- **Data Availability:** Each agency likely has some compilation of data pertaining to culverts residing on their lands. Inaccessible data makes watershed-scale prioritization difficult and time consuming.

- **Analysis and Prioritization Methods:** Inconsistent analysis and prioritization methods increase the probability of duplicated efforts that may result in fewer benefits and unnecessary costs. If we cannot prioritize fish passage barriers within our watersheds, high probability exists that culverts with minimal watershed benefits will be replaced. A prioritization scheme for the Nestucca/Neskowin watersheds has not been developed that has been used or accepted by watershed partners.

As a result of these problems, incompatible data has made analysis and prioritization nearly impossible at the watershed level. Fish passage projects are expensive, so it is essential that funds are spent implementing high priority projects. Funds currently being spent on low priority projects could be utilized to implement collaborative projects that will generate maximum natural resource benefits.

New Approach

In 2004, the Tillamook Estuaries Partnership (TEP) and Bureau of Land Management (BLM) identified the need for a new approach and aimed to make fish passage throughout the Nestucca/Neskowin watersheds a priority, consistent with such plans as the *Tillamook Bay Comprehensive Conservation and Management Plan* (CCMP) completed in December 1999 by the TEP.

The TEP and BLM were interested in cooperatively developing a large scale prioritization of fish passage barriers across ownerships in the Nestucca/Neskowin watersheds. By taking a basin-wide management approach, partners can collaborate on barrier prioritization to ensure that the expenditure of funds used on projects generate maximum natural resource benefits ("bang for your buck"). This approach provides positive benefits to both watershed partners and the resources that we are charged with protecting. Benefits include the following:

- Watershed partners can assist each other in receiving funds for priority fish passage barrier upgrades.
- Critical habitats are made accessible to adult and juvenile salmon species.
- Public funds are spent effectively and time is used efficiently.
- This prioritization model, created for internal use, can be distributed and utilized in other watersheds.

The BLM and US Forest Service (USFS) have collected comprehensive passage data for the Nestucca Watershed. As a federally-designated National Estuary Project, TEP is responsible for fostering collaboration among watershed partners to implement the CCMP. On this project, TEP led the

collaborative effort that developed methods for analyzing and prioritizing culverts that impede fish passage, and leveraging funds to implement high priority fish passage barrier replacements.

The TEP and BLM sought to ensure the prioritization process developed was supported by and applicable to watershed partners. As such, resource managers and private citizens throughout the Nestucca/Neskowin watersheds were invited to participate in developing the systematic, basin-wide prioritization of fish passage barriers. The new approach to this collaborative effort had five objectives, all of which have been completed.

1) Compile all available culvert data for the Nestucca/Neskowin watersheds into one central database.
2) Develop a prioritization process that can be utilized by all watershed partners.
3) Determine appropriate analysis methods to be utilized for prioritization.
4) Analyze all culverts in the database.
5) Develop an Action Plan to guide partner efforts and facilitate resource leveraging.

BLM Culvert Inventory

This prioritization was driven by an inventory initiated by the BLM in 2002. Between 2002 and 2004, BLM completed an inventory of all culverts across land ownerships throughout the Nestucca Watershed. BLM used GIS to create a modeled stream crossing layer that identified all stream crossings in the basin with a gradient less than 15%. (A 15% gradient is generally accepted as the probable end of fish use.) Culvert crossings with upstream and/or downstream channel gradients of greater than 15% were excluded. Fish distribution GIS layers were not used because upper extents of fish distribution are often incomplete. The modeled layer was then used to field check all modeled culverts. BLM contracted with the Tillamook County Soil and Water Conservation District to identify and contact landowners adjacent to the modeled culverts in order to obtain permission for BLM staff to conduct an inspection or survey. Any culverts that were not in the model, but after field checking were determined to have a high probability of fish use, were also surveyed and added to the database.

BLM inspected all 885 modeled stream crossings (channel gradients <15%) throughout the Nestucca Watershed. A total of 154 culverts were surveyed and data entered into a Microsoft Access database. The surveyed number differs from the modeled number because some of the modeled culverts were bridges, were removed, or were not located on fish bearing streams (channel gradient >15% but the crossing was <15%). The new database was merged with an existing USFS database containing 428 Nestucca culverts, resulting in a comprehensive database of 582 Nestucca Watershed culverts. The BLM was cognizant of the existing USFS database and cautious to avoid duplication efforts. The inventory did not include tidegates, dams, or other potential fish passage barriers.

Nestucca/Neskowin Watersheds Council's Rapid Bio-Assessment

Simultaneously with the BLM's Culvert Inventory, the Nestucca/Neskowin Watersheds Council (NNWC) contracted with Bio-Surveys, LLC to conduct a 'Rapid Bio-Assessment' (RBA). Beginning in 2002, this three-year assessment surveyed juvenile salmonid distribution and abundance throughout the Nestucca and Neskowin watersheds.

It was the intent of these two basin-wide surveys (Culvert Inventory and RBA) to identify fish passage barriers and critical habitat areas in order to facilitate the prioritization of watershed enhancement efforts among partners. This document summarizes the identification of these barriers and habitat areas.

II. CULVERT PRIORITIZATION DEVELOPMENT

In spring 2005, BLM contracted with TEP to develop a prioritization process to analyze the 582 culverts. The BLM and TEP collaborated with other resource managers (identified under the Acknowledgements) to further implement this new approach. This approach had six key phases:

1) Identify the 'barrier determination model' to use in the prioritization model.
2) Create a preliminary culvert prioritization model to test on a subset of culverts.
3) Conduct a trial run on a subset of culverts and present results to watershed partners.
4) Finalize the prioritization model.
5) Analyze all 582 culverts.
6) Present the final model and analyzed culverts to partners.

Phase 1: Barrier Determination Model

Before developing a prioritization process, partners determined it was necessary to identify or develop an appropriate 'barrier determination model'. This model would determine the culvert barrier type (full, partial, none). The determination would then be plugged into the culvert prioritization model. TEP accumulated three models and comparison revealed that the *BLM Coarse Screen Filter Version 2.2* (see Appendix), a juvenile passage model, was the best model available for the purposes of determining whether or not a culvert is a barrier, given the existing data available. TEP found other models not as stringent as the BLM model. For example, the Oregon Department of Fish and Wildlife (ODFW) determines a culvert a juvenile barrier if there is a 6-inch outlet drop, with appropriate pool depth (*ODFW Fish Passage Criteria, October 2004*). However, BLM's filter identified a 4-inch drop as a juvenile barrier. It is acknowledged that the selected model has flaws. However, it most closely met the objectives for developing a prioritization. Determinations resultant from the model are not absolute. For example, if the model determines a culvert is a barrier to juvenile passage at any flows, it may actually pass juveniles at some flows.

For this prioritization, culverts were evaluated only for juvenile salmon passage. If culverts are evaluated only for adult passage, a high likelihood exists that many priority culverts will be overlooked.

Phase 2: Prioritization Model

After selecting a barrier determination model, TEP compiled various culvert prioritization models to develop a new one meeting our goals. Unlike selecting a barrier determination model, prioritization models were either too complex, too simple, or lacked information partners considered important. Eleven models from the Pacific Northwest were summarized and compared for the utilization capability of determining relative culvert replacement priorities. Comparison of the models led to the selection of a few models based on feasibility of using the model and ecologically important criteria within the model. Criteria from the selected models were merged into one new model which uses a sum-total point system.

Phase 3: Trial Run

Before ranking all 582 culverts, TEP conducted a trial run on 30 BLM culverts (5% sample) to evaluate the new model. BLM culverts were selected since they had the most complete data and any data gaps could be filled easily with BLM staff already assisting TEP in the process. Several trial runs were made with the preliminary model, making minor adjustments to criteria after each trial. Trial runs resulted in the following conclusions:

- Stream order does not significantly influence the ranking, especially when fish presence and habitat length are already parameters. [Stream order eliminated from the model.]

- Fish presence/absence as a 'yes' or 'no' correlates exactly with the length of habitat above, even though the length of habitat above is based on stream gradient. [Fish presence/absence as a 'yes' or 'no' eliminated from the model.]
- Separating fish presence into 'anadromous', 'non-anadromous', and 'no fish' does not alter the ranking significantly, but we suspect it will on a watershed scale. [No change to parameter.]
- Fish species does not significantly influence the ranking. [Change parameter to 'Additional Consideration'.]
- Probably the most important revelation after conducting the trial runs was that developing a prioritization model need not be complex or ideal. All that is needed is a model to identify fish passage barrier priorities relative to others in the watershed.

In February 2005, TEP convened the first partners' meeting to discuss the trial run conclusions and perfect the preliminary model. Partners offered productive feedback and were supportive of the process.

Phase 4: Finalize the Model

TEP used partners' feedback to finalize the culvert prioritization model. Partners struggled most with what criteria to base habitat quality above the culverts.

Table 1. Culvert Prioritization Model

STEP	PARAMETER	POINTS	CRITERIA	CRITERIA BASED ON
1	Upstream Habitat Length	1	0.0 - .50 miles	Stream gradient (BLM and USFS GIS layers)
		2	.60 - 1.0 miles	
		3	1.1 - 1.5 miles	
		4	> 1.6 miles	
2	Upstream Habitat Quality	1	Poor	Included channel complexity, pool quality, presence of large wood, and stream gradient (BLM-USFS experience & ODFW-USFS inventories)
		2	Fair	
		3	Good	
3	Fish Presence	1	No Fish	Fish distribution layers (Streamnet, BLM, USFS)
		2	Resident	
		3	Anadromous	
4	Barrier Severity	1	Not a Barrier (no flows)	Juvenile Passage Model *(BLM Coarse Screen Filter Version 2.2)*
		2	Partial Barrier (some flows)	
		3	Complete Barrier (all flows)	

ADDITIONAL CONSIDERATIONS (in no particular order)

- Fish species
- Upstream and downstream barriers
- Ownership and landowner participation
- Feasibility of replacement
- Educational opportunities (i.e. high visibility)
- Potential partners and public interest
- Risk of failure
- Restoration potential in project area (i.e. riparian planting, instream enhancement)
- Water quality

Phase 5: Analysis

To begin the final analysis, TEP compiled all available data into one database. Data was available from the following sources: BLM, USFS, ODOT, and Pioneer Engineering Corp. culvert inventory data; Bio-Surveys Rapid Bio-Assessment 2002-2004 Final Report; stream gradient and fish distribution GIS layers; and ODFW and USFS stream habitat survey data. After the database was created data gaps were identified and filled with assistance from BLM, USFS, and NNWC.

Further investigation of the 428 USFS culverts revealed that numerous pipes were either not on fish bearing streams, lacked fish habitat, or two pipes at one crossing were recorded individually. While filling data gaps and conducting field checks, it was recognized that some culverts should be added or removed. Table 2 below summarizes this process.

Table 2. Culvert Inventory Summaries and Resultant Fish Pipes*

Data Source	Total Culverts Surveyed in Original Merged Database	Added Culverts	Culled Non-Fish Pipes & Duplicates	Remaining Fish Pipes
BLM	154	1		**155**
USFS	428		321	**107**
ODOT		83	18	**65**
Pioneer Engineering Corp. Neskowin Assessment		11		**11**
TOTALS	**582**	**95**	**339**	**338** 42 (High) 40 (Medium) 256 (Low)

*For the purposes of this prioritization, a *'Fish Pipe'* is defined as a culvert that currently has fish present. A *'Non-Fish Pipe'* is defined as a culvert that does not currently have fish present and surrounding habitat is not, or does not have potential to, support fish.

Next, BLM used GIS layers to map stream gradients above the 338 culverts. Based on gradients, staff ranked all culverts into high (0-3%), medium (4-5%), and low (>6%) potential quality habitats. Extensive BLM and USFS knowledge of these watersheds also weighed heavily in making this first cut. Low-ranking culverts received no further evaluation. It is important to note that there may be low priority culverts that are replaced before high priority culverts based on their structural condition or susceptibility for failure, which could have significant impacts to downstream fish populations.

Additional data was collected for the high and medium priority culverts in order to rank culverts using the new model. Habitat quantity was based on stream gradients derived from BLM and USFS GIS layers. Gradients above 5% were determined not to be priority anadromous salmon habitat. [It is recognized that steelhead and cutthroat populations inhabit higher gradient stream reaches.] Habitat quality was based on attributes including, but not limited to, channel complexity, pool quality, presence of large wood, and stream gradient. ODFW Aquatic Inventory survey data was utilized where available, as well as BLM and USFW professional knowledge and experience. Fish distribution data was derived from BLM, USFS, and Streamnet (a cooperative project that provides natural resource data online). Barrier severity was based on culvert attributes such as outlet drop and slope (refer to Appendix). With a complete database of the high and medium priority culverts, the culverts were analyzed and points assigned to each culvert.

NOTE: After finalizing the model, all 338 culverts were broken into high, medium, and low rankings based on stream gradient and BLM and USFS knowledge and experience. After data gaps on the medium

and highs were filled, the final prioritization model was applied to identify relative priorities within the medium and high ranked culverts. In these watersheds, extensive experience was available and utilized to reduce the number of culverts to a manageable level (i.e. not ranking the lows). If experience is unavailable, it is recommended that the prioritization model be applied, followed by field verification. It was beneficial for this prioritization to utilize knowledge and experience prior to applying the model.

Phase 6: Results Presentation

In June 2005 TEP convened a second meeting, which 11 partners attended, to review and discuss the prioritization process and resultant draft culvert list. TEP led a productive open discussion about how culverts were classified into rankings, the accuracy of the rankings, and a summary of the subsequent Action Plan and clustering strategy for leveraging resources. Table 3 summarizes the final list of high and medium priority culverts. The large number of low priority culverts led to their exclusion from this Plan. Data is available upon request.

Table 3. High and Medium Ranked Culverts *(sorted by Ranking, Priority, Stream)*

Culvert #	Watershed Name	Stream Name	Road Name	T	R	S	Culvert Shape	Length (ft)	Width (in)	Outlet Drop (ft)	Culvert Slope (%)	Habitat Length (mi)	STEPS[1]				RANK[2]	Priority[3]
													1	2	3	4		
O336	Neskowin	Butte Cr	Hwy 101	5S	11W	25	Circular	200.0	72	0.0	5	2.0	4	3	3	3	**13**	H
2080	Neskowin	Butte Cr	Sunbow Road	5S	11W	25	Circular	110.0	78	0.50	2	1.80	4	3	3	3	**13**	H
2081	Neskowin	Butte Cr	Unnamed	5S	11W	25	Circular	30.0	48	0.00	4	1.70	4	3	3	3	**13**	H
1122	Nestucca	East Cr	3727 - East Cr	3S	8W	15	Circular	119.0	144	0.7	2	2.3	4	3	3	3	**13**	H
O339	Neskowin	Fall Cr	Hwy 101	6S	10W	6	Box	380.0	60	1.0	3	2.7	4	3	3	3	**13**	H
2078	Neskowin	Hawk Cr	Hawk Street	5S	11W	25	Circular	---	---	0.00	---	1.80	4	3	3	3	**13**	H
1527*	Nestucca	Horn Cr	Unnamed	4S	10W	20	Circular	25.0	72	0.0	0	5.0	4	3	3	3	**13**	H
1129	Nestucca	Nestucca River	3613 - Nestucca Access	3S	6W	15	Box	91.5	120	0.5	2	6.8	4	3	3	3	**13**	H
O356	L Nestucca	Sourgrass Cr	Hwy 22	5S	9W	34	Circular	120.0	120	2.0	2	2.2	4	3	3	3	**13**	H
1174	Nestucca	Walker Cr	3622.1	3S	6W	22	Pipe Arch	50.6	90	0.0	0	3.5	4	3	3	3	**13**	H
1083	Nestucca	West Beaver Cr Trib	Unnamed	3S	10W	10	Circular	22.5	66	0.9	2	2.0	4	3	3	3	**13**	H
O3058*	Nestucca	Wolfe Cr	860 - Wolfe Cr	3S	9W	28	Circular	65.0	120	0.1	2	4.4	4	3	3	3	**13**	H
O3032	Nestucca	Farmer Cr	880 - Farmer Cr	4S	10W	1	Circular	60.0	96	0.7	2	3.7	4	3	3	3	**13**	M
1065	Nestucca	Tiger Cr Trib	Nosacks	3S	9W	7	Circular	27.0	72	0.0	6	4.2	4	3	3	3	**13**	M
1245	Nestucca	Boulder Cr	Blaine	3S	9W	26	Circular	95.0	126	0.0	4	4.0	4	2	3	3	**12**	H
1264	Nestucca	Boulder Cr	Boulder Cr (old)	3S	9W	26	Pipe Arch	42.6	108	0.4	2	3.9	4	2	3	3	**12**	H
1717	L Nestucca	Bower Cr	Meda Loop	5S	10W	16	Circular	26.0	48	0.6	2	1.1	3	3	3	3	**12**	H
1309	Nestucca	Foland Cr	Bixby	3S	9W	29	Pipe Arch	52.0	96	0.0	0	2.4	4	2	3	3	**12**	H
O3003	L Nestucca	Louie Cr	Hwy 22	5S	9W	28	Circular	---	60	0.2	---	1.3	3	3	3	3	**12**	H
1157	Nestucca	Walker Cr	3615.3 - A-B	3S	6W	15	Pipe Arch	52.8	108	0.0	1	5.7	4	3	3	2	**12**	H
O3012*	Nestucca	Wildcat Cr (E Beaver Cr)	East Beaver Cr	3S	9W	18	Circular	60.0	36	0.5	4	1.5	4	2	3	3	**12**	H
O3001	L Nestucca	Baxter Cr	Hwy 22	5S	9W	28	Circular	60.0	112	0.0	1	2.7	4	3	3	2	**12**	M
O3017	Nestucca	Bear Cr (E Beaver Cr)	857 - East Beaver Cr	3S	9W	18	Open Btm Arch	---	---	0.00	---	4.4	4	3	3	2	**12**	M
1610	Nestucca	Clear Cr	Jenck	4S	10W	34	Pipe Arch	34.0	144	0.0	2	3.3	4	3	3	2	**12**	M
1237	Nestucca	Boulder Cr	Blankenship	3S	9W	26	Pipe Arch	32.5	108	0.0	2	4.1	4	2	3	2	**11**	H
1192	Nestucca	Fan Cr	3613 - Nestucca Access	3S	7W	24	Circular	79.0	66	0.0	3	1.2	3	2	3	3	**11**	H
2012	Nestucca	Fan Cr	3724 - Fan Cr	3S	7W	24	Circular	95.2	84	0.0	3	1.1	3	2	3	3	**11**	H
O355*	L Nestucca	Sourgrass Cr	Hwy 22	5S	9W	34	Circular	150.0	120	0.0	3	1.2	3	3	3	2	**11**	H
1078	Nestucca	West Beaver Cr Trib	Unnamed	3S	10W	11	Circular	40.0	48	0.4	3	0.9	2	3	3	3	**11**	H
O3035	Nestucca	Hartley Cr	Hwy 101	4S	10W	14	Circular	80.0	36	0.2	3	1.8	4	1	3	3	**11**	M
1012	Nestucca	North Beaver Cr Trib	310B	3S	10W	3	Circular	50.0	48	0.0	0	1.1	3	2	3	3	**11**	M
1376	Nestucca	Slick Rock Cr	Blaine	4S	8W	1	Pipe Arch	83.0	210	2.1	2	1.0	2	3	3	3	**11**	M
1031	Nestucca	Tiger Cr	Unnamed	3S	9W	5	Circular	52.0	48	1.0	1	1.0	2	3	3	3	**11**	M
1070	Nestucca	West Beaver Cr Trib	370 - Newberg	3S	10W	10	Circular	41.0	72	0.0	0	2.8	4	2	3	2	**11**	M
O353	Nestucca	Woods Cr (3 Rivers)	Hwy 22	5S	9W	4	Box	50.0	72	0.0	4	1.6	4	2	2	3	**11**	M
1724	Nestucca	Alder Cr (Three Rivers)	Hwy 22	5S	9W	17	Circular	30.0	36&48	0.5&0.0	---	0.30	1	3	3	3	**10**	H
1001*	Nestucca	East Beaver Cr	857 - East Beaver Cr	2S	8W	29	Pipe Arch	60.0	96	1.2	6	0.5	1	3	3	3	**10**	H
1412	Nestucca	George Cr	Evergreen Dr	4S	10W	12	Circular	36.0	60	0.0	3	0.9	2	2	3	3	**10**	H
1090	Nestucca	Ginger Cr	3613 - Nestucca Access	3S	6W	7	Circular	82.1	60	1.3	2	0.7	2	2	3	3	**10**	H
F181	Neskowin	Neskowin Cr Trib	Slab Cr	6S	10W	10	Circular	78	36	1.8	1	0.1	1	3	3	3	**10**	H
2082	Neskowin	Sutton Cr	Proposal Rock Loop Rd	5S	11W	36	Circular	24.0	48	0.00	1	0.25	1	3	3	3	**10**	H
2084	Neskowin	Sutton Cr	South Beach Rd	5S	11W	36	Pipe Arch	26.0	60	0.00	3	0.22	1	3	3	3	**10**	H

Culvert #	Watershed Name	Stream Name	Road Name	T	R	S	Culvert Shape	Length (ft)	Width (in)	Outlet Drop (ft)	Culvert Slope (%)	Habitat Length (mi)	STEPS[1]				RANK[2]	Priority[3]
													1	2	3	4		
2085	Neskowin	Sutton Cr	South Beach Rd	5S	11W	36	Circular	26.0	36	0.00	1	0.16	1	3	3	3	**10**	H
2086	Neskowin	Sutton Cr	South Beach Rd	5S	11W	36	Circular	---	---	1.00	---	0.12	1	3	3	3	**10**	H
F2025	Nestucca	Bays Cr	8573	3S	9W	13	Open Btm Arch	60.0	145	0.0	5	0.5	1	3	3	3	**10**	M
O3011	Nestucca	Beaver Cr Trib	Hwy 101	3S	9W	18	Circular	45.0	36	1.5	2	0.9	2	2	3	3	**10**	M
1134	Nestucca	Bummer Cr (E Beaver Cr)	Unnamed	3S	9W	17	Circular	30.5	36	1.6	9	0.6	2	3	2	3	**10**	M
1385	Nestucca	Clarence Cr	Blaine	4S	8W	2	Open Btm Arch	82.5	210	0.0	1	0.9	2	3	3	2	**10**	M
1219	Nestucca	Hastor Cr (Beaver Cr)	Beaver-Becker	3S	9W	29	Circular	25.0	36	0.0	4	0.6	2	2	3	3	**10**	M
F6	Neskowin	Lewis Cr	1280	6S	10W	4	Circular	77.0	60	0.8	11	0.8	2	2	3	3	**10**	M
F2055	Nestucca	Limestone Cr trib	8598	4S	8W	6	Circular	48.0	24	0.2	0	1.5	3	1	3	3	**10**	M
O3005	L Nestucca	Small Cr	Hwy 130	5S	9W	30	Circular	60.0	48	1.7	2	0.8	2	2	3	3	**10**	M
1574	Nestucca	Three Rivers Trib	3094 - Big Trout	4S	9W	30	Circular	31.0	60	0.9	2	0.4	1	3	3	3	**10**	M
1203	Nestucca	West Cr Trib	1004	3S	9W	19	Circular	31.0	24	1.7	3	0.6	2	3	2	3	**10**	M
F3	Nestucca	West Cr Trib	1004	3S	10W	24	Circular	36.0	24	1.9	2	0.2	1	3	3	3	**10**	M
1719	L Nestucca	Bower Cr	Unnamed	5S	10W	16	Circular	20.0	36	0.7	7	0.5	1	2	3	3	**9**	H
F23	Nestucca	Farmer Cr Trib	880 - Farmer Cr	4S	10W	3	Open Btm Arch	41.0	102	0.0	2	0.8	2	2	3	2	**9**	H
F24*	Nestucca	Farmer Cr Trib	1034	4S	10W	3	Circular	38.5	60	1.8	3	0.2	1	2	3	3	**9**	H
O3002	L Nestucca	Judson Cr	Hwy 130	5S	9W	30	Circular	60.0	36	0.3	4	0.4	1	2	3	3	**9**	H
1700	L Nestucca	L Nestucca Trib	Irish	5S	10W	9	Circular	35.0	27	0.5	1	0.4	1	2	3	3	**9**	H
O3004	L Nestucca	Mcknight Cr	Hwy 130	5S	10W	25	Circular	60.0	72	0.0	4	0.8	2	1	3	3	**9**	H
F1*	Neskowin	Sloan Cr	12	6S	10W	9	Circular	57.0	36	2.8	3	0.5	1	2	3	3	**9**	H
F2060	Nestucca	Alder Cr	8598	4S	9W	1	Open Btm Arch	68.0	145	0.0	5	0.6	2	2	3	2	**9**	M
F2024	Nestucca	Bays Cr Trib	8573	3S	9W	13	Circular	54.0	72	0.8	5	0.7	2	1	3	3	**9**	M
2016	Nestucca	East Cr Trib	3727 - East Cr	3S	8W	15	Circular	60.7	42	0.0	2	0.2	1	2	3	3	**9**	M
F155	L Nestucca	Hiack Cr Trib	12	6S	9W	8	Circular	45.0	24	1.3	0	0.5	1	2	3	3	**9**	M
F761	Nestucca	Niagara Cr Trib	2283	4S	8W	27	Circular	89.0	48	1.7	3	0.8	2	2	2	3	**9**	M
1686	Nestucca	Upton Slough	Christensen	5S	10W	7	Circular	30.0	48	0.0	2	0.8	2	2	2	3	**9**	M
1689	Nestucca	Upton Slough	Oretown	5S	10W	7	Circular	61.0	66	0.4	6	0.7	2	2	2	3	**9**	M
1108	Nestucca	West Beaver Cr Trib	Unnamed	3S	10W	14	Circular	71.0	48	0.5	3	0.3	1	3	2	3	**9**	M
1213	Nestucca	West Cr Trib	1004	3S	9W	30	Circular	40.0	18	0.7	7	0.1	1	3	3	2	**9**	M
1208	Nestucca	Moon Cr Trib	863 - Moon Cr	3S	8W	20	Circular	51.0	30	0.6	4	0.6	2	1	2	3	**8**	H
O3020	Nestucca	Moon Cr Trib	863 - Moon Cr	3S	8W	20	Circular	50.0	12	0.0	3	0.5	1	2	2	3	**8**	H
1708	L Nestucca	Bower Cr Trib	Meda Loop	5S	10W	9	Circular	35.0	36	0.3	3	0.9	2	1	2	3	**8**	M
1321	Nestucca	Foland Cr Trib	Bixby	3S	9W	32	Circular	106.5	48	2.0	5	0.4	1	2	2	3	**8**	M
1253	Nestucca	Nestucca Trib	Blaine	3S	9W	27	Circular	53.0	42	1.5	12	0.3	1	1	3	3	**8**	M
1278	Nestucca	Nestucca Trib	Unnamed	3S	9W	27	Circular	24.0	24	0.0	4	0.4	1	1	3	3	**8**	M
F762	Nestucca	Niagara Cr Trib	2283	4S	8W	27	Circular	111.0	48	1.8	0	0.5	1	2	2	3	**8**	M
O354	L Nestucca	Sourgrass Cr Trib	Hwy 22	5S	9W	35	Circular	100.0	48	0.0	2	0.7	2	1	2	3	**8**	M
1121	Nestucca	West Beaver Cr Trib	Unnamed	3S	10W	14	Circular	63.0	36	0.9	3	0.3	1	2	2	3	**8**	M
O3022	Nestucca	Moon Cr Trib	863 - Moon Cr	3S	8W	29	Circular	60.0	24	1.0	4	0.3	1	1	2	3	**7**	M
F734	L Nestucca	Sourgrass Cr Trib	2234111	5S	9W	35	Circular	70.5	54	0.0	2	0.8	2	1	2	2	**7**	M

[1]Refer to Table 1 for further clarification.

[2]Total of 13 points possible points.

[3]Refer to II. Culvert Prioritization Development - Phase 5 for further clarification.

*Culverts in red and marked by asterisk are scheduled for replacement.

Data gaps are depicted as ' --- '

T, R, S = Township, Range, Section

III. ACTION PLAN

After the final meeting, TEP developed this collaborative Action Plan to facilitate the replacement of fish passage barrier culverts in the watersheds. Collectively, replacing all the high and medium ranked culverts in this Plan would improve access to an **estimated 89.4 miles** of salmon spawning and rearing habitat throughout the Nestucca and Neskowin watersheds.

The primary goal of this Plan is to enable resource leveraging during project implementation. Many of the potential projects residing in this Plan are likely to be replaced through grant funding. Numerous federal grant funding sources exist, but they are often accompanied by tough matching requirements (i.e. 1:1 from a non-federal source). Limited sources of non-federal grant funds complicate the problem. However, if properly planned and strategized, these problems can be resolved. Other sources of non-federal funding exist that are often overlooked while planning a project. For instance, a private industrial landowner decommissioning a road at their expense could leverage the replacement of a County road culvert led by a local watershed council in the same watershed. Combine the decommissioning project with in-kind (donated) time County staff may spend reviewing plans and inspecting the project, and several thousands of dollars can be accrued in non-federal match, thereby leveraging a federal grant. Resources available for match can include donated supplies, equipment, technical assistance, labor, or other services that may otherwise be contracted and paid for through grant funds. Partnering on projects not only helps meet match requirements, but it reduces the overall grant request, making the project more competitive, and facilitates the implementation of larger projects.

This plan not only identifies the high and medium priority fish passage barrier culverts to replace, it 'clusters' them together to facilitate project development. Barriers are grouped primarily on a watershed scale. Obviously, one culvert can be replaced independent of the rest of the cluster. However, the cluster table is provided as a tool to facilitate leveraging of funds and match, or to gain on-the-ground project implementation efficiencies. Table 4 illustrates the clustering strategy that is the foundation of the individual culvert summaries.

All high priority culverts are listed in this clustering strategy. Medium priority culverts in the vicinity of each other or in the vicinity of high priority culverts are also listed in this strategy. Remaining medium priority culverts are lumped into the 'Non-Clustered Culverts' category. These culverts are isolated on the landscape and there is no justifiable clustering strategy. **The clusters are listed by location, beginning in the upper watershed. The number before the cluster name does not state or imply a priority among clusters.**

Table 4. Culvert Replacement Clustering Strategy

CLUSTER	CULVERT #	PRIORITY	STREAM	UPSTREAM HABITAT
NESTUCCA MAINSTEM				
1 - Walker Creek	1129	H	Nestucca River	6.8 miles
	1157	H	Walker Creek	
	1174	H	Walker Creek	
2 - Upper Nestucca	1090	H	Ginger Creek	1.9 miles
	1192	H	Fan Creek	
	2012	H	Fan Creek	
3 - Slick Rock Creek / Clarence Creek	1376	M	Slick Rock Creek	1.9 miles
	1385	M	Clarence Creek	
4 - Upper Niagara Creek	F761	M	Niagara Creek Trib	1.3 miles
	F762	M	Niagara Creek Trib	
5 - Moon Creek	1208	H	Moon Creek Trib	1.4 miles
	O3020	H	Moon Creek Trib	
	O3022	M	Moon Creek Trib	
6 - East Creek	1122	H	East Creek	2.3 miles
	2016	M	East Creek Trib	
7 - Bays Creek	F2024	M	Bays Creek Trib	1.2 miles
	F2025	M	Bays Creek	
8 - Boulder Creek	1237	H	Boulder Creek	4.1 miles
	1245	H	Boulder Creek	
	1264	H	Boulder Creek	
9 - Unnamed Tribs	1253	M	Nestucca Trib	0.7 miles
	1278	M	Nestucca Trib	
10 - Wolfe Creek	O3058	H	Wolfe Creek	4.4 miles
11 - Foland Creek	1309	H	Foland Creek	2.8 miles
	1321	M	Foland Creek Trib	
12 - East Beaver Creek	1001	H	East Beaver Creek	7.0 miles
	O3012	H	Wildcat Creek	
	O3017	M	Bear Creek	
	1134	M	Bummer Creek	

13 - West Beaver Creek	1031	M	Tiger Creek	12.0 miles
	1065	M	Tiger Creek Trib	
	1012	M	North Beaver Creek Trib	
	1070	M	West Beaver Creek Trib	
	1078	H	West Beaver Creek Trib	
	1083	H	West Beaver Creek Trib	
	1108	M	West Beaver Creek Trib	
	1121	M	West Beaver Creek Trib	
14 - West Creek	F3	M	West Creek Trib	0.9 miles
	1203	M	West Creek Trib	
	1213	M	West Creek Trib	
15 - Farmer Creek	O3032	M	Farmer Creek	3.7 miles
	F23	H	Farmer Creek Trib	
	F24	H	Farmer Creek Trib	
16 - George Creek	1412	H	George Creek	0.9 miles
17 - Three Rivers	O353	M	Woods Creek	2.3 miles
	1574	M	Three Rivers Trib	
	1724	H	Alder Creek	
18 - Horn Creek	1527	H	Horn Creek	5.0 miles
LITTLE NESTUCCA				
19 - Sourgrass Creek	O355	H	Sourgrass Creek	2.2 miles
	O356	H	Sourgrass Creek	
	F734	M	Sourgrass Creek Trib	
	O354	M	Sourgrass Creek Trib	
20 - Louie Creek / Baxter Creek	O3001	M	Baxter Creek	4.0 miles
	O3003	H	Louie Creek	
21 - Little Nestucca River Road Tribs	O3002	H	Judson Creek	2.0 miles
	O3004	H	McKnight Creek	
	O3005	M	Small Creek	
22 - Little Nestucca River Trib	1700	H	Little Nestucca Trib	0.4 miles
23 - Bower Creek	1708	M	Bower Creek Trib	2.0 miles
	1717	H	Bower Creek	
	1719	H	Bower Creek	
24 - Upton Slough	1686	M	Upton Slough	0.8 miles
	1689	M	Upton Slough	

NESKOWIN				
25 - Fall Creek	O339	H	Fall Creek	2.7 miles

26 - Upper Neskowin	F6	M	Lewis Creek	1.4 miles
	F1	H	Sloan Creek	
	F181	H	Neskowin Creek Trib	

27 - Hawk Creek / Butte Creek	2078	H	Hawk Creek	3.8 miles
	O336	H	Butte Creek	
	2080	H	Butte Creek	
	2081	H	Butte Creek	

28 - Sutton Creek	2082	H	Sutton Creek	0.3 miles
	2084	H	Sutton Creek	
	2085	H	Sutton Creek	
	2086	H	Sutton Creek	

NON-CLUSTERED CULVERTS				
	1219	M	Hastor Cr (Beaver Cr)	0.6 miles
	F155	M	Hiack Creek Trib	0.5 miles
	F2055	M	Limestone Cr Trib	1.5 miles
	F2060	M	Alder Cr (Nestucca River)	0.6 miles
	O3011	M	Beaver Cr Trib	0.9 miles
	O3035	M	Hartley Cr	1.8 miles
	1610	M	Clear Creek	3.3 miles
			TOTAL MILES	**89.4 miles**

While developing this Plan, partners initiated several projects. Table 5 lists the culvert replacement projects currently underway.

Table 5. Culvert Replacement Projects Underway

Culvert #	Watershed Name	Stream Name	Road Name	Habitat Length (mi)	Rank	Priority	Project Lead	Project Status
1001	Nestucca	East Beaver Cr	857 - East Beaver Cr	0.5	**10**	H	BLM	Engineering underway Planned 2006 completion
O3058	Nestucca	Wolfe Cr	860 - Wolfe Cr	4.4	**13**	H	TEP	Engineering underway Planned 2007 completion
1527	Nestucca	Horn Cr	Unnamed	5.0	**13**	H	NNWC	Engineering complete Planned 2007 completion
O3012	Nestucca	Wildcat Cr	East Beaver Cr	1.5	**12**	H	NNWC	Engineering complete Planned 2007 completion
O355	L Nestucca	Sourgrass Cr	Hwy 22	1.2	**11**	H	ODOT	Engineering complete Planned 2007 completion
F24	Nestucca	Farmer Cr Trib	USFS 1034	0.2	**9**	H	USFS	Engineering complete No estimated completion
F1	Neskowin	Sloan Cr	USFS 12	0.5	**9**	H	USFS	Engineering complete No estimated completion
2078	Neskowin	Hawk Cr	Hawk Street	1.8	**13**	H	NNWC	Project initiated Planned 2008 completion

Culvert Summaries

The following is a series of tables containing data on each high and medium priority culvert. The tables are organized by cluster, as listed in Table 4. A short narrative and map accompanies each cluster. Culverts other than ones that are part of the map's cluster of focus may be shown. The end point of the fish distribution layers does not necessarily indicate that fish are absent upstream of the end point. Total miles, listed at the beginning of each cluster, refers to the total miles of habitat available upstream if access was improved through replacing or modifying all the culverts listed in that cluster. If two culverts are located on one stream, upstream habitat miles are only recorded for the lower culvert. Counting habitat above both culverts would result in duplication of miles. Potential partners listed refers to entities that could provide any of the following activities, including but not limited to, overall management and coordination (shown as the 'lead' on some clusters), grant writing, administration, contract management, education, supplies, equipment, or implementing additional enhancements (i.e. riparian or large woody debris projects).

The following terms are used throughout the summaries and are defined here for consistency:

Inlet Gradient %: Channel gradient from the inlet of the culvert, upstream one pipe diameter.

Upstream Gradient: Channel gradient beginning at a point upstream of the inlet (above the culvert-influence area) and ending approximately 50 feet upstream of that point.

Bankfull Width: Bankfull flow is a winter high or peak flow that usually occurs on average every 1 to 2 years. Look for indicators of the highest annual water scour marks on each bank, such as a change in vegetation, bank topography, or the size of streambed material. Other indicators include a line defining the lower limit of lichen colonization, exposed roots, a stain line visible on bare substrate, or an undisturbed line of organic debris on the ground. These measuring points should be well above any influence the stream crossing may have on channel width.

Bankfull Ratio: [Inlet Width / Bankfull Width] The bankfull ratio is a measure of channel constriction as water flows into the culvert. In order for a culvert crossing structure to meet the criteria for stream simulation, this ratio must be one or greater. Structures that do not constrict the channel at most flows are generally more successful at passing fish and other biota.

Co: coho

Stw: winter steelhead

Chf: fall chinook

Ct: cutthroat

1 – WALKER CREEK

Total Habitat Gained: 6.8 miles

These three culverts are located in the uppermost extent of anadromous fish distribution in the Nestucca Watershed on BLM-managed roads and land. In 2005, BLM replaced a fish passage barrier culvert with a bridge on the mainstem Nestucca, just below Walker Creek's confluence. However, just below the new bridge is fish barrier culvert #1129. Replacing or modifying this culvert, along with replacing #1157 and #1174, will allow unrestricted access to salmon habitat in the Walker Creek watershed.

Potential Partners: BLM (lead), TEP, NNWC, City of McMinnville

LOCATION INFO		CULVERT #	1129	PRIORITY	H
Watershed	Nestucca				
Stream Name	Nestucca River				
Township-Range-Section-1/4	3S – 6W – S15 – SW of NW				
UTM Easting / Northing	467208 / 5017400				
Road Name	3613 – Nestucca Access Road				
Road/Culvert Owner	BLM				
Adjacent Landowners	City of McMinnville				

CULVERT INFO		CHANNEL INFO	
Shape	Box	**Inlet Gradient (%)**	2.0
Material	Concrete	**Upstream Gradient (%)**	2.0
Length (ft)	91.5	**Bankfull Width (ft)**	22.0
Width (in)	120.0	**Bankfull Ratio**	0.5
Height (in)	120.0		
Outlet Drop (ft)	0.5		
Slope (%)	2.0		

PRIORITIZATION ANALYSIS			
Habitat Length	6.8 miles	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**13**

NOTES: This culvert is located in Yamhill County. Wood baffles (4'x4's) have been placed in the culvert. BLM has completed an Environmental Assessment for replacement of this culvert (i.e. NEPA).

LOCATION INFO		CULVERT #	1157	PRIORITY	H
Watershed	Nestucca				
Stream Name	Walker Creek				
Township-Range-Section-1/4	3S – 6W – S15 – SE of SW				
UTM Easting / Northing	467477 / 5016513				
Road Name	3615.3 – A-B Road				
Road/Culvert Owner	BLM				
Adjacent Landowners	BLM				
CULVERT INFO		**CHANNEL INFO**			
Shape	Pipe arch	**Inlet Gradient (%)**	3.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	52.8	**Bankfull Width (ft)**	16.9		
Width (in)	78.0	**Bankfull Ratio**	0.5		
Height (in)	108.0				
Outlet Drop (ft)	0.0				
Slope (%)	1.0				
PRIORITIZATION ANALYSIS					
Habitat Length	5.7 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**12**		

NOTES: This culvert is located in Yamhill County. BLM has completed an Environmental Assessment for the replacement.

LOCATION INFO		CULVERT #	1174	PRIORITY	H
Watershed	Nestucca				
Stream Name	Walker Creek				
Township-Range-Section-1/4	3S – 6W – S22 – SW of NW				
UTM Easting / Northing	467407 / 5015715				
Road Name	3622.1				
Road/Culvert Owner	BLM				
Adjacent Landowners	BLM				
CULVERT INFO		**CHANNEL INFO**			
Shape	Pipe arch	**Inlet Gradient (%)**	8.0		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	50.6	**Bankfull Width (ft)**	17.0		
Width (in)	90.0	**Bankfull Ratio**	0.4		
Height (in)	69.0				
Outlet Drop (ft)	0.0				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	3.5 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

NOTES: This culvert is located in Yamhill County. BLM has completed an Environmental Assessment for the replacement.

1 - Walker Creek

Nestucca River

T3S-R6W

16

15

1129

1157

1174

21

22

23

28

Walker Creek

High Priority Culvert

Dam

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

2 – UPPER NESTUCCA

Total Habitat Gained: 1.9 miles

These three culverts are located on BLM-managed roads and land. Although the Ginger Creek and Fan Creek culverts are in different sub-watersheds, they have been included in the same cluster because the potential exists to gain efficiencies if concurrently implemented on-the-ground. Culverts #1090 and #1192 both cross the Nestucca Access Road and are relatively close in proximity. Instream enhancements, planned by BLM for future implementation, will improve habitat quality from fair to good. Ginger Creek was historically one of the most productive steelhead stream in the entire upper Nestucca.

Potential Partners: BLM (lead), TEP, NNWC

LOCATION INFO				CULVERT #	1090	PRIORITY	H
Watershed	Nestucca						
Stream Name	Ginger Creek						
Township-Range-Section-1/4	3S – 6W – S7 – NE of SE						
UTM Easting / Northing	463721 / 5018630						
Road Name	3613 – Nestucca Access Road						
Road/Culvert Owner	BLM						
Adjacent Landowners	BLM						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	21.0				
Material	Corrugated metal	**Upstream Gradient (%)**	10.0				
Length (ft)	82.1	**Bankfull Width (ft)**	20.0				
Width (in)	60.0	**Bankfull Ratio**	0.3				
Height (in)	60.0						
Outlet Drop (ft)	1.3						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.7 miles	**(1) Habitat Pts**	2				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

NOTES: Located at Ginger Creek's confluence with the mainstem Nestucca, this culvert is adjacent to a very productive salmon spawning reach. BLM has completed an Environmental Assessment for the replacement. Approximately 400' upstream is a 6' bedrock jump, created from past debris torrents, that appears to stop adult and juvenile passage. Although this barrier currently truncates anadromous distribution, the barrier is not permanent.

LOCATION INFO				CULVERT #	1192	PRIORITY	H
Watershed	Nestucca						
Stream Name	Fan Creek						
Township-Range-Section-1/4	3S – 7W – S24 – NE of SW						
UTM Easting / Northing	461059 / 5015442						
Road Name	3613 – Nestucca Access Road						
Road/Culvert Owner	BLM						
Adjacent Landowners	BLM						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	6.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	79.0	**Bankfull Width (ft)**	16.0				
Width (in)	66.0	**Bankfull Ratio**	0.3				
Height (in)	66.0						
Outlet Drop (ft)	0.0						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	1.2 miles	**(1) Habitat Pts**	3				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**11**				

NOTES: In the 1980's, log weirs were placed below the outlet to facilitate fish access to the culvert. BLM has completed an Environmental Assessment for the replacement.

LOCATION INFO				CULVERT #	2012	PRIORITY	H
Watershed	Nestucca						
Stream Name	Fan Creek						
Township-Range-Section-1/4	3S – 7W – S24 – NE of SW						
UTM Easting / Northing	461029 / 5015573						
Road Name	3724 – Fan Creek Road						
Road/Culvert Owner	BLM						
Adjacent Landowners	BLM						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	4.0				
Material	Corrugated metal	**Upstream Gradient (%)**	3.0				
Length (ft)	95.0	**Bankfull Width (ft)**	16.0				
Width (in)	84.0	**Bankfull Ratio**	0.4				
Height (in)	84.0						
Outlet Drop (ft)	0.0						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	1.1 miles	**(1) Habitat Pts**	3				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**11**				

NOTES: BLM has completed an Environmental Assessment for the replacement. This culvert appears to be a full barrier to coho as the last coho observed were in the outlet pool.

2 - Upper Nestucca

- High Priority Culvert
- Falls
- Coho
- Cutthroat
- Streams

Ownership

- BLM
- USFS
- ODF
- Local Government
- Private Industrial
- Private
- Unknown

1090

2012

1192

T3S-R7W T3S-R6W

Ginger Creek

Creek

River

Pan Creek

Nestucca

Bald Mtn Fork

Nestucca River

3 – SLICK ROCK CREEK / CLARENCE CREEK

Total Habitat Gained: 1.9 miles

These two culverts are located on Blaine Road, which is managed by Tillamook County, and they have been prioritized as mediums because current passage conditions are relatively good and the cost of replacement is high. Since their replacement would be driven by fish passage, rather than failure risk or hydraulic capacity, it is unlikely that Tillamook County would be leading an effort for their replacements. As such, other partners will need to take the lead while the County has a supportive role. Similar to the Ginger and Fan Creek culverts, these culverts should be replaced concurrently to gain potential on-the-ground efficiencies.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	1376	PRIORITY	M
Watershed	Nestucca						
Stream Name	Slick Rock Creek						
Township-Range-Section-1/4	4S – 8W – S1 – SE of NW						
UTM Easting / Northing	451373 / 5011137						
Road Name	Blaine Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Alicia Boicken, Wendell Larrew						
CULVERT INFO		**CHANNEL INFO**					
Shape	Pipe arch	**Inlet Gradient (%)**	17.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	83.0	**Bankfull Width (ft)**	22.3				
Width (in)	210.0	**Bankfull Ratio**	0.8				
Height (in)	150.0						
Outlet Drop (ft)	2.1						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	1.0 mile	**(1) Habitat Pts**	2				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**11**				

NOTES: A 60’ barrier falls exists 1.0 mile upstream. According to the RBA, coho distribution terminates 0.3 miles below the falls at a series of 6’ bedrock slides.

LOCATION INFO				CULVERT #	1385	PRIORITY	M
Watershed	Nestucca						
Stream Name	Clarence Creek						
Township-Range-Section-1/4	4S – 8W – S2 – NW of SW						
UTM Easting / Northing	449668 / 5010921						
Road Name	Blaine Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Glen Wilding, Glen Van de Voort						
CULVERT INFO		**CHANNEL INFO**					
Shape	Open bottom pipe arch	**Inlet Gradient (%)**	7.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	82.5	**Bankfull Width (ft)**	24.0				
Width (in)	210.0	**Bankfull Ratio**	0.7				
Height (in)	150.0						
Outlet Drop (ft)	0.0						
Slope (%)	1.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.9 miles	**(1) Habitat Pts**	2				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	GREY	**(4) Barrier Pts**	2				
		Prioritization Total Pts	**10**				

NOTES: A definitive barrier falls exists 0.9 miles upstream of the culvert.

3 - Slick Rock Creek / Clarence Creek

Medium Priority Culvert
Falls
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

N
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S

26
35
36
34
27
1
2
3
6
T3S-R8W
T4S-R8W
Slick Rock Creek
Clarence Creek
Nestucca River
Wake Creek
1376
1385

4 – UPPER NIAGARA CREEK

Total Habitat Gained: 1.3 miles

These crossings, located on a USFS-managed road and land, are two of the four culverts in the low road density Niagara Creek watershed. All downstream crossings on the mainstem are bridges. The two culverts are on different tributaries that join about 100 yards downstream. Both culverts are undersized, have partially plugged inlets with water ponded over the entrance, and there is evidence of deposition in the upstream floodplains. Neither culvert currently passes fish. The crossings present a risk to aquatic resources should the culverts plug completely resulting in a road fill failure.

Potential Partners: USFS (lead), TEP, NNWC

LOCATION INFO				CULVERT #	F761	PRIORITY	M
Watershed	Nestucca						
Stream Name	Niagara Creek tributary						
Township-Range-Section-1/4	4S – 8W – S27 – SW of SW						
UTM Easting / Northing	448144 / 5004228						
Road Name	2283						
Road/Culvert Owner	USFS						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	3.0				
Material	Corrugated metal	**Upstream Gradient (%)**	2.0				
Length (ft)	89.0	**Bankfull Width (ft)**	11.8				
Width (in)	48.0	**Bankfull Ratio**	0.3				
Height (in)	48.0						
Outlet Drop (ft)	1.7						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.8 miles	**(1) Habitat Pts**	2				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	ct	**(3) Fish Pts**	2				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

LOCATION INFO				CULVERT #	F762	PRIORITY	M
Watershed	Nestucca						
Stream Name	Niagara Creek tributary						
Township-Range-Section-1/4	4S – 8W – S27 – SW of SW						
UTM Easting / Northing	448109 / 5004132						
Road Name	2283						
Road/Culvert Owner	USFS						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	44.0				
Material	Corrugated metal	**Upstream Gradient (%)**	2.0				
Length (ft)	111.0	**Bankfull Width (ft)**	7.8				
Width (in)	48.0	**Bankfull Ratio**	0.5				
Height (in)	48.0						
Outlet Drop (ft)	1.8						
Slope (%)	0.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.5 miles	**(1) Habitat Pts**	1				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	ct	**(3) Fish Pts**	2				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**8**				

4 - Upper Niagara Creek

16

15

14

21

22

23

28

27

26

25

Niagara Creek

Buelah Creek

Pheasant Creek

T4S-R8W

F761

F762

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

5 – MOON CREEK

Total Habitat Gained: 1.4 miles

All three culverts are located on Moon Creek Road, the lower end of which is managed by Tillamook County. With the potential failure risk of O3022, the County could take the lead on a replacement project. Replacement of the other culverts may need to be facilitated by partners. Riparian enhancements could improve the habitat quality along all three tributaries. According to the RBA, coho are broadly distributed in low densities throughout 5 miles of the Moon Creek watershed.
Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	1208	PRIORITY	H
Watershed	Nestucca				
Stream Name	Moon Creek tributary				
Township-Range-Section-1/4	3S – 8W – S20 – SW of SW				
UTM Easting / Northing	444987 / 5015146				
Road Name	863 – Moon Creek Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	John Luciano				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	22.0		
Material	Concrete	**Upstream Gradient (%)**	4.0		
Length (ft)	51.0	**Bankfull Width (ft)**	6.0		
Width (in)	30.0	**Bankfull Ratio**	0.4		
Height (in)	30.0				
Outlet Drop (ft)	0.6				
Slope (%)	4.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.6 miles	**(1) Habitat Pts**	2		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

LOCATION INFO		CULVERT #	O3020	PRIORITY	H
Watershed	Nestucca				
Stream Name	Moon Creek tributary				
Township-Range-Section-1/4	3S – 8W – S20 – NW of NW				
UTM Easting / Northing	44890 / 5016400				
Road Name	863 – Moon Creek Road				
Road/Culvert Owner	Private				
Adjacent Landowners	Lyle Bledsoe				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	5.0		
Length (ft)	50.0	**Bankfull Width (ft)**	---		
Width (in)	12.0	**Bankfull Ratio**	---		
Height (in)	12.0				
Outlet Drop (ft)	0.0				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.5 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

NOTES: One plastic culvert has recently been installed, adjacent to the metal pipe, and is now carrying most of the streamflow.

LOCATION INFO				CULVERT #	O3022	PRIORITY	M
Watershed	Nestucca						
Stream Name	Moon Creek tributary						
Township-Range-Section-1/4	3S – 8W – S29 – SW of NW						
UTM Easting / Northing	445050 / 5014075						
Road Name	863 – Moon Creek Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	William Slavens						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Concrete	**Upstream Gradient (%)**	6.0				
Length (ft)	60.0	**Bankfull Width (ft)**	---				
Width (in)	24.0	**Bankfull Ratio**	---				
Height (in)	24.0						
Outlet Drop (ft)	1.0						
Slope (%)	4.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.3 miles	**(1) Habitat Pts**	1				
Habitat Quality	poor	**(2) Habitat Quality Pts**	1				
Fish Species	ct	**(3) Fish Pts**	2				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**7**				

NOTES: This culvert is broken in the middle and has a high failure risk.

6 – EAST CREEK

Total Habitat Gained: 2.3 miles

Both culverts are located on BLM-managed roads and land. The lower culvert on the mainstem marks the beginning of a highly productive salmon reach upstream. In 2005, Tillamook County upgraded the bridge at East Creek's confluence with Moon Creek.

Potential Partners: BLM (lead), TEP, NNWC

LOCATION INFO		CULVERT #	1122	PRIORITY	H
Watershed	Nestucca				
Stream Name	East Creek (Moon Creek)				
Township-Range-Section-1/4	3S – 8W – S15 – SW of NW				
UTM Easting / Northing	447919 / 5017594				
Road Name	3727 – East Creek Road				
Road/Culvert Owner	BLM				
Adjacent Landowners	BLM				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	3.0
Material	Corrugated metal	**Upstream Gradient (%)**	3.0
Length (ft)	119.0	**Bankfull Width (ft)**	47.0
Width (in)	144.0	**Bankfull Ratio**	0.3
Height (in)	144.0		
Outlet Drop (ft)	0.7		
Slope (%)	2.0		

PRIORITIZATION ANALYSIS			
Habitat Length	2.3 miles	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw chf ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**13**

NOTES: BLM has completed an Environmental Assessment for replacement of this culvert.

LOCATION INFO		CULVERT #	2016	PRIORITY	M
Watershed	Nestucca				
Stream Name	East Creek tributary				
Township-Range-Section-1/4	3S– 8W – S15 – NE of NW				
UTM Easting / Northing	448137 / 5017918				
Road Name	3727 – East Creek Road				
Road/Culvert Owner	BLM				
Adjacent Landowners	BLM				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	3.0
Material	Corrugated metal	**Upstream Gradient (%)**	5.0
Length (ft)	60.0	**Bankfull Width (ft)**	15.2
Width (in)	42.0	**Bankfull Ratio**	0.2
Height (in)	42.0		
Outlet Drop (ft)	0.0		
Slope (%)	2.0		

PRIORITIZATION ANALYSIS			
Habitat Length	0.2 miles	**(1) Habitat Pts**	1
Habitat Quality	fair	**(2) Habitat Quality Pts**	2
Fish Species	co stw ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**9**

5 - Moon Creek
6 - East Creek

Moon Creek

East Creek

2016

1122

O3020

1208

O3022

T3S-R8W

7 8 9 10

18 17 16 15

19 20 21 22

30 29 28 27 26

High Priority Culvert

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W E

S

7 – BAYS CREEK

Total Habitat Gained: 1.2 miles

USFS and Green Diamond have road and land ownership in the Bays Creek watershed. In 2006, Green Diamond replaced the culvert crossing the mainstem near the mouth with a bridge. Several instream enhancement projects have been implemented throughout the mainstem (below #2024 and downstream of the second bridge). A fish weir exists on the mainstem, just upstream of Green Diamond's new bridge. ODFW does not consider the weir a barrier since wild fish are manually transported above it.

Potential Partners: Green Diamond, USFS, TEP, NNWC, ODFW

LOCATION INFO				CULVERT #	F2024	PRIORITY	M
Watershed	Nestucca						
Stream Name	Bays Creek tributary						
Township-Range-Section-1/4	3S – 9W – S13 – NE of NW						
UTM Easting / Northing	442582 / 5016182						
Road Name	8573						
Road/Culvert Owner	USFS						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	17.0				
Material	Corrugated metal	**Upstream Gradient (%)**	3.0				
Length (ft)	54.0	**Bankfull Width (ft)**	11.9				
Width (in)	72.0	**Bankfull Ratio**	0.5				
Height (in)	72.0						
Outlet Drop (ft)	0.8						
Slope (%)	5.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.7 miles	**(1) Habitat Pts**	2				
Habitat Quality	poor	**(2) Habitat Quality Pts**	1				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

LOCATION INFO				CULVERT #	F2025	PRIORITY	M
Watershed	Nestucca						
Stream Name	Bays Creek						
Township-Range-Section-1/4	3S – 9W – S13 – SE of SW						
UTM Easting / Northing	442266 / 5016722						
Road Name	8573						
Road/Culvert Owner	USFS						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Open bottom arch	**Inlet Gradient (%)**	36.0				
Material	Corrugated metal	**Upstream Gradient (%)**	1.0				
Length (ft)	60.0	**Bankfull Width (ft)**	16.5				
Width (in)	145.0	**Bankfull Ratio**	0.7				
Height (in)	114.0						
Outlet Drop (ft)	0.0						
Slope (%)	5.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.5 miles	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

7 - Bays Creek

11
12
7
T3S-R9W
T3S-R8W
14
13
18
23
24
19
20
Bays Creek
Moon Creek
Nestucca River
F2025
F2024
Fish Weir
O3020
1208

High Priority Culvert
Medium Priority Culvert
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

N
W
E
S

8 – BOULDER CREEK

Total Habitat Gained: 4.1 miles

All three culverts occur on Tillamook County-managed roads (Blankenship and Blaine), with adjacent private landowners. Due to the very close proximity of these culverts, this is an ideal situation to utilize on-the-ground and planning efficiencies. Since these culverts are not currently failing, but instead pose fish passage problems, a partner other than Tillamook County will likely need to lead enhancement efforts.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	1237	PRIORITY	H
Watershed	Nestucca						
Stream Name	Boulder Creek						
Township-Range-Section-1/4	3S – 9W – S26 – SW of NE						
UTM Easting / Northing	441128 / 5014415						
Road Name	Blankenship Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Walter Blankenship, Tillamook County						
CULVERT INFO		**CHANNEL INFO**					
Shape	Pipe arch	**Inlet Gradient (%)**	9.0				
Material	Corrugated metal	**Upstream Gradient (%)**	7.0				
Length (ft)	32.5	**Bankfull Width (ft)**	17.0				
Width (in)	108.0	**Bankfull Ratio**	0.5				
Height (in)	72.0						
Outlet Drop (ft)	0.0						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	4.1 miles	**(1) Habitat Pts**	4				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	GREY	**(4) Barrier Pts**	2				
		Prioritization Total Pts	**11**				

LOCATION INFO				CULVERT #	1245	PRIORITY	H
Watershed	Nestucca						
Stream Name	Boulder Creek						
Township-Range-Section-1/4	3S – 9W – S26 – SW of NE						
UTM Easting / Northing	441870 / 5014283						
Road Name	Blaine Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Lowell Schrock, Tillamook County						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	11.0				
Material	Corrugated metal	**Upstream Gradient (%)**	3.0				
Length (ft)	95.0	**Bankfull Width (ft)**	24.5				
Width (in)	126.0	**Bankfull Ratio**	0.4				
Height (in)	126.0						
Outlet Drop (ft)	0.0						
Slope (%)	4.0						
PRIORITIZATION ANALYSIS							
Habitat Length	4.0 miles	**(1) Habitat Pts**	4				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**12**				

LOCATION INFO				CULVERT #	1264	PRIORITY	H
Watershed	Nestucca						
Stream Name	Boulder Creek						
Township-Range-Section-1/4	3S – 9W – S26 – SW of NE						
UTM Easting / Northing	441315 / 5014134						
Road Name	Boulder Creek Road (old)						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Lowell Schrock, Reuben Schrock						
CULVERT INFO		**CHANNEL INFO**					
Shape	Pipe arch	**Inlet Gradient (%)**	2.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	42.6	**Bankfull Width (ft)**	23.6				
Width (in)	108.0	**Bankfull Ratio**	0.4				
Height (in)	96.0						
Outlet Drop (ft)	0.4						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	3.9 miles	**(1) Habitat Pts**	4				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**12**				

8 - Boulder Creek

1237
1245
1264
F2060
F2055

27
26
25
34
35
36
31
3
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10
11
12
7
8

Blaine Road
Nestucca
Boulder Creek
River
Alder Creek
Tody Creek
Turpy Creek
Limestone Creek

T3S-R9W
T3S-R8W
T4S-R9W
T4S-R8W

High Priority Culvert
Medium Priority Culvert
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

N
W
E
S

9 – UNNAMED TRIBUTARIES

Total Habitat Gained: 0.7 miles

Culverts #1253 and #1278 are on unnamed tributaries to the mainstem Nestucca River. Although ranked as medium priorities, their proximity to each other has offered a clustering opportunity.
Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	1253	PRIORITY	M
Watershed	Nestucca				
Stream Name	Nestucca River tributary				
Township-Range-Section-1/4	3S – 9W – S27 – SW of NW				
UTM Easting / Northing	438633 / 5014230				
Road Name	Blaine Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Doris Sorenson Trust				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	9.0		
Material	Concrete/Corrugated metal	**Upstream Gradient (%)**	4.0		
Length (ft)	53.0	**Bankfull Width (ft)**	11.0		
Width (in)	42.0	**Bankfull Ratio**	0.3		
Height (in)	42.0				
Outlet Drop (ft)	1.5				
Slope (%)	12.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.3 miles	**(1) Habitat Pts**	1		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	co ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

LOCATION INFO		CULVERT #	1278	PRIORITY	M
Watershed	Nestucca				
Stream Name	Nestucca River tributary				
Township-Range-Section-1/4	3S – 9W – S27 – NW of SW				
UTM Easting / Northing	438599 / 5014078				
Road Name	Unnamed				
Road/Culvert Owner	Private				
Adjacent Landowners	Doris Sorenson Trust				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	12.0		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	24.0	**Bankfull Width (ft)**	6.0		
Width (in)	24.0	**Bankfull Ratio**	0.3		
Height (in)	24.0				
Outlet Drop (ft)	0.0				
Slope (%)	4.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.4 miles	**(1) Habitat Pts**	1		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	co ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

10 – WOLFE CREEK

Total Habitat Gained: 4.4 miles

Engineering for replacing this culvert is underway and on-the-ground construction is scheduled for 2007. Along with the culvert replacement, adjacent landowners have agreed to extensive instream and riparian enhancements. ODFW is assisting with instream enhancement designs and the NNWC is assisting with riparian enhancements. All partners listed below are contributing match to the project.

Potential Partners: TEP (lead), Tillamook County, USFS, NNWC, ODFW, private landowners

LOCATION INFO			
Watershed	Nestucca		
Stream Name	Wolfe Creek		
Township-Range-Section-1/4	3S – 9W – S28 – NE of NE		
UTM Easting / Northing	438210 / 5014600		
Road Name	860 – Wolfe Creek Road		
Road/Culvert Owner	Tillamook County		
Adjacent Landowners	Thomas Deyoe, Bryan Measor		
CULVERT INFO		**CHANNEL INFO**	
Shape	Circular	**Inlet Gradient (%)**	3.0
Material	Corrugated metal	**Upstream Gradient (%)**	4.0
Length (ft)	65.0	**Bankfull Width (ft)**	30.0
Width (in)	120.0	**Bankfull Ratio**	0.3
Height (in)	120.0		
Outlet Drop (ft)	0.1		
Slope (%)	2.0		
PRIORITIZATION ANALYSIS			
Habitat Length	4.4 miles	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw chf ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**13**

CULVERT #	O3058	**PRIORITY**	**H**

9 - Unnamed Tribs
10 - Wolfe Creek

16
15
14
21
22
23
28
27
26
25

Wolfe Creek
Swab Creek
Blaine Road
Boulder Creek
Nestucca River

T3S-R9W

O3058
1253
1278
1237
1245
1264

High Priority Culvert
Medium Priority Culvert
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

N
W
E
S

11 – FOLAND CREEK

Total Habitat Gained: 2.8 miles

Both culverts are located under Bixby Road, which is managed by Tillamook County and surrounded by rural landowners. The County could take the lead on culvert #1321, since it is becoming a failure risk, and a partner could take the lead on culvert #1309. The two replacements could leverage the other.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	1309	PRIORITY	H
Watershed	Nestucca				
Stream Name	Foland Creek				
Township-Range-Section-1/4	3S – 9W – S29 – SE of SW				
UTM Easting / Northing	436193 / 5013691				
Road Name	Bixby Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Timothy Strong, Ollie Woods (Trustee)				
CULVERT INFO		**CHANNEL INFO**			
Shape	Pipe arch	**Inlet Gradient (%)**	4.0		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	52.0	**Bankfull Width (ft)**	20.0		
Width (in)	96.0	**Bankfull Ratio**	0.4		
Height (in)	72.0				
Outlet Drop (ft)	0.0				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	2.4 miles	**(1) Habitat Pts**	4		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw chf ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**12**		

LOCATION INFO		CULVERT #	1321	PRIORITY	M
Watershed	Nestucca				
Stream Name	Foland Creek tributary				
Township-Range-Section-1/4	3S – 9W – S32 – NE of NW				
UTM Easting / Northing	436085 / 5013235				
Road Name	Bixby Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Thad Brill, Timothy Strong				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	13.0		
Material	Corrugated metal	**Upstream Gradient (%)**	4.0		
Length (ft)	106.5	**Bankfull Width (ft)**	8.0		
Width (in)	48.0	**Bankfull Ratio**	0.5		
Height (in)	48.0				
Outlet Drop (ft)	2.0				
Slope (%)	5.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.4 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

NOTES: This culvert is failing (broken in the middle).

11 - Foland Creek

BEAVER

Blaine Road

1309

1321

Little Foland Creek

Nestucca River

32

33

T3S-R9W

T4S-R9W

5

4

3

West Fork Foland Creek

Foland Creek

Tony Creek

Turpy Creek

High Priority Culvert

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

12 – EAST BEAVER CREEK

Total Habitat Gained: 7.0 miles

Although #1001 is located on the mainstem in the upper watershed, no other crossings, other than bridges, exist downstream. Culverts #O3012, #O3017, and #1134 are on tributaries to East Beaver Creek in the lower watershed. With the replacement of #1001 in 2006 and #O3012 in 2007, opportunities to replace #O3017 and #1134 within the same time frame should be investigated.

Potential Partners: Tillamook County, BLM, Green Diamond, USFS, TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	1001	PRIORITY	H
Watershed	Nestucca						
Stream Name	East Beaver Creek						
Township-Range-Section-1/4	2S – 8W – S29 – NE of SE						
UTM Easting / Northing	446698 / 5023125						
Road Name	857 – East Beaver Creek Road						
Road/Culvert Owner	BLM						
Adjacent Landowners	Green Diamond						
CULVERT INFO		**CHANNEL INFO**					
Shape	Pipe arch	**Inlet Gradient (%)**	16.0				
Material	Corrugated metal	**Upstream Gradient (%)**	9.0				
Length (ft)	60.0	**Bankfull Width (ft)**	24.5				
Width (in)	96.0	**Bankfull Ratio**	0.3				
Height (in)	67.0						
Outlet Drop (ft)	1.2						
Slope (%)	6.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.5 miles	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

NOTES: BLM has completed an Environmental Assessment for the replacement and is implementation is scheduled for 2006.

LOCATION INFO		CULVERT #	O3012	PRIORITY	H
Watershed	Nestucca				
Stream Name	Wildcat Creek (East Beaver Creek)				
Township-Range-Section-1/4	3S – 9W – S18 – NW of NE				
UTM Easting / Northing	434925 / 5017825				
Road Name	East Beaver Creek Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Richard Clark, James Kessinger				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	5.0		
Length (ft)	60.0	**Bankfull Width (ft)**	---		
Width (in)	36.0	**Bankfull Ratio**	---		
Height (in)	36.0				
Outlet Drop (ft)	0.5				
Slope (%)	4.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.5 miles	**(1) Habitat Pts**	4		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**12**		

NOTES: Low priority culvert #1971 and #1972 are upstream but are not barriers. USFS has completed a design for the replacement of this culvert. NNWC is leading implementation, which is scheduled for 2007.

LOCATION INFO		CULVERT #	O3017	PRIORITY	M
Watershed	Nestucca				
Stream Name	Bear Creek (East Beaver Creek)				
Township-Range-Section-1/4	3S – 9W – S18 – NE of NW				
UTM Easting / Northing	434665 / 5017925				
Road Name	857 – East Beaver Creek Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	James Kessinger, William Miles				
CULVERT INFO		**CHANNEL INFO**			
Shape	Open bottom arch	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	---		
Length (ft)	---	**Bankfull Width (ft)**	---		
Width (in)	---	**Bankfull Ratio**	---		
Height (in)	---				
Outlet Drop (ft)	0.0				
Slope (%)	---				
PRIORITIZATION ANALYSIS					
Habitat Length	4.4 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw chf ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**12**		

LOCATION INFO				CULVERT #	1134	PRIORITY	M
Watershed	Nestucca						
Stream Name	Bummer Creek (East Beaver Creek)						
Township-Range-Section-1/4	3S – 9W – S17 – NE of SE						
UTM Easting / Northing	436721 / 5017066						
Road Name	Unnamed						
Road/Culvert Owner	Private						
Adjacent Landowners	Curt Schonbrod, Mary Tattoed						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	34.0				
Material	Corrugated metal	**Upstream Gradient (%)**	6.0				
Length (ft)	30.5	**Bankfull Width (ft)**	10.0				
Width (in)	36.0	**Bankfull Ratio**	0.3				
Height (in)	36.0						
Outlet Drop (ft)	1.6						
Slope (%)	9.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.6 miles	**(1) Habitat Pts**	2				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	ct	**(3) Fish Pts**	2				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

12 - East Beaver Creek

High Priority Culvert

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

T2S-R8W

T3S-R9W

T3S-R8W

1001

O3017

O3012

O3011

1134

F2025

F2024

O3020

Bear Creek

Wildcat Creek

Bummer Creek

East Beaver Creek Road

East Beaver Creek

101

13 – WEST BEAVER CREEK

Total Habitat Gained: 12.0 miles

Eight culverts are grouped in this cluster, only two of which are ranked as high priorities. However, replacing several medium priority culverts in the same watershed will result in significant watershed improvements. It is unlikely that all eight culverts will be replaced within the same time frame, but smaller clusters can be broken out to leverage replacements. Several opportunities exist within this cluster to replace barriers on lands where owners (private timber companies) regularly implement replacements. Numerous culverts were replaced with the recent completion of the County's Sandlake-Galloway Road Project.

Potential Partners: Green Diamond, Stimson, TEP, NNWC

LOCATION INFO		CULVERT #	1031	PRIORITY	M
Watershed	Nestucca				
Stream Name	Tiger Creek (Beaver Creek)				
Township-Range-Section-1/4	3S – 9W – S5 – NW of SE				
UTM Easting / Northing	436455 / 5020165				
Road Name	Unnamed				
Road/Culvert Owner	Private				
Adjacent Landowners	LaFond Construction				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	3.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	52.0	**Bankfull Width (ft)**	4.5		
Width (in)	48.0	**Bankfull Ratio**	0.9		
Height (in)	48.0				
Outlet Drop (ft)	1.0				
Slope (%)	1.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.0 miles	**(1) Habitat Pts**	2		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**11**		

LOCATION INFO		CULVERT #	1065	PRIORITY	M
Watershed	Nestucca				
Stream Name	Tiger Creek tributary (Beaver Creek)				
Township-Range-Section-1/4	3S – 9W – S7 – NE of NW				
UTM Easting / Northing	434430 / 5019555				
Road Name	Nosacks Road (unofficial name)				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	1.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	27.0	**Bankfull Width (ft)**	12.6		
Width (in)	72.0	**Bankfull Ratio**	0.5		
Height (in)	72.0				
Outlet Drop (ft)	0.0				
Slope (%)	6.0				
PRIORITIZATION ANALYSIS					
Habitat Length	4.2 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

LOCATION INFO		CULVERT #	1012	PRIORITY	M
Watershed	Nestucca				
Stream Name	North Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S3 – SE of NW				
UTM Easting / Northing	429932 / 5020960				
Road Name	310B				
Road/Culvert Owner	Stimson Lumber				
Adjacent Landowners	Stimson Lumber				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	2.0		
Material	Concrete	**Upstream Gradient (%)**	2.0		
Length (ft)	50.0	**Bankfull Width (ft)**	16.7		
Width (in)	48.0	**Bankfull Ratio**	0.2		
Height (in)	48.0				
Outlet Drop (ft)	0.0				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.1 miles	**(1) Habitat Pts**	3		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co, stw, ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**11**		

NOTES: Stimson intends to replace in 2007 or 2008.

LOCATION INFO		CULVERT #	1070	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S10 – SE of NE				
UTM Easting / Northing	430664 / 5019464				
Road Name	370 – Newberg Road				
Road/Culvert Owner	Stimson Lumber				
Adjacent Landowners	Stimson Lumber				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	30.0		
Material	Corrugated metal	**Upstream Gradient (%)**	3.0		
Length (ft)	41.0	**Bankfull Width (ft)**	7.0		
Width (in)	72.0	**Bankfull Ratio**	0.9		
Height (in)	72.0				
Outlet Drop (ft)	0.0				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	2.8 miles	**(1) Habitat Pts**	4		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**11**		

LOCATION INFO		CULVERT #	1078	PRIORITY	H
Watershed	Nestucca				
Stream Name	West Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S11 – NE of SE				
UTM Easting / Northing	432085 / 5019056				
Road Name	Unnamed				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	21.0		
Material	Corrugated metal	**Upstream Gradient (%)**	4.0		
Length (ft)	40.0	**Bankfull Width (ft)**	18.0		
Width (in)	48.0	**Bankfull Ratio**	0.2		
Height (in)	48.0				
Outlet Drop (ft)	0.4				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.9 miles	**(1) Habitat Pts**	2		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**11**		

NOTES: Culvert #O3055 downstream was replaced in 2005 with a backwatered, countersunk concrete box culvert (good passage).

LOCATION INFO		CULVERT #	1083	PRIORITY	H
Watershed	Nestucca				
Stream Name	West Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S10 – NE of SE				
UTM Easting / Northing	430552 / 5018919				
Road Name	Unnamed				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	30.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	22.5	**Bankfull Width (ft)**	13.0		
Width (in)	66.0	**Bankfull Ratio**	0.4		
Height (in)	66.0				
Outlet Drop (ft)	0.9				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	2.0 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

NOTES: This culvert is failing.

LOCATION INFO		CULVERT #	1108	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S14 – NW of NE				
UTM Easting / Northing	431980 / 5018260				
Road Name	Unnamed				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	4.0		
Material	Corrugated metal	**Upstream Gradient (%)**	6.0		
Length (ft)	71.0	**Bankfull Width (ft)**	15.0		
Width (in)	48.0	**Bankfull Ratio**	0.3		
Height (in)	48.0				
Outlet Drop (ft)	0.5				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.3 miles	**(1) Habitat Pts**	1		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

LOCATION INFO		CULVERT #	1121	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Beaver Creek tributary				
Township-Range-Section-1/4	3S – 10W – S14 – NW of SW				
UTM Easting / Northing	431010 / 5017689				
Road Name	Unnamed				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	20.0		
Material	Corrugated metal	**Upstream Gradient (%)**	4.0		
Length (ft)	63.0	**Bankfull Width (ft)**	11.0		
Width (in)	36.0	**Bankfull Ratio**	0.3		
Height (in)	36.0				
Outlet Drop (ft)	0.9				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.3 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

13 - West Beaver Creek

Ownership

- BLM
- USFS
- ODF
- Local Government
- Private Industrial
- Private
- Unknown

- High Priority Culvert
- Medium Priority Culvert
- Coho
- Cutthroat
- Streams

N W E S

34
North Beaver Creek
1012
3
2
1
T3S-R10W
T3S-R9W
101
5
1031
1065
Tiger Creek
Bear Creek
8
7
Wildcat
Creek
O3017
O3012
1070
Sand Lake
Road
10
11
1078
12
1083
West Beaver Creek
1108
15
1121
14

14 – WEST CREEK

Total Habitat Gained: 0.9 miles

These three culverts are under a USFS-managed road on separate tributaries draining into West Creek's mainstem. A downstream culvert on the mainstem has recently been permanently removed. The USFS could take the lead on implementing replacements with the potential for assistance from several partners.
Potential Partners: USFS (lead), Forest Capital Partners, Green Diamond, TEP, NNWC, private landowners

LOCATION INFO		CULVERT #	F3	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Creek tributary				
Township-Range-Section-1/4	3S – 10W – S24 – NE of SE				
UTM Easting / Northing	433595 / 5015412				
Road Name	1004				
Road/Culvert Owner	USFS				
Adjacent Landowners	Forest Capital Partners LLC				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	17.0
Material	Corrugated metal	**Upstream Gradient (%)**	1.0
Length (ft)	36.0	**Bankfull Width (ft)**	5.3
Width (in)	24.0	**Bankfull Ratio**	0.4
Height (in)	24.0		
Outlet Drop (ft)	1.9		
Slope (%)	2.0		

PRIORITIZATION ANALYSIS			
Habitat Length	0.2 miles	**(1) Habitat Pts**	1
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**10**

NOTES: This culvert is failing and the inlet is partially blocked.

LOCATION INFO		CULVERT #	1203	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Creek tributary				
Township-Range-Section-1/4	3S – 9W – S19 – SE of SW				
UTM Easting / Northing	434354 / 5015198				
Road Name	1004				
Road/Culvert Owner	USFS				
Adjacent Landowners	Lucia Duvall, Thomas Ullmann, Lloyd Redford				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	14.0		
Material	Corrugated metal	**Upstream Gradient (%)**	3.0		
Length (ft)	31.0	**Bankfull Width (ft)**	9.0		
Width (in)	24.0	**Bankfull Ratio**	0.2		
Height (in)	24.0				
Outlet Drop (ft)	1.7				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.6 miles	**(1) Habitat Pts**	2		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

NOTES: This culvert is failing.

LOCATION INFO		CULVERT #	1213	PRIORITY	M
Watershed	Nestucca				
Stream Name	West Creek tributary				
Township-Range-Section-1/4	3S – 9W – S30 – NE of NW				
UTM Easting / Northing	434583 / 5015055				
Road Name	1004				
Road/Culvert Owner	USFS				
Adjacent Landowners	Green Diamond, Clayton Rees				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	39.0		
Material	Corrugated metal	**Upstream Gradient (%)**	5.0		
Length (ft)	40.0	**Bankfull Width (ft)**	9.0		
Width (in)	18.0	**Bankfull Ratio**	0.2		
Height (in)	18.0				
Outlet Drop (ft)	0.7				
Slope (%)	7.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.1 miles	**(1) Habitat Pts**	1		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**9**		

14 - West Creek

23

24

19

F3

1203

1213

26

25

30

T3S-R10W

T3S-R9W

West Creek

Saling Creek

Lehman Creek

BEAVER

101

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

15 – FARMER CREEK

Total Habitat Gained: 3.7 miles

This cluster is comprised of two high priority culverts on tributaries in the upper watershed and one medium priority culvert on the mainstem downstream. The medium priority culvert, #O3032, is currently passing fish at some flows, but has potential to develop into a more significant barrier due to being undersized. A 2 foot concrete dam at rivermile 0.44 is a more inhibitive fish barrier. According to the RBA, the dam may be limiting the upstream distribution of juvenile salmon from the mainstem Nestucca. Farmer Creek is identified as a high priority instream enhancement site by ODFW.
Potential Partners: Tillamook County, Green Diamond, USFS, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	O3032	PRIORITY	M
Watershed	Nestucca				
Stream Name	Farmer Creek				
Township-Range-Section-1/4	4S – 10W – S1 – SW of NW				
UTM Easting / Northing	432420 / 5011350				
Road Name	880 – Farmer Creek Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	William Loewen, Nora Welty, State of Oregon				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	3.0		
Length (ft)	60.0	**Bankfull Width (ft)**	---		
Width (in)	96.0	**Bankfull Ratio**	---		
Height (in)	96.0				
Outlet Drop (ft)	0.7				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	3.7 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw chf ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

LOCATION INFO		CULVERT #	F23	PRIORITY	H
Watershed	Nestucca				
Stream Name	Farmer Creek tributary				
Township-Range-Section-1/4	4S – 10W – S3 – NE of NE				
UTM Easting / Northing	430342 / 5011773				
Road Name	880 – Farmer Creek Road				
Road/Culvert Owner	USFS				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Open Bottom Arch	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	---		
Length (ft)	41.0	**Bankfull Width (ft)**	15.0		
Width (in)	102.0	**Bankfull Ratio**	0.6		
Height (in)	94.0				
Outlet Drop (ft)	0.0				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.8 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**9**		

LOCATION INFO				CULVERT #	F24	PRIORITY	H
Watershed	Nestucca						
Stream Name	Farmer Creek tributary						
Township-Range-Section-1/4	4S – 10W – S3 – NW of NE						
UTM Easting / Northing	430159 / 5011964						
Road Name	1034						
Road/Culvert Owner	USFS						
Adjacent Landowners	Green Diamond						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	9.0				
Material	Corrugated metal	**Upstream Gradient (%)**	1.0				
Length (ft)	38.5	**Bankfull Width (ft)**	6.3				
Width (in)	60.0	**Bankfull Ratio**	0.8				
Height (in)	60.0						
Outlet Drop (ft)	1.8						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.2 miles	**(1) Habitat Pts**	1				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

NOTES: USFS design is complete. No implementation is scheduled.

15 - Farmer Creek

High Priority Culvert
Medium Priority Culvert
Dam
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

26
25
West Creek
Saling Creek
35
36
River
Nestucca
F24
F23
T3S-R10W
T4S-R10W
O3032
Farmer Creek
101
3
2
1

16 – GEORGE CREEK

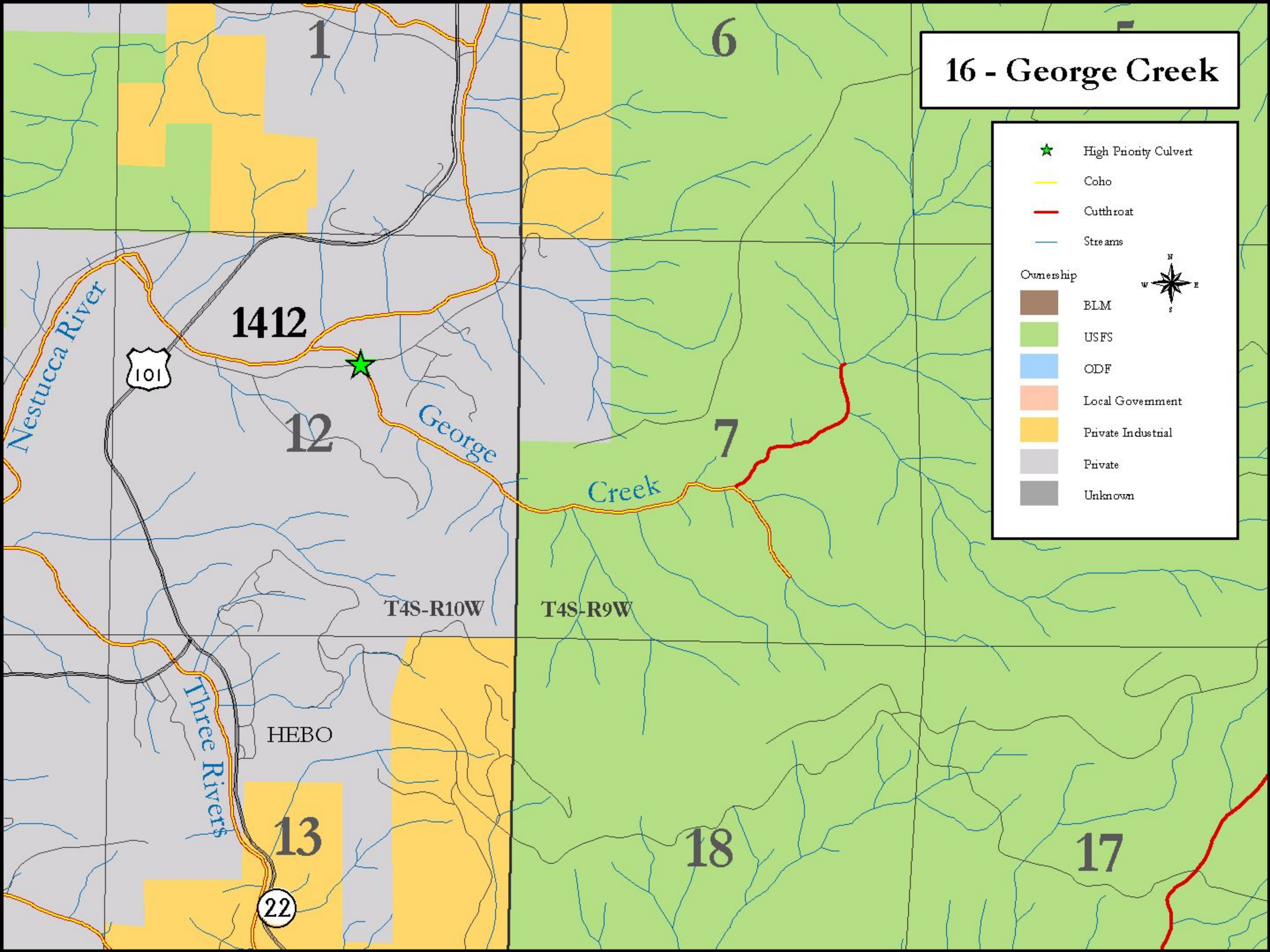
Total Habitat Gained: 0.9 miles

This high priority culvert is isolated in the watershed, with no medium or high priority barriers in its vicinity for clustering, which is not necessarily negative. The presence of chum salmon should further elevate the importance of replacing this culvert.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	1412	PRIORITY	H
Watershed	Nestucca						
Stream Name	George Creek						
Township-Range-Section-1/4	4S – 10W – S12 – SW of NE						
UTM Easting / Northing	433164 / 5009810						
Road Name	Evergreen Drive						
Road/Culvert Owner	Private						
Adjacent Landowners	Mark Cavatorta						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	7.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	36.0	**Bankfull Width (ft)**	30.0				
Width (in)	60.0	**Bankfull Ratio**	0.2				
Height (in)	60.0						
Outlet Drop (ft)	0.0						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.9 miles	**(1) Habitat Pts**	2				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw ct chum	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

16 - George Creek



17 – THREE RIVERS

Total Habitat Gained: 2.3 miles

These three culverts reside on private and State owned roads. The potential exists for ODOT to lead an effort in replacing two of the culverts, with potential assistance for partners. One of the limiting factors in this watershed is the Cedar Creek hatchery weir located on the mainstem of Three Rivers. This barrier is being redesigned in an effort led by the US Fish and Wildlife Service.

Potential Partners: ODOT, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	O353	PRIORITY	M
Watershed	Nestucca				
Stream Name	Woods Creek				
Township-Range-Section-1/4	5S – 9W – S4 – SW of NW				
UTM Easting / Northing	436952 / 5001833				
Road Name	Highway 22				
Road/Culvert Owner	ODOT				
Adjacent Landowners	Gibbs Family LLC				
CULVERT INFO		**CHANNEL INFO**			
Shape	Box	**Inlet Gradient (%)**	---		
Material	Concrete	**Upstream Gradient (%)**	4.0		
Length (ft)	50.0	**Bankfull Width (ft)**	---		
Width (in)	72.0	**Bankfull Ratio**	---		
Height (in)	72.0				
Outlet Drop (ft)	0.0				
Slope (%)	4.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.6 miles	**(1) Habitat Pts**	4		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**11**		

LOCATION INFO		CULVERT #	1574	PRIORITY	M
Watershed	Nestucca				
Stream Name	Three Rivers tributary				
Township-Range-Section-1/4	4S – 9W – S30 – SW of NE				
UTM Easting / Northing	434705 / 5004948				
Road Name	3094 – Big Trout Road				
Road/Culvert Owner	Three Rivers Road District				
Adjacent Landowners	Karl Vogel, Maxine Wright				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	2.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	31.0	**Bankfull Width (ft)**	11.0		
Width (in)	60.0	**Bankfull Ratio**	0.5		
Height (in)	60.0				
Outlet Drop (ft)	0.9				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.4 miles	**(1) Habitat Pts**	1		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw chf ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

LOCATION INFO				CULVERT #	1724	PRIORITY	H
Watershed	Nestucca						
Stream Name	Alder Creek						
Township-Range-Section-1/4	5S – 9W – S17 – NE of SE						
UTM Easting / Northing	436671 / 4998039						
Road Name	Highway 22						
Road/Culvert Owner	ODOT						
Adjacent Landowners	Herbert Crew						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	---				
Length (ft)	30.0	**Bankfull Width (ft)**	---				
Width (in)	36.0 & 48.0	**Bankfull Ratio**	---				
Height (in)	36.0 & 48.0						
Outlet Drop (ft)	0.5 & 0.0						
Slope (%)	---						
PRIORITIZATION ANALYSIS							
Habitat Length	0.3 miles	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

NOTES: This crossing has two side by side culverts, which equally divert streamflow in the winter (see picture). During the summer, flow is likely concentrated to the larger pipe.

17 - Three Rivers

1574

O353

1724

T4S-R9W

T5S-R9W

Pollard Creek

Lawrence Creek

Three Rivers

Woods Creek

Crazy Creek

Rock Creek

Bear Creek

Buck Creek

Alder Creek

Baxter Creek

- High Priority Culvert
- Medium Priority Culvert
- Falls
- Coho
- Cutthroat
- Streams

Ownership

- BLM
- USFS
- ODF
- Local Government
- Private Industrial
- Private
- Unknown

18 – HORN CREEK

Total Habitat Gained: 5.0 miles

Although within tidal influence, there are no known tidegates on the mainstem of Horn Creek. [One tidegate is located a small tributary.] One culvert is located downstream of #1527, but it is not an adult or juvenile fish barrier. The presence of chum in this watershed should elevate the importance of this culvert replacement. Riparian enhancements should be incorporated with replacing #1527.

Potential Partners: NNWC (lead), ODFW, private landowners

LOCATION INFO		CULVERT #	1527	PRIORITY	H
Watershed	Nestucca				
Stream Name	Horn Creek				
Township-Range-Section-1/4	4S – 10W – S20 – NE of SW				
UTM Easting / Northing	426612 / 5006208				
Road Name	Unnamed				
Road/Culvert Owner	Private				
Adjacent Landowners	Carl Hurliman				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	1.0
Material	Corrugated metal	**Upstream Gradient (%)**	1.0
Length (ft)	25.0	**Bankfull Width (ft)**	16.0
Width (in)	72.0	**Bankfull Ratio**	0.4
Height (in)	72.0		
Outlet Drop (ft)	0.0		
Slope (%)	0.0		

PRIORITIZATION ANALYSIS			
Habitat Length	5.0 miles	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct chum	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**13**

NOTES: USFS engineering complete. NNWC implementation 2007.

18 - Horn Creek

High Priority Culvert
Medium Priority Culvert
Tidegate
Dam
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

F24
F23
O3032
1412
O3035
1527
HEBO
T4S-R10W
Palmer Creek
Nestucca River
Horn Creek
Sand Creek
Town Creek
Smith Creek
Hartley Creek
Dawson Creek
101
22

19 – SOURGRASS CREEK

Total Habitat Gained: 2.2 miles

This subbasin is one of the most productive tributaries in the Little Nestucca. Despite its productivity, fish passage barriers are watershed concerns. ODOT is scheduled to replace #O355 in 2007 due to failure risks. However, a culvert inhibiting fish passage is located approximately one mile downstream. The replacement of these two projects will be very expensive and partnerships should be an integral planning component.

Potential Partners: ODOT, USFS, Green Diamond, TEP, NNWC, ODFW

LOCATION INFO		CULVERT #	O355	PRIORITY	H
Watershed	Little Nestucca				
Stream Name	Sourgrass Creek				
Township-Range-Section-1/4	5S – 9W – S34 – NE of SE				
UTM Easting / Northing	439952 / 4993262				
Road Name	Highway 22				
Road/Culvert Owner	ODOT				
Adjacent Landowners	USFS				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	---
Material	Corrugated metal	**Upstream Gradient (%)**	2.0
Length (ft)	150.0	**Bankfull Width (ft)**	---
Width (in)	120.0	**Bankfull Ratio**	---
Height (in)	120.0		
Outlet Drop (ft)	0.0		
Slope (%)	3.0		

PRIORITIZATION ANALYSIS			
Habitat Length	1.2 miles	**(1) Habitat Pts**	3
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct	**(3) Fish Pts**	3
Barrier Type	GREY	**(4) Barrier Pts**	2
		Prioritization Total Pts	**11**

NOTES: This culvert is located in Yamhill County. ODOT engineering is complete and construction planned for 2007.

LOCATION INFO				CULVERT #	O356	PRIORITY	H
Watershed	Little Nestucca						
Stream Name	Sourgrass Creek						
Township-Range-Section-1/4	5S – 9W – S34 – SE of SW						
UTM Easting / Northing	438929 / 4994452						
Road Name	Highway 22						
Road/Culvert Owner	ODOT						
Adjacent Landowners	Green Diamond						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	2.0				
Length (ft)	120.0	**Bankfull Width (ft)**	---				
Width (in)	120.0	**Bankfull Ratio**	---				
Height (in)	120.0						
Outlet Drop (ft)	2.0						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	2.2 miles	**(1) Habitat Pts**	4				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw chf ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**13**				

NOTES: This culvert is located in Yamhill County.

LOCATION INFO				CULVERT #	F734	PRIORITY	M
Watershed	Little Nestucca						
Stream Name	Sourgrass Creek tributary						
Township-Range-Section-1/4	5S – 9W – S35 – NW of NE						
UTM Easting / Northing	440821 / 4993434						
Road Name	223411						
Road/Culvert Owner	USFS						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	4.0				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	70.5	**Bankfull Width (ft)**	7.6				
Width (in)	54.0	**Bankfull Ratio**	0.6				
Height (in)	54.0						
Outlet Drop (ft)	0.0						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.8 miles	**(1) Habitat Pts**	2				
Habitat Quality	poor	**(2) Habitat Quality Pts**	1				
Fish Species	ct	**(3) Fish Pts**	2				
Barrier Type	GREY	**(4) Barrier Pts**	2				
		Prioritization Total Pts	**7**				

LOCATION INFO		CULVERT #	O354	PRIORITY	M
Watershed	Little Nestucca				
Stream Name	Sourgrass Creek tributary				
Township-Range-Section-1/4	5S – 9W – S35 – NE of SW				
UTM Easting / Northing	440738 / 4993143				
Road Name	Highway 22				
Road/Culvert Owner	ODOT				
Adjacent Landowners	USFS				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	---
Material	Concrete	**Upstream Gradient (%)**	3.0
Length (ft)	100.0	**Bankfull Width (ft)**	---
Width (in)	48.0	**Bankfull Ratio**	---
Height (in)	48.0		
Outlet Drop (ft)	0.0		
Slope (%)	2.0		

PRIORITIZATION ANALYSIS			
Habitat Length	0.7 miles	**(1) Habitat Pts**	2
Habitat Quality	poor	**(2) Habitat Quality Pts**	1
Fish Species	ct	**(3) Fish Pts**	2
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**8**

NOTES: Concrete sill on outlet pool.

19 - Sourgrass Creek

27

26

DOLPH JUNCTION

O356

22

River

34

35

F734

O355

O354

Sourgrass Creek

36

Little Nestucca

T5S-R9W

T6S-R9W

3

2

1

High Priority Culvert

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

20 – LOUIE CREEK / BAXTER CREEK

Total Habitat Gained: 4.0 miles

According to the RBA, Louie Creek and its tributaries are the most productive segments of the Little Nestucca basin. The very high densities of coho observed in Louie Creek and its primary tributary Baxter Creek may be initiating density dependent downstream migrations that are contributing significantly to seeding the mainstem Little Nestucca. This observation and the lack of a significant spawning peak in the mainstem, elevate the concern for protection and enhancement of Louie Creek and Baxter Creek. The coho densities observed in Baxter Creek were higher than RBA surveyors had ever observed in any stream corridor in the Midcoast district in the last five years. Only four crossings exist in this watershed. Two are bridges on Louie Creek, downstream of #O3003, and the other two are culverts in this cluster. The lower reach of Louie Creek is identified as a high priority enhancement site by ODFW.

Potential Partners: ODOT, Green Diamond, TEP, NNWC, ODFW

LOCATION INFO		CULVERT #	O3001	PRIORITY	M
Watershed	Little Nestucca				
Stream Name	Baxter Creek (Louie Creek)				
Township-Range-Section-1/4	5S – 9W – S28 – SW of NE				
UTM Easting / Northing	437710 / 4995425				
Road Name	Highway 22				
Road/Culvert Owner	ODOT				
Adjacent Landowners	Green Diamond				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	---
Material	Corrugated metal	**Upstream Gradient (%)**	2.0
Length (ft)	60.0	**Bankfull Width (ft)**	---
Width (in)	112.0	**Bankfull Ratio**	---
Height (in)	112.0		
Outlet Drop (ft)	0.0		
Slope (%)	1.0		

PRIORITIZATION ANALYSIS			
Habitat Length	2.7 miles	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw chf ct	**(3) Fish Pts**	3
Barrier Type	GREY	**(4) Barrier Pts**	2
		Prioritization Total Pts	**12**

NOTES: This culvert is lined with a concrete pad.

LOCATION INFO		CULVERT #	O3003	PRIORITY	H
Watershed	Little Nestucca				
Stream Name	Louie Creek				
Township-Range-Section-1/4	5S – 9W – S28 – SW of NE				
UTM Easting / Northing	437679 / 4995524				
Road Name	Highway 22				
Road/Culvert Owner	ODOT				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	---		
Length (ft)	---	**Bankfull Width (ft)**	---		
Width (in)	60.0	**Bankfull Ratio**	---		
Height (in)	60.0				
Outlet Drop (ft)	0.2				
Slope (%)	---				
PRIORITIZATION ANALYSIS					
Habitat Length	1.3 miles	**(1) Habitat Pts**	3		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw chf ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**12**		

20 - Louie Creek / Baxter Creek

1724

Alder Creek

T5S-R9W

20

21

22

Louie Creek

Baxter Creek

22

O3003

O3001

29

Little Nestucca River

28

DOLPH
JUNCTION

27

26

High Priority Culvert

Medium Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

21 – LITTLE NESTUCCA RIVER RD TRIBUTARIES

Total Habitat Gained: 2.0 miles

These three culverts are located on tributaries draining into the Little Nestucca River under Highway 130 (Little Nestucca River Road). All three tributaries provide critical summer rearing habitat. The potential exists for ODOT to lead replacement efforts with assistance from partners.

Potential Partners: ODOT (lead), TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	O3002	PRIORITY	H
Watershed	Little Nestucca						
Stream Name	Judson Creek						
Township-Range-Section-1/4	5S – 9W – S30 – NW of SE						
UTM Easting / Northing	434450 / 4995100						
Road Name	Highway 130						
Road/Culvert Owner	ODOT						
Adjacent Landowners	Kathleen Ziegler, Sashanna Ellinwood						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Concrete	**Upstream Gradient (%)**	5.0				
Length (ft)	60.0	**Bankfull Width (ft)**	---				
Width (in)	36.0	**Bankfull Ratio**	---				
Height (in)	36.0						
Outlet Drop (ft)	0.3						
Slope (%)	4.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.4 miles	**(1) Habitat Pts**	1				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

LOCATION INFO				CULVERT #	O3004	PRIORITY	H
Watershed	Little Nestucca						
Stream Name	McKnight Creek						
Township-Range-Section-1/4	5S – 10W – S25 – NE of SE						
UTM Easting / Northing	433375 / 4995050						
Road Name	Highway 130						
Road/Culvert Owner	ODOT						
Adjacent Landowners	Marlon Fessler						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	3.0				
Length (ft)	60.0	**Bankfull Width (ft)**	---				
Width (in)	72.0	**Bankfull Ratio**	---				
Height (in)	72.0						
Outlet Drop (ft)	0.0						
Slope (%)	4.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.8 miles	**(1) Habitat Pts**	2				
Habitat Quality	poor	**(2) Habitat Quality Pts**	1				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

NOTES: The ODOT survey noted that there is a poor culvert 100' upstream on private, but GIS layers indicate otherwise.

LOCATION INFO				CULVERT #	O3005	PRIORITY	M
Watershed	Little Nestucca						
Stream Name	Small Creek						
Township-Range-Section-1/4	5S – 9W – S30 – NE of SE						
UTM Easting / Northing	435050 / 4995150						
Road Name	Highway 130						
Road/Culvert Owner	ODOT						
Adjacent Landowners	Richard Murray						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	4.0				
Length (ft)	60.0	**Bankfull Width (ft)**	---				
Width (in)	48.0	**Bankfull Ratio**	---				
Height (in)	48.0						
Outlet Drop (ft)	1.7						
Slope (%)	2.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.8 miles	**(1) Habitat Pts**	2				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

21 - Little Nestucca River Road Tribs

T5S-R10W

T5S-R9W

24

19

25

30

29

O3004

O3002

O3005

Little Nestucca River Road

Little Nestucca

McKnight Creek

Judson Creek

Small Creek

River

High Priority Culvert

Medium Priority Culvert

Falls

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

22 – LITTLE NESTUCCA TRIBUTARY

Total Habitat Gained: 0.4 miles

This high priority culvert is isolated in the watershed, with no medium or high priority barriers in its vicinity for clustering. In addition to impeding fish passage, the two culverts are significantly undersized and creating a failure risk.
Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	1700	PRIORITY	H
Watershed	Little Nestucca						
Stream Name	Little Nestucca River tributary						
Township-Range-Section-1/4	5S – 10W – S9 – NE of SE						
UTM Easting / Northing	428893 / 4999797						
Road Name	Irish Road						
Road/Culvert Owner	Tillamook County						
Adjacent Landowners	Richard Heathershaw (Little River Jersey Dairy)						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	1.0				
Material	Concrete	**Upstream Gradient (%)**	2.0				
Length (ft)	35.0	**Bankfull Width (ft)**	11.6				
Width (in)	27.0	**Bankfull Ratio**	0.2				
Height (in)	27.0						
Outlet Drop (ft)	0.5						
Slope (%)	1.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.4 miles	**(1) Habitat Pts**	1				
Habitat Quality	fair	**(2) Habitat Quality Pts**	2				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**9**				

23 – BOWER CREEK

Total Habitat Gained: 2.0 miles

Bower Creek drains through private agricultural lands under County-owned roads. Given the existing condition of the three culverts, it is likely County will not lead a replacement effort. However potential exists for a partnership with the County and several private landowners. Riparian improvements would further enhance the habitat quality. Although the lower reach is tidally influenced there are no known tidegates in the watershed.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	1708	PRIORITY	M
Watershed	Little Nestucca				
Stream Name	Bower Creek tributary				
Township-Range-Section-1/4	5S – 10W – S9 – SE of SW				
UTM Easting / Northing	428190 / 4999485				
Road Name	Meda Loop				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Bearl Seals, CJ Hurliman				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	1.0		
Material	Concrete	**Upstream Gradient (%)**	0.0		
Length (ft)	35.0	**Bankfull Width (ft)**	6.0		
Width (in)	36.0	**Bankfull Ratio**	0.5		
Height (in)	36.0				
Outlet Drop (ft)	0.3				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.9 miles	**(1) Habitat Pts**	2		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**8**		

LOCATION INFO		CULVERT #	1717	PRIORITY	H
Watershed	Little Nestucca				
Stream Name	Bower Creek				
Township-Range-Section-1/4	5S – 10W – S16 – NW of NW				
UTM Easting / Northing	427727 / 4998982				
Road Name	Meda Loop				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	John Powers, Clem Jr. Hurliman				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	7.0		
Material	Concrete	**Upstream Gradient (%)**	1.0		
Length (ft)	26.0	**Bankfull Width (ft)**	11.0		
Width (in)	48.0	**Bankfull Ratio**	0.4		
Height (in)	48.0				
Outlet Drop (ft)	0.6				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.1 miles	**(1) Habitat Pts**	3		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**12**		

LOCATION INFO		CULVERT #	1719	PRIORITY	H
Watershed	Little Nestucca				
Stream Name	Bower Creek				
Township-Range-Section-1/4	5S – 10W – S16 – SW of NW				
UTM Easting / Northing	427667 / 4998682				
Road Name	Unnamed				
Road/Culvert Owner	Private				
Adjacent Landowners	John Powers				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	7.0		
Material	Concrete	**Upstream Gradient (%)**	2.0		
Length (ft)	20.0	**Bankfull Width (ft)**	10.0		
Width (in)	36.0	**Bankfull Ratio**	0.3		
Height (in)	36.0				
Outlet Drop (ft)	0.7				
Slope (%)	7.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.5 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

24 – UPTON SLOUGH

Total Habitat Gained: 0.8 miles

There are only two known tidegates on the mainstem of any of the streams in this Action Plan and one of them is the tidegate is at the mouth of Upton Slough. The 2 foot culvert with an aluminum gate and floating arm ('fish-friendly") may allow for fish passage at some flows, but the small culvert diameter seems to be undersized. This crossing should be further evaluated before implementing any upstream fish passage improvements. Riparian enhancements would improve the overall habitat quality.

Potential Partners: Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	1686	PRIORITY	M
Watershed	Nestucca				
Stream Name	Upton Slough				
Township-Range-Section-1/4	5S – 10W – S7 – SW of NE				
UTM Easting / Northing	425220 / 5000645				
Road Name	Christensen Road				
Road/Culvert Owner	Private				
Adjacent Landowners	Seymour Family, Eula Pearn (life estate), USA				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	0.0		
Material	Concrete	**Upstream Gradient (%)**	1.0		
Length (ft)	30.0	**Bankfull Width (ft)**	12.0		
Width (in)	48.0	**Bankfull Ratio**	0.3		
Height (in)	48.0				
Outlet Drop (ft)	0.0				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.8 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

LOCATION INFO		CULVERT #	1689	PRIORITY	M
Watershed	Nestucca				
Stream Name	Upton Slough				
Township-Range-Section-1/4	5S – 10W – S7 – SW of NE				
UTM Easting / Northing	425093 / 5000440				
Road Name	Oretown Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Eula Pearn (life estate)				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	14.0		
Material	Corrugated metal	**Upstream Gradient (%)**	1.0		
Length (ft)	61.0	**Bankfull Width (ft)**	8.0		
Width (in)	66.0	**Bankfull Ratio**	0.7		
Height (in)	66.0				
Outlet Drop (ft)	0.4				
Slope (%)	6.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.7 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	ct	**(3) Fish Pts**	2		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

22 - Little Nestucca River Trib
23 - Bower Creek
24 - Upton Slough

Little Nestucca River Road

101

1686

1689

Upton Slough

Upton Creek

1700

1708

1717

1719

Bowers Branch

T5S-R10W

6 5 4 7 8 9 18 17 16 15

High Priority Culvert
Medium Priority Culvert
Tidegate
Falls
Coho
Cutthroat
Streams

Ownership
BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

25 – FALL CREEK

Total Habitat Gained: 2.7 miles

This culvert is located under Highway 101 with a huge amount of fill. The likelihood of this culvert being replaced is quite low, but that does not mean it is not a high priority. ODOT has installed log weirs downstream, but fish passage is still inhibited. During the summer, RBA surveyors noted a 4 foot drop from one of the weirs. According to the RBA, excellent habitat exists in Fall Creek with at least one mile of deep pool scours, abundant gravels, and high flows. Water quality (temperature) in this tributary is excellent and the result of an intact late successional canopy. Access may be improved through additional retrofitting.

Potential Partners: ODOT, USFS, TEP, NNWC, ODFW

LOCATION INFO				CULVERT #	O339	PRIORITY	H
Watershed	Neskowin						
Stream Name	Fall Creek						
Township-Range-Section-1/4	6S – 10W – S6 – SE of NW						
UTM Easting / Northing	424405 / 4992548						
Road Name	Highway 101						
Road/Culvert Owner	ODOT						
Adjacent Landowners	USFS						
CULVERT INFO		**CHANNEL INFO**					
Shape	Box	**Inlet Gradient (%)**	---				
Material	Concrete	**Upstream Gradient (%)**	4.0				
Length (ft)	380.0	**Bankfull Width (ft)**	20.0				
Width (in)	60.0	**Bankfull Ratio**	0.3				
Height (in)	60.0						
Outlet Drop (ft)	1.0						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	2.7 miles	**(1) Habitat Pts**	4				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**13**				

NOTES: ODOT installed log weirs below outlet.

25 - Fall Creek

Neskowin Creek

Fall Creek

Prospect Creek

O339

101

1

6

5

7

8

12

T5S-R10W

T5S-R11W

T6S-R10W

T6S-R11W

High Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

N

W

E

S

26 – UPPER NESKOWIN

Total Habitat Gained: 1.4 miles

These three culverts occur on USFS land, one of which is under County-administered Slab Creek Road. Potential exists for USFS to lead the replacement of these culverts, while partnering with the County and others. The County may contribute significantly to the replacement of #F1 and #F181 since they are showing evidence of failure.
Potential Partners: USFS (lead), Tillamook County, TEP, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	F6	PRIORITY	M
Watershed	Neskowin				
Stream Name	Lewis Creek				
Township-Range-Section-1/4	6S – 10W – S4 – NE of SE				
UTM Easting / Northing	428890 / 4991981				
Road Name	1280				
Road/Culvert Owner	USFS				
Adjacent Landowners	USFS				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	27.0
Material	Corrugated metal	**Upstream Gradient (%)**	3.0
Length (ft)	77.0	**Bankfull Width (ft)**	22.5
Width (in)	60.0	**Bankfull Ratio**	0.2
Height (in)	60.0		
Outlet Drop (ft)	0.8		
Slope (%)	11.0		

PRIORITIZATION ANALYSIS			
Habitat Length	0.8 miles	**(1) Habitat Pts**	2
Habitat Quality	fair	**(2) Habitat Quality Pts**	2
Fish Species	co stw ct	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**10**

NOTES: There is a log jam grade control structure downstream 50 feet.

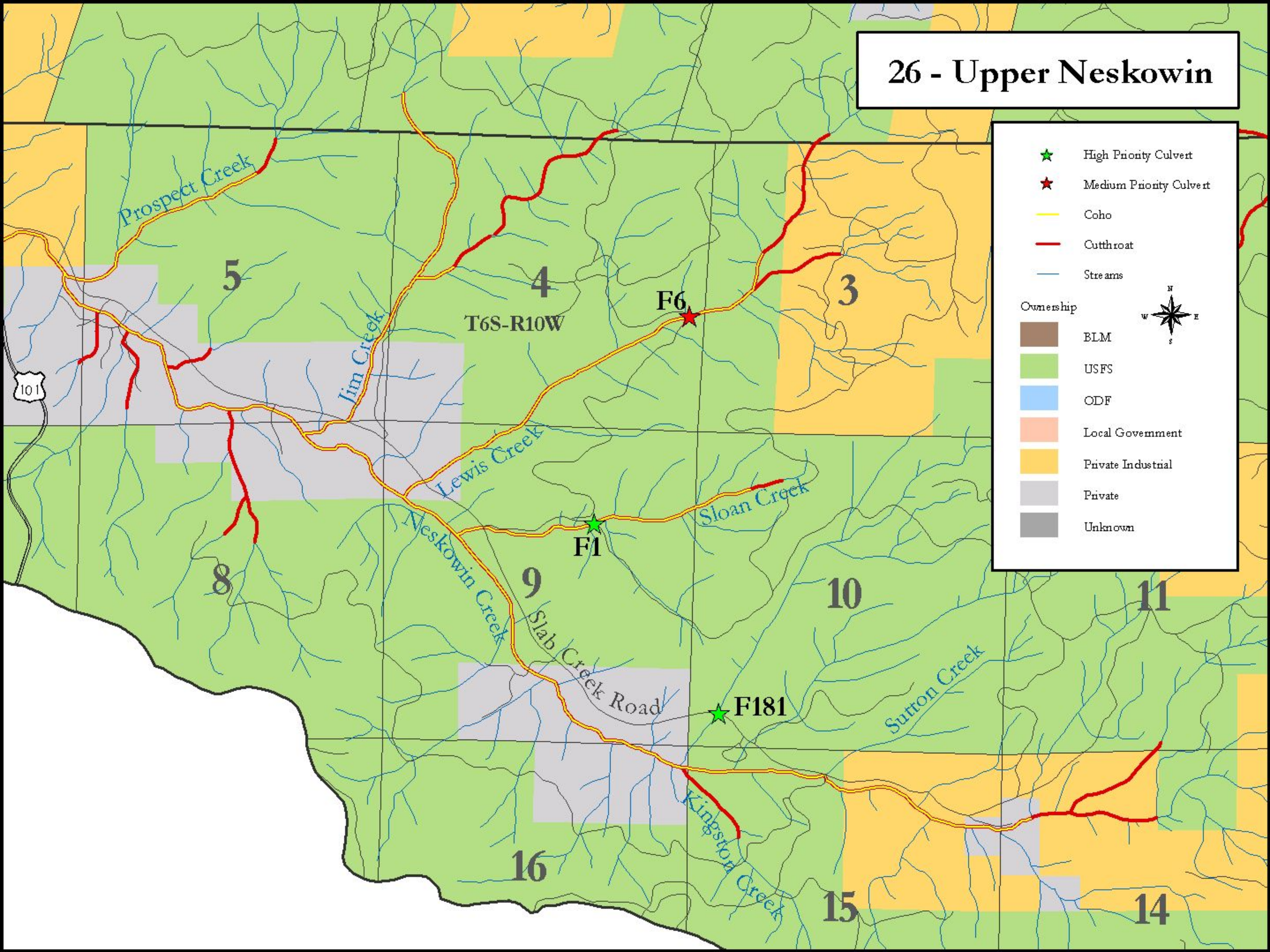
LOCATION INFO		CULVERT #	F1	PRIORITY	H
Watershed	Neskowin				
Stream Name	Sloan Creek				
Township-Range-Section-1/4	6S – 10W – S9 – SE of NW				
UTM Easting / Northing	428400 / 4990928				
Road Name	12				
Road/Culvert Owner	USFS				
Adjacent Landowners	USFS				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	9.0		
Material	Corrugated metal	**Upstream Gradient (%)**	3.0		
Length (ft)	57.0	**Bankfull Width (ft)**	10.5		
Width (in)	36.0	**Bankfull Ratio**	0.1		
Height (in)	36.0				
Outlet Drop (ft)	2.8				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.5 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

NOTES: RBA indicates the two pipes have rusted out and flows are draining out through the middle of the culverts and eroding substantial amounts of fill from underneath the road crossing. The crossing is a high priority for both passage and road maintenance. Almost all steelhead observed in the Sloan Creek were present in the plunge pool below the culverts. USFS design is complete with no scheduled implementation.

LOCATION INFO		CULVERT #	F181	PRIORITY	H
Watershed	Neskowin				
Stream Name	Neskowin Creek tributary				
Township-Range-Section-1/4	6S – 10W – S10 – SW of SW				
UTM Easting / Northing	429031 / 4989965				
Road Name	Slab Creek Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	USFS				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	32.0		
Material	Concrete	**Upstream Gradient (%)**	5.0		
Length (ft)	78.0	**Bankfull Width (ft)**	12.0		
Width (in)	36.0	**Bankfull Ratio**	0.3		
Height (in)	36.0				
Outlet Drop (ft)	1.8				
Slope (%)	1.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.1	**(1) Habitat Pts**	1		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

NOTES: Road is slumping above the culvert. RBA indicates that most flow is draining underneath the culvert and there is a large accumulation of debris upstream. The condition of this culvert significantly worsened over the course of the 3 year survey. Coho seeding in this stream is well below capacity.

26 - Upper Neskowin



27 – HAWK CREEK / BUTTE CREEK

Total Habitat Gained: 3.8 miles

Butte Creek drains into Hawk Creek west of Highway 101 just upstream of Hawk Creek's confluence with Neskowin Creek. The first half-mile of each stream runs through a golf course, where the channel lacks a healthy riparian area. The RBA indicates that Hawk Creek is the number one producer of salmon in the Neskowin watershed. A 4 foot dam at the Neskowin Regional Water District's water diversion intake (rivermile 0.8) impedes fish passage. TEP is currently partnering with the District and ODFW to improve passage at the dam and the NNWC is working to restore passage at the first culvert on Hawk Creek (#2078). On the map, the road crossing Hawk Creek just below the dam has been removed. Butte Creek has four primary crossings, the first of which is a tidegate. The two 42" diameter, top-hinged tidegates impede fish passage into Butte Creek. Fish are passing, however, and the landowner has no interest in an upgrade.

Potential Partners: ODOT, Tillamook County, NNWC, ODFW, private landowners

LOCATION INFO				CULVERT #	2078	PRIORITY	H
Watershed	Neskowin						
Stream Name	Hawk Creek						
Township-Range-Section-1/4	5S – 11W – S25 – SW of SW						
UTM Easting / Northing	422862 / 4994937						
Road Name	Hawk Street						
Road/Culvert Owner	Private						
Adjacent Landowners	William Clark, Nestucca Fire District, USA						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	---				
Length (ft)	---	**Bankfull Width (ft)**	---				
Width (in)	---	**Bankfull Ratio**	---				
Height (in)	---						
Outlet Drop (ft)	0.0						
Slope (%)	---						
PRIORITIZATION ANALYSIS							
Habitat Length	1.8	**(1) Habitat Pts**	4				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct chum	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**13**				
NOTES: NNWC is leading a replacement project for implementation in 2008.							

LOCATION INFO		CULVERT #	O336	PRIORITY	H
Watershed	Neskowin				
Stream Name	Butte Creek				
Township-Range-Section-1/4	5S – 11W – S25 – SW of NE				
UTM Easting / Northing	423405 / 4995429				
Road Name	Highway 101				
Road/Culvert Owner	ODOT				
Adjacent Landowners	Russell Jackson, Frank Herbert, Robert Affolter, Margaret Berglund, David Heonpud				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	4.0		
Length (ft)	200.0	**Bankfull Width (ft)**	20.0		
Width (in)	72.0	**Bankfull Ratio**	0.3		
Height (in)	72.0				
Outlet Drop (ft)	0.0				
Slope (%)	5.0				
PRIORITIZATION ANALYSIS					
Habitat Length	2.0 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

NOTES: Center is sagging.

LOCATION INFO		CULVERT #	2080	PRIORITY	H
Watershed	Neskowin				
Stream Name	Butte Creek				
Township-Range-Section-1/4	5S – 11W – S25 – SW of NE				
UTM Easting / Northing	423571 / 4995531				
Road Name	Sunbow Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Unknown				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	---		
Length (ft)	110.0	**Bankfull Width (ft)**	---		
Width (in)	78.0	**Bankfull Ratio**	---		
Height (in)	78.0				
Outlet Drop (ft)	0.5				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.8	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**13**		

LOCATION INFO		CULVERT #	2081	PRIORITY	H
Watershed	Neskowin				
Stream Name	Butte Creek				
Township-Range-Section-1/4	5S – 11W – S25 – NE of NE				
UTM Easting / Northing	423833 / 4995738				
Road Name	Unnamed				
Road/Culvert Owner	Private				
Adjacent Landowners	Michael Kowalski, Margaret Berglund, Louise Jose				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	---
Material	Concrete	**Upstream Gradient (%)**	---
Length (ft)	30.0	**Bankfull Width (ft)**	---
Width (in)	48.0	**Bankfull Ratio**	---
Height (in)	48.0		
Outlet Drop (ft)	0.0		
Slope (%)	4.0		

PRIORITIZATION ANALYSIS			
Habitat Length	1.7	**(1) Habitat Pts**	4
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct chum	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**13**

27 - Hawk Creek / Butte Creek

High Priority Culvert
Tidegate
Dam
Coho
Cutthroat
Streams

Ownership

BLM
USFS
ODF
Local Government
Private Industrial
Private
Unknown

Enlarged View

2078
Butte
Hawk

4
19
20
25
30
29

Butte Creek
Hawk Creek

101

2081
2080
O336
2078

T5S-R11W
T5S-R10W

NESKOWIN

28 – SUTTON CREEK

Total Habitat Gained: 0.3 miles

Sutton Creek flows through a private residential area with several culvert crossings. Three crossings were replaced in 2003, as well as the installation of a new trash rack on #2084. The remaining crossings (identified in this cluster) are undersized and facilitate flooding over the small amounts of fill cover. The RBA indicates that the new trash rack installed on #2084 to combat beaver problems is terminating adult and juvenile fish passage. the production potential is excellent because of the stable beaver pond habitat that can rear large numbers of juveniles.

Potential Partners: ODOT, Tillamook County, NNWC, ODFW, private landowners

LOCATION INFO		CULVERT #	2082	PRIORITY	H
Watershed	Neskowin				
Stream Name	Sutton Creek				
Township-Range-Section-1/4	5S – 11W – S36 – NE of NW				
UTM Easting / Northing	422895 / 4994152				
Road Name	Proposal Rock Loop Road				
Road/Culvert Owner	Private				
Adjacent Landowners	Unknown				

CULVERT INFO		CHANNEL INFO	
Shape	Circular	**Inlet Gradient (%)**	---
Material	Corrugated metal	**Upstream Gradient (%)**	---
Length (ft)	24.0	**Bankfull Width (ft)**	---
Width (in)	48.0	**Bankfull Ratio**	---
Height (in)	48.0		
Outlet Drop (ft)	0.0		
Slope (%)	1.0		

PRIORITIZATION ANALYSIS			
Habitat Length	0.3	**(1) Habitat Pts**	1
Habitat Quality	good	**(2) Habitat Quality Pts**	3
Fish Species	co stw ct chum	**(3) Fish Pts**	3
Barrier Type	RED	**(4) Barrier Pts**	3
		Prioritization Total Pts	**10**

LOCATION INFO				CULVERT #	2084	PRIORITY	H
Watershed	Neskowin						
Stream Name	Sutton Creek						
Township-Range-Section-1/4	5S – 11W – S36 – SW of NW						
UTM Easting / Northing	422833 / 4993948						
Road Name	South Beach Road						
Road/Culvert Owner	Private						
Adjacent Landowners	Unknown						
CULVERT INFO		**CHANNEL INFO**					
Shape	Pipe arch	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	---				
Length (ft)	26.0	**Bankfull Width (ft)**	---				
Width (in)	60.0	**Bankfull Ratio**	---				
Height (in)	46.0						
Outlet Drop (ft)	0.0						
Slope (%)	3.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.2	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct chum	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

NOTES: A new trash rack installed in 2003. An 8" waterline at the outlet traps debris and may impede fish passage at some flows.

LOCATION INFO				CULVERT #	2085	PRIORITY	H
Watershed	Neskowin						
Stream Name	Sutton Creek						
Township-Range-Section-1/4	5S – 11W – S36 – SW of NW						
UTM Easting / Northing	422683 / 4993860						
Road Name	South Beach Road						
Road/Culvert Owner	Private						
Adjacent Landowners	Unknown						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	---				
Length (ft)	26.0	**Bankfull Width (ft)**	---				
Width (in)	36.0	**Bankfull Ratio**	---				
Height (in)	36.0						
Outlet Drop (ft)	0.0						
Slope (%)	1.0						
PRIORITIZATION ANALYSIS							
Habitat Length	0.2	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct chum	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

LOCATION INFO				CULVERT #	2086	PRIORITY	H
Watershed	Neskowin						
Stream Name	Sutton Creek						
Township-Range-Section-1/4	5S – 11W – S36 – SW of NW						
UTM Easting / Northing	422540 / 4993667						
Road Name	South Beach Road						
Road/Culvert Owner	Private						
Adjacent Landowners	Unknown						
CULVERT INFO		**CHANNEL INFO**					
Shape	Circular	**Inlet Gradient (%)**	---				
Material	Corrugated metal	**Upstream Gradient (%)**	---				
Length (ft)	---	**Bankfull Width (ft)**	---				
Width (in)	---	**Bankfull Ratio**	---				
Height (in)	---						
Outlet Drop (ft)	1.0						
Slope (%)	---						
PRIORITIZATION ANALYSIS							
Habitat Length	0.1	**(1) Habitat Pts**	1				
Habitat Quality	good	**(2) Habitat Quality Pts**	3				
Fish Species	co stw ct chum	**(3) Fish Pts**	3				
Barrier Type	RED	**(4) Barrier Pts**	3				
		Prioritization Total Pts	**10**				

28 - Sutton Creek

High Priority Culvert

Coho

Cutthroat

Streams

Ownership

BLM

USFS

ODF

Local Government

Private Industrial

Private

Unknown

2082

2085

2084

2086

36

NESKOWIN

101

Neskowin Creek

Sutton Creek

T5S-R11W

30 – NON-CLUSTERED CULVERTS

LOCATION INFO		CULVERT #	1219	PRIORITY	M
Watershed	Nestucca				
Stream Name	Hastor Creek (Beaver Creek)				
Township-Range-Section-1/4	3S – 9W – S29 – NE of NW				
UTM Easting / Northing	435947 / 5014949				
Road Name	Beaver-Becker Road (unofficial name)				
Road/Culvert Owner	Green Diamond				
Adjacent Landowners	Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	11.0		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	25.0	**Bankfull Width (ft)**	9.0		
Width (in)	36.0	**Bankfull Ratio**	0.3		
Height (in)	36.0				
Outlet Drop (ft)	0.0				
Slope (%)	4.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.6 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

LOCATION INFO		CULVERT #	F155	PRIORITY	M
Watershed	Little Nestucca				
Stream Name	Hiack Creek tributary				
Township-Range-Section-1/4	6S – 9W – S8 – NE of NE				
UTM Easting / Northing	436330 / 4991186				
Road Name	12				
Road/Culvert Owner	USFS				
Adjacent Landowners	USFS				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	45.0	**Bankfull Width (ft)**	3.8		
Width (in)	24.0	**Bankfull Ratio**	0.5		
Height (in)	24.0				
Outlet Drop (ft)	1.3				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.5 miles	**(1) Habitat Pts**	1		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**9**		

LOCATION INFO		CULVERT #	F2055	PRIORITY	M
Watershed	Nestucca				
Stream Name	Limestone Creek tributary				
Township-Range-Section-1/4	4S – 8W – S6 – SE of NW				
UTM Easting / Northing	443825 / 5011140				
Road Name	8598				
Road/Culvert Owner	USFS				
Adjacent Landowners	USFS				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	0.0		
Material	Concrete	**Upstream Gradient (%)**	2.0		
Length (ft)	48.0	**Bankfull Width (ft)**	7.0		
Width (in)	24.0	**Bankfull Ratio**	0.3		
Height (in)	24.0				
Outlet Drop (ft)	0.2				
Slope (%)	0.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.5 miles	**(1) Habitat Pts**	3		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

LOCATION INFO		CULVERT #	F2060	PRIORITY	M
Watershed	Nestucca				
Stream Name	Alder Creek				
Township-Range-Section-1/4	4S – 9W – S1 – NE of NW				
UTM Easting / Northing	442252 / 5011654				
Road Name	8598				
Road/Culvert Owner	USFS				
Adjacent Landowners	USFS				
CULVERT INFO		**CHANNEL INFO**			
Shape	Open bottom arch	**Inlet Gradient (%)**	12.0		
Material	Corrugated metal	**Upstream Gradient (%)**	6.0		
Length (ft)	68.0	**Bankfull Width (ft)**	16.5		
Width (in)	145.0	**Bankfull Ratio**	0.7		
Height (in)	70.0				
Outlet Drop (ft)	0.0				
Slope (%)	5.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.6 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw ct	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**9**		

LOCATION INFO		CULVERT #	O3011	PRIORITY	M
Watershed	Nestucca				
Stream Name	Beaver Creek tributary				
Township-Range-Section-1/4	3S – 9W – S18 – SW of SE				
UTM Easting / Northing	434735 / 5016835				
Road Name	Highway 101				
Road/Culvert Owner	ODOT				
Adjacent Landowners	John Payne, Roy Jones, Green Diamond				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Concrete	**Upstream Gradient (%)**	4.0		
Length (ft)	45.0	**Bankfull Width (ft)**	---		
Width (in)	36.0	**Bankfull Ratio**	---		
Height (in)	36.0				
Outlet Drop (ft)	1.5				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	0.9 miles	**(1) Habitat Pts**	2		
Habitat Quality	fair	**(2) Habitat Quality Pts**	2		
Fish Species	co stw chf ct chum	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**10**		

NOTES: A makeshift weir has been constructed just below the outlet.

LOCATION INFO		CULVERT #	O3035	PRIORITY	M
Watershed	Nestucca				
Stream Name	Hartley Creek				
Township-Range-Section-1/4	4S – 10W – S14 – NE of SW				
UTM Easting / Northing	431365 / 5007725				
Road Name	Highway 101				
Road/Culvert Owner	ODOT				
Adjacent Landowners	Karl Hale, Beatrice Gann, Michael McMillen				
CULVERT INFO		**CHANNEL INFO**			
Shape	Circular	**Inlet Gradient (%)**	---		
Material	Corrugated metal	**Upstream Gradient (%)**	5.0		
Length (ft)	80.0	**Bankfull Width (ft)**	---		
Width (in)	36.0	**Bankfull Ratio**	---		
Height (in)	36.0				
Outlet Drop (ft)	0.2				
Slope (%)	3.0				
PRIORITIZATION ANALYSIS					
Habitat Length	1.8 miles	**(1) Habitat Pts**	4		
Habitat Quality	poor	**(2) Habitat Quality Pts**	1		
Fish Species	co ct	**(3) Fish Pts**	3		
Barrier Type	RED	**(4) Barrier Pts**	3		
		Prioritization Total Pts	**11**		

NOTES: Outlet has higher gradient than inlet. Culvert access is limited.

LOCATION INFO		CULVERT #	1610	PRIORITY	M
Watershed	Nestucca				
Stream Name	Clear Creek				
Township-Range-Section-1/4	4S – 10W – S34 – NE of NW				
UTM Easting / Northing	429407 / 5003996				
Road Name	Jenck Road				
Road/Culvert Owner	Tillamook County				
Adjacent Landowners	Marlene Trent, Ray Jones				
CULVERT INFO		**CHANNEL INFO**			
Shape	Pipe arch	**Inlet Gradient (%)**	0.0		
Material	Corrugated metal	**Upstream Gradient (%)**	2.0		
Length (ft)	34.0	**Bankfull Width (ft)**	14.0		
Width (in)	144.0	**Bankfull Ratio**	0.9		
Height (in)	84.0				
Outlet Drop (ft)	0.0				
Slope (%)	2.0				
PRIORITIZATION ANALYSIS					
Habitat Length	3.3 miles	**(1) Habitat Pts**	4		
Habitat Quality	good	**(2) Habitat Quality Pts**	3		
Fish Species	co stw chf ct chum	**(3) Fish Pts**	3		
Barrier Type	GREY	**(4) Barrier Pts**	2		
		Prioritization Total Pts	**12**		

NOTES: USFS engineering design complete. No plans for implementation.

IV. NEXT STEPS

It is imperative that this Action Plan is not left to gather dust on partners' bookshelves. As such, TEP will lead the following efforts to ensure that doesn't happen.

- TEP will maintain and update the Plan, convene annual meetings, and manage efforts to keep the Plan moving forward. TEP will work closely with BLM to maintain GIS layer integrity. Updates will be facilitated through TEP's annually reporting process, at which time TEP gathers project information from its partners.
- This Plan will be posted on TEP's website and associated data will be made accessible to all watershed partners. BLM and USFS intend to create an online mapping system with a searchable database and photos.
- Additional field surveys should be conducted to fill data gaps in the Neskowin and Sand Lake watersheds using consistent survey protocols. Tidegates, dams, and other fish passage barriers should be included, although survey protocols may differ.
- Culvert survey protocols were established for the BLM culvert inventory, which collected similar attributes as the USFS inventories. If additional inventories are implemented, BLM or TEP should be contacted to receive the survey protocols and forms to ensure that data collected is consistent with existing data and fulfills the requirements of the prioritization model.
- As fish barriers are replaced, the upper extents of fish distributions should be re-evaluated.

Coarse Screen Filter –Juvenile salmonid passage evaluation criteria				***V2.2***
	Structure	Green	Grey	Red
1	Bottomless pipe arch or countersunk pipe arch, substrate 100% coverage through pipe and invert depth greater than 20% of culvert rise.	Culvert installed at channel grade (+/- 1%), culvert span to bankfull width ratio greater than 0.9, no blockage.	Culvert installed at channel grade (+/- 1%), culvert span to bankfull width ratio greater than 0.5, less than or equal to 10% blockage.	Culvert not installed at channel grade (+/- 1%), culvert span to bankfull width ratio less than 0.5, greater than 10% blockage.
2	Pipe arches (1x3 corrugation and larger). Substrate less than 100% coverage through pipe or invert depth less than 20% of culvert rise.	Culvert gradient less than 0.5%, no perch, no blockage, culvert span to bankfull width ratio greater than 0.75.	Culvert gradient between 0.5 to 2.0%, less than 4" perch, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5.	Culvert gradient greater than 2.0%, greater than 4" perch, greater than 10% blockage, culvert span to bankfull width ratio less than 0.5.
3	Circular CMP or ABS, 48 inch span and smaller, spiral or annular (CMP) corrugations, regardless of substrate coverage.	Culvert gradient less than 0.5%, no perch, no blockage, culvert span to bankfull width ratio greater than 0.75	Culvert gradient 0.5 to 1.0%, perch less than 4 inches, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5.	Culvert gradient greater than 1.0%, perch greater than 4 inches, blockage greater than 10%, span to bankfull width ratio less than 0.5.
4	Circular CMPs with annular corrugations larger than 1x3 and 1x3 spiral corrugations (>48" span), substrate less than 100% coverage through pipe or invert depth less than 20% culvert rise.	Culvert gradient less than 0.5%, no perch, no blockage, culvert span to bankfull width ratio greater than 0.75.	Culvert gradient between 0.5 to 2.0%, less than 4" perch, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5.	Culvert gradient greater than 2.0%, greater than 4" perch, greater than 10% blockage, culvert span to bankfull width ratio less than 0.5.
5	Circular CMPs with 1x3 or smaller annular corrugations (all spans) and 1x3 spiral corrugations (>48" span), 100% substrate coverage through pipe and invert depth greater than 20% of culvert rise.	Culvert gradient less than 1%, no perch, no blockage, culvert span to bankfull width ratio greater than 0.75	Culvert gradient 1.0 to 3.0%, perch less than 4 inches, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5.	Culvert gradient greater than 3.0%, perch greater than 4 inches, blockage greater than 10%, culvert span to bankfull width ratio less than 0.5.
6	Circular CMPs with 2x6 annular corrugations (all spans), 100% substrate coverage through pipe and invert depth greater than 20% of culvert rise.	Culvert gradient less than 2.0%, no perch, no blockage, culvert span to bankfull width ratio greater than 0.75	Culvert gradient 2.0 to 4.0%, less than 4" perch, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5.	Culvert gradient greater than 4.0%, greater than 4 inch perch, greater than 10% blockage, culvert span to bankfull width ratio less than 0.5.
7	Special items; log stringer or modular bridge,	No encroachment on bankfull width.	Encroachment on bankfull width (either streambank).	Structural collapse.
8	Baffled structure installations (all culvert sizes and configurations).	No perch, no blockage. Culvert span to bankfull width ratio greater than 0.75. 100% substrate in pipe but baffles protruding.	Outlet with less than 6 inch perch, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5. Less than 100% substrate.	Perch greater than 6 inches, greater than 10% blockage, culvert span to bankfull width ratio less than 0.5. Less than 100% substrate.
9	Weir installations (all culvert sizes and configurations).	No perch, no blockage. Culvert span to bankfull width ratio greater than 0.75. Weirs provide 6 inch minimum pool depth and no jumps exceed 4 inches.	Outlet with less than 6 inch perch, less than or equal to 10% blockage, culvert span to bankfull width ratio greater than 0.5. Weirs with pool depths less than 6 inches. Jumps over weirs greater than 4 inches.	Perch greater than 6 inches, greater than 10% blockage, culvert span to bankfull width ratio less than 0.5. Weirs without pools, no resting areas. Weir Jumps> 4 inches
10	Concrete Box Culverts	Culvert backwatered or mostly backwatered w/100% substrate. Culvert span to bankfull width ratio greater than 0.75. No blockage.	Culvert gradient up to 2%. Outlet with less than 4 inch perch. 100% substrate in pipe. Culvert span to bankfull ratio greater than 0.5.	Perch greater than 4 inches. Culvert span to bankfull ratio less than 0.5. Laminar flow. Less than 100% substrate in pipe.
11	Circular concrete and smooth wall ABS culverts.	100% substrate in pipe. Slope less than .5%. No Perch	Less than 100% substrate in pipe. Slope .5-1%. Perch less than 4 inches	No substrate. Slope greater than 1% Perch greater than 4 inches.

Note: 1) For culverts containing baffles but are entirely covered with substrate, evaluate using the criteria for structures 2-8, as appropriate. 2) If culvert does not fit well on this CSF run Fish-Xing. 3) This CSF works well for culverts on public lands, not always well for private landowner culverts due to large variations in construction materials and types of installations.

This model was derived from a US Forest Service model.