2006 (7th Round) SRFB Cycle – Grant Application
Chelan County Natural Resource Department
Clear Creek Passage Program

Project Report

PROJECT SPONSOR INFORMATION

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A: Project location

Describe where your proposed project is located.

Clear Creek is located in the Chiwawa watershed of the Wenatchee subbasin in North Central Washington (Figure 1). Clear Creek is a 2nd order stream with an average gradient of 3% that enters the Chiwawa at RM 1.6 (Harza/BioAnalysts 2000). It is approximately 3 miles upstream from the town of Plain and is located within Sec. 31 T27N, R18E.

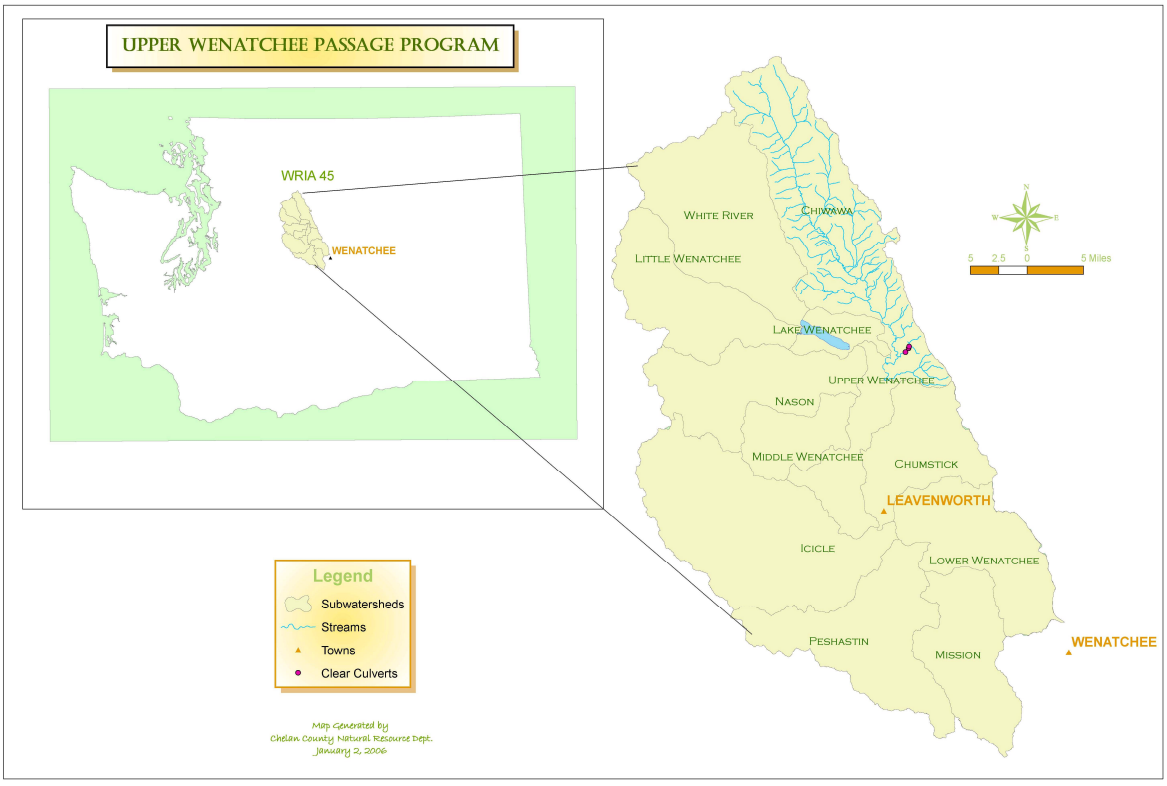

Figure 1. Clear Complex Area Map

B. Impacted Species

List the fish species and life-history stages that your proposed project will impact.

Species	Rearing	Spawning	Migration	Passage	High-water refugia
Sockeye salmon					
Coho salmon					
Chinook salmon					
Steelhead	X	X		X	
Other (list)					
Bull Trout					

Three barrier culverts occur in Clear Creek that are partial or complete passage barriers to juvenile and adult ESA listed Upper Columbia summer steelhead (WDFW 2005). Up to 30 redds a year have been found below culvert #1 located on private land (USFS 2006, Cameron Thomas, personal communication) (Figure 2).

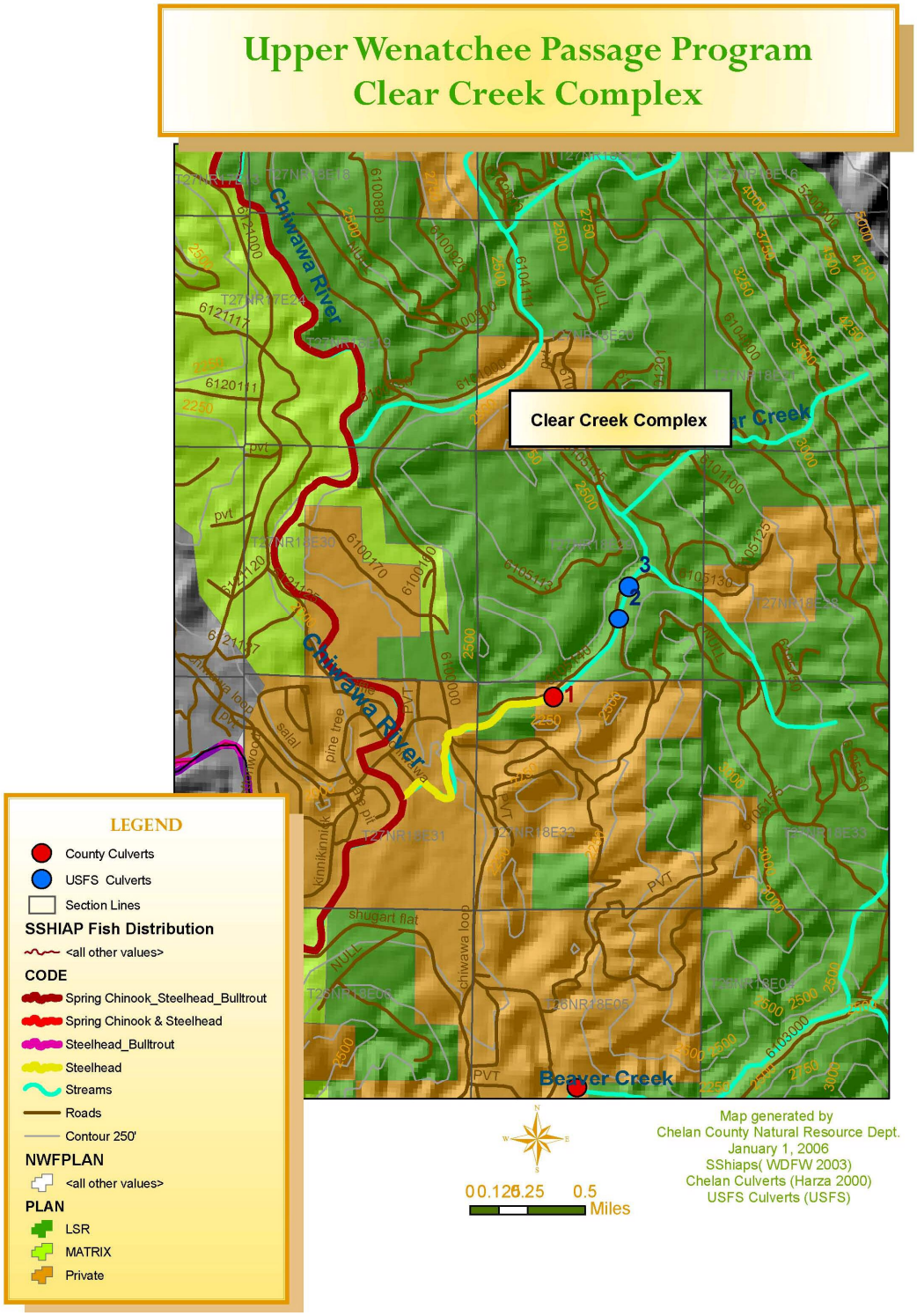

Figure 2. Clear Creek Complex Location Map

C: Project Design

Describe how the project design was developed and specifically how it will be implemented.

Clear Creek Passage Program Design Concept

The Clear Creek Passage Program addresses 3 passage barriers within a 2.0 mile reach of the Clear Creek subbasin. The first site is located on private property with the following two on Forest Service lands. The third culvert has failed due to excessive loading. The Forest Service is to provide surveying and designs for all three structures as part of the "Economy Act" agreement with the Bureau of Reclamation.

Chelan County Natural Resources Department proposes to replace the three passage barrier culverts with modular steel bridge structures. The Washington Department of Fish and Wildlife "Design of Road Culverts for Fish Passage Manual" will be applied in designing the replacement structures. Engineering designs will reflect the most current research regarding replacement of barrier culverts and will be designed for the 100 year flow event. The proposed design concept for the Wenatchee Passage Program is to utilize modular steel bridge super structures set in place on pre-cast concrete abutments (see Figure 3a and b photos below). The decision to use bridges was based on discussions with Washington State Department of Fish and Wildlife personnel and WAC 220-110-070 which states in part "***In fish bearing waters, bridges are preferred as water crossing structures by the department in order to ensure free and unimpeded fish passage for adult and juvenile fishes and preserve spawning and rearing habitat."*** The bridge manufacturers claim low initial cost, prompt delivery, and fast easy installation. Furthermore, load ratings and normal maintenance practices are preserved.

Figure 3a. The modular steel bridge on a similar project in Idaho. Pre-cast concrete abutments are set in the "dry". Standard heavy equipment sets the modular steel superstructure on the abutments.

Figure 3b. Modular Steel Bridge

It appears during initial cost estimating that stream crossing structures consisting of modular steel bridge components manufactured in pre-selected span lengths offer the most affordable natural tributary stream conditions at accepted road crossings. The Wenatchee Passage Program design concept contains commonly accepted designs with required materials and qualified construction contractors locally available. After requirements for all permitting and contracting documents have been secured, typical construction would proceed in accordance with the contract plans.

Alternatives

In keeping with the above objective, three (3) alternatives were actively considered, including retrofitting the existing culvert, bottomless arch culverts, and modular steel bridges.

1) Retro-fit the existing culvert. A low-cost option to eliminate a fish passage barrier is to retro-fit the existing culvert structure with a modified roughened channel or with baffles where necessary. This method does not adequately address the fish passage barrier problem or requires an unacceptable commitment to maintenance. In addition, the local permitting agencies prefer other alternatives.

2) Bottomless arch structure. This type of structure provides fish passage and is relatively easy to construct. It typically includes sections of galvanized steel arch plates which are bolted together and connected to pre-cast concrete footings. Estimated costs are typically equal to modular steel bridges.

3) Modular Steel Bridges. These structures are consistent with the intent of WAC 220-110-070- Water Crossing Structures, which contains specific language for encouraging bridge structures at road crossings as opposed to culvert pipes. The proposed design concept for the Wenatchee Passage Program is to utilize modular steel bridge super structures set in place on pre-cast concrete abutments.

D: Current Situation

What limiting factor(s) is the project proposing to address? What activities are contributing to the limiting factor(s)? How was the specific project identified? Be sure to cite references such as the Discussion DRAFT 2003 Upper Columbia Biological Strategy.

The Upper Wenatchee Passage Program (UWPP) is a collaborative effort between Chelan County, the U.S. Forest Service (USFS), and the Bureau of Reclamation (Reclamation) to acquire funds to replace nine barrier culverts that interrupt adult and juvenile salmonid passage in the Chiwawa and Middle Wenatchee subwatersheds (Figure 4). The biological goal of the UWPP is to increase fish passage into Alder Creek, Clear Creek, Beaver Creek and Skinney Creek. The objectives include replacing 9 barrier culverts with fish-friendly structures to provide over 11 RM of additional spawning and rearing habitat for Upper Columbia steelhead, spring Chinook and bull trout.

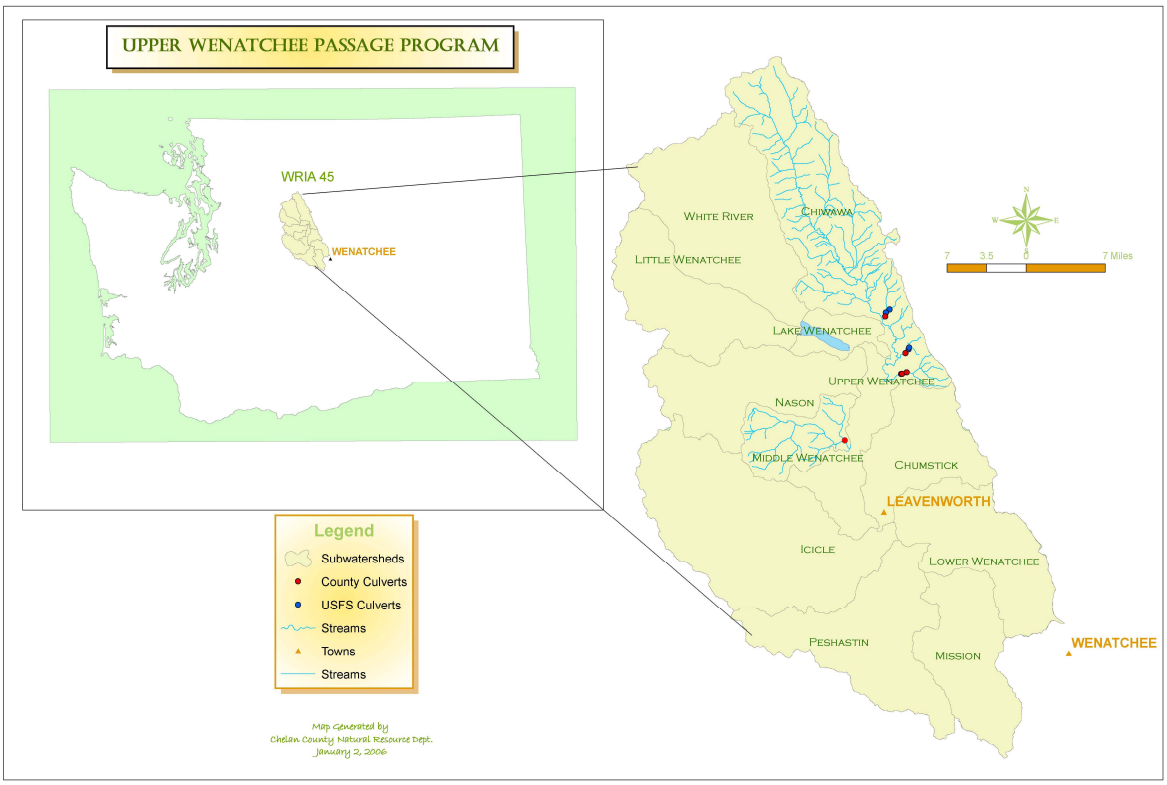

Figure 4. Upper Wenatchee Passage Program Area Map

The Draft Salmon Recovery Plan (UCSRB 2005) describes the Chiwawa River watershed as a Category 1 using the rating system from the Upper Columbia Regional Technical Team's Biological Strategy (UCRTT 2003). Habitat quantity is the primary limiting factor for the Chiwawa watershed identified in the Draft Salmon Recovery Plan (UCSRB 2005), with residential development listed as the primary causal factor and threat. The Chiwawa River has a known occurrence of all three ESA listed species (Table 1).

Clear Creek is a 2nd order stream with an average gradient of 3% that enters the Chiwawa River at RM 1.6 (Harza/BioAnalysts 2000). Three barrier culverts occur in Clear Creek that are partial or complete passage barriers to juvenile and adult ESA listed Upper Columbia summer steelhead (WDFW 2005). The Clear Creek Passage Program will replace culvert barriers #1, #2 and #3, providing approximately 2.7 additional linear mile of stream habitat.

Table 1. Matrix of known occurrence of spawning and rearing for selected salmonid species in some subwatersheds of Chelan County.

Stream	Steelhead		Spring Chinook		Bull Trout		Recovery Plan Primary Limiting Factor[3]	Recovery Plan Primary Causal Factor[3]
	Spawning	Rearing	Spawning	Rearing	Spawning	Rearing		
Entiat (Middle)	X[2]	X[2]	X[2]	X[2]	X[2]	X[2]	Habitat diversity; Obstructions	Roads; Fires; Riprap; Residential development; Culverts
Chiwawa	X[2]	X[2]	X[2]	X[2]	X[2]	X[2]	Habitat quantity	Residential development
Middle Wenatchee (Tumwater Canyon)	X[4]	X[4]	X[4]	X[4]	X[4]	X[4]	None	None
Chiwaukum	X[4]	X[4]	X[1]	X[4]	X[4]	X[4]	Habitat diversity; Obstructions	Roads; Campgrounds

[1:] Andonaegui 2001
[2:] Harza/BioAnalysts 2000
[3:] UCSRB 2005
[4:] WDFW 2005

In the 2007-09 Northwest Power Planning Council solicitation for proposals, the Independent Scientific Review Panel (ISRP) evaluated the Wenatchee Passage Program proposal and suggested that the proposal address: 1) how priority was given to the barriers, 2) species currently using the tributaries, 3) an estimate of carrying capacity, and 4) the potential benefit to other species. The following information addresses these topics.

Barrier Prioritization
Clear Creek culverts #1, #2 and #3 were given a "high" priority for replacement by the Upper Columbia Regional Technical Team (Table 2; UCRTT 2006). In addition, Beaver Creek culverts are included in the Implementation Schedule for construction in years 1-3 (UCSRB 2006).

Species Use
Upper Columbia steelhead, spring Chinook and bull trout are known to spawn and rear in the Chiwawa watershed (Table 1). Table 3 shows the known and presumed fish presence in Clear Creek up to and beyond each culvert.

Carrying Capacity
Calculating the carrying capacity is beyond the scope of this grant proposal. As a substitute for carrying capacity, we calculated the area by multiplying the bankfull width by the length of stream opened up by replacing the culvert (Table 2).

Benefit to other species
By replacing the fish barrier culverts with modular steel bridges, the project will provide year-round fish passage to all species at all life stages. Pre- and post-construction effectiveness monitoring will document the species that actually benefit from the project. Native species that are known to exist in the Wenatchee subbasin and could potentially benefit from culvert replacement projects include westslope cutthroat trout, rainbow trout, coho, sculpin, dace, lamprey, peamouth, chiselmouth, suckers and whitefish. It is unlikely that all of these species will be present at the project site. However, if they are present they will not be impeded in their upstream or downstream migration by the new bridges.

Table 2. Relative priority, biological benefit, feasibility and costs for replacing selected culverts in Chelan County.

Watershed	Creek Complex	CCNRD Barrier No.	UCRTT Overall Priority (draft)	UCRTT Category[4]	Harza/ BioAnalysts Rank	River Miles upstream	Area upstream of culvert (sq ft)	Feasibility	Total Project Cost when completed as a Complex	Cost of project if constructed separately
Chiwawa	Alder (RM 0.5)	1	High	1	0	0.4	25,344	High	$148,536	$152,536
Chiwawa	Alder (RM 0.9)	2	High/ Funded	1	Top 5	0.5	31,680	High	N/A	N/A
Chiwawa	Alder/ Elder (RM 1.4)	3	High	1	0	0.06[1]	1,267	High	$104,664	$108,664
		Total				**0.96**	**58,291**		**$253,200**	**$261,200**
Chiwawa	Clear (RM 0.5)	1	High	1	Top 10	1	52,800[3]	High	$99,936	$103,936
Chiwawa	Clear (RM 1.5)	2	High	1	0	0.2	10,560	High	$109,152	$113,152
Chiwawa	Clear (RM 1.7)	3	High	1	0	1.49[1]	78,672	High	$109,152	$113,152
		Total				**2.69**	**142,032**		**$318,240**	**$330,240**
Middle Wenatchee	Beaver (RM 1.9)	1	High	1	Top 20	0.1	6,336[3]	High	$96,336	$100,336
Middle Wenatchee	Beaver (RM 2.0)	2	High	1	Top 20	0.5	31,680	High	$97,536	$101,536
Middle Wenatchee	Beaver (RM 2.5)	3	High	1	Top 25	2.39[1]	113,573	High	$99,936	$103,936
		Total				**2.99**	**151,589**		**$293,808**	**$305,808**

Table 2. continued.

Watershed	Creek Complex	CCNRD Barrier No.	UCRTT Overall Priority (draft)	UCRTT Category[4]	Harza/ BioAnalysts Rank	River Miles upstream	Area upstream of culvert (sq ft)	Feasibility	Total Project Cost when completed as a Complex	Cost of project if constructed separately
Chiwaukum	Lower Skinney (RM 0.25)	1	Moderate	2	Inventoried by USFS	1.25	79,200	High	$130,200	$134,200
Chiwaukum	Upper Skinney (RM 1.5)	N/A	Moderate/ Funded	2	Top 25	3.45[1]	N/A	N/A	N/A	N/A
		Total				**4.7**	**79,200**		**$130,200**	**$134,200**
Chumstick	North Road	1	High	3	Inventoried by USFWS & NRCS	7[2]	517,440[3]	Moderate	$129,360	$129,360
		Total				**7**	**517,440**		**$129,360**	**$129,360**
Entiat Middle	Stormy Creek (RM 0.2)	N/A	NR/ Replaced	1	Top 25	0.5	N/A	N/A	N/A	N/A
Entiat Middle	Stormy Creek (RM 0.7)	1	NR	1	Top 25	0.2	10,560[3]	High	Construct only as a complex	Construct only as a complex
Entiat Middle	Stormy Creek (RM 0.9)	2	NR	1	Top 25	3.24[1]	171,072[3]	High	Construct only as a complex	Construct only as a complex
		Total					**181,632**		**$139,512**	

[1]: GIS was used to measure the upstream length of mainstem and tributaries to the 8% gradient. Field truthing is recommended.
[2]: Length is estimated, which affects the overall area computation.
[3]: Bankfull width is estimated, which affects the overall area computation.
[4]: UCRTT 2003

Table 3. Fish presence in Clear Creek.

Clear Creek				
Fish Presence (pre-construction)				
Species	**Mouth to Barrier 1**	**Barrier 1 to 2**	**Barrier 2 to 3**	**Barrier 3 to 8% gradient**
Steelhead	X[1,2]	0	0	0
Chinook	x	0	0	0
Bull trout	x	0	0	0
Coho	0	0	0	0
Sockeye	0	0	0	0
Westslope cutthroat	x	0	0	0
Rainbow trout	x	0	0	0

Key:
X: known presence
x: presumed presence
0: none documented

Presumed presence:
For rainbow trout, possible presence reflects known steelhead presence. For other species, possible presence indicates that a tributary adjoins the stream with known fish presence and no barriers would hinder their use of the area.

Source:
[1]: WDFW 2005
[2]: USFS 2006, personal communication with Cameron Thomas

Clear Creek Barrier #1

Adult listed steelhead currently reach the first barrier culvert (**Clear Creek #1**) on private land at RM 0.5 (WDFW 2004) but are obstructed by a slope and velocity barrier, and an outfall vertical drop of approximately 8" (Figure 5 and 6). The landowner has signed a landowner willingness form (See Appendix A).

Figure 5. Clear Creek #1 (Note outfall drop)

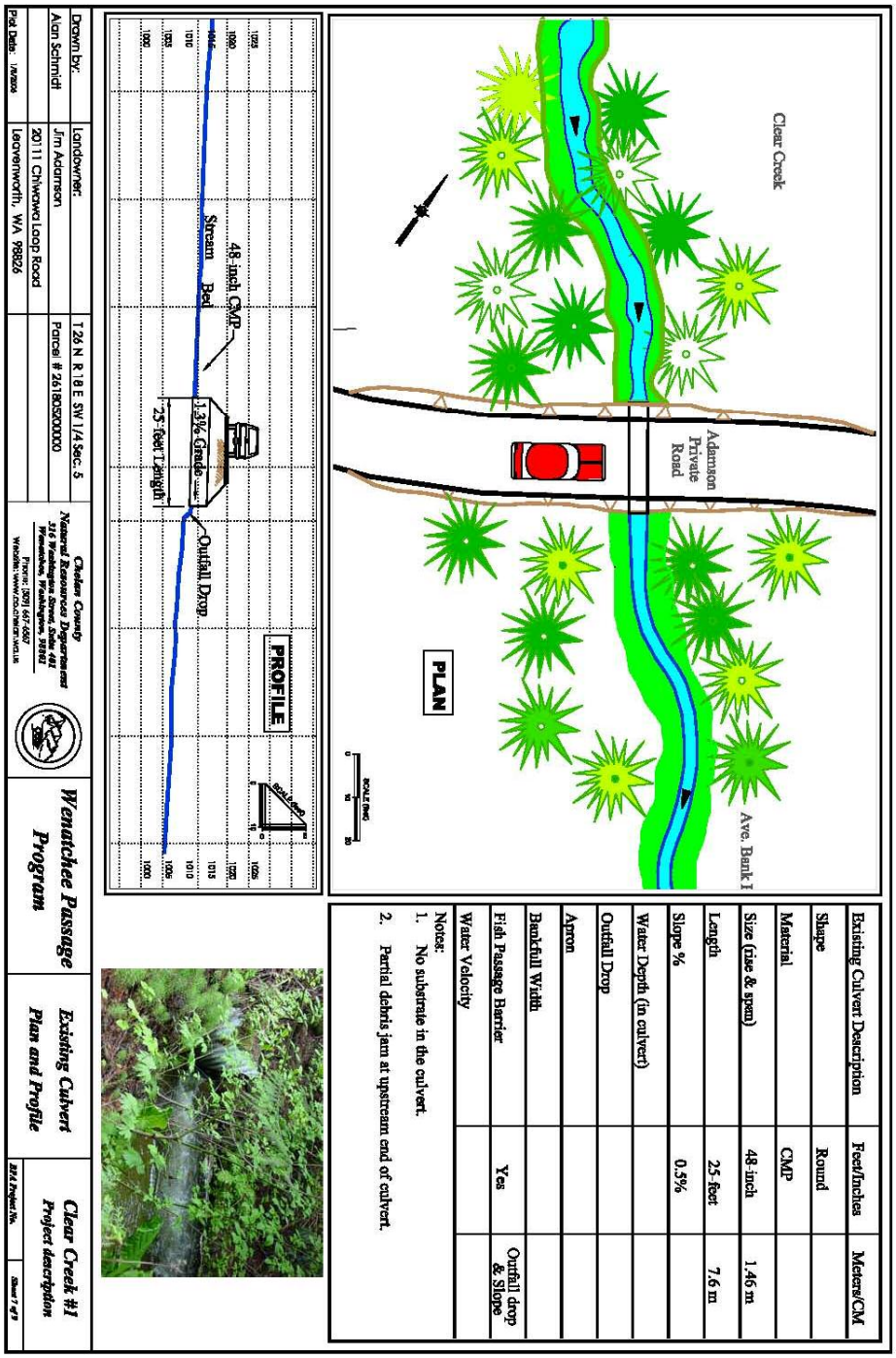

Figure 6. Clear Creek #1, Plan and Profile

Clear Creek Barrier #2

Approximately 1 mile upstream of the Clear Creek #1 are two Forest Service culverts. Both culverts pass under FS Road 6105 and are adjacent to a swampy valley bottom in Clear Creek. The second barrier is a FS culvert and is located at RM 1.5 (**Clear Creek #2**). This culvert is functioning appropriately from a transportation standpoint since it passes water and the road prism is intact; however, it is a velocity barrier to juveniles, contains no substrate in the culvert, and blocks access to a stream wetland complex that could provide up to a half mile of over-wintering habitat for juvenile steelhead (Figure 7 and 8). Clear Creek is low gradient at this crossing and has a bankfull width of 10 feet.

Figure 7. Clear Creek #2

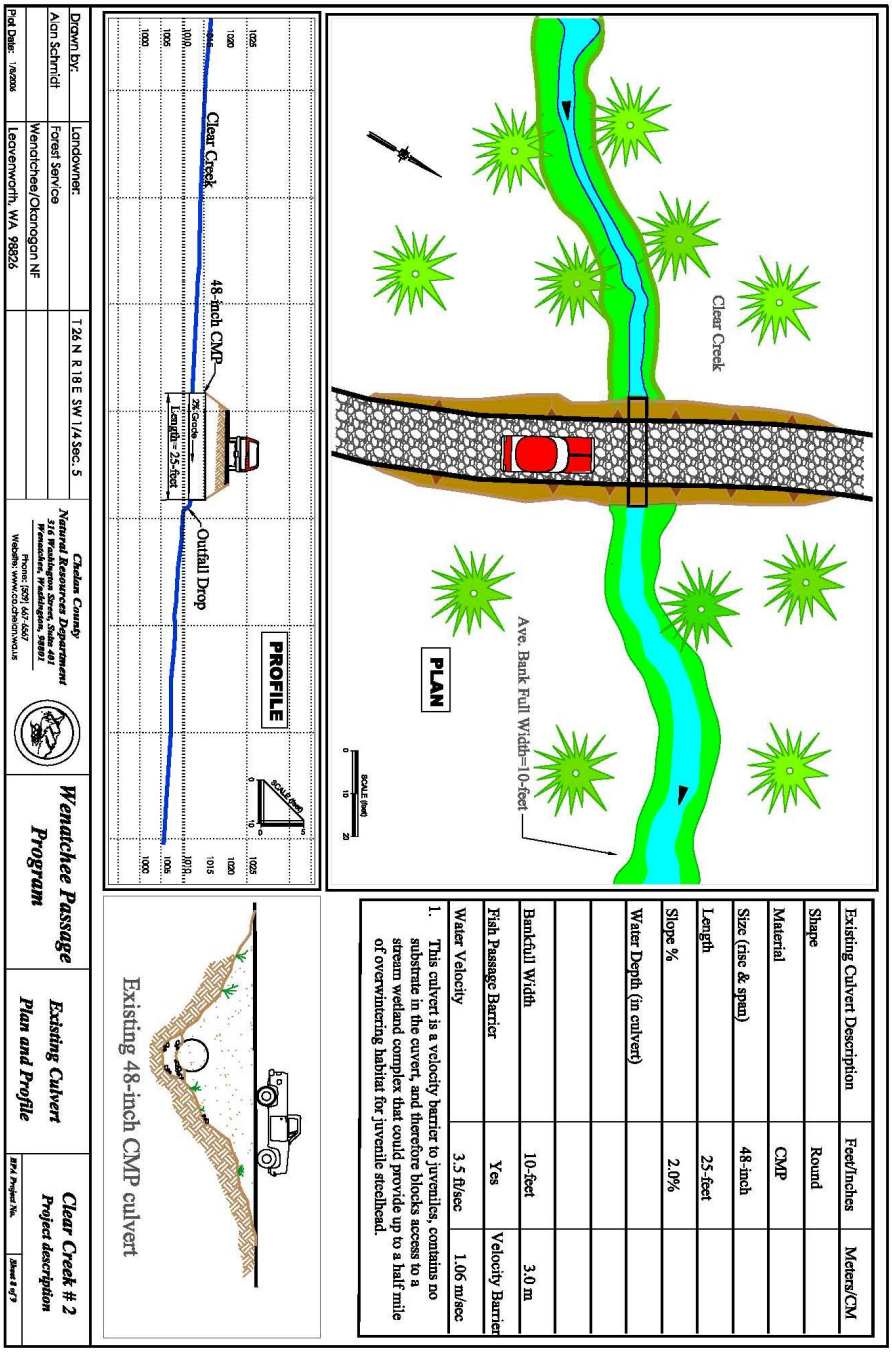

Figure 8. Clear Creek #2, Plan and Profile

Clear Creek Barrier #3

The third barrier (**Clear Creek #3**) at RM 1.7 is approximately 300 meters upstream of the first barrier and it blocks juvenile upstream migration. This pipe is upstream of a second order tributary to Clear Creek. Clear Creek has a bankfull width of 4 feet at this point. The existing spiral 48" round CMP (corrugated metal pipe) has failed at this location and a hole approximately 1' wide has opened in the side of the road prism. The pipe placement and subsequent outlet drops 2 to 3 feet over small boulders that appear to have been used in the construction of the road prism (Figure 9 and 10).

Figure 9. Clear Creek #3 (Note pipe failure)

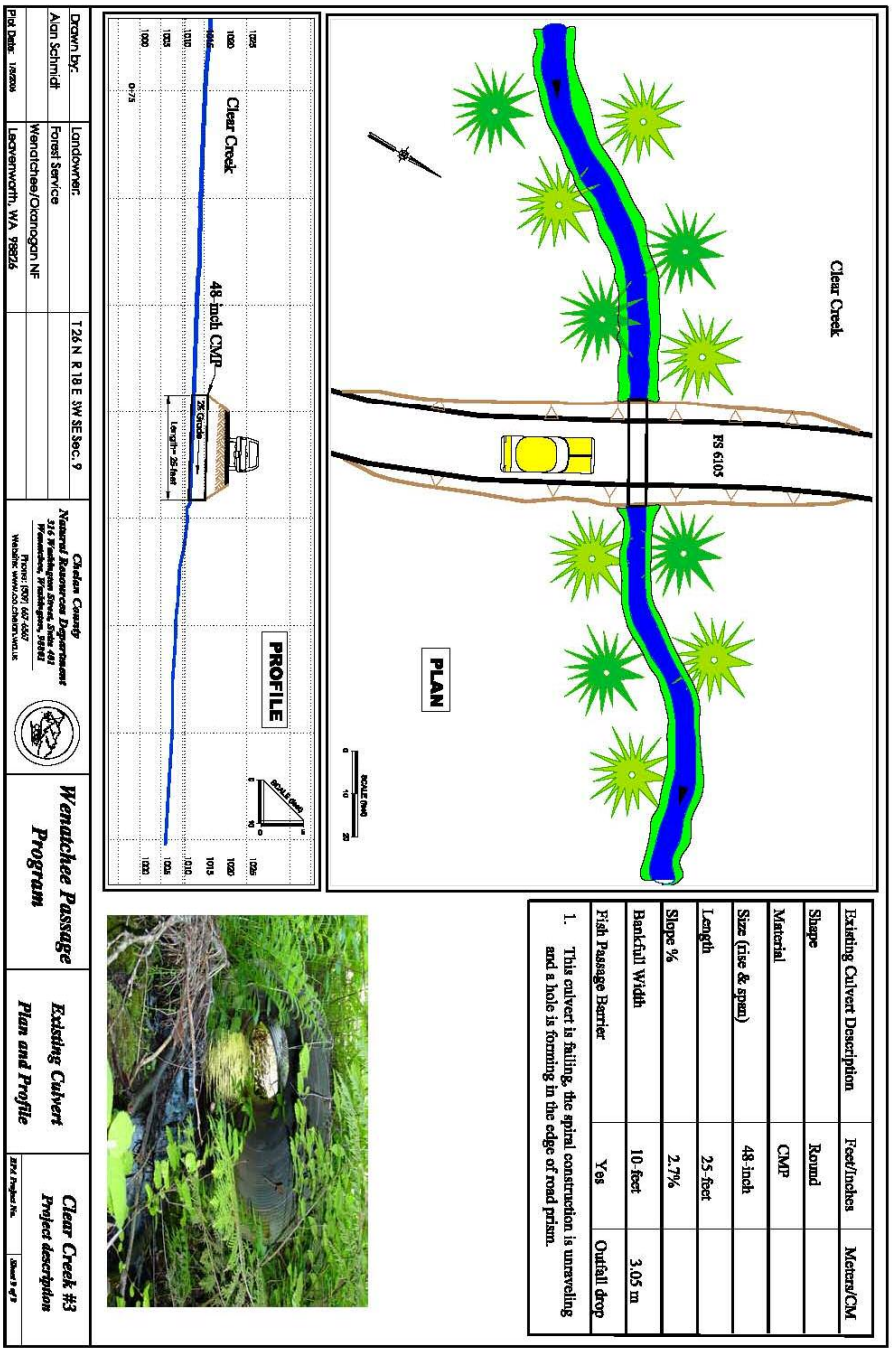

Figure 10. Clear Creek #3, Plan and Profile

E. Proposed Action

Outcome Statement – how will your proposed project address the limiting factor(s)?

Removing barriers to provide unobstructed passage is an important step toward restoring listed fish populations. Activities undertaken in this project will increase available tributary habitat primarily for ESA listed summer steelhead, but may also benefit coho, endangered spring Chinook and threatened bull trout. Removing barriers to fish passage and enhancing habitat in the Chiwawa drainage is directly outlined in the strategies and recommendations of the major salmon recovery documents guiding restoration efforts within the Wenatchee subbasin.

What specific actions are you proposing to address the limiting factor?
Three fish passage barrier culverts (Clear #1, #2 and #3) will be replaced with modular steel bridges (Figure 5; Figures 6-8) to provide year-round passage to all species at all life stages. In addition to the correction of barriers, second and third year activities will include riparian plantings to restore and enhance habitat.

Construction

The construction and planting work will be accomplished through the combined efforts of the Forest Service, Chelan County Natural Resource Department and private contractors. The Wenatchee Passage Program contains commonly accepted designs**,** materials and qualified construction contractors that are available locally. Typical construction after requirements for all permitting and contracting documents have been secured would proceed in accordance with the contract plans. Use of heavy construction equipment such as a track hoe, small dozer, road grader and dump truck can be assumed. Road closures of no more than three (3) days are expected. Construction staking and inspection would be provided by the Chelan County Natural Resources Department. Chelan County Natural Resources Department and the Forest Service will apply for all necessary permits.

Bridge abutments and steel superstructure are delivered by truck to the project site and are set in the dry. All components are off loaded and set in place with a track hoe, then are bolted together as per the manufacturer's instructions. The guardrail is included. New stream channel will be constructed in accordance with the approved Bureau of Reclamation design. Construction activities will be accomplished during low flow periods to reduce the potential impacts to juvenile fish. On-site sediment mitigation measures could include silt fencing where necessary, isolating and/or diverting the stream around the work site, using pre-cast footings. 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.

Monitoring
Monitoring and Evaluation will consist of implementation monitoring and Level I effectiveness monitoring as described in "Project Monitoring: A Guide for Sponsors in the Upper Columbia Basin" (Hillman 2005).

Implementation Monitoring
Implementation Monitoring will be conducted by the Chelan County Natural Resources Department to ensure that the Clear Creek Culvert replacements are implemented as planned. This will be an administrative review and will not include measurement of any parameters. Photos will be obtained pre- and post-construction to document project completion. The implementation monitoring will address the design goals of the installed structures. The data collected will include the number and location of fish passage structures installed and Engineering specifications (e.g., HS20-44 rating, length of bridge; stream slope; presence of substrate; bridge span to streambed width ratio; and fill depth) (Hillman 2005).

Effectiveness Monitoring
Level 1 effectiveness monitoring will focus on addressing the biological goals and objectives of the project. Level I effectiveness monitoring will be performed to establish baseline conditions prior to project construction, and then following the installation of the fish-friendly structures. The U.S. Forest Service and the Chelan County Natural Resources Department will implement the Level 1 effectiveness monitoring. For all culvert replacement projects, data (including photographs) will be collected at least once before implementation of the project and then annually for five years following replacement). Other data collected will include maximum water velocity within culverts; maximum water depth within culverts; outfall drop; presence/absence of steelhead redds; presence/absence of juvenile or adult steelhead.

The sampling scheme as described in Hillman's protocols include taking physical measurements (velocities, depths, and outfall drop) and will be collected at each barrier during high flow (spring) and low flow (late summer) one year before barrier replacement and each year for five years after replacement. Thus, physical measurements will be collected twice per year for the six-year period and will be collected at the same place and time each year. Photographs of each culvert (taken upstream, downstream and at each culvert) will be collected during high-flow and low-flow periods before and after installation of the squash culverts. Photographs will be taken from the same locations during each survey period.

Because suitable spawning and rearing habitat exists immediately upstream and downstream of each culvert, a 300-m reach of stream downstream from each barrier and a 300-m reach upstream from the upper barrier will be surveyed by walking the stream bank and looking for the presence of steelhead and other species. Foot surveys will be conducted twice per year; once during the spring to find steelhead redds and again during the low-flow period to find juvenile steelhead. Snorkeling or electro-fishing will be used when a positive identification of a juvenile fish cannot be made from the bank.

F. Project partners and roles

List the project partners that will contribute towards the proposed project and define their contribution. A signed HCP Tributary Committee Landowner Willingness Form must be included with this application.

The Clear Creek Passage Program is a cooperative effort between the Chelan County Natural Resource Department (CCNRD), U.S. Forest Service (USFS) and the Bureau of Reclamation (Reclamation). Construction staking and inspection will be provided by CCNRD. CCNRD and the USFS will apply for all necessary permits. The construction, planting, and monitoring work will be accomplished through the combined efforts of the USFS, CCNRD and private contractors.

The Chelan County Natural Resources Department and the Bureau of Reclamation have established a partnership to develop habitat restoration projects within WRIA 45 and WRIA 46. The Forest Service will conduct site surveys, reach analysis, and develop final engineering plans and specifications. The Reclamation and USFS have utilized the Economy Act to group projects within a close geographical area into management units. This allows the Forest Service to develop project plans on all three project sites in the Clear Creek Complex even with Clear #1 under Chelan County/Reclamation jurisdiction. In turn, the Bureau of Reclamation will provide engineering for the three projects sites on the Beaver Creek Complex. The Forest Service contribution consists of the following:

- Project Coordination and Administration: $3,500
- Site surveys utilizing a total station electronic transit will create a digital terrain model (DTM): $5,000
- A Reclamation engineer will produce a design that complies with permitting agency requirements. Each site will be analyzed for the 100-year storm event. Structure is intended to withstand any anticipated storm water flows as well as winter ice/snowmelt conditions. Each structure design will be stamped by a licensed engineer: $20,000
- Post Construction Assessment and Completion Report: $2,500

Total Bureau of Reclamation contribution per project site: $31,000

Staff Descriptions
Chelan County will be responsible for the administration of the project. Design, permitting, implementation and monitoring will be done in coordination with the Forest Service and the Bureau of Reclamation.

Mike Kaputa, Chelan County Natural Resource Department Director
Mike is the Director of the Natural Resource Department and has a bachelor and master degrees in environmental science and environmental policy and planning. Mike has over 15 years experience in natural resource planning, assessment and project implementation, including the past five years as Director of the Chelan County Natural Resource Department. Mike reports directly to the elected County Commissioners and represents the County on land, water, and other natural resource issues.

Joy Juelson, Chelan County Natural Resource Specialist
Joy Juelson is the staff scientist for the department providing various biological, hydrological, and ecological services related to project development and policy justification. She has a Master's Degree in Natural Resource Management with an emphasis in ecological restoration. Joy has 15 years experience with the US Forest Service as an ecologist. In addition to Joy's extensive field work experience in a variety of areas, Joy worked on a variety of fisheries related projects and has experience in snorkeling, electro-fishing, radio telemetry, spawning and stream surveys.

Lee Duncan, Chelan County Natural Resource Specialist
Lee Duncan is the staff scientist responsible for providing technical expertise in the development and implementation of watershed management plans. His background is in geomorphology, hydrology and water quality. Lee has 4 years experience with the US Forest Service as a Hydrologic Technician. This included leading stream survey crews, coordinating habitat and stream assessments and analyzing field data. Lee's experience also includes several years as a watershed coordinator which involved developing, overseeing and implementing stream restoration projects.

Alan Schmidt, Chelan County Habitat Program Manager
Alan Schmidt has over 25 years of experience with project management and implementation. Alan has owned his own forestry resources consulting business, served as a Transportation Engineer 2 for the Washington Department of Transportation, and managed major development and utility projects for the Chelan County Public Works Department. Alan's areas of expertise include project surveying, engineering and design, on-the-ground project implementation, including bid procedures, construction management and landowner negotiations.

Dolanna Burnett, Chief Accountant
Dolanna Burnett recently joined Chelan County Natural Resources in May 2006. She moved to Eastern Washington last year with her family and brings with her six years of experience in the field of conservation work; previously working with Thurston Conservation District located in Olympia, Washington. Dolanna's experience includes over 12 years of accounting work in both private and public sector companies, along with an extensive knowledge of budgeting, grant management, and governmental reporting requirements. Dolanna's work with the District resulted in three successful audits conducted by the Washington State Auditor's Office: Financial Statements and Federal Single Audit Report, as well as individual granting agency audits over the past six years. Dolanna Burnett has a B.A. and strives to continue her education in the field of natural resources.

PROJECT TIMELINE

Describe the general terms when you expect project milestone to be complete and the overall completion date of the specific project work.

Item/Milestone	Outcome	Target Date (Month/Year)
Quarterly Reports		Quarterly
Surveys completed		7/2006 to 10/2006
Draft Project Design	~60% project design	10/2006 to 1/2007
Reclamation and USFS Meetings	Coordination and design input	2/2007
Landowner Access Agreements		4/2007 to 6/2007
Construction Access Agreements		4/2007 to 6/2007
Final Project Design	~75% project design will be submitted with permit (expect it will change during permitting process)	4/2007 to 7/2007
Permits submitted and obtained	HPA and other permits obtained	4/2007 to 7/2007
Pre-Construction Implementation Monitoring	Photograph and document barrier culvert	7/2007
Pre-Construction Effectiveness Monitoring	Determine baseline biological information using monitoring protocol developed by Hillman (2005)	7/2007
Develop bid package and award to contractor		8/2007
Remove culvert and install bridge	Fish-friendly structure installed	8/2007 to 9/2007
Riparian planting	Replant disturbed area around culvert to minimize erosion and eventually provide bank stability and shade	9/2007
Final Checklist		9/2007
Completion Report		9/2007
Turnover Agreement		10/2007
Post-Construction Implementation Monitoring	Ensure that work was completed	10/2007
Post-Construction Effectiveness Monitoring	Determine biological impacts of culvert replacement using monitoring protocol developed by Hillman (2005)	10/2007, then once a year for 5 years

PROPOSED PROJECT BUDGET

	Clear Creek Culvert #1 RM 0.5		**Modular Bridge**		
Bid Item	**Item**	**Unit**	**$ Price**	**Quantity**	**Total**
1	Mobilization	LS	$1,000	1	$1,000
2	Traffic Control & Signing	LS	$800	1	$1,200
3	Clearing and Grubbing	Acre	$2,000	1	$2,000
4	Erosion and Sediment Control	LS	$1,000	1	$2,000
5	Diversion and Care of Stream	LS	$7,000	1	$7,000
7	Removal of existing structure	LS	$4,000	1	$4,000
8	Channel Reconfiguration	LS	$4,000	1	$4,000
9	Rock Weir/Deflector Barbs	EA	$1,500	4	$6,000
10	Stream Bed Gravel	CY	$35	160	$5,600
11	Furnish 16-ft. x 25-ft Modular Bridge	SF	$48	400	$19,200
12	Pre-cast concrete abutment	EA	$5,600	2	$11,200
13	Install new bridge structure	EA	$7,000	1	$7,000
14	Embankment for new structure	CY	$16	30	$480
15	Furnish and Install Rip Rap	CY	$20	50	$1,000
16	Install future utility extension carrier	LS	$1,000	1	$1,000
17	Roadway Restoration	SF	$2	800	$1,600
18	Hydroseed Mix & Re-vegetation	EA	$2	1,000	$2,000
19	Permitting	LS	$7,000	1	$7,000
	Contract Administration - Contingencies 20%				$16,656
	Sub-Total Amount Requested From SRFB/TRIB			*	**$99,936**
	Forest Service "In Kind" Contribution				
	Project Administration		$3,500	1	$3,500
	Surveying		$5,000	1	$5,000
	Design Engineering and Inspection		$20,000	1	$20,000
	Post Construction Assessment and Completion Report		$2,500	1	$2,500
	Total Project Cost (Clear Creek #1)				**$130,936**
	* If funded individually Mobilization & Permitting add				$4,000

	Clear Creek Culvert #2 RM 1.5		**Modular Bridge**		
Bid Item	**Item**	**Unit**	**$ Price**	**Quantity**	**Total**
1	Mobilization	LS	$1,000	1	$1,000
2	Traffic Control & Signing	LS	$800	1	$1,200
3	Clearing and Grubbing	Acre	$2,000	1	$2,000
4	Erosion and Sediment Control	LS	$1,000	1	$2,000
5	Diversion and Care of Stream	LS	$7,000	1	$7,000
7	Removal of existing structure	LS	$4,000	1	$4,000
8	Channel Reconfiguration	LS	$4,000	1	$4,000
9	Rock Weir/Deflector Barbs	EA	$1,500	4	$6,000
10	Stream Bed Gravel	CY	$35	160	$5,600
11	Furnish 16-ft. x 35-ft Modular Bridge	SF	$48	560	$26,880
12	Pre-cast concrete abutment	EA	$5,600	2	$11,200
13	Install new bridge structure	EA	$7,000	1	$7,000
14	Embankment for new structure	CY	$16	30	$480
15	Furnish and Install Rip Rap	CY	$20	50	$1,000
16	Install future utility extension carrier	LS	$1,000	1	$1,000
17	Roadway Restoration	SF	$2	800	$1,600
18	Hydroseed Mix & Re-vegetation	EA	$2	1,000	$2,000
19	Permitting	LS	$7,000	1	$7,000
	Contract Administration - Contingencies 20%				$18,192
	Sub-Total Amount Requested From SRFB/TRIB			*	**$109,152**
	Forest Service "In Kind" Contribution				
	Project Administration		$3,500	1	$3,500
	Surveying		$5,000	1	$5,000
	Design Engineering and Inspection		$20,000	1	$20,000
	Post Construction Assessment and Completion Report		$2,500	1	$2,500
	Total Project Cost (Clear Creek #2)				**$140,152**
	* If funded individually Mobilization & Permitting add				$4,000

	Clear Creek Culvert #3 RM 1.7		**Modular Bridge**		
Bid Item	**Item**	**Unit**	**$ Price**	**Quantity**	**Total**
1	Mobilization	LS	$1,000	1	$1,000
2	Traffic Control & Signing	LS	$800	1	$1,200
3	Clearing and Grubbing	Acre	$2,000	1	$2,000
4	Erosion and Sediment Control	LS	$1,000	1	$2,000
5	Diversion and Care of Stream	LS	$7,000	1	$7,000
7	Removal of existing structure	LS	$4,000	1	$4,000
8	Channel Reconfiguration	LS	$4,000	1	$4,000
9	Rock Weir/Deflector Barbs	EA	$1,500	4	$6,000
10	Stream Bed Gravel	CY	$35	160	$5,600
11	Furnish 16-ft. x 35-ft Modular Bridge	SF	$48	560	$26,880
12	Pre-cast concrete abutment	EA	$5,600	2	$11,200
13	Install new bridge structure	EA	$7,000	1	$7,000
14	Embankment for new structure	CY	$16	30	$480
15	Furnish and Install Rip Rap	CY	$20	50	$1,000
16	Install future utility extension carrier	LS	$1,000	1	$1,000
17	Roadway Restoration	SF	$2	800	$1,600
18	Hydroseed Mix & Re-vegetation	EA	$2	1,000	$2,000
19	Permitting	LS	$7,000	1	$7,000
	Contract Administration - Contingencies 20%				$18,192
	Sub-Total Amount Requested From SRFB/TRIB			*	**$109,152**
	Forest Service "In Kind" Contribution				
	Project Administration		$3,500	1	$3,500
	Surveying		$5,000	1	$5,000
	Design Engineering and Inspection		$20,000	1	$20,000
	Post Construction Assessment and Completion Report		$2,500	1	$2,500
	Total Project Cost (Clear Creek #3)				**$140,152**
	* If funded individually Mobilization & Permitting add				$4,000

Economy of Scale

The Chelan County Natural Resources Department has identified three passage barriers in each of the Alder Creek, Beaver Creek, and Clear Creek subbasins for removal and replacement. Funding is requested for each subbasin in order to realize the greatest biological benefit while also taking advantage of the reduced costs of grouping each structure of three passage barriers into one project. This philosophy is reflected in the Federal Governments "Economy Act" provision allowing the Forest Service and Bureau of Reclamation to each survey and design all three barriers within close proximity and within a specific subbasin. Under the Economy Act, the Reclamation is to survey and design all three sites within the Alder Creek subbasin and the Forest Service is to survey and design all three sites within the Clear Creek subbasin.

Construction costs will be reduced by allowing the contractor to mobilize equipment and purchase materials for all three sites instead of one at a time. For example, mobilization of heavy construction equipment will require transport of approximately 30 miles over county roads. The same heavy equipment is required for each site; therefore the equipment can be used at each site before transport back to the contractors shop.

Purchase of materials for all three sites allows the supplier to more efficiently transport such items as the modular bridge superstructures, pre-cast concrete abutments, ecology blocks, and rip rap slope retention rock. As result of the recent fuel price increases, all suppliers and contractors are including in their contracts a provision for a "Fuel Surcharge". While it is difficult to estimate fuel price increases, much of the increased costs can be avoided by grouping each subbasins three sites under one contract.

Permitting costs could be reduced by replacing all the culverts in each of the subbasins by taking advantage of the Consolidated Permit provision provided by Washington Department of Fish and Wildlife.

References:

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Washington Department of Fish and Wildlife. 2005. "Fishdist: 1:24,000 (24K) and 1:100,000 (100K) Statewide Salmonid Fish Distribution". GIS data layer. (M. Hudson, data manager). Available from Washington Department of Fish and Wildlife, 600 Capitol Way North, Olympia, Washington 98501-1091.

Appendix A. Landowner Willingness Form

16. Landowner Willingness Form

Landowner Information:

Name of Landowner:

Landowner Contact Information:

X☐ Mr. ☐ Ms. Title

First Name: Jim Last Name: Adamson

Contact Mailing Address: 20111 Chiwawa Loop Road
Leavenworth, WA 98826

Contact E-Mail Address:

Property Address or Location: Parcel # 261805200000

I certify that Adamson Family LLC is the legal owner of property described in this grant
(landowner or organization)
application to the Salmon Recovery Funding Board (SRFB). I am aware the project is being proposed on said property. My signature authorizes the applicant listed below to seek funding for project implementation, however, does not represent authorization of project implementation.

Jim Adamson, Mgr. 12-21-2005
Landowner Signature **Date**
Adamson Family LLC

Project Applicant Information:

Project Name: Entiat River Habitat Improvement Project

Project Applicant Contact Information:

☐ Mr. ☐ Ms. Title **Habitat Program Manager**

First Name: **Alan** Last Name: **Schmidt**

Contact Mailing Address: **Chelan County Natural Resource Department**
316 Washington St. Suite 401
Wenatchee, WA 98801

Contact E-Mail Address: **alan.schmidt@co.chelan.wa.us**

Lead Entity Organization: **Chelan County Natural Resource Department**