Nason Creek Lower White Pine
Coulter Creek Barrier Replacement

12th Round Funding Cycle

June 30, 2011

Request from Tributary Committee:	**$12,468.98**
Request from SRFB:	**$70,657.00**
Total Request:	**$83,126.00**
TOTAL Project Budget:	**$83,126.00**

Proposal Checklist/Table of Contents

Project Title: Coulter Creek Barrier Replacement

Proposal Contents	**Page of Application**	**√ Reviewer Received**
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Summary of Project Changes

The project budget has been revised to:

New	
Request from Tributary Committee:	**$12,468.98**
Request from SRFB:	**$70,657.00**
Total Request:	**$83,126.00**
Old	
Total Request:	**$153,161.86**

1. Costs are excessive, Chris Fisher is working with Mike Kane to provide actual costs for similar projects in Omak Creek.

Chris provided costs for similar projects in Omak Creek. These costs were used to revise the cost estimate for the project.

2. Why not use smaller round culvert that is counter-sunk?

The Reclamation Engineer estimated bankfull width of Coulter Creek to be 8' above and below the crossing. Based on WDFW standards for fish passage of 1.2 x (width)+2, we would have to use a 12' diameter culvert. This would add a considerable amount of excavation and fill and create a large hump in the road. A 50" or even a 10' dia culvert would not work based on these standards. I have made calls to Bruce Heiner, asking if it would be possible to relax WDFW fish passage standards based on the feedback from Tributary Committee, but have not heard back from him yet.

3. Still concerned about sequencing; suggest elaborating in final proposal on the certainty of RR project. You should talk with YN about funding this as part of their Fish Accord project to reconnect the lower end of LWP.

YN typically has been interested in funding projects they are implementing.
Since CCNRD is in the process of working with all the landowners on the Dardanelle's Road as part of the BNSF/LWP Project and has been working with the Byther's as part of that effort, it seemed logical to also talk with them at this time about replacing the Coulter Creek culvert. Reclamation has also agreed to provide support for design/engineering at this time. Even if funding for construction were received in Jan. of 2012 for this project, design and permitting might not be completed in time for construction in summer of 2012. Permitting has been able to proceed at a fairly rapid pace in the past, but feedback from agencies and changes in County Shorelines Regulations are making it necessary to submit permits earlier. Technically we should have permits submitted no later than Nov. 2012 for a project that would go out for bid in May of 2013 and be constructed in July/August of 2013. Even if funding was committed at this stage and we moved forward with design and permitting, the project would not be constructed if the RR project was not implemented.

4. Since the urgency is not high and the cost / benefit is uncertain as proposed the sponsor could wait to see the outcome of LWP before proceeding.

See above response to sequencing. Feedback from design team members and funders on the B+ connection was to pursue now while working with landowners rather than postpone and return.

5. Clarify habitat and physical conditions upstream of the barrier to quantify biological benefits. (Casey noted that he had provided a map of ICTRT intrinsic potential and this creek did show a reasonable quantity, several kilometers, of steelhead potential).

A detailed habitat survey has not been completed at this time. We will complete a survey this summer.

6. How much flow is there in the fall? Be sure to focus on the correct species.

See Hydrograph Appendix C

7. Are there any fish use surveys?

After contacting USFWS, USFS, UCSRB, WDFW, and YN Coho Program, we have determined that very little monitoring has been completed in the Coulter Cr. drainage.

Roaring and Coulter Creeks do get one time surveys around peak spawning for the upper Wenatchee Basin. Gill Creek we do not survey. We plan on continuing in this manner in the foreseeable future. We have never had a redd in Coulter Creek and Roaring Creek had two redds in 2005

Nason Creek, Lower White Pine Coulter Creek Barrier Replacement

1. Project Overview

    A. Provide a brief summary of the project

The primary objective of the Coulter Creek Barrier Replacement project is to replace an existing fish passage barrier at RM 0.4 with a bottomless arch structure. The goal of this action is to increase access to rearing habitat for ESA listed steelhead. The project area is within WRIA 45 in the Lower White Pine Reach of Nason Creek as defined in the Lower White Pine Reach Assessment (USBR 2009). Coulter Creek is a 4.6 square-mile basin in Township 26 North, Range 16 East, Sections 11, Willamette Meridian. The culverts can be accessed from Highway 2 – 0.5 miles from the Washington State rest stop then left onto West Dardenelles Road. This is a private gravel road that crossed Coulter Creek at RM 0.4. .

The goal of this action is to increase access to rearing habitat steelhead in Nason Creek and the Wenatchee Subbasin. This project will complement the larger Nason Creek Lower White Pine (LWP) Reconnection that will reconnect 14.9% of the Upper Nason Creek Basin including the reestablishment of hydraulic connectivity to the Coulter Creek drainage to the mainstem Nason Creek. The replacement of the barrier culverts with a bottomless arch structure would improve salmonid access to 1.6 miles of potential spawning habitat, of which the first 0.3 miles is low gradient rearing habitat.

    B. When possible, list your sources of information by citing specific studies, reports, and other documents.

See references in Appendix E

    C. Has any part of this project been previously reviewed or funded by the SRFB?

    No

2. Salmon Recovery Context

    A. Describe the fish resources present at the site and targeted by this project.

Coulter Creek is a tributary of Nason Creek which is a Category 2 watershed in the Wenatchee Subbasin and contains major spawning areas for ESA listed spring Chinook salmon and steelhead and is a bull trout core area (UCRTT 2007).

The primary limiting factor that would be addressed is access to spawning and rearing habitat. Steelhead would primarily benefit from increased access to the Coulter Creek basin for rearing, high water refugia and limited spawning: though, spring Chinook and Bull trout may possibly utilize this area for rearing habitat and high water refugia. Steelhead enter and begin to ascend the Columbia River in June and July. Upstream migration near the Wenatchee River peaks in early September; most adult steelhead have moved into tributary streams by November. Nason Creek steelhead counts averaged 152 redds per year from 2001 to 2005. Juvenile rearing lasts about 2 to 7 years prior to ocean emigration (Raekes 2008).

There is some potential for Spring Chinook to utilize Coulter Creek for rearing as Nason Creek drainage supports the second strongest population of spawning spring Chinook in the Wenatchee subbasin (Andonaegui, 2001). Spring Chinook salmon spawning occurs from mid-August through mid-September, with the majority of spring Chinook redds located in the lower 15.8 river miles. A 2005 survey identified 186 redds in Nason Creek. Eggs remain in the gravel until hatching in December, and fry emerge in January/February. Juveniles spend about 1 year in fresh water before smolting and ocean emigration between April and June (Raekes 2008).

There is also some potential for bull trout to utilize Coulter Creek for rearing. Bull trout typically overwinter from December to May, migrate upstream to spawning grounds from May to mid-October, and adult bull trout migrate back to overwintering habitat from October to December. The Nason Creek bull trout population is depressed and typically has less than 15 redds each year. Spawning occurs within the upper reaches of the watershed, but not at the project reach (Raekes 2008).

Non- listed species such as Coho may also utilize the habitat opened up by replacing the partial culvert barrier.

Species	Life History Present (egg, juvenile, adult) in Nason Mainstem	Current Population Trend (decline, stable, rising)	ESA Coverage (Y/N)	Life History Target (egg, juvenile, adult)
Target Species Steelhead/ Rainbow	Egg, Juveniles, Adult	Declining	Y	Egg, Juvenile, Adult
Spring Chinook	Egg, Juveniles, Adult	Declining	Y	Juvenile
Bull Trout	Juvenile, Adult	Declining	Y	Juvenile
Coho	Egg, Juveniles, Adult	Rising	N	Juvenile,
Sockeye	Adult	Stable	N	n/a

B. Describe the nature, source, and extent of the problem that the project will address. Include a detailed description of site conditions and other current and historic factors important to understanding the need for this project. Be specific – avoid general statements. (acquisition, fish passage, diversions, and screening projects should refer to the supplemental questions later in this worksheet for information to include in their problem statement.)

At RM 0.4 of Coulter Creek there is a duel pipe culvert crossing fish passage barrier culvert under Dardanelle's gravel road crossing (see Vicinity Map Appendix A). The USFS Barrier Inventory (2000) and the Chelan County Barrier Inventory (2000) identifies these culverts as passage barriers due to a high outfall drop on the 36" squash pipe and a high outfall drop and slope on the 18" relief culvert.

Coulter Creek flows into what is now a disconnected oxbow of Nason Creek; the oxbow, wetlands and tributaries are currently separated from the main channel of Nason Creek by the BNSF railroad grade which runs parallel to Nason Creek and perpendicular to Coulter Creek. Placement of the railroad

grade backwaters the area in the vicinity of Coulter Creek confluence with Nason Creek and has also limited and/or prevented fish access into the wetted habitats (USBR 2009). Construction for the Nason Creek LWP Reconnection project to reestablish the connection from Nason Creek to this habitat is scheduled for 2012. Reclamation has completed conceptual designs for the downstream bottomless arch structure and is currently evaluating design concepts and funding options for an upstream bottomless arch at B+ (see LWP Reconnection Map Appendix A).

Results expected: removing a fish passage barrier near the mouth of Coulter Creek to provide unobstructed passage is an important step to allow anadromous and resident fish access to spawning and rearing habitats. Activities undertaken in this project will increase available tributary habitat primarily for ESA listed summer steelhead and may also benefit spring Chinook, bull trout, and coho. This project will also complement the Nason Creek LWP reconnection project with salmonid access to 1.6 miles of potential spawning habitat, of which the first 0.3 miles is low gradient rearing habitat.

C. Discuss how this project fits within your regional recovery plan or local lead entity strategy to restore or protect salmonid habitat in the watershed (i.e., does the project address a priority action, occur in a priority area, or target priority fish species?).

Restoration of Nason Creek habitat is identified the top priority for implementation of habitat actions in the Wenatchee Basin as prioritized by the Upper Columbia Regional Technical Team and as in the Upper Columbia Salmon Recovery Plan (UCSRB 2007). This project will lead to the reconnection of off-channel habitats and tributaries on Nason Creek that will directly benefit ESA-listed steelhead.

Since 2007, Nason Creek has been the focus of the U.S. Bureau of Reclamation's technical work in the Wenatchee Watershed, that included the completion of the U.S. Bureau of Reclamation's Nason Creek Tributary Assessment (2008) which assessed all of the wetlands, floodplains, and tributaries behind the railroad grade.

The Nason Creek intrinsic potential map shows suitable steelhead habitat above the barrier (Map

figure provided by ICTRT and NWFSC {Attachment B}). The Coulter Creek Barrier was identified as a barrier in both the USFS Barrier Inventory (2000) and Chelan County Barrier Inventory (2000). While this barrier has not been identified as a top priority in the past, the low ranking was partially due to the diminished hydraulic connection from to the BNFS railroad prism which is scheduled for construction in 2012.

D. Describe the consequences of not conducting this project at this time. Consider the current level and imminence of risk to habitat in your discussion.

Given the LWP reconnection project will be constructed in 2012, there is an opportunity to benefit from CCNRD's coordination efforts for the LWP reconnection project that has included contact with multiple private landowners within the Coulter Creek basin.

3. Project Design

A. Provide a detailed description of the project size, scope, design, and how it will address the problem described in Section 2B. Describe specific restoration methods and design elements you plan to employ. (Acquisition-only projects need not respond to this question.)

The design and engineering for the Coulter Creek culvert/s replacement project will be completed by the US Bureau of Reclamation. Engineering designs will reflect the most current research regarding replacement of barrier culverts and designed for the 100 year flow event. The Washington Department of Fish and Wildlife "Design of Road Culverts for Fish Passage Manual" was applied in designing the replacement structures. Native riparian vegetation will be planted in the disturbed sites to restore and enhance riparian habitat as well as minimize erosion and noxious weed establishment.

After requirements for all permitting and contracting documents have been secured, typical construction would proceed for the summer of 2012 in accordance with the contract plans. The project sponsor will be responsible for contracting and managing the construction of the bottomless arch.

This project will complement the Nason Creek LWP reconnection project that plans to reconnect wetlands, floodplains, and tributaries behind the railroad grade to provide the following metrics:

- Hydraulic reconnection of 148 acres of Category 1 wetland.
- Fish access to 83.1 acres of high flow and 6.8 acres of low flow rearing and refuge habitat (see hydrograph Appendix C).
- Steelhead access to 1 mile of lower Coulter Creek (proposal is currently being submitted to replace passage barrier).
- Steelhead and Chinook access to 0.75 mile of lower Roaring Creek.
- Hydraulic reconnection of the Coulter, Roaring, Gill, and Knutson Creek basins. Accounting for a total reconnection of 14.9% of the Upper Nason Creek Basin.

The replacement of the barrier culverts with a bottomless arch structure will improve access subbasin area above the barrier at RM 0.4 (see Photosheet Appendix D).

- Improve salmonid access to 0.32 square miles of rearing habitat (20 acres of wetland).
- Improve salmonid access to 1.6 RM of stream. (below 0.73 RM the gradient is < 4% and above 0.73 miles the gradient is 4-8% up to RM 1.6).

B. If restoration will occur in phases, explain individual sequencing steps, and which of these steps is included in this application.

N/A

C. Describe the long-term stewardship and maintenance obligations for the project or acquired land.

CCNRD in cooperation with the US Forest Service is developing a specific project effectiveness monitoring plan for the LWP project area. This plan will be coordinated with existing (and approved) programs and use the objectives and indicators from the MaDMC framework. The plan will show how it is going to be coordinated with existing or currently planned monitoring programs and identify any new efforts required.

Pre-construction data will be collected this coming field season, including existing habitat conditions and fish use in Coulter as apart of the Nason Creek LWP Reconnection Project.

4. Project Development

A. Explain how the project's cost estimates were determined.

The construction costs are based on engineers estimates of time and materials to construct the conceptual plan using rates typical to bids for similar local projects from 2008 – 2010. Personnel estimates involve using the hourly rates for each staff person and the percentage of their time that is anticipated for that person per project.

B. Describe other approaches, opportunities, and design alternatives that were considered to achieve the project's objectives.

A round counter-sunk culvert was considered; however, the Reclamation Engineer estimated bankfull width of Coulter Creek to be 8' above and below the crossing and based on WDFW standards for fish passage of 1.2 x (width) +2, we would have to use a 12' diameter culvert. This would add a considerable amount of excavation and fill and create a large hump in the road. A 50" or even a 10' diameter culvert would not work based on these standards. WDFB has been contacted to see if it would be possible to relax WDFW fish passage standards based on the feedback from Tributary Committee, but have not heard back from them yet.

C. Have members of the community, recreational user groups, adjacent landowners, or others been contacted about this project? Describe any concerns about the project raised from these contacts and how those concerns were or will be addressed.

Landowners have been contacted and there are no concerns.

D. Include a Partner Contribution Form.

N/A

E. List all landowner name. Include a signed Landowner Acknowledgement Form (Appendix K) from each landowner acknowledging that his or her property is proposed for SRFB funding consideration.

The landowner is named Ralph Byther. He is supportive of the project and is sending in the Landowner Willingness form now. Will distribute as soon as it arrives.

F. Describe your experience managing this type of project.

The Coulter Creek culvert project is a collaborative effort between the Chelan County Natural Resource Department (CCNRD) and the US Bureau of Reclamation (design and engineering). CCNRD will be responsible for implementation.

Chelan County Natural Resource Department is the project lead sponsor and has been responsible for managing numerous habitat restoration projects in the Wenatchee and Entiat subbasins including managing the design process, advertising and selecting a construction contractor, construction inspection, and pre/post project monitoring. Mike Kane and MaryJo Sanborn from the CCNRD will be the primary contacts during design, contractor selection, and construction.

5. Tasks and Schedule

Item/Milestone	Outcome	Target Date (Month/Year)
Project Design	Reclamation – Designs completed, cultural surveys and wetland Delineation.	June 2011– January 2012
Permitting process	Obtain permits prior to construction; Comply with ESA, NEPA/SEPA, DAHP, WSDOT, county, state and federal agencies	January – July 2012
Pre-project monitoring	Obtain photo points prior to construction	June – July 2012
In-stream construction	Replace fish passage barrier with bottomless arch structure	July – September 2012
Post-construction mitigation	Revegetate areas that are disturbed during construction	September - October 2012
Post-project monitoring	Obtain photo points post-construction; monitor plant survival according to permit requirements	October 2012

6. Constraints and Uncertainties

The LWP reconnection project will be constructed in 2012 and there is an opportunity to benefit from CCNRD's coordination and construction efforts for the LWP reconnection project; however, if the LWP reconnection project is delayed then the Coulter Creek reconnection may need to be delayed as well.

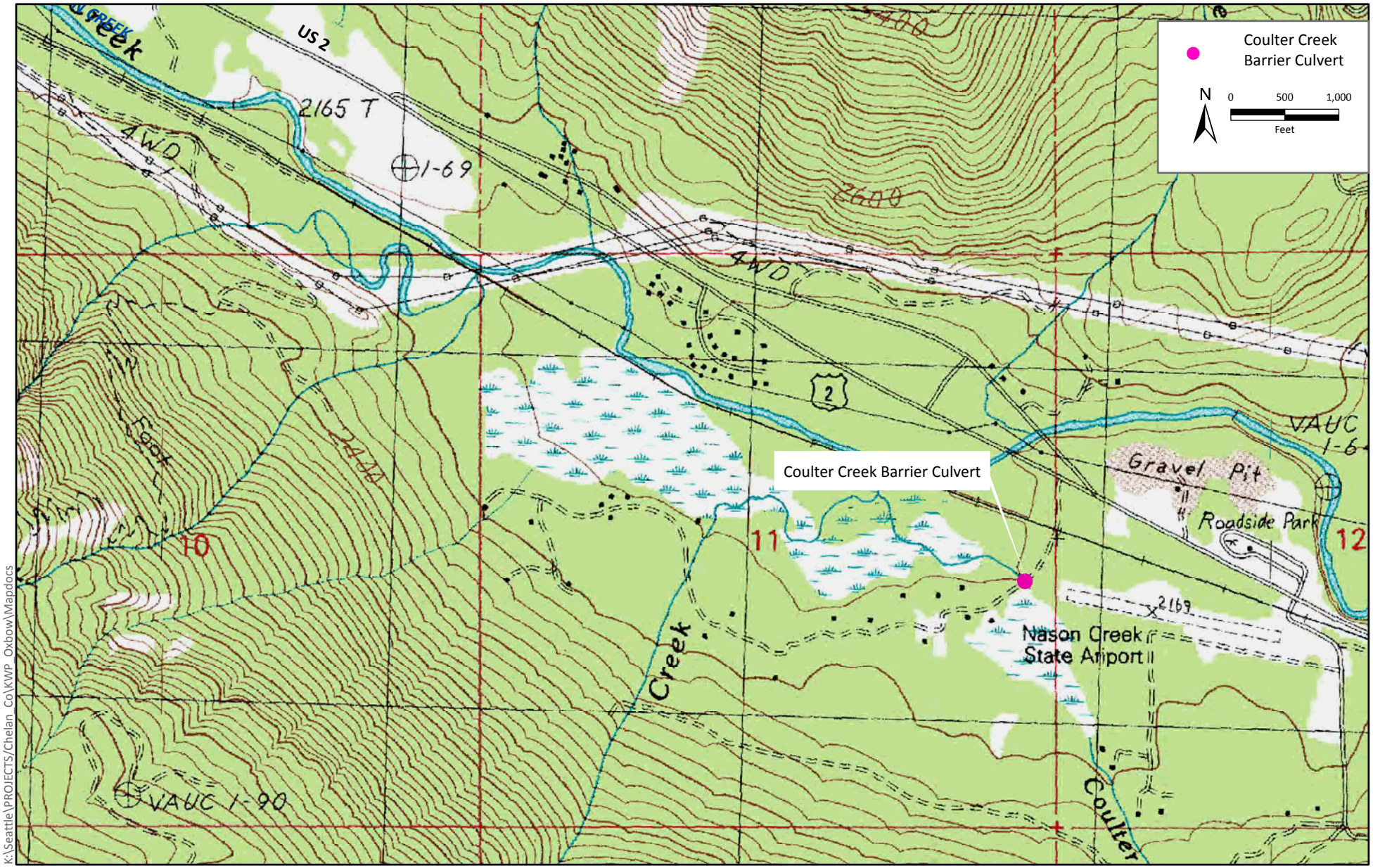
7. Detailed project cost estimate. Please include a detailed project cost estimate and attach in PRISM. Clearly label the attachment in PRISM "Cost Estimate." This will help the local review process and the SRFB Review Panel better understand the project cost details.

See Appendix E

Appendix A

Vicinity Map of Coulter Creek Barrier Culvert

Map of LWP Reconnection Project including Coulter Creek drainage



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ICF INTERNATIONAL

Coulter Creek Culvert Replacement
Lower White Pine Reconnection Project

Peak Migration

March = Steelhead Adults
March-June = Spring Chinook Fry/Parr
April/May = Coho Juveniles
June/July = Steelhead Fry
September = Spring Chinook Adults
September = Bull Trout Adults
October = Coho Adults

MilepostMarkers
Bridge or Culvert Location Option
Constructed Channel
Tributaries
River Miles
BNSF Railway
Wetland Boundary

N
0 250 500
Feet

F+ Alt
Proposed B+ Connection
Downstream Connection
Gill Creek Habitat Complex
Roaring Creek Habitat Complex
Roaring Creek Habitat Complex
Coulter Creek Habitat Complex
Gill Creek
Gill Creek
Shales Creek
Roaring Creek
Coulter Cr
11
10.9
10.8
10.5
10.4
10.3
10.2
9.9
9.8
9.7
9.6
9.5
9.4
9.3

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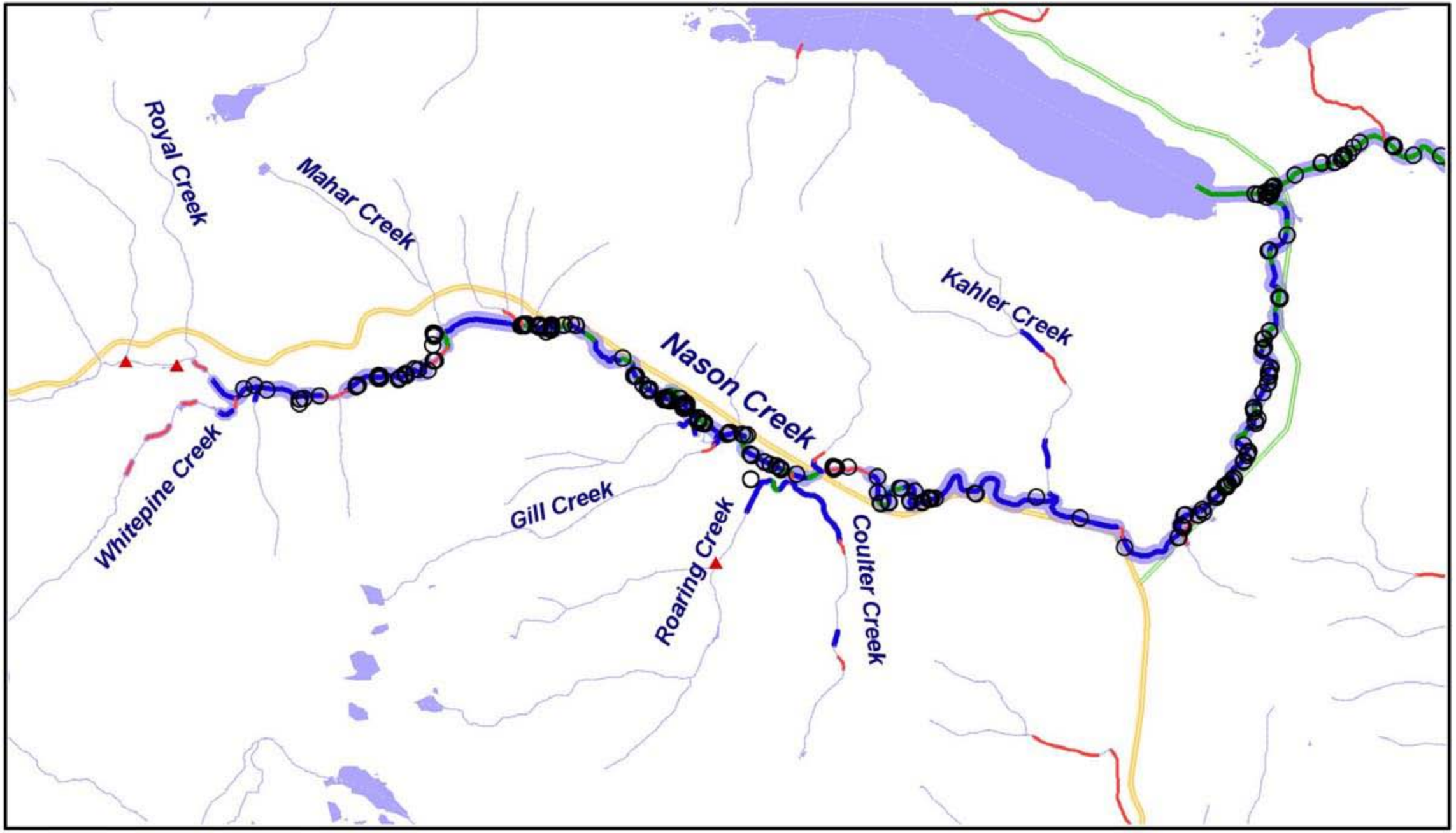
ICF INTERNATIONAL

Coulter Creek Culvert Replacement
Lower White Pine Reconnection Project

Appendix B

Biological Benefit Intrinsic Map of Coulter Creek



NASON CREEK STEELHEAD

STEELHEAD REDD

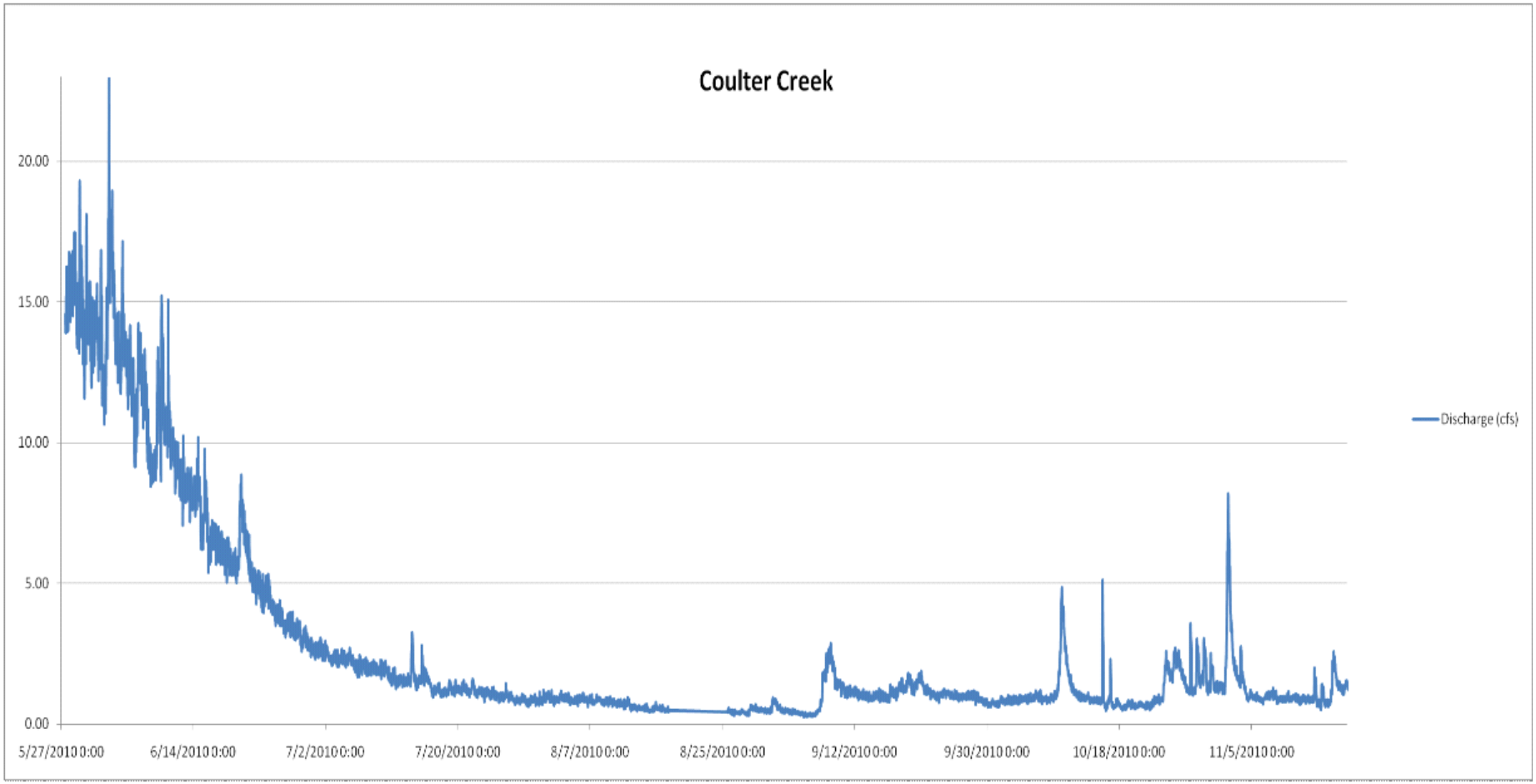
STEELHEAD POTENTIAL

- unsuitable
- low
- medium
- high

2 0 2 4 Miles

Appendix C

Hydrograph


Coulter Creek
20.00
15.00
10.00
5.00
0.00
5/27/2010 0:00
6/14/2010 0:00
7/2/2010 0:00
7/20/2010 0:00
8/7/2010 0:00
8/25/2010 0:00
9/12/2010 0:00
9/30/2010 0:00
10/18/2010 0:00
11/5/2010 0:00
Discharge (cfs)

Appendix D

Photosheet

Photo 1. Coulter Creek barrier culvert/s 36” squash pipe and 18” relief culvert - looking upstream

Photo 2. Coulter Creek barrier culvert/s looking downstream

Photo 3. Coulter Creek barrier culvert/s looking upstream

Photo 4. Wetlands above barrier culvert/s looking up Coulter Creek drainage

Photo 5. Wetlands and Yakama Nation's acclimation pond site above the Coulter Creek barrier culvert/s.

Photo 6. Coulter Creek barrier culvert/s upstream habitat

Photo 1. Coulter Creek barrier culvert/s 36” squash pipe and 18” relief culvert - looking upstream

Photo 2. Coulter Creek barrier culvert/s looking downstream

Appendix E

Estimated Budget

Coulter Creek Culvert Replacement RM 0.4 - Construction Cost Estimate

Construction Contract Estimate — **Bottomless Arch**

Bid Item #	Item	Unit	$ Price	Quantity	Total
	Erosion and Sediment Control	LS	$ 1,000.00	1	$ 1,000.00
	Diversion and Care of Stream	LS	$ 7,000.00	1	$ 7,000.00
	Removal of existing structures incl. Clearing	LS	$5,000.00	1	$ 5,000.00
	Structure Excavation	CY	$15.00	136	$ 2,040.00
	Steel Structural Plate Arch Culvert, 13" Span,	LF	$423.00	32	$ 13,536.00
	13' Span, 4'-7" Rise Galvanized Coated .111				
	Pre-cast Concrete Footings	LS	$16,000.00	1	$ 16,000.00
	Abutment Footing (quarry spalls)	CY	$55.00	20	$ 1,100.00
	Streambed Gravel	CY	$ 50.00	160	$ 8,000.00
	Furnish and Install Rip Rap	CY	$ 55.00	60	$ 3,300.00
	Crushed Surfacing Top Course	TON	$ 16.00	175	$ 2,800.00
1	Mobilization (incl. bid preparation work, pre-construction expenses, Spill Prevention and Control Plan, Temporary Erosion and Sediment Control plans preparation, bonding costs, compliance with prevailing wage rates, pre-bid walkthrough, hiring employees, purchasing materials.	LS	$ 7,850.00	1	$ 7,850.00
	Project Administration: Includes landowner coordination, meetings, travel to project site, contract preparation, advertising, pre-bid walk through, contract award, construction inspection, billing invoices, preparing as builts, substantial completion and final acceptance, contract closeout documentation.				$7,500
	Permitting & Wetland Delineation				$8,000
	Total Project Cost				**$ 83,126.00**

Appendix F

Citations

CITATIONS

Andonaegui, C. 2001. Washington State Conservation Committee. Salmon, Steelhead and Bull Trout Habitat Limiting Factors for the Wenatchee Subbasin (Water Resource Inventory Areas 45) and Portions of WRIA 40 within Chelan County (Squilchuck, Stemilt and Colockum drainages). Olympia, WA.

Harza/BioAnalysts. 2000. Chelan County Fish Barrier Inventory report. Prepared for Chelan County Planning, Wenatchee, WA.

Raekes. 2008. Email communication from Cindy L. Raekes, U.S. Forest Service, Leavenworth Ranger Station, Washington. May 23, 2008.

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